Abstracts

Oktober 2017

DOS Kongressen 2017

Radisson Blu Scandinavia Hotel 25.–27. oktober

www.ortopaedi.dk

DOS Bulletin

Udgiver
Dansk Ortopædisk Selskab
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DOS Bestyrelse
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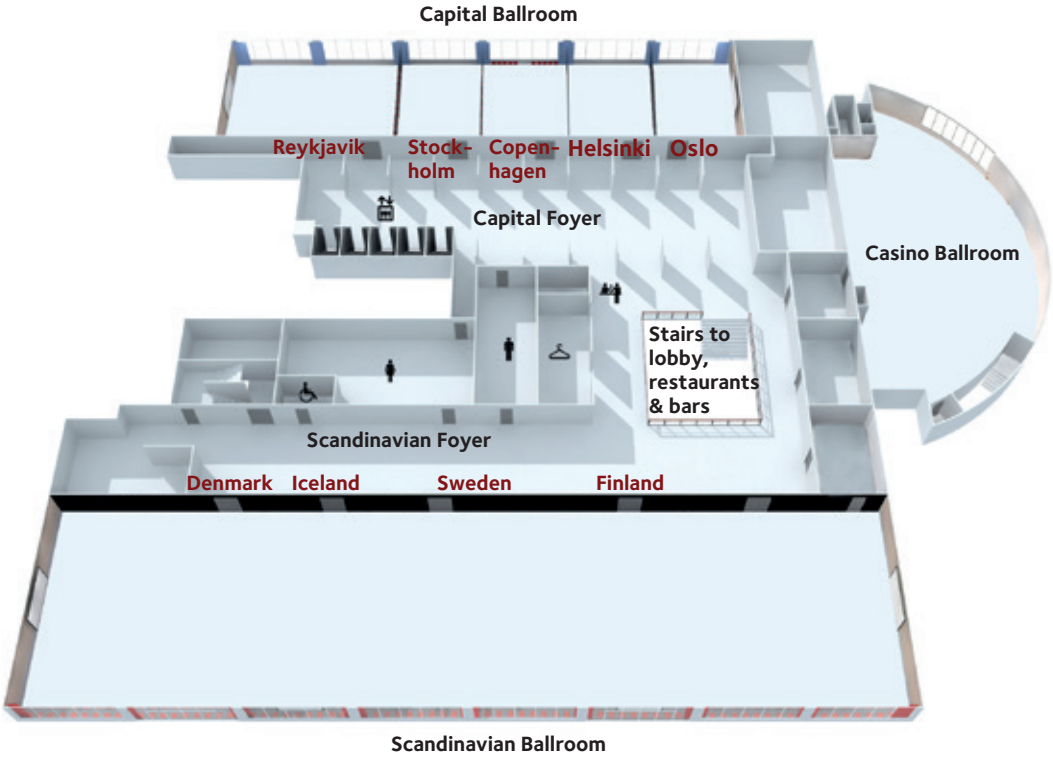
ISSN 0902-8633

	Onsdag d. 25. oktober	Torsdag d. 26. oktober	Fredag d. 27. oktober
07:30-08:00		Generalforsamling	
08:00-08:30			
08:30-09:00			
09:00-09:30	1: Knee I 2: Trauma I 3: Shoulder and Elbow Symposium (UDDU)		13: Hip II 14: Traume II UDDU Cases VU Symposium
09:30-10:00		8:YODA Best Papers Clinical Assesment (UDDU)	
10:00-10:30			
10:30-11:00	Kaffe i udstillingen	Kaffe i udstillingen	Kaffe i udstillingen
11:00-11:30	4: Knee II 5: Best Posters 6.Pediatrics/Foot and Ankle Clinical Assesment (UDDU)	DOS Honorary Lecture v/ Peter Qvotrup Geisling	Guildal Lecture v/ Beat Hintermann
11:30-12:00			
12:00-12:30	Frokost i udstillingen	Frokost i udstillingen samt Frokost symposium	Frokost i udstillingen
12:30-13:00			
13:00-13:30	Møde i fagområderne	9: Hip I 10: Hand and Wrist 11: Sports Orthopaedics Symposium (KU)	15: Experimental/Infections 16: Spine/Tumor/ Symposium (VU) Symposium (Infections)
13:30-14:00			
14:00-14:30			
14:30-15:00	Kaffe i udstillingen	Kaffe i udstillingen	Donationer og kaffe
15:00-15:30	Møde i fagområderne (fortsat)	Velkomst til nye kollegaer Professorforelæsning	
15:30-16:00		12: DOS Best Papers	
16:00-16:30			
16:30-17:00			
17:00-17:30			
17:30-18:00	Reception and Posterwalk 7: Cases / Technical Notes		
18:00-18:30			
18:30-19:00		DOS Party	
19:30			

Indhold

Floorplan


Capital Ballroom
Reykjavik
Stock-holm
Copen-hagen
Helsinki
Oslo
Capital Foyer
Casino Ballroom
Stairs to lobby, restaurants & bars
Scandinavian Foyer
Denmark
Iceland
Sweden
Finland
Scandinavian Ballroom

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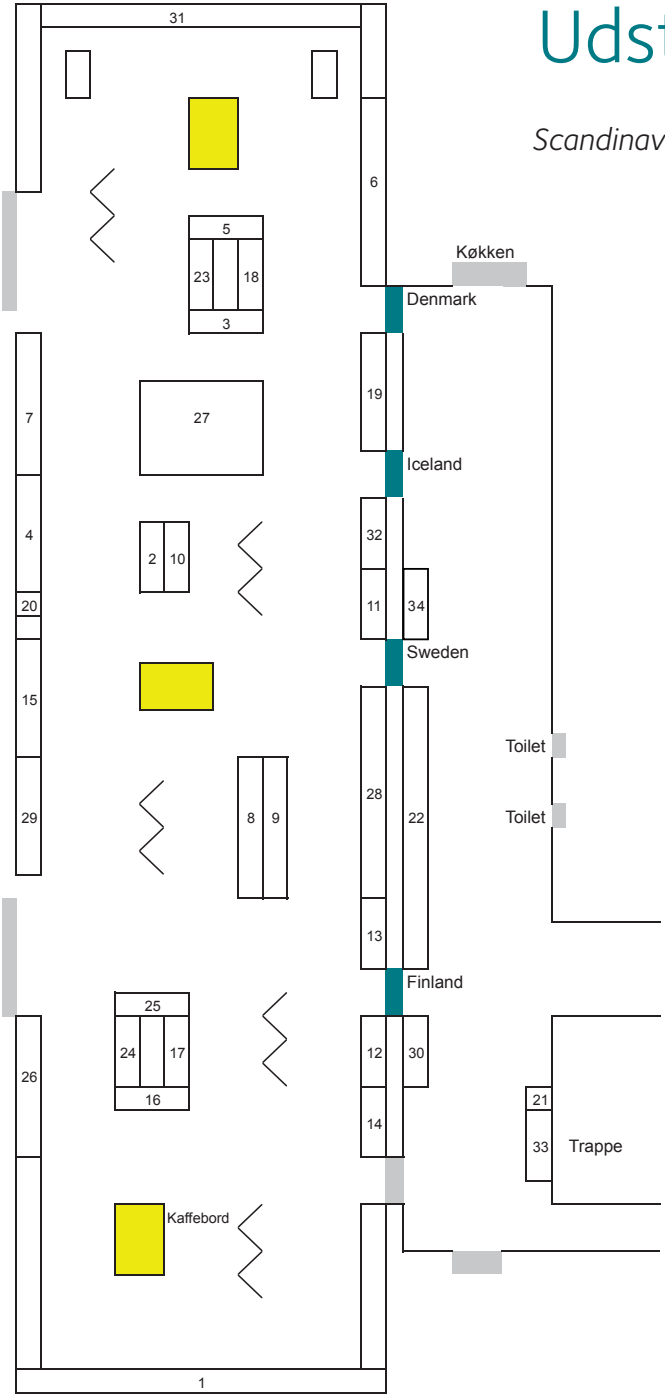
Udstilling

Scandinavian Ballroom



Dagsprogram

Onsdag d. 25. oktober

		Lokale:
09:00 – 10:30	**Session 1** *(Knæ I)*	*Reykjavik*
	Session 2 *(Traume I)*	*Stockholm/ Copenhagen*
	Session 3 *(Skulder/Albue)*	*Helsinki/Oslo*
	DOS Symposium (Uddannelsesudvalget) ***"Mesterlære"***	*Ballroom C*
10:30 - 11:00	***Kaffe i udstillingen***	
10:30 – 12:00	*Forum for Ledende overlæger*	*2620 (26. etage)*
11:00 - 12:00	**Session 4** *(Knæ II)*	*Reykjavik*
	Session 5 *(Best Posters)*	*Stockholm/ Copenhagen*
	Session 6 *(Børn/Fod og Ankel)*	*Helsinki/Oslo*
	DOS Workshop (Uddannelsesudvalget) ***"Kompetencevurdering i hverdagen"***	*Directors*
12:00 - 13:00	***Frokost i udstillingen***	

13:00 - 14:30	**Møder i fagområderne**	**Lokale:**
	Fagområder:	
	Dansk Selskab for hofte- og knæalloplastik	*Helsinki*
	Dansk Ortopædisk Traumeselskab	*Oslo*
	Dansk Selskab for håndkirurgi	*Reykjavik*
	Dansk Selskab for artroskopi og sportstraumatologi (SAKS)	*Copenhagen*
	Dansk Selskab for skulder- og albuekirurgi	*2620 (26.etage)*
	Ryginteressegruppen	*Chairmans*
	Dansk Fod- og ankelkirurgisk selskab	*Stockholm*
	Dansk børneortopædisk Selskab	*Directors*
	Dansk onkologi/knogle og bløddelstumorer	*545, (stueetagen)*
14:30 – 15:00	***Kaffe i udstillingen***	
15:00 – 17:30	**Møder i fagområderne (fortsat)**	
16:00 – 17:30	*Dansk Selskab for infektionsinteresserede Ortopædkirurger*	*Executive*
17:30 – 18:30	**Velkomst og Posterwalk**	*Udstillingen*
	Session 7 (*Technical notes/Case)*	*Copenhagen*
18:00 – 20:00	*Danske Ortopæders Organisation*	*2620 (26. etage)*
	Yngre ortopædkirurger Danmark (YODA)	*Reykjavik*

Dagsprogram

Torsdag 26. oktober 2016

		Lokale:
07:30 – 09:30	**Generalforsamling i DOS** ***let morgenbuffet***	*Ballroom C*
09:30 – 10:30	**Session 8** *(YODA Best Papers)*	*Stockholm/ Copenhagen Helsinki/ Oslo*
	DOS Workshop (Uddannelsesudvalget) ***"Kompetencevurdering i hverdagen"***	*Directors*
10:30 – 11:00	***Kaffe i udstillingen***	
11:00 – 12:00	**DOS Honorary Lecture** **v/Peter Qvortrup Geisling** ***"Sund kommunikation midt i aftenkaffen"***	*Stockholm/ Copenhagen Helsinki/ Oslo*
12:00 – 13:00	***Frokost i udstillingen***	
12:15 – 12:45	**Lunch Symposium (Arthrex)** **v/Dr.Med. Sven Lichtenberg** ***"Stemless Shoulder Arthroplasty 10+ Years of Clinical Data & Experience"***	*Ballroom C*
13:00 – 14:30	**Session 9** *(Hofte I)*	*Reykjavik*
	Session 10 *(Hånd og Håndled)*	*Stockholm/ Copenhagen*
	Session 11 *(Sportsortopædi)*	*Helsinki/ Oslo*
	DOS Workshop (Uddannelsesudvalget) ***"Kompetencevurdering i hverdagen"***	*Directors*

		Lokale:
13:00 – 14:30	**DOS Symposium (Kvalitetsudvalget)** ***"Det nye akutmedicinske speciale og samarbejdet med ortopædien....."***	*Ballroom C*
14:30 – 15:00	***Kaffe i udstillingen***	
15:00 – 15:10	*Velkommen til de nye speciallæger*	*Stockholm/ Copenhagen Helsinki/Oslo*
15:10 – 15:30	**Professor Lecture** **Søren Kold, Aalborg University** ***"Introducing new surgical techniques"***	*Stockholm/ Copenhagen Helsinki/Oslo*
15:30 – 17:00	**Session 12:** *(Best Papers)*	*Stockholm/ Copenhagen Helsinki/ Oslo*
16:00 – 17:30	Uddannelsesansvarlige overlæger	*Directors*
18:30 – 19:00	**Velkomst til kongresmiddag**	*Ballroom C*
19:00 – 01:00	***Kongresmiddag (buffet)*** *Prisuddelinger:* *YODA Best Paper* *"Den Gyldne Yoda"* *DOS Best Paper and second Best Paper* *Best Poster* *Best PhD 2017* *Best published paper 2017* *DOS Fellowship 2017*	*Stockholm/ Copenhagen Helsinki/Oslo*

Dagsprogram

Fredag 27. oktober 2016

		Lokale:
09:00 – 10:30	**Session 13** *(Hofte II)*	*Reykjavik*
	Session 14 *(Traume II)*	*Stockholm/ Copenhagen*
	DOS Symposium (Uddannelsesudvalget) ***"Cases and Meet the experts"***	*Helsinki/Oslo*
	DOS Symposium (Videnskabeligt Udvalg) ***"Metaanalyser"***	*Ballroom C*
10:30 – 11:00	***Kaffe i udstillingen***	
11:00 – 12:00	**Guildal Lecture:** **Beat Hintermann, MD, Associate Professor, University of Basel** ***"Development in the Treatment of Ankle Arthritis over the last 30 Years".***	*Stockholm/ Copenhagen* *Helsinki/Oslo*
12:00 – 13:00	***Frokost i udstillingen***	
13:00 – 14:30	**Session 15** *(Eksperimentel/Infektion)*	*Reykjavik*
	Session 16 *(Ryg/Tumor)*	*Stockholm/ Copenhagen*

		Lokale:
13:00 – 14:30	**DOS Symposium (Videnskabeligt Udvalg)** ***"Kirurgisk vs. ikke-kirurgisk behandling"***	*Helsinki/Oslo*
	DOS Symposium ***"Bone infections - Animal models and clinical research"***	*Ballroom C*
14:30 – 15:00	**Uddelinger** • **DOS Fonden** • **Guildal Fonden**	*Stockholm/ Copenhagen*

Videnskabeligt program

Dansk Ortopædisk Selskab kan i år præsentere et videnskabeligt program med 176 abstrakts fordelt på foredrag, posters med foredrag samt en posterudstilling.

Onsdag d. 25. oktober fra kl. 11:00 til 12:00 er der "Best Posters" (session 5). Mød op og vær med til at kåre DOS Kongressens bedste poster. Afstemningssedler udleveres umiddelbart efter session 5.

Torsdag d. 26. oktober fra kl. 9:30 – 10:40 afholder "YODA Best Papers" (session 8). Om eftermiddagen fra kl. 15:30 til 17:00 er der "DOS Best Papers" (Session 12). Kom og giv din stemme.

Alle vindere offentliggøres til DOS Festmiddag torsdag d. 26. oktober.

I denne DOS Abstractbog er listet en oversigt om alle abstrakts med titel og forfattere. Selve abstraktet kan ses i vores abstraktbog, som kan findes på vores hjemmeside (www.ortopaedi.dk).

Thomas Jakobsen
Redaktør

Session 1: Knee I

Onsdag d. 25. oktober
09:00-10:30
Lokale: Reykjavik

Chairmen: Frank Madsen og Kirill Gromov

1. One year effectiveness of neuromuscular exercise compared with instruction in analgesic use on knee function in patients with early knee osteoarthritis: the EXERPHARMA randomized trial
Anders Holsgaard-Larsen, Robin Christensen, Brian Clausen, Jens Søndergaard, Thomas P. Andriacchi, Ewa M. Roos

2. Simultaneous versus staged bilateral total knee arthroplasty. A propensity matched case-control study from 9 fast-track centres.
Martin Lindberg-Larsen, Frederik Taylor Pitter, Henrik Husted, Henrik Kehlet, Christoffer Jørgensen

3. Equal fixation of fixed-bearing versus mobile-bearing cemented partial knee replacement. A randomised controlled RSA study with 2-year follow-up.
Daan Koppens, Søren Rytter, Stig Munk, Jesper Dalsgaard, Ole Gade Sørensen, Torben Bæk Hansen, Maiken Stilling

4. Minimal Important Change determined with a novel method focusing on patients' perspectives of important change for the Oxford Knee Score and the Forgotten Joint Score after knee replacement
Lina Holm Ingelsrud, Ewa Roos, Kirill Gromov, Henrik Husted, Berend Terluin, Anders Troelsen

5. Low Preoperative BMD is Related to High Migration of Tibia Components in Uncemented TKA – 92 patients in a combined DEXA- and RSA-study with two-year follow-up.
Mikkel Rathsach Andersen, Nikolaj S. Winther, Thomas Lind, Henrik M. Schrøder, Michael Mørk Petersen

6. Knee osteoarthritis patients can provide useful information about knee range of motion
Anne Mørup-Petersen, Pætur Mikal Holm, Christina Holm, Tobias Wirenfeldt Klausen, Søren T. Skou, Michael Rindom Krogsgaard, Mogens Berg Laursen, Anders Odgaard

7. UCLA Activity Scale: translation process and validation study in a Danish knee osteoarthritis population
Anne Mørup-Petersen, Søren T. Skou, Christina Holm, Pætur Mikal Holm, Tobias Wirenfeldt Klausen, Michael Rindom Krogsgaard, Mogens Berg Laursen, Anders Odgaard

8. A new screening algorithm to improve the referral pattern of outpatient orthopedic knee patients. Development and evaluation based on patient-reported data and radiographs.
Lone Ramer Mikkelsen, Mette Garval, Carsten Holm, Søren Thorgaard Skou

9. Differences in level of physical activity in patients with knee osteoarthritis, patients with knee joint replacement and healthy subjects measured with an accelerometer-based method
Rikke Daugaard, Marianne Tjur, Maik Sliepen, Dieter Rosenbaum, Bernd Grimm, Inger Mechlenburg

10. Bearing dislocation in domed lateral Oxford Unicompartmental Knee replacement - short- to mid-term follow-up of 45 knees
Thomas Lind-Hansen, Claus Varnum, Lasse Enkebølle Rasmussen

11. Preoperative analgesic treatment and the risk of manipulation under anaesthesia (MUA) following total knee arthroplasty (TKA) – a case-control study
Sara Svanholm, Anders Odgaard, Thomas Lind

Session 2: Trauma I

Onsdag d. 25. oktober
09:00-10:30
Lokale: Stockholm/Copenhagen

Chairmen: Lonnie Froberg og Henrik Palm

12. Impact of preadmission anti-inflammatory drug use on the risk of allogeneic red blood cell transfusion in elderly hip fracture patients
Eva Natalia Glassou, Nickolaj Kristensen, Bjarne Møller, Christian Erikstrup, Torben Bæk Hansen, Alma Becic Pedersen

13. Hip fracture, comorbidity, and the risk of myocardial infarction and stroke: A Danish nationwide cohort study, 1995-2015
Alma B Pedersen , Vera Ehrenstein, Szimonetta K. Szépligeti, Henrik T Sørensen

14. Perioperative antithrombotic therapy and risk of blood transfusion and mortality following hip fracture surgery: A Danish nationwide cohort study
Cecilie Daugaard, Nickolaj Risbo Kristensen, Alma Becic Pedersen, Søren Paaske Johnsen

15. Excess Risk of Venous Thromboembolism in Hip Fracture Patients and the Prognostic Impact of Comorbidity
Alma B. Pedersen, Vera Ehrenstein, Szimonetta Szépligeti, Henrik T. Sørensen

16. Selective Serotonin Reuptake Inhibitor Use among Hip Fracture Patients: A Danish nationwide cohort study, 2006-2012
Stine Bakkensen Bruun, Irene Petersen, Deirdre Cronin-Fenton, Alma Becic Pedersen

17. Cemented hemiarthroplasty for femoral neck fracture patients: Collarless, polished tapered stem (CPT) versus anatomic matte stem (Lubinus SP2)
Rajzan Joanroy, Jesper Stork-Hansen, Lars Rotwitt, Bjarke Viberg

18. Perioperative complications and reoperations after osteosynthesis of instable trochanteric fractures with short and long intramedullary nails. A register-based study.
Klaus D. Sander, Michael Brix, Jesper O. Schønnemann

19. A restrictive blood transfusion limit does not affect mortality in hip fracture patients – a regional cohort study based on national databases
Bjarke Viberg, Per Hviid Gundtoft, Jesper Schønnemann, Lasse Pedersen, Lis Røhl Andersen, Kjell Titlestad, Jens Lauritsen, Søren Overgaard

20. Impact of comorbidity on the association between surgery delay and mortality in hip fracture patients: a Danish nationwide cohort study
Buket Öztürk, Søren P. Johnsen, Niels D. Röck, Alma B. Pedersen

21. Is High Quality Of Care Associated With Higher Costs? - A Nationwide Cohort Study Among Hip Fracture Patients
Pia Kjær Kristensen, Rikke Søgaard, Theis Thillemann, Kjeld Søballe, Søren Paaske Johnsen

22. Fast track for patients with hip fractures
Rikke Beckermann

Session 3: Shoulder and Elbow

Onsdag d. 25. oktober
09:00-10:30
Lokale: Helsinki/Oslo

Chairmen: Theis Thillemann og Anne-Kathrine Belling Sørensen

23. Reproducibility of dual x-ray absorptiometry and assessment of changes in regional body composition following shoulder arthroplasty for osteoarthritis
Mustafa Al-Hamdani, Bo S. Olsen, Bo Zerahn, Jeppe V. Rasmussen

24. The prevalence and impact of Diabetes Mellitus on the Frozen Shoulder
Per Hviid Gundtoft, Anne Krog Kristensen, Mikkel Attrup, Jette Wessel Vobbe, Torben Luxhøi, Flemming Gothard Rix, Per Hölmich, Lilli Sørensen

25. PRECISION OF BONE MODELS IN DYNAMIC RSA OF THE ELBOW AND DISTAL FOREARM
Sepp De Raedt, Janni Thillemann, Chalotte Vestergaard Hemmingsen, Maiken Stilling

26. Muscle inflammation following supraspinatus tears
Lars Henrik Frich, Kate Lykke Lambertsen, Allan Steensballe, Henrik Daa Schrøder

27. Risk factors of infection after shoulder arthroplasty. Incidence, infection-free survival and relative risks in 6877 primary shoulder replacements
Sahar Moeini, Jeppe V. Rasmussen, Stig Brorson

28. Risk of revision or clinical failure in 2,418 patients with stemmed hemiarthroplasty for acute proximal humeral fracture
Alexander Amundsen, Jeppe V. Rasmussen, Bo S. Olsen, Stig Brorson

29. Predictors of pain six months after arthroscopic shoulder surgery
Lone Dragnes Brix, Theis Muncholm Thillemann, Karen Toftdahl Bjørnholdt, Lone Nikolajsen

30. ELBOW BIOMECHANINCS, RADIOCAPITELLAR JOINT PRESSURE, AND INTEROSSOUS MEMBRANE STRAIN BEFORE AND AFTER RADIAL HEAD ARTHROPLASTY
Chalotte Krabbe Hemmingsen, Theis Muncholm Thillemann, Brian Elmengaard, Sepp de Raedt, Emil Toft Nielsen, Sebastian Breddam Mosegaard, Kasper Stent-Olesen, Maiken Stilling

31. Longterm clinical results in patients treated with arthroscopic release for elbow stiffness
Taj Haubuf, Janne Ovesen, Hans Viggo Johannsen

32. Good mid-term outcome and few complications after elbow hemiarthroplasty for acute distal humeral fractures in adults
Ali K. K. Al-Hamdani, Jeppe Rasmussen, Anne Kathrine Belling Sørensen, Janne Ovesen, Stig Brorson, Bo Olsen

33. Cuff-Tear Arthropathy: An Historical Review of 19th Century Sources
Stig Brorson

Session 4: Knee II

Onsdag d. 25. oktober
11:00-12:00
Lokale: Reykjavik

Chairmen: Lasse Enkebølle Rasmussen og Anders Odgaard

34. Outcome of tibial component valgus subsidence in cementless Oxford unicompartmental knee replacement
Lasse E. Rasmussen, Thomas Lind-Hansen, Claus Varnum, Per Wagner Kristensen

35. The perioperative infection rate in total knee arthroplasty may be dependent on season
Hannes Torngren, Sara Kamilla Clausen, Anders Odgaard, Thomas Lind

36. Treatment of Osteoarthritis with the Stromal Vascular Fraction of Abdominal Adipose Tissue - a Pilot Study
Kristoffer Weisskirchner Barfod, Lars Blønd

37. Patients with anteromedial osteoarthritis achieve the greatest improvement in patient reported outcome after total knee arthroplasty
Iben Rønne Jessing, Mette Mikkelsen, Kirill Gromov, Henrik Husted, Thomas Kallemose, Anders Troelsen

38. Limited use of the orthopaedic surgeon's advice on non-surgical treatment for knee osteoarthritis – An observational cohort study.
Sofie Ryaa, Lina H. Ingelsrud, Søren T. Skou, Ewa M. Roos, Anders Troelsen

39. Using wearable sensors to determine knee range of movement in knee arthroplasty patients. A pilot study.
Mie Christina Hansen, Rasmus Malik Thaarup Høegh, Jacob Fyhring Mortensen, Helge Bjarup Dissing Sørensen, Anders Odgaard

40. Isolated Tibial Insert Exchange after Primary Total Knee Arthroplasty
Amir Pasha Attarzadeh, Amin Bakhtyar Baram, Thorbjørn Gantzel Christiansen, Thomas Lind

Session 5: Best Posters

Onsdag d. 25. oktober
11:00-12:00
Lokale: Stockholm/Copenhagen

Chairmen: Claus Varnum og Bo Sanderhoff Olsen

41. No association between surgical delay and mortality following distal femoral fractures. A study from The Danish Fracture Database Collaboration
Anne Marie Nyholm, Henrik Palm, Thomas Kallemose, Anders Troelsen, Kirill Gromov

42. Neural axis abnormalities in patients with adolescent idiopathic scoliosis - the role of MRI
Sidsel Fruergaard, Søren Ohrt-Nissen, Benny Dahl, Martin Gehrchen

43. Cross-Cultural translation, adaption and Reliability of the Danish modified version of AOFAS-Da and SEFAS-Da
Julie Ladeby Erichsen, Carsten Jensen, Frank Damborg, Bjarke Viberg, Lonnie Froberg

44. Medium to Long-term functionality and survival of HemiCap for hallux rigidus
Mads Holm Møller, Pernille Henszelman Jørsboe, Michael Stage Pedersen, Mostafa Benyahia, Thomas Kallemose, Jeannette Østergaard Penny

45. Spinal Injury Epidemiology based on patients referred to a Tertiary Care Centre: Pilot study from the SPinal INjury Epidemiology Database
Oliver Zielinski, Rune Bech, Martin Gehrchen, Benny Dahl

46. Low inter-observer agreement among experienced shoulder surgeons assessing overstuffing of glenohumeral resurfacing hemiarthroplasty based on plain radiographs
Nicolai Sandau, Stig Brorson, Bo S. Olsen, Anne Kathrine Sørensen, Steen L. Jensen, Kim Schantz, Janne Ovesen, Jeppe V. Rasmussen

47. Reverse total shoulder arthroplasty for Cuff-Tear Arthropathy: Outcome, revision rate and indication for revision for 504 arthroplasties reported to the Danish Shoulder Arthroplasty Registry
Amin Bakhtyar Baram, Mette Ammitzbøll, Bo Sanderhoff Olsen, Stig Brorson, Jeppe Vejlgaard Rasmussen

48. Readmissions, length of stay and mortality after primary surgery for adult spinal deformity
Frederik Taylor Pitter, Martin Lindberg-Larsen, Alma Pedersen, Benny Dahl, Martin Gehrchen

49. Passive range of motion and clinical cut-off point of in ankle dorsiflexion are not correlated with gross motor function in children with cerebral palsy – a cross sectional study
Helle Mätzke Rasmussen, Joachim Svensson, Maria Thorning, Niels Wisbech Pedersen, Søren Overgaard, Anders Holsgaard-Larsen

50. A single magnetic controlled growing rod can drive double growing rod systems with apical control in EOS
Simon Toftgaard Skov, Sebastiaan P.J. Wijdicks, Cody Bünger , René M. Castelein , Haisheng Li, Moyo C. Kruyt

Session 6: Pediatrics/Foot and Ankle

Onsdag d. 25. oktober
11:00-12:00
Lokale: Helsinki/Oslo

Chairmen: Bjarne Møller Madsen og Jeannette Penny

51. PRP-enriched Allogenic Cartilage Decreases Risk of Bone Bridge Formation after Physeal Injury in an Experimental Porcine Model
Ahmed Abdul-Hussein Abood, Bjarne Møller-Madsen, Juan Manuel Shiguetomi-Medina, Morten Lykke Olesen, Hans Stødkilde-Jørgensen, Casper Bindzus Foldager, Ole Rahbek

52. The effect of load management in adolescents between 10 and 14 years of age with patellofemoral pain – a prospective single-cohort intervention study including 151 adolescents
Michael Skovdal Rathleff, Thomas Graven-Nielsen, Per Hölmich, Lukasz Winiarski, Kasper Krommes, Kristian Thorborg

53. Prevention of Bone Bridge Formation using Autologous Cartilage in an Experimental Porcine Model
Ahmed Abdul-Hussein Abood, Bjarne Møller-Madsen, Juan Manuel Shiguetomi-Medina, Hans Stødkilde-Jørgensen, Casper Bindzus Foldager, Ole Rahbek

54. Structural hydroxyapatite tricalciumphosphate graft vs. tricortical iliac crest autograft in paediatric calcaneal lengthening osteotomies. The final results from a randomised controlled noninferiority trial.
Polina Martinkevich, Ole Rahbek, Maiken Stilling, Line Kjeldgaard Pedersen, Martin Gottliebsen , Kjeld Søballe, Bjarne Møller-Madsen

55. Intra-articular vs. Extra-articular Subtalar Arthrodesis: An Assessment of RSA Stability
Peter Buxbom, Stig Sonne-Holm, Christian Wong

56. Validity and Reliability of an Ultrasound Measurement of the free length of the Achilles tendon.

Kristoffer W. Barfod, Anja Falk Riecke, Anders Boesen, Philip Hansen, Jens Friedrich Maier, Simon Doessing, Anders Troelsen

57. Plantar Forces Mid-Term After Hemiarthroplasty With HemiCAP For Hallux Rigidus

Pernille Henszelman Jørsboe, Michael Stage Pedersen, Mostafa Benyahia, Mads Holm Møller, Thomas Kallemose, Merete Brink Speedtsberg, Hanne Bloch Lauridsen, Jeannette Østergaard Penny

Session 7: Technical / Cases

Onsdag d. 25. oktober
17:30-18:30
Lokale: Copenhagen

Chairmen: Søren Kold og Vilhelm Engell

58. Operative management of femoral Focal Fibrocartilaginous Dysplasia in children
Line Kjeldgaard Pedersen, Jens Svendsson, Mindaugas Mizukis, Søren Harving

59. Obturator pyomyositis related to staphylococcus aureus bacteremia: can mimic or be complicated by ipsilateral septic coxitis
Rasmus Cleemann, Mathias Bünger, Martin Gottliebsen, Klaus Kjær Petersen

60. Does missed primary information lead to complications in Achilles tendon ruptures? A preliminary case series.
Marianne Christensen, Kathrine Skov Andersen, Inge Lunding Kjær

61. Early results with the X-pander® trial cup in primary hip replacement.
Khuram Bashir, Leif Broeng

Session 8: YODA Best Papers

Torsdag d. 26. oktober
09:30-10:30
Lokale: Stockholm/Copenhagen/Helsinki/Oslo

Chairmen: Jakob Klit og Søren Ohrt-Nissen

62. A Systematic Review and Meta-analysis of treatment of Ankle Fractures with Syndesmotic Rupture; Suture- Button Fixation vs. Cortical Screw Fixation
Alexandra Claire McKenzie, Kristian Eskild Hesselholt,

63. Increased risk of revision in total knee arthroplasties following high tibial osteotomy is explained by patient demographics
Anders El-Galaly, Poul Torben Nielsen, Steen Lund Jensen, Andreas Kappel

64. Resurfacing hemiarthroplasty versus reverse shoulder arthroplasty in treatment of cuff tear arthropathy - a matched-pair analysis
Mette Ammitzbøll, Jeppe V Rasmussen, Amin B Baram, Stig Brorson, Bo S Olsen,

65. Preoperative systemic bone quality does not affect tibial component migration in knee arthroplasty. A 2 year RSA study of 101 consecutive patients.
Karina Nørgaard Linde, Katriina Bøcker Puhakka, Bente Lomholt Langdahl, Kjeld Søballe, Inger Krog-Mikkelsen, Frank Madsen, Maiken Stilling

66. Preoperative Patient Reported Outcome Measures in the Prediction of Outcome in Arthroplasty of the Basal Joint of the Thumb
Rasmus Wejnold Jørgensen, Jens-Christian Vedel, Anders Odgaard, Claus Hjorth Jensen

Session 9: Hip I

Torsdag d. 26. oktober
13:00-14:30
Lokale: Reykjavik

Chairmen: Stig Jakobsen og Thomas Jakobsen

67. EQUIVALENT FEMORAL STEM FIXATION WITH HI-FATIGUE AND PALACOS BONE-CEMENTS. A 2 YEAR RANDOMIZED CONTROLLED TRIAL WITH RADIOSTEREOMETRIC ANALYSIS
Peter Bo Jørgensen, Martin Lamm, Kjeld Søballe, Maiken Stilling

68. Effect of preoperative methylprednisolone on orthostatic hypotension during early mobilization after total hip arthroplasty - a randomized, double-blind, placebo-controlled trial
Viktoria Lindberg-Larsen, Pelle Petersen, Øivind Jans, Torben Beck, Henrik Kehlet

69. Incidence of hip and knee replacements in rheumatoid arthritis patients following introduction of biological DMARDs: an interrupted time series analysis using nationwide Danish health care registers
René Cordtz, Samuel Hawley, Daniel Prieto-Alhambra, Kristian Zobbe, Pil Højgaard, Lars Erik Kristensen, Søren Overgaard, Anders Odgaard, Lene Dreyer

70. Survival of hip resurfacing arthroplasty and the Mitch proximal epiphyseal replacement - Results from the Danish Hip Arthroplasty Registry
Maja Tang Jensen, Per Kjærsgaard-Andersen, Søren Overgaard, Claus Varnum

71. Normal values and variation of acetabular angles measured by computed tomography in normal hips
Inger Mechlenburg, Maiken Stilling, Lone Rømer, Marleen de Bruijne, Kjeld Søballe, Sepp de Raedt

72. Feasibility and Safety of Same-Day Total Hip Arthroplasty – A Retrospective, Single-Center Observational Study in 116 Patients
Maria Lange Kirkegaard, Merete Nørgaard Madsen, Malene Laursen, Jens Rolighed Larsen, Merete Frydenlund Pedersen, Birgitte Skovgaard, Lone Ramer Mikkelsen

73. Association between periacetabular osteotomy (PAO) and the occurrence of hip dysplasia in among relatives of Danish patients – a cross-sectional study.
Pernille Simonsen, Jens Michael Hertz, Kjeld Søballe, Inger Mechlenburg

74. Custom Triflanged Implant in Reconstruction of Severe Acetabular Bone loss and Pelvic discontinuity after Total Hip Arthroplasty.
Nikolaj Winther, Michael Mørk Petersen, Poul Torben Nielsen, Jens Stürup

75. A Comparison of Measurements of Center-Edge angle between Supine-Pelvis Radiograph and Supine AP-Hip Radiograph, Intra- and interobserver study
Haider Ghalib Majeed, Morten Homilius, Idar Bohnhorst, Else Merete Ebbensgaard , Ahmed Salam N. Kurmasha, Torben Bæk Hansen

76. Ultrasound sensitivity and specificity for adverse reaction to metal debris in patients with total hip arthroplasty
Rasmus Mikkelsen, Marianne Fløjstrup, Thomas Skjødt, Per Kjærsgaard-Andersen, Claus Varnum

77. Preoperative progressive resistance training in patients with hip dysplasia - a feasibility study
Louise Mortensen, Jeppe Schultz, Anton Elsner, Stig S. Jakobsen, Kjeld Søballe, Julie S. Jakobsen, Signe Kierkegaard, Ulrik Dalgas, Inger Mechlenburg

Session 10: Hand and Wrist

Torsdag d. 26. oktober
13:00-14:30
Lokale: Stockholm/Copenhagen

Chairmen: Maiken Stilling og Camilla Ryge

78. Short-term result of a pyrocarbon implant in the STT joint for osteoarthritis
Allan Ibsen Sørensen, Peter Axelsson , Jonny Andersson

79. POLYETHYLENE WEAR OF A DUAL-MOBILITY ARTICULATION IN TOTAL TRAPEZIOMETACARPAL ARTHROPLASTY
Maiken Stilling, Lene Dremstrup, Lone Kirkeby, Torben Bæk Hansen

80. The Pronator Quadratus muscle after volar plating: Ultrasound evaluation of anatomical changes correlated to patient reported clinical outcome
Jesper Sonntag, Jesper Hern, Linn Woythal, Ulrik Branner, Kai H. W. Lange, Stig Brorson

81. SIMILAR PRESS-FIT FIXATION WITH A SPHERICAL AND A CONICAL CUP DESIGN IN THETRAPEZIOMETACARPAL JOINT: A RADIOSTEREOMETRIC ANALYSIS WITH A PIG BONE MODEL
Lene Dremstrup, Sebastian Breddam Mosegaard, Torben Bæk Hansen, Maiken Stilling

82. Short-term result of a pyrocarbon implant in the TMC joint for osteoarthritis
Allan Ibsen Sørensen

83. IDENTIFICATION OF PREDICTORS FOR EFFECT OF OPERATION FOR OSTEOARTHRITIS IN THE TRAPEZIOMETACARPAL JOINT WITH A TOTAL JOINT REPLACEMENT

Sebastian Breddam Mosegaard, Maiken Stilling, Torben Bæk Hansen, Eva Glassou

84. STATIC AND DYNAMIC RADIOSTEREOMETRIC ANALYSIS FOR EVALUATION OF INSTABILITY IN THE DISTAL RADIOULNAR JOINT BEFORE AND AFTER TFCC LESIONS

Janni Kjærgaard Thillemann, Sepp De Raedt, Peter Bo Jørgensen, Bart Kaptein, Lone Rømer, Torben Bæk Hansen , Maiken Stilling

85. The value of magnetic resonance imaging (MRI) and ultrasound (UL) in diagnosing UCL ruptures of the thumb

Ellen Hamborg-Petersen, Trine Torfing, Bjarke Viberg

86. Management of TFCC injuries – short term results of foveal re-attachment by ulnar tunnel technique

Robert Gvozdenovic

87. Arthrodesis of the Proximal Interphalangeal Joint

Rasmus Wejnold Jørgensen, Jens-Christian Vedel, Claus Hjorth Jensen

88. Superior Healing in Small Joint Fusion in the Hand Using the Acutrak 2 Headless Compression Screw as Compared to Kirschner Wires

Jens-Christian Vedel, Rasmus Wejnold Jørgensen, Claus Hjorth Jensen

Session 11: Sport Orthopaedics

Torsdag d. 26. oktober
13:00-14:30
Lokale: Helsinki/Oslo

Chairmen: Kristoffer Barfod og Michael Rindom Krogsgaard

89. The effect of cortisone in High-Volume Injection in Chronic Midportion Achilles Tendinopathy – A randomized double-blinded prospective study
Anders Ploug Boesen

90. NO EFFECT OF PLATELET RICH PLASMA AS COADJUVANT TO MICROFRACTURE FOR THE TREATMENT OF CHONDRAL DEFECTS
Morten Lykke Olesen, Bjørn Borsøe Christensen, Casper Bindzus Foldager, Kris Chadwick Hede, Natasja Leth Jørgensen, Martin Lind

91. Better failure rates with recent compared to early primary anterior cruciate ligament reconstruction using anteromedial portal for drilling of the femoral tunnel.
Niclas Højgaard Eysturoy , Torsten Grønbech Nielsen, Martin Carøe Lind

92. Quantifying the risk of developing knee osteoarthritis following knee injury - a systematic review and meta-analysis
Erik Poulsen, Glaucia H. Goncalves, Ewa M. Roos, Jonas B. Thorlund, Carsten B. Juhl

93. One-year results after Pediatric ACL Reconstruction using physeal sparing technique.
Peter Faunø, Torsten Nielsen, Martin Lind

94. Changes in total lower limb support moment in middle-aged patients undergoing arthroscopic partial meniscectomy
Anders Holsgaard-Larsen, Jonas B Thorlund, Tim Blackmore, Mark W Creaby

95. Lateral Patellar Instability Treated by Non-Anatomic Functional Reconstruction of the Medial Patellofemoral Ligament Using the Medial Collateral Ligament of the Knee as a Pulley
Jens-Christian Beuke, Jens Christian Pörneki, Jesper Vinther, Niels Maagaard, Bjarke Viberg

96. Completeness of the Danish Hip Arthroscopy Registry
Erik Poulsen, Bent Lund, Eleanor Boyle, Ewa M. Roos

97. Good mid-term results after hip arthroscopy: a retrospective study of 84 patients with femoroacetabular impingement followed for a minimum of 6 year
Niels Christian Kaldau, Stig Brorson, Bent Lund

98. Does a clinical algorithm improve the one year results after hip arthroscopy with labral repair ?- a retrospective study
Christian Dippmann, Line Dahl, Torsten Warming, Michael Rindom Krogsgaard

Session 12: Best Papers

Torsdag d. 26. oktober
15:30-17:00
Lokale: Stockholm/Copenhagen/Helsinki/Oslo

Chairmen: Ole Rahbek og Klaus Hindsø

99. Similar and good fixation of cementless and cemented Oxford® Partial Knee Tibial Trays at 5 years follow-up. A Randomized RSA Study
Maiken Stilling, Anders Odgaard, Claus Fink Jepsen, Kjeld Søballe, Per Wagner Kristensen, Frank Madsen

100. Optimal treatment of clavicle fractures is not an "all operative" or "all non-operative" approach: a single-blinded randomised controlled trial comparing non-operative and operative treatment of displaced midshaft fractures.
Ban Ilija, Kristensen Morten Tange , Barfod Kristoffer, Eschen Jacob , Kallemose Thomas , Troelsen Anders

101. A randomized study of in-cast intermittent pneumatic foot-compression in the preoperative treatment of malleolar fractures
Henriette Brink Christiansen, Pernille Bovbjerg, Jens Eggers, Jesper O. Schønnemann

102. Effect of prophylactic high-dose methylprednisolone on postoperative delirium in elderly patients undergoing hip fracture surgery; a double-blind, randomised, placebo-controlled trial.
Christopher Clemmesen, Troels Haxholdt Lunn, Morten Tange Kristensen, Henrik Palm, Nicolai Bang Foss

103. Quadricepstendon grafts reduce donor site morbidity for anterior cruciate ligament reconstruction compared to hamstring graft - a prospective and randomized study
Martin Lind, Torsten Grønbech Nielsen, Peter Faunø, Ole Gade Sørensen, Bjarne Mygind-Klavsen, Kasper Sinding

104. NO EFFECT OF PLATELET RICH PLASMA AS COADJUVANT TO AUTOLOGOUS PARTICULATED CARTILAGE FOR THE TREATMENT OF CHONDRAL DEFECTS

Morten Lykke Olesen, Bjørn Borsøe Christensen, Casper Bindzus Foldager, Kris Chadwick Hede, Natasja Leth Jørgensen, Martin Lind

105. Tranexamic acid does not increase the postoperative risk of cardiovascular events or death after total hip arthroplasty surgery. A population-based study from the Danish Hip Arthroplasty Register

Alexander Dastrup, Anton Pottegård, Jesper Hallas, Søren Overgaard

Session 13: Hip II

Fredag d. 27. oktober
09:00-10:30
Lokale: Reykjavik

Chairmen: Kjeld Søballe og Claus Varnum

106. Cup orientation after total hip arthroplasty is not challenged by obesity or preoperative anatomical properties of the acetabulum.
Roshan Latifi, Bjørn Gliese Jakobsen, Henrik Husted, Thomas Kallemose, Anders Troelsen, Kirill Gromov

107. Statin treatment is not associated with the postoperative risk of cardiovascular events or death after total hip arthroplasty surgery. A population-based study from the Danish Hip Arthroplasty Register.
Alexander Dastrup, Anton Pottegård, Søren Overgaard, Jesper Hallas

108. Is newer better? Revision risk of total hip arthroplasty with the newer Echo Bimetric stem compared to the preceding Bimetric stem
Claus Varnum, Per Hviid Gundtoft, Lasse Enkebølle Rasmussen, Per Kjærsgaard-Andersen

109. Does year of surgery influence revision risk of cemented primary total hip arthroplasty – results from the Danish Hip Arthroplasty Register (DHR)
Graversen Anders Elneff, Varnum Claus, Pedersen Alma Becic, Overgaard Søren

110. 91% infection free survival after cementless one-stage revision in chronic periprosthetic hip joint infection.
Jeppe Lange, CORIHA RESEARCH GROUP

111. High relative reliability and responsiveness of the forgotten joint score-12 in patients with femoroacetabular impingement undergoing hip arthroscopic treatment. A prospective survey-based study.
Birgitte Bramming, Signe Kierkegaard, Bent Lund , Stig S. Jakobsen, Inger Mechlenburg

112. Intra- and inter-observer variability in computed tomography assessment of gaps after primary cementless total hip arthroplasty
Maartje Belt, Omar Muharemovic, Bjørn Gliese, Hendrik Husted, Kirill Gromov, Anders Troelsen

113. Women and patients with high BMI have the lowest preoperative forgotten joint score prior to total hip arthroplasty
Dana Li, Anders Troelsen, Lina Ingelsrud , Henrik Husted, Kirill Gromov

114. Muscle-tendon related pain in 100 patients with hip dysplasia: prevalence and associations with self-reported hip disability and muscle strength
Julie Sandell Jacobsen, Per Hölmich, Kristian Thorborg, Bolvig Lars, Stig Storgaard Jakobsen, Kjeld Soballe, Inger Mechlenburg

115. Diagnostic performance of post-operative interference gap assessment on plain radiographs after cementless primary THA.
Maartje Belt, Bjørn Gliese, Omar Muharemovic, Hendrik Husted, Anders Troelsen, Kirill Gromov

116. Association between comorbidity and post-operative health-related quality of life in total hip arthroplasty patients
Eva Natalia Glassou, Alma Becic Pedersen, Peter Kloster Aalund, Torben Bæk Hansen

Session 14: Trauma II

Fredag d. 27. oktober
09:00-10:30
Lokale: Stockholm/Copenhagen

Chairmen: Hagen Schmal og Ilija Ban

117. Topical analgesia prior to percutaneous k-wire removal in upper extremity fractures in children
Mette Sørensen Studstrup, Simon Hestbech Lundorff, Lenike Jeppesen, Niels Krarup Jensen, Thomas Jakobsen

118. A Prospective RCT comparing The Fibular Nail vs ORIF in Ankle Fractures in adult patients under age 65
Linea H Lundholm, Bjørn L Madsen, Kim Holck, Lucy H Olsen, Andrew D Ducksworth, Tim O White

119. Regain of the pre-fracture basic mobility at the time of acute hospital discharge is associated with the risk of 30-day mortality and readmission – A 1-year nationwide register study of 5,554 Danish patients with hip fracture
Morten Tange Kristensen , Buket Öztürk , Niels Dieter Rock, Annette Ingeman, Henrik Palm , Alma Becic Pedersen

120. Oedema treatment after ankle fracture
Jesper Stork-Hansen, Rajzan Joanroy, Kristine Bollerup Arndt, Anders Jordy, Bjarke Viberg

121. Knee pain after tibial shaft fracture treated with intramedullary nailing in a 6-year follow-up of 223 cases.
Nikolaj Erin-Madsen, Bjarke Viberg, Tobias Kvanner Aasvang, Thomas Bloch, Michael Brix, Peter Toft Tengberg

122. Rates of complications in lateral vs. dual plating in tibial plateau fractures
Kathrine Rasch, Jens-Christian Beuke, Frank Damborg

123. Quadriceps tendon rupture. Anchor or transosseous sutures?
Martin Corÿdon Hochheim, Jonas Vestergård Iversen

124. Altered long-term health-related quality of life in patients following patella fractures - A long-term follow-up study of 49 patients treated with current methods
Julie Odgaard Vedel, Sabina Vistrup, Peter Larsen, Rasmus Elsøe

125. The diagnostic accuracy of ultrasonography compared to conventional radiography for diagnosis of extremity fractures in the emergency department: a pilot project
Nissa Khan, Gerhard Tiwald

126. Posterolateral approach to the ankle - early complications following ORIF. Early results from the PRO-Malleol study
Catarina Malmberg, Peter Toft Tengberg, Ilija Ban, Morten Grove Thomsen, Søren Kring, Mads Terndrup

127. Displaced isolated lateral malleolar fractures – Outcome at 3 months following non-operative treatment: Early results from the PRO-Malleol study
Mads Terndrup, Ilija Ban, Morten Grove Thomsen , Søren Kring, Peter Toft Tengberg

Session 15: Experimental/ Infections

Fredag d. 27. oktober
13:00-14:30
Lokale: Reykjavik

Chairmen: Casper Foldager og Jeppe Lange

128. Composite Biomaterial as a Carrier for Bone Active Substances for Metaphyseal Tibial Bone Defect Reconstruction in Rats
Peter Frederik Horstmann, Bushan Raina Raina, Hanna Isaksson, Werner Hettwer, Lars Lidgren, Michael Mørk Petersen, Magnus Tägil

129. Risk of revision, prosthetic joint infection and death following total hip or total knee arthroplasty in patients with rheumatoid arthritis – a nationwide cohort study from Denmark
René Cordtz, Pil Højgaard, Lars Erik Kristensen, Søren Overgaard, Anders Odgaard, Hanne Lindegaard, Lene Dreyer

130. Microcalorimetric detection of staphylococcal biofilm growth on various prosthetic biomaterials after exposure to daptomycin
Christen Ravn, Inês Santos Ferreira, Elena Maiolo, Søren Overgaard, Andrej Trampuz

131. Radiographic biodegradation patterns of a hydroxyapatite / calcium sulfate biocomposite. Results from a large animal bone defect model.
Werner Hettwer

132. Characterization of the remodeling events contributing to trabecularization of cortical bone: A study on human fibula diaphysis
Christina M. Andreasen, Jesper S. Thomsen, Lydia P. Bakalova, Annemarie Brüel, Ellen M. Hauge, Gete E.T. Eschen, Birgitte J. Kiil, Jean-Marie Delaisse, Mariana E. Kersh, Thomas L. Andersen

133. Regenerative tissue after matrix-associated cell implantation has better quality using amplified chondrocytes compared to synovial derived stem cells in a rabbit model

Hagen Schmal, Anke Bernstein, Michael Seidenstücker, Katharina Böttiger, Eva Johanna Kubosch

134. Time spent on alcohol rub prior to surgery – Does time feel faster with increasing age?

Jakob Klit, Per Hviid Gundtoft, Eske Brand, Peter Toft Tengberg, Kristoffer Weisskirchner Barfod

135. Identification of procedures for simulation-based training in orthopedic surgery through a national general needs assessment

Amandus Gustafsson, Bjarke Viberg, Charlotte Paltved, Karen Lindorff-Larsen, Bjørn Ulrik Nielsen, Henrik Palm, Lars Konge, Leizl Joy Nayahangan

136. Mortality analysis and Failure to Rescue in dysvascular lower extremity amputees: implications for future treatment protocols.

Christian Wied, Nicolai Bang Foss, Peter Toft Tengberg, Gitte Holm, Anders Troelsen, Morten Tange Kristensen

Session 16: Spine/Tumor

Fredag d. 27. oktober
13:00-14:30
Lokale: Stockholm/Copenhagen

Chairmen: Søren Morgen og Michael Bendtsen

137. Minimal Access vs. Open Spine Surgery in Patients with Metastatic Spinal Cord Compression. Preliminary Results from a One-Center Randomized Controlled Trial
Søren Schmidt Morgen, Lars Valentin Hansen, Robert Svardal-Stelmer, Martin Gehrchen, Benny Dahl

138. Patient reported outcomes after surgical treatment for cervical radioculopathy.
Andreas Kiilerich Andresen, Rune Paulsen, Frederik Busch, Alexander Isenberg-Jørgensen, Leah Carreon, Mikkel Østerheden Andersen

139. Bacterial biofilms: A possible mechanism for chronic infection in patients with lumbar disc herniation – A prospective proof-of-concept study using fluorescence in-situ hybridization.
Søren Ohrt-Nissen, Blaine Fritz, Jonas Walbom, Kasper Kragh, Thomas Bjarnsholt, Benny Dahl , Claus Manniche

140. Coccydynia, Outcome 1 year after surgical treatment of 138 consecutive patients.
Ane Simony MD PhD, Carsten Ernst MD, Stig Mindedahl Jespersen MD, PhD

141. Natural Course of Local Bone Mineralization after use of a Composite Bone Graft Substitute as Filling Material for Cavitary Bone Defects. A Prospective Evaluation using Sequential DXA Measurements
Peter Frederik Horstmann, Werner Hettwer, Michael Mørk Petersen

142. Two double rod systems with apical control in EOS; Magec growth engine (MCGR) versus open interval distraction: Early 3D correction and spinal growth

Simon Toftgaard Skov, Sebastiaan P.J. Wijdicks, Moyo C. Kruyt , Li Haisheng, René M. Castelein , Jan H.D. Rölfing , Ebbe S. Hansen , Kristian Høy , Peter Helmig, Cody Bünger

143. A rod construct with differentiated rigidity improves the restoration of thoracic kyphosis in surgical treatment of adolescent idiopathic scoliosis

Søren Ohrt-Nissen, Casper Dragsted, Benny Dahl, John Ferguson, Martin Gehrchen

144. Validation of the Danish version of the Musculoskeletal Tumour Society Score (MSTS) questionnaire – a measurement of functional outcome for sarcoma patients

Casper Sæbye, Johnny Keller, Thomas Baad-Hansen

145. Is revision surgery a risk factor for decreased survival in patients with metastatic bone disease?

Thea Bechmann Hovgaard, Peter Frederik Horstmann, Michael Mørk Petersen, Michala Skovlund Sørensen

146. Soft-tissue sarcomas of the thoracic wall; surgical margin and malignancy grade's impact on survival and local recurrence.

Tine Rytter Sørensen, Mathias Rædkjær, Peter Holmberg Jørgensen, Thomas Baad-Hansen

147. Patient survival following joint replacement due to metastatic bone disease: comparison of overall survival between cohorts treated in two different time periods

Thea Bechmann Hovgaard, Peter Frederik Horstmann, Michael Mørk Petersen, Michala Skovlund Sørensen

Posterudstilling

Fra onsdag 26. oktober
Lokale: Udstillingen (Scandinavian Ballroom)

148. Quadriceps tendon graft harvest has less donor site morbidity than semitendinosus/gracilis graft harvest after ACL-reconstruction.
Torsten Grønbech Nielsen, Lene Miller, Ole Gade Sørensen, Bjarne Mygind-Klavsen, Peter Faunø, Lind Martin

149. Retrospective analysis for treatment of proximal tibial fractures with a complete metaphyseal component in two centers with different distinct strategies: Open reduction and internal fixation (ORIF) and Ilizarov frame (Odense, Denmark) versus ORIF an
Haakon Berven, Michael Brix, Kaywan Izadpanah, Eva Johanna Kubosch, Hagen Schmal

150. Systematic review of treatment for lumbar spinal stenosis
Rikke Rousing, Mikkel Østerheden Andersen

151. The Influence of Tibial Slope on ACL Graft Failure Risk is Dependent on Graft Positioning
Steffen Sauer, Robert English, Mark Clatworthy

152. Improved function and relief of pain after THA is not translated into increased daily physical activity one year after surgery.
Marianne Tjur, Steffan Tabori Jensen, Torben Bæk-Hansen, Inger Mechlenburg , Maiken Stilling

153. Population-based epidemiology of 344calcaneus fractures
Rasmus Elsoe, MD, PhDa Mykola Horodyskyy, MDa, Peter Larsen, PT, PhDb Inge L. Kjær, MDa

154. Clinical outcome of patella stabilizing surgery including trochleoplasty for treatment of recurrent patellar dislocations and severe trochlear dysplasia.
Lene L. Miller, Torsten Grønbech Nielsen, Ole Gade Sørensen, Bjarne Mygind-Klavsen, Peter Faunø, Martin Lind

155. POPULATION-BASED EPIDEMIOLOGY AND INCIDENCE OF DISTAL FEMUR FRACTURES
Adriano axel Ceccotti, Larsen Peter, Rasmus Elsøe,

156. The clinical use of cut-off points in range of motion of the lower extremities and the association with gait summary measures in children with cerebral palsy
Joachim Svensson, Helle Mätzke Rasmussen, Nis Nissen, Anders Holsgaard-Larsen

157. Single- and dual energy QCT around acetabular cups in total hip arthroplasty using 3-dimensional segmentation
Bo Mussmann, Poul Erik Andersen, Trine Torfing, Søren Overgaard

158. Complication-rate of severe complications after lumbar discectomy
Stina Brogård Andersen, Karen Højmark, Frederik Busch, Mikkel Andersen

159. Hip Fractures in Denmark: Incidence and Mortality from 1996 to 2012
Axel Ceccotti, Henrik Larsen Jørgensen

160. Volar locking plate surgery fails to restore the anatomy after distal radius fracture
Mette Lund Madsen, Daniel Wæver, Jan Duedal Rölfing, Lars Carl Borris, Lise Loft Nagel, Mads Henriksen, Rikke Thorninger

161. XIAPEX® is a viable first-line treatment of MCP Dupuytrens contractures, however inferior in PIP joints. 1 to 4 year follow-up of 178 joints
Charlotte Hartig-Andreasen, Lena Schroll, Jeppe Lange

162. Closed reduction and casting of paediatric forearm fractures in Denmark - a lost art?
Jens Brahe Pedersen, Martin Gottliebsen

163. Strength in soft tissue sarcoma patients after limb-sparing surgery in the extremities – preliminary results
Casper Sæbye, Johnny Keller, Henning Andersen, Thomas Baad-Hansen

164. Hematoma Following Fasciectomy for Dupuytrens Disease
Rasmus Wejnold Jørgensen, Lars Solgård, Jens-Christian Vedel, Claus Hjorth Jensen

165. Early results of the Arcos Modular Femoral Revision System by single center retrospective data collection
Karen Dyreborg, Michael Mørk Petersen, Anne Grete Kjersgaard, Søren Solgaard

166. Clinical outcome after fibula rod osteosynthesis as a salvage procedure in bi- or trimalleolar ankle fracture. A retrospective study.
Veronika Murlasits, Michelle Fog Andersen, Andreas Hermann, Lasse Bayer, Jesper Sonntag

167. Update and external validation of the SPRING score for prediction of survival in patients having surgery for metastatic bone disease the appendicular skeleton
Michala Skovlund Sørensen, Thomas A. Gerds, Klaus Hindsø, Michael Mørk Petersen

168. The effect of orthoses, alignment adjustment and exercise for the young patient with anterior knee pain.
Torsten Grønbech Nielsen, Miller Lene, Bjarne Mygind-Klavsen, Lind Martin

169. 1 year results after distal biceps tendon repair with double incision technique – a prospective cohort study with 34 consecutive patients
Christian Dippmann, Line Borskov Dahl, Michael Rindom Krogsgaard

170. Cut-points for maximal knee-extension strength indicating sarcopenia is associated with functional performance four months after hip fracture.
Jan Arnholtz Overgaard, Morten Tange Kristensen

171. Conservative treatment of excessive anterior pelvic tilt: A systematic review
Anders Falk Brekke, Søren Overgaard, Asbjørn Hróbjartsson, Anders Holsgaard-Larsen

172. Return to work after lumbar disc surgery is related to the length of preoperative sick leave.
Mikkel Ø Andersen, Carsten Ernst, Rasmussen Jesper , Dahl Søren , Leah Carreon

173. Plating assisted bone transport in the femur using a motorized lengthening nail - a new technique
Ulrik Kähler Olesen, Tobias Nygaard

174. Greater interlimb difference in hip muscle mass in patients with metal-on-metal hip arthroplasty compared to metal-on-polyethylene hip arthroplasty at midterm follow-up.
Mette Hjorth Holm, Inger Mechlenburg, Marianne Tjur, Kjeld Søballe, Maiken Stilling

175. Is discontinuation of vitamin-K-antagonist necessary prior to elective TKA surgery?
Christian Skovgaard Nielsen, Henrik Husted , Kristian Stahl Otte, Thue Ørsnes , Anders Troelsen , Kirill Gromov

176. Evalutation of AC joint reconstruction using modified Weaver Dunn operation
Zaid Al-Saadi, Niels Clausen, Peter Suder, Gerhardt Teichert

Abstracts

One year effectiveness of neuromuscular exercise compared with instruction in analgesic use on knee function in patients with early knee osteoarthritis: the EXERPHARMA randomized trial

1.

Anders Holsgaard-Larsen, Robin Christensen, Brian Clausen, Jens Søndergaard, Thomas P. Andriacchi, Ewa M. Roos

Orthopaedic Research Unit, Department of Orthopaedics and Traumatology, Odense University Hospital, Institute of Clinical Research, University of Southern Denmark; Musculoskeletal Statistics Unit, The Parker Institute, Bispebjerg and Frederiksberg Hospital, Copenhagen, Denmark.; Research Unit for Musculoskeletal Function and Physiotherapy, Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark.; Research Unit for General Practice, Institute of Public Health, University of Southern Denmark, Odense, Denmark. ; Departments of Mechanical Engineering and Orthopaedic Surgery, Stanford University, Stanford, California, USA. VA Joint Preservation Center, Palo Alto, California, USA.; Research Unit for Musculoskeletal Function and Physiotherapy, Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark.

Background: Exercise is a preferred treatment of osteoarthritis (OA) due to its anticipated negligible adverse effects while still having clinically relevant effect.
Purpose / Aim of Study: To test whether long-term effectiveness of a neuromuscular exercise (NEMEX) would be superior to instructions in optimized use of analgesics and anti-inflammatory drug use (PHARMA) on knee joint function.
Materials and Methods: Extended follow-up of 12 months results from a randomized controlled trial. Participants with mild-to-moderate medial tibiofemoral knee OA were randomly allocated (1:1) to one of two 8-week treatments. The primary outcome measure at 12 months follow- up was activity of daily living (ADL) subscale of the Knee Injury and Osteoarthritis Outcome Score (KOOS). Secondary outcome measures include the other four KOOS subscales, the UCLA Activity Score and the EQ-5D. ClinicalTrials.gov Identifier: NCT01638962 (July 3, 2012).
Findings / Results: Ninety-three patients (57% women, 58 ± 8 years with a body mass index of 27 ± 4) were randomized to NEMEX (n = 47) or PHARMA group (n = 46) with data from 85% (41 and 38 patients, respectively) being available at 12 months follow-up; 49% of the participants in NEMEX and only 7% in PHARMA demonstrated good compliance. We found, with a reasonable precision (excluding any likely benefit), no between-groups difference in patient-reported activities of daily living (KOOS ADL 3.6 [-2.1 to 9.2]; P = 0.216). For the secondary outcome measure KOOS Symptoms, a statistically significant difference of 7.6 points (2.6 to 12.7; P = 0.004) was observed in favor of NEMEX. There were no other statistically significant differences.
Conclusions: The NEMEX group generally demonstrated a trend towards larger self-reported improvements than the PHARMA group, but there was no statistically significant difference on KOOS ADL after 12 months.

No conflicts of interest reported

Simultaneous versus staged bilateral total knee arthroplasty. A propensity matched case-control study from 9 fast-track centres. 2.

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Background: Bilateral simultaneous total knee arthroplasty (TKA) seems safe in selected patients[1]. However, limited data exists on postoperative morbidity compared to staged bilateral procedures and there are no randomized controlled trials. [1] Lindberg-Larsen M et al. Knee Surg Sports Traumatol Arthrosc 2015, 23: 831-7.
Purpose / Aim of Study: To compare early postoperative morbidity, mortality and length of stay (LOS) between bilateral simultaneous and staged TKA in matched groups.
Materials and Methods: A prospective propensity score matched case-control study in 9 dedicated high-volume centers from Feb. 2010 to Nov. 2015. Bilateral simultaneous and staged TKA (1-6 months between stages) were matched on available patient characteristics in the Lundbeck Foundation Centre for Fast-track THA and TKA Database. 30-days follow-up was acquired from the Danish Patient Registry and patient records.
Findings / Results: A total of 345 (47.2%) simultaneous and 386 (52.8%) staged bilateral TKA procedures were performed. In non- matched analysis 30 day readmission rate was 7.2% after simultaneous vs 8.0% after staged bilateral procedures (ns). No patients died within 30 days postoperatively. 235 simultaneous and 235 staged bilateral TKA patients were matched and LOS was median 4 days (IQR 3-5) after simultaneous vs cumulated 4 days (IQR 4-6) after staged bilateral TKA ($p<0.001$). 30 day readmission rate was 8.5% after simultaneous vs 8.1% after staged bilateral TKA (ns). Only 2 cases (0.9%) of venous thromboembolic events were found in each of the groups. 4 cases (1.7%) of deep infections requiring revision were found after simultaneous and none after staged bilateral TKA (ns).
Conclusions: Early postoperative morbidity, mortality and LOS may be similar between simultaneous and staged bilateral TKA procedures but further safety data on specific complications is required.
No conflicts of interest reported

Equal fixation of fixed-bearing versus mobile-bearing cemented partial knee replacement. A randomised controlled RSA study with 2-year follow-up. 3.

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Background: Medial unicompartmental knee arthroplasty (UKA) makes up 10-20% of all knee arthroplasties and gives good clinical outcomes. However, the revision rate is higher compared to total knee arthroplasty (TKA)[1]. Early implant migration is a predictor of implant loosening/revision and can be measured with radiostereometric analysis (RSA). The mobile- bearing Oxford UKA has been on the marked for 40 years and has a 7-year revision rate of 11.1%, and a 10-year revision rate of 14.9% [2]. The fixed-bearing Sigma UKA has been on the marked since 2010 and presents a low 7-year revision rate of 5.5% in registries. Longtime follow up for the Sigma UKA is yet unknown.
Purpose / Aim of Study: This study aims to evaluate migration of the Sigma and Oxford UKA using RSA.
Materials and Methods: A patient-blinded, randomised controlled RSA study with 24 months follow-up was performed. Between January 2014 and October 2015, 62 patients were randomised to receive either a Sigma (N = 31) or Oxford UKA (N = 31). Stereoradiographs were obtained postoperatively, at 4, 12 and 24 months. Mixed model analysis was used for statistical data evaluation. Currently, follow-up is completed for 43 patients.
Findings / Results: No differences in translations or rotations were found between the Sigma UKA and the Oxford UKA. The size of measured translations and rotations was comparable with reportings in the literature [2]. For maximal total point motion (MTPM) of the tibial component, no difference was shown between groups (Likelihood ratio test) ($p = 0.9$). A difference in migration over time was though found for both groups ($p < 0.01$).
Conclusions: Our study shows no difference in migration between the Sigma UKA and the Oxford UKA. This supports the low revision rates of the Sigma UKA in the national registries [2]. Migration stabilises after 12 months.

No conflicts of interest reported

Minimal Important Change determined with a novel method focusing on patients' perspectives of important change for the Oxford Knee Score and the Forgotten Joint Score after knee replacement

4.

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Background: Interpreting changes in Oxford Knee Score (OKS) and Forgotten Joint Score (FJS) after undergoing knee replacement is challenged by lack of methodologically rigorous methods to derive on Minimal Important Change (MIC) values.
Purpose / Aim of Study: To determine MIC values for the OKS and FJS in patients undergoing primary knee replacement in Denmark.
Materials and Methods: Patients undergoing knee replacement between January 2015 and May 2016 were selected from one hospital's arthroplasty database. OKS and FJS were completed preoperatively and at 1 year postoperatively, accompanied by a 7-point anchor question ranging from "better, an important improvement" to "worse, an important worsening". MIC improvement values were defined with the predictive modelling approach based on logistic regression, with patients' decisions on important improvement as dependent variable and change in OKS/FJS as independent variable. Furthermore, the MIC was adjusted for the high proportion of improved patients.
Findings / Results: We identified 341 patients with 1-year follow-up data, with a mean age of 67.4 years (63% female). Complete data for OKS, FJS and anchor questions were found for 307/341 patients (90%), and 85% (n=261) of these patients were importantly improved. The Spearman's correlation between the anchor and the change score was 0.59 for OKS, and 0.61 for FJS. Adjusted predictive MIC values (95% CI) for improvement were 6.6 (4.6; 9.2) for OKS and 13.0 (8.4; 19.4) for FJS.
Conclusions: The MIC value of 6.6 for OKS and 13.0 for FJS, determined with novel MIC methodology, corresponds to minimal improvements that the average patient finds important. These values may aid in evaluating the clinical relevance of improvement after knee replacement surgery.

No conflicts of interest reported

Low Preoperative BMD is Related to High Migration of Tibia Components in Uncemented TKA – 92 patients in a combined DEXA- and RSA-study with two-year follow-up.

5.

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Background: The fixation of uncemented tibia components in Total Knee Arthroplasty (TKA) may rely on the bone quality of the tibia, however, no previous studies have shown convincing objective proof of this.
Purpose / Aim of Study: To investigate the possible relation between preoperative bone quality and fixation of uncemented tibia components in TKA.
Materials and Methods: We performed 2 year follow up of 92 patients who underwent TKA surgery with an uncmented tibia component. Bone mineral density (BMD) (g/cm2) of the tibia host bone was measured preoperatively using dual energy X-ray absorbtiometry (DEXA). The proximal tibia was divided in to two regions of interest (ROI) in the part of the tibia bone where the components were implanted. Radiostereometric analysis was performed postoperatively and after 3, 6, 12 and 24 months. Primary the outcome was Maximum Total Point Motion (MTPM) (mm). Statistics: Regression analysis was performed to evaluate the relation between preoperative BMD and MTPM.
Findings / Results: We found low preoperative BMD in ROI1 to be significantly related to high MTPM at all follow-ups: After 3 months (R2 = 20%, PBMD=0.017), 6 months (R2=29%, PBMD=0.003), 12 months (R2=33%, PBMD=0.001) and 24 months (R2=27%, PBMD=0.001). We also found a significant relation for low BMD in ROI2 and high MTPM: 3 months (R2=19%, PBMD=0.042), 6 months (R2=28%, PBMD=0.04), 12 months (R2=32%, PBMD=0.004) and 24 months (R2=24%, PBMD=0.005).
Conclusions: Low preoperative BMD in the tibia is related to high MTPM. Thus, high migration of uncemented tibia components is to be expected in patients with poor bone quality. High component migration is relevant as it has been shown to predict aseptic loosening.

No conflicts of interest reported

Knee osteoarthritis patients can provide useful information about knee range of motion

6.

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Background: Knee arthroplasty surgery does not always require extensive patient follow-up. For those with good function, follow-up examination mainly focuses on range of motion (ROM). If ROM could be reported reliably by the patient, attendance for follow-up might be replaced by phone calls, emails or even register surveys.
Purpose/Aim: We investigated whether a new, simple, illustration-based scale enables patients to report their own passive knee range of motion in 15° increments.
Materials/Methods: Through an iterative process we created a 2-item scale with 11 illustrations of knee motion neutral for age, sex and race. Reliability was tested in 105 knee arthritis patients (mean age 70.8 years) at different treatment stages. Passive ROM was measured with a long goniometer by a physiotherapist and an orthopaedic resident, both blinded.
Results: Patients found our scale quick and easy to use. They handed in 100 correctly completed questionnaires. The mean difference between patients' reports and measurement was -0.72° (SD 12.3°) for flexion and 1.11° (SD 11.6°) for extension. For patients reporting flexion > 110° **(n=64)**, 94% were confirmed by goniometer measurement. For knee flexion < 110° (n=32), the patient-reported ROM had a sensitivity of 88% and a specificity of 88%. If flexion limit was set at 100° the according values were 95 and 81%. For extension deficits > 10° (n=18) we found a sensitivity of 78% and a specificity of 70%. Values were 100 and 66% for a 15° limit. Retest results are underway.
Conclusion: Patient-reported ROM is a feasible and for some purposes reliable alternative to professional ROM measurement. This scale can act as supplement to register surveys and combined with e.g. patient-reported outcomes it may reduce the number of patients who need a follow-up visit, leaving the surgeon more time for those who do.

No conflicts of interest reported

UCLA Activity Scale: translation process and validation study in a Danish knee osteoarthritis population

7.

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Background: UCLA Activity Scale (UAS) is a brief and widely acknowledged scale assessing physical activity in hip and knee arthroplasty patients on a 10- level scale, where "10" is very active.
Purpose / Aim of Study: We aimed to translate and culturally adapt UAS for use in Denmark and to test its validity in knee arthroplasty patients before or after surgery.
Materials and Methods: Formal translation was made by a physiotherapist, a professional translator and an orthopaedic resident. The version agreed upon was edited, redesigned and culturally adapted through an iterative process including 22 lay persons and 55 patients. In the final test of 76 patients, each patient's own rating (Pt) was compared to his/her level according to a physiotherapist (Phys) and one of two orthopaedic residents (Ort) based on short, blinded interviews mimicking the normal clinical setting.
Findings / Results: Eleven patients (mean age 67.3 y) were excluded due to marking more than one level. The remaining 65 patients (66.5 y) had average ratings of 5.0 (Pt), 3.8 (Phys) and 4.4 (Ort). In 49% of cases the patient either agreed with one or both examiners, or patient's rating was between examiners' ratings. Spearman correlation was 0.65 for Pt vs. Ort and 0.47 for Pt vs. Phys indicating strong and moderate correlations, respectively. At retest (mean 8.3 days later), 21 of 38 patients reported to have "no change in physical activity since the first test". Thirteen (62%) of the 21 agreed perfectly with their own first test and five (23%) were one level away.
Conclusions: The Danish UAS is a fast and fairly comprehensible tool for assessing patient- reported physical activity level in this population. Mixing time, intensity and frequency is a potential threat to the credibility of UAS, and therefore responsiveness testing and testing against more raters or objective measures is warranted.

No conflicts of interest reported

A new screening algorithm to improve the referral pattern of outpatient orthopedic knee patients. Development and evaluation based on patient-reported data and radiographs. 8.

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Background: Many knee patients referred to outpatient orthopedic clinics (OOC) are not (yet) candidates for surgery and might benefit from conservative treatment. If it is possible to identify relevant patients to refer to the orthopedic surgeon (OS) it could potentially improve efficiency and quality of care in the OOC.
Purpose / Aim of Study: To develop and test a screening algorithm to define appropriateness of referral to OS based on pre-visit patient-reported outcomes and radiographical findings thereby being applicable prior to clinical examination.
Materials and Methods: Prior to clinical examination, 173 consecutive patients with a first-time referral to the OOC completed questionnaires, and radiographic osteoarthritis severity was graded. The gold standard for relevant referral to the OS was based on actual treatments, referral to other medical specialists or further diagnostics. The performance of the algorithm in predicting relevant referrals and total knee replacement (TKR) was assessed using sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).
Findings / Results: Of the 173 patients, 40% (n=69) underwent TKR and further 25% (n=44) were considered relevant to refer to OS due to other reasons than surgery. Sensitivity, specificity, PPV and NPV for prediction of relevant referral to OS were 0.70, 0.56, 0.76 and 0.48, respectively. The corresponding performance estimates for prediction of TKR surgery were 0.92, 0.56, 0.55 and 0.92.
Conclusions: The algorithm was able to identify most patients relevant to refer to OS, but was less suitable for identifying those not relevant. The algorithm performed excellent in predicting TKR surgery. With further development, this screening algorithm might be able to improve the referral pattern and thereby improve patient care and efficiency in the OOC.

No conflicts of interest reported

Differences in level of physical activity in patients with knee osteoarthritis, patients with knee joint replacement and healthy subjects measured with an accelerometer-based method

9.

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Background: Knee osteoarthritis (KOA) causes impairment through pain, stiffness and malalignment and knee joint replacement (KJR) may be necessary to alleviate such symptoms. There is disagreement whether patients with KJR increases their level of physical activity after surgery.
Purpose / Aim of Study: The aim of this study is to investigate whether patients with KJR have a higher level of physical activity than patients with KOA, as measured by accelerometer-based method. Furthermore, to investigate whether patients achieve the same level of activity as healthy subjects five years post TJR.
Materials and Methods: Fifty-four patients with KOA (29 women, mean age 62±8.6, mean BMI 27±5), 53 patients who had KJR five years earlier (26 women, mean age 66±7.2, mean BMI 30±5) and 171 healthy subjects (76 women, mean age 64±9.7, mean BMI 26±5) were included in this cross sectional study. The level of physical activity was measured over a mean of 5.5 days with a tri-axial accelerometer mounted on the thigh. Number of daily short walking bouts of <10 seconds duration, number of daily steps, and number of daily transfers from sitting to standing were calculated. Data was analyzed through linear regression and adjusted for age, sex and BMI.
Findings / Results: Patients with KJR had 10.1 fewer short walking bouts (p=0.04), 745 fewer steps (p=0.19) and 6.2 fewer transfers (p=0.09) per day than patients with KOA. In addition, patients with KJR performed 21.7 fewer short walking bouts (p=0.001), 281 fewer steps (p=0.60) and 3.2 fewer transfers (p=0.32) per day than healthy subjects.
Conclusions: Patients with KJR do not seem to be more physically active than patients with KOA. Neither do the seem to be as active as healthy subjects, However, the results may suffer from selection bias and thus the results ought to be confirmed in a bigger cohort study.

No conflicts of interest reported

Bearing dislocation in domed lateral Oxford Unicompartmental Knee replacement - short- to mid-term follow-up of 45 knees

10.

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Background: The indication for the domed lateral Oxford Unicompartmental Knee Replacement (OUKR) is isolated lateral unicompartmental osteoarthritis. Since the introduction of the implant, dislocation of the mobile bearing has been a concern. Our series represents one of the largest independent series published from non-design centres.
Purpose / Aim of Study: To evaluate the outcome of the first 45 domed lateral OUKR, operated at Vejle Hospital, regarding bearing dislocation and revision in a retrospective cohort study.
Materials and Methods: The files of all patients operated with the domed lateral OUKR in our institution from February 2010 – June 2016 was reviewed regarding implant size, surgeon, revision of any cause, and latest available patient-reported outcome. All patients had at least 1-year follow-up.
Findings / Results: We identified 46 patients (48 knees: 27 females (1 bilateral) and 19 males (1 bilateral)) operated by 6 different surgeons. 6 (13%) bearings dislocated causing open revision with replacement of the bearing. Median time to dislocation was 103 days (range 47-469 days),only one bearing dislocated after one year. 3 (7%) knees were revised to total knee replacement (TKR) due to progression of osteoarthrosis (n=1) and following dislocation (n=2). Of the remaining 45 domed lateral OUKR, 41 (91%) reported that they were satisfied or very satisfied at the one year follow-up.
Conclusions: The domed lateral OUKR is a challenging procedure with concerning rates of dislocation, which was also found in this series. However, it seems that good or excellent performance can be achieved despite early dislocation. But it is concering that 2/6 knees with dislocated bearing had to be revised to TKR, further emphasizing the challenges with the procedure in regards of dislocation.

No conflicts of interest reported

Preoperative analgesic treatment and the risk of manipulation under anaesthesia (MUA) following total knee arthroplasty (TKA) – a case-control study

11.

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Background: Post-operative joint stiffness is a common complication to total knee arthroplasty (TKA) and the leading cause of re-hospitalization and manipulation under anaesthesia (MUA).
Purpose / Aim of Study: This study examines the correlation between preoperative analgesic treatment and the risk of post-operative MUA in order to gain a better understanding of the risk factors associated with post-operative joint stiffness. The goal is to identify and improve the treatment of this group of patients.
Materials and Methods: Design: A retrospective case-control study in which the case population consisted of all patients receiving MUA at Gentofte Hospital from January 2011 to December 2015. Controls were 3-4 patients receiving TKA the same day as the TKA that led to MUA in the case group. Inclusion criteria: All patients from the age of 18 and above receiving MUA following TKA as a result of knee arthrosis, given the details regarding baseline data and analgesic treatment were available. 101 patients undergoing MUA were included and 315 in the control group. Analysis: Analgesic treatment prior to TKA as a risk factor was examined both univariate and adjusted. The relative risk (RR) with 95% CI for all variables were determined through logistic regression.
Findings / Results: Patients using analgesics prior to surgery were twice as likely to receive MUA (RR = 2.14, p = 0,036), particularly when a combination of Paracetamol and Ibuprofen was administered compared to no analgesic treatment (RR = 2.8, p = 0.005).
Conclusions: Analgesic treatment prior to TKA increases the risk of post-operative re-manipulation and can be used as a predictor of outcome in addition to other risk factors associated with post-operative joint stiffness. The results could help clinicians design specialized care following TKA to improve procedures and avoid re-hospitalization.

No conflicts of interest reported

Impact of preadmission anti-inflammatory drug use on the risk of allogeneic red blood cell transfusion in elderly hip fracture patients

12.

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Background: Despite advances in techniques of orthopedic surgery and improvement of pre- and postoperative treatment, hip fracture surgery is often associated with blood loss causing postoperative anemia.
Purpose / Aim of Study: Using red blood cell (RBC) transfusion as a surrogate for post-operative bleeding, the aim was to investigate if prescription drugs with anti-inflammatory properties such as NSAIDs, corticosteroids and statins increased the risk of RBC transfusion within the first week after hip fracture surgery in elderly patients in Denmark.
Materials and Methods: 56,420 surgery treated hip fracture patients aged 65 years or older registered in the Danish Multidisciplinary Hip Fracture Database in 2005-2013 were included. Information on treatment, transfusion, medication and comorbidities were collected using national administrative and clinical databases. Patients were categorized as non-users (no prescription ≤365 days prior to surgery), former users (one prescription ≤ 91-365 days) and current users (one prescription ≤ 90 days) of the three anti-inflammatory drugs. A log-binomial model was used to estimate relative risks (RRs) for RBC transfusion within 7 days of surgery and corresponding 95% confidence intervals (CIs). Adjustments were made for patient and surgery related factors.
Findings / Results: Current users of NSAIDs had an increased adjusted RR of transfusion (1.07, CI: 1.04 - 1.11) compared to non- users. There were no increase or decrease in RRs of transfusion for current users of corticosteroids and statins (0.97, CI: 0.93 - 1.01 and 1.03, CI: 1.00 - 1.05, respectively).
Conclusions: NSAID prescription within the last 90 days of a hip fracture surgery resulted in an increased risk of RBC transfusion. Thus, prescription of NSAID can be associated with an increased risk of post- operative bleeding in relation to hip fracture surgery.

No conflicts of interest reported

Hip fracture, comorbidity, and the risk of myocardial infarction and stroke: A Danish nationwide cohort study, 1995-2015

13.

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Background: Hip fracture is a common trauma, associated with high morbidity and mortality.
Purpose / Aim of Study: We evaluated risks of MI and stroke in hip fracture patients compared with general population. We also examined the interaction between hip fracture and comorbidity with respect to risks of MI or stroke, defined as excess of risk explained by combining risks of hip fracture and comorbidity.
Materials and Methods: A population-based cohort study using Danish health registries from 1995-2015 including 110,563 hip fracture patients and 552,774 members of the 2015 including 110,563 hip fracture patients and 552,774 members of the comparison cohort from the general population. comparison cohort from the general population.
Findings / Results: Thirty-day cumulative incidences of MI were 1.15% among patients with hip fracture and 0.09% in the general population (adjusted hazard ratio (aHR) = 12.97 (95% confidence interval (CI): 11.56-14.55)). Thirty-day cumulative incidences of stroke were 2.16% for hip fracture patients and 0.21% in the general population (aHR= 9.42 (95% CI: 8.71-10.19)). During the 31-365 days following hip fracture, the aHR for MI was 1.05 (95% CI: 0.97-1.14) and remained at this level during the remainder of follow-up (maximum of 20 years). The aHR for stroke was 1.29 (95% CI: 1.22-1.35) during the 31-365 days following hip fracture, remained elevated for up to 10 years, and then decreased to the general-population level. During the first 30 days, up to 76% of MI and stroke risk was attributable to interaction between hip fracture and comorbidity.
Conclusions: Patients with hip fracture are at increased risk of both MI and stroke up to one year following the fracture. Risk of stroke, but not of MI, was elevated during up to 10 years post-fracture. Although the absolute risks were low, our finding underscores the importance of targeting multimorbidity, including prevention and adequate treatment, to improve the prognosis of hip fracture patients.

No conflicts of interest reported

Perioperative antithrombotic therapy and risk of blood transfusion and mortality following hip fracture surgery: A Danish nationwide cohort study

14.

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Background: Hip fracture is associated with high bleeding risk and mortality. The patients are often elderly and comorbid requiring various drugs, however, little is known about the effect of ongoing antithrombotic therapy on outcome among patients undergoing hip fracture surgery.
Purpose / Aim of Study: To determine if anticoagulants and antiplatelets are associated with increased use of blood transfusion and 30 days mortality among hip fracture patients.
Materials and Methods: A nationwide cohort study was performed. We included 56,420 patients aged ≥ 65 years who underwent hip fracture surgery during 2005-2013, using the Danish Hip Fracture Database. Patient characteristics were depicted according to antithrombotic treatment. We determined and compared the cumulative risk of blood transfusion within 7 days of surgery and death within 30 days.
Findings / Results: Following hip fracture surgery, 47.7% received blood transfusion and 10.7% died within 30 days. Current vitamin K antagonists (VKA) treatment at the time of hip fracture did not increase the risk of transfusion; adj. relative risk (RR) was 0.97 (95% CI 0.93-1.02) nor the risk of 30 days mortality; adj. hazard ratio (HR) was 0.92 (95% CI 0.79-1.07). In contrast, both the risk of transfusion and 30 days mortality was increased among hip fracture patients on antiplatelet therapy. The adj. RR for transfusion was 1.14 (95% CI 1.11-1.18) and adj. HR for 30 days mortality was 1.19 (95% CI 1.13-1.26). Updated data including data on non-vitamin K antagonist oral anticoagulants will be available at the meeting.
Conclusions: Hip fracture patients preoperatively treated with VKA had no increased risk of transfusion or 30 days mortality. In contrast, use of antiplatelet drugs was associated with significantly increased risk of transfusion and higher 30 days all-cause mortality.

No conflicts of interest reported

Excess Risk of Venous Thromboembolism in Hip Fracture Patients and the Prognostic Impact of Comorbidity

15.

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Background: Hip fracture patients are at increased risk of venous thromboembolism (VTE). The magnitude or duration of potential excess VTE risk among hip fracture patients and the duration of this potential risk have not yet been studied.
Purpose / Aim of Study: We examined the risk of VTE in hip fracture patients and a comparison cohort from the general population over a 20-year period, both overall and by comorbidity level.
Materials and Methods: Nationwide cohort study based on prospectively collected data from Danish health registries. We identified patients who were aged >55 years with incident hip fracture (n= 110,563) between 1995 and 2015. We sampled a comparison cohort without hip fracture from the general population (n= 552,774).
Findings / Results: Among hip fracture patients, the cumulative incidences of VTE were 0.73% within 30 days and 0.83% within 31-365 days. Corresponding cumulative incidences in the general population were 0.05% and 0.43%, respectively. Adjusted hazard ratios (HRs) of VTE among hip fracture patients were 17.29 [95% CI: 14.74-20.28] during the first 30 days and 2.13 (95% CI: 1.95 20.28] during the first 30 days and 2.13 (95% CI: 1.95-2.32) during 31-365 days compared with the general population. The relative risks of VTE also were 1.03 (95% CI: 0.96-1.11) and 1.11 (95% CI: 1.00-1.23) during 1-5 years and 6-10 years following hip fracture. During the first 30 days and 31-365 days following hip fracture, 14%/28% of VTE rates and 5%/4% of VTE rates were attributable to the interaction between hip fracture and severe/very severe comorbidity, respectively.
Conclusions: Hip fracture patients were at increased excess risk of VTE up to one year following their fracture.The interaction between hip fracture and comorbidity could explain up to 23% of VTE risk within 30 days following hip fracture in patients with severe and very severe comorbidity.

No conflicts of interest reported

Selective Serotonin Reuptake Inhibitor Use among Hip Fracture Patients: A Danish nationwide cohort study, 2006-2012 16.

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Background: Hip fracture is a common trauma associated with high morbidity and mortality. 1/3 of hip fracture patients have at least one chronic comorbid condition and receive multiple prescription medications. Depression is common in elderly patients and despite concerns regarding adverse effects, selective serotonin reuptake inhibitors (SSRI) are prescribed as first choice treatment.
Purpose / Aim of Study: To examine the prevalence of SSRI use among elderly hip fracture patients in Denmark during 2006-2012 and to identify factors associated with SSRI use.
Materials and Methods: We conducted a nationwide cohort study. During 2006-2012 hip fracture surgery patients aged ≥65 years were identified using the Danish Multidisciplinary Hip Fracture Database. We tabulated patient characteristics by SSRI status. The association between patient characteristics and SSRI use were estimated as prevalence risk ratios (PRR) with 95% confidence interval (CI) using Poisson regression analyses. Comorbidity was assessed using the Charlson Comorbidity index (CCI).
Findings / Results: Among 44,788 patients, 27.29% redeemed at least one prescription for SSRI's within two years prior to surgery. The prevalence of SSRI use decreased from 27.68% (CI 26.57%-28.81%) in 2006 to 25.27% (CI 24.19%-26.37%) in 2012. Factors associated with SSRI use were female gender (PRR = 1.15; CI 1.10-1.19), age between 75-84 and above 85 years (PRR = 1.10; CI 1.04-1.16 and PRR = 1.11; CI 1.05-1.17 respectively), CCI medium (score 1-2) (PRR = 1.34; CI 1.28-1.40) and CCI high (score >=3) (PRR = 1.42; CI 1.35-1.50).
Conclusions: More than 1/4 of Danish hip fracture patients had a prescription for SSRI although the use is decreasing. Female gender, older age and higher CCI score were associated with SSRI use. Our data can provide a basis for improving the safety of SSRI use in elderly hip fracture patients.

No conflicts of interest reported

Cemented hemiarthroplasty for femoral neck fracture patients: Collarless, polished tapered stem (CPT) versus anatomic matte stem (Lubinus SP2)

17.

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Background: Cemented hemiarthroplasty is a well- documented treatment for patients presenting with femoral neck fractures (FNFs). However, there are not many cohort studies comparing different types of hemiarthroplasty (HA).
Purpose / Aim of Study: To compare CPT and Lubinus SP2 HA for FNF patients concerning complications and radiological measurements.
Materials and Methods: From January 1st 2013, CPT was primarily used as the new cemented HA due to a regional procurement. The Lubinus SP2 was the used HA prior to CPT. Data from 3 years prior and after introduction of CPT was retrieved from the hospital database using the NOMESCO procedure code KNFB12. All patient health records were retrospectively reviewed for types of implant, American Society of Anaesthesiologists (ASA) score, duration of admission, mortality, and major complications within 1 year. All x-ray images were analyzed for radiological measurements concerning offset, stem angulation and cement filling.
Findings / Results: There were 300 patients with CPT and 287 with Lubinus SP2. The mean age (SD) was 82.0 (8.2) years and 74.7% were female. There were 7.3% major complications for CPT and 7.6% for Lubinus SP2 resulting in no difference between the groups ($p<0.527$). There was no baseline difference in age, sex, ASA score, and mortality, but the admission length was 0.7 day shorter for the CPT group ($p<0.004$). The Lubinus SP2 had a mean plus 2.7 mm offset postoperatively compared to preoperatively ($p<0.001$) while CPT had plus 10.6 mm ($p<0.000$). The mean (SD) angle of the stems where 6.4 (1.7) degrees for Lubinus SP2 and 2.5 (1.9) for CPT ($p<0.000$). There was no difference in cementation ($p<0.316$).
Conclusions: There was no difference between the CPT and Lubinus SP2 stem regarding major complications. However, the CPT stem had overcorrection of offset and a higher degree of varus positioning.

No conflicts of interest reported

Perioperative complications and reoperations after osteosynthesis of instable trochanteric fractures with short and long intramedullary nails. A register-based study.

18.

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Background: In Denmark, we have a national consensus to treat instable trochanteric fractures with intramedullary nails (IMN), but the recommended length of IMN is still to be clarified. Long IMN inserted to the corresponding leading edge of patella has been suggested as the treatment of choice to reduce the risk of fractures below the nail or in line with distal locking screws. However, short IMN has other advantages such as shorter surgery time and lower economical costs.
Purpose / Aim of Study: The aim of this study was to compare the risk of perioperative complications and reoperations following long and short IMN in instable trochanteric fractures.
Materials and Methods: In the Danish Fracture Database (DFDB) we identified all patients with instable trochanteric fractures (AO type 31A (1-3)) treated with long IMN or short IMN in the period 2011-2014 and included information on perioperative complications. Data were linked to the Danish Interdisciplinary Registry of Hip-Near Fractures (DIRH) to obtain information on reoperations within 2 years after primary osteosynthesis
Findings / Results: We included 1513 patients registered in DFDB with an instable trochanteric fracture treated with long IMN (n = 451) or short IMN (n = 1062). The prevalence of perioperative complications was 27 for short IMN (2.5%) and 10 for long IMN (2.22%) (P>0.05). Data on reoperations registered in DIRH are still pending.
Conclusions: We found no difference in perioperative complications in patients with instable trochanteric fractures treated with long IMN or short IMN. Data on reoperations are still to be analyzed.

No conflicts of interest reported

A restrictive blood transfusion limit does not affect mortality in hip fracture patients – a regional cohort study based on national databases

19.

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Background: In 2014, the Danish National Clinical Guidelines (NCG) for transfusion with blood components using restrictive transfusions limits was introduced. Very few trials have evaluated the influence of restrictive transfusion limits on hip fracture patients.
Purpose / Aim of Study: To estimate the association of introducing the NCG for transfusion with blood components with mortality and transfusion frequency for hip fracture patients above 65 years.
Materials and Methods: From 01102015 to 30092016, all hospitals treating hip fracture patients in the Region of Southern Denmark adhered to the new NCG and the patients were included as the restrictive transfusion group (RG). This group was compared to a liberal transfusion group (LG) from 01102012 to 30092013. Data from the Danish Interdisciplinary Registry for Hip Fractures was collected including age, sex, Charlson Comorbidity Index (CCI), type of fracture and surgery. Data was merged with data from the Danish Transfusion Database and the Regional Laboratory Database. Statistic for comparing groups and Cox proportional hazards model was performed.
Findings / Results: 2,908 patients were included with no major baseline difference in the two groups concerning age, sex, CCI, type of fracture, or type of surgery. The 30-day mortality was 12% in LG (n=1,494) and 9% in RG (n=1,414) yielding a relative risk of 0.74 (0.59; 0.94) for RG compared to LG (adjusted for age, sex, CCI, and type of surgery). In LG 42% received blood transfusions compared to 30% in RG ($p<0.001$). The mean (CI) hemoglobin at the first transfusion was 5.65 mmol/l (5.57;5.72) in LG and 5.16 mmol/l (5.08;5.24) in RG ($p<0.001$).
Conclusions: The restrictive NCG lowered the percentage of patients transfused with blood components without increasing the overall mortality rate. Thus, it seems safe to implement this guideline for hip fracture patients.

No conflicts of interest reported

Impact of comorbidity on the association between surgery delay and mortality in hip fracture patients: a Danish nationwide cohort study

20.

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Background: The effect of the timing of hip fracture surgery on mortality was studied extensively but the findings are not conclusive. It is generally thought that earlier surgery leads to lower mortality, but the correct threshold is unknown.
Purpose / Aim of Study: To investigate whether the association between surgery delay and mortality varies by comorbidity level.
Materials and Methods: Using data from Danish registers, 24,819 hip fracture surgery patients (2008 – 2012) were identified. 30-days and 31-365-days all-cause mortality was determined. Adjusted Odds Ratios (OR) and Hazard Ratios (HR) with 95% confidence interval (CI) were calculated. We defined comorbidity according to Charlson Comorbidity Index (CCI): low (score of 0), medium (score of 1-2) and high (score of 3+).
Findings / Results: ORs for 30-days mortality in patients with low CCI were 1.20 (CI: 1.03;1.39) if surgery delay was >24 vs <24 hours and 1.46 (CI: 1.12;1.92) if surgery delay was >48 vs <48 hours. This increase in 30-days mortality was not p present for patients with medium or h high CCI. HRs for 31-365 days mortality in patients with low CCI were 1.10 (CI: 1.00;1.22) for surgery delay >24 vs <24 hours and 1.20 (CI: 1.00;1.44) for surgery delay >48 vs <48 hours. In patients with medium CCI corresponding HRs were 1.12 (CI: 1.02;1.23) and 1.27 (CI: 1.07;1.50). No increase in 31-365 days mortality was p present among patients with high CCI.
Conclusions: The association between surgery delay and mortality is dependent on the presence of comorbidity at the time of the hip fracture. Mortality is increased among hip fracture patients free of comorbidity when surgery is delayed >24 hours, while patients with high comorbidity do not have the same increased mortality when surgery is delayed. These findings may reflect differences in the optimization focus depending on the level of comorbidity.

No conflicts of interest reported

Is High Quality Of Care Associated With Higher Costs? – A Nationwide Cohort Study Among Hip Fracture Patients

21.

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Background: It is unknown whether improvements in quality of care will require increased health care spending or whether improvements in quality of care will lead to a reduction in adverse patient outcomes, including fewer complications and readmissions.
Purpose / Aim of Study: To examine whether fulfilment of process performance measures reflecting national guideline are associated with hospital costs among hip fracture patients
Materials and Methods: We identified 20,458 hip fracture patients ≥ 65 years based on prospectively collected data from the Danish Multidisciplinary Hip Fracture Registry. Quality of care were defined as fulfilment of seven process performance measures from the national multidisciplinary guideline for in-hospital care: systematic pain assessment, early mobilisation, basic mobility assessment before admission and discharge, post discharge rehabilitation program, anti- osteoporotic medication and prevention of future fall accidents. Total costs were defined as the sum of costs used for treating the individual patient according to the Danish Reference Cost Database.
Findings / Results: Fulfilment of the individual process performance measures were associated with lower total costs within the index admission. The adjusted ratio ranged from 0.90 (95% Confidence Interval (CI): 0.88-0.91) to 0.97 (95% CI: 0.95-0.99), corresponding to adjusted mean differences between EUR305 to EUR3534 when compared to patients where the care did not fulfil the measures. Receiving between 50% to 75% or more than 75% of the performance measures were also associated with lower total costs. The association were weakened when taking into account all costs related to hospitalisations within the first year.
Conclusions: High quality of care appear not to imply increased spending and may even lead to lower hospital costs for the index admission and within the first year.

No conflicts of interest reported

Fast track for patients with hip fractures

22.

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Background: For several years, it has been a challenge to reach the national standard of 90% postoperative survival for patients operated for hip fractures at Aalborg University Hospital. Waiting time for surgery has been shown to be one of the most important factors to reduce mortality.
Purpose / Aim of Study: Reducing waiting time for operation, so that 75% of all patients are operated within 24 hours and 90% within 36 hours.
Materials and Methods: The project was designed as an interdisciplinary co-operation. The group met for two seminars and six meetings to secure progress by discussing and adjusting the changing in work flows that was being tested. How we made a "Fast Track for patients with hip fractures" • On arrival at the Emergency Room, a nurse orders blood samples, local anesthesia and x-ray right away. • The Orthopedic surgeon makes a "click- journal" as soon as possible. • The patient is transported to a Recovery Ward where an anesthesiologist ensures preoperatively optimization of the patient. • After being optimized, the patient is taken to the Operation Theatre as soon as possible. • Expansion of operation capacity by five hours in the evening two days a week.
Findings / Results: The goal is fully achieved. 100% of all patients are operated on within 36hours. The median waiting time for operation has changed from 27,6 hours in early 2016 to 12.3 hours from September to December 2016.
Conclusions: We succeded in reducing the waiting time for operation. As a part two of the project, our focus is now to improve the post-operative recovery from operation to discharge with our main focus on early mobilization and orto-geriatric cooperation. As a part tree we'll address the last part of the process - "Optimization of transition to municipalities for patients with hip fractures - after discharge from hospital to home" .

No conflicts of interest reported

Reproducibility of dual x-ray absorptiometry and assessment of changes in regional body composition following shoulder arthroplasty for osteoarthritis

23.

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Background: Measurements of body composition using a DXA may objectively reflect the outcome of various rehabilitation programs and surgical procedures in the upper extremity.
Purpose / Aim of Study: To assess the reproducibility of dual x-ray absorptiometry (DXA) measurements of regional body composition in the shoulder with or without the presence of a shoulder arthroplasty. Furthermore, we used the DXA to assess changes in body composition after shoulder arthroplasty.
Materials and Methods: Body composition was measured in one region of interest (ROI) corresponding to the deltoid muscle. Each patient had two duplicate scans for both the affected and the contralateral arm. Data on functional outcome score (e.g., the Constant Score) and muscle strength were collected preoperatively whereas the body composition scans were collected the day after surgery. The patients were re- examined at 3 and 12 months.
Findings / Results: Intraclass correlation values (ICC) between duplicate scans were 0.991 and 0.996 with and without a shoulder arthroplasty respectively. The Bland-Altman plots showed narrow limits of agreement. Friedman's and Wilcoxon test showed highly significant declines in muscle mass 3 months after surgery, $p < 0.001$ and the muscle mass was not regained at the 12-months follow-up. There was a statistically significant correlation between muscle mass and muscle strength, $r=0.23$, $P=0.03$.
Conclusions: DXA is an excellent method for measuring body composition in the upper extremity. The presence of a shoulder arthroplasty did not affect reproducibility. Muscle mass decreased during the first 3 months and was not fully regained a year after surgery. The reason for this is unknown, but the results of the present study underline the importance of a better understanding of factors that influence postoperative recovery programs after shoulder arthroplasty.

No conflicts of interest reported

The prevalence and impact of Diabetes Mellitus on the Frozen Shoulder

24.

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Background: Numerous studies have shown that Diabetes Mellitus (DM) is a risk factor for Frozen Shoulder (FS), and patients with DM are regarded as being more severely affected by their FS than patients without DM. Furthermore, a high proportion of patients with DM are undiagnosed.
Purpose / Aim of Study: The objective of this study was to estimate the prevalence of undiagnosed DM in patients with newly diagnosed FS and study whether DM increases the severity of the FS disease.
Materials and Methods: Patients with newly diagnosed FS were consecutively included in this case-control study. Patients that were not already diagnosed with DM were invited to be tested with the HbA1c blood sample test. The study population was compared with a control group, consisting of 5 individuals from the general population matched on age and sex. The passive range of motion (ROM), Oxford Shoulder Score, and Visual Analog Scale (VAS) for average and maximum daily pain was recorded for all patients in the study group.
Findings / Results: A total of 235 patients were included of which 34 (14%) were diagnosed with DM prior to examination. Of the reaming 201 patients, 122 (61%) agreed to be tested for DM. None of the tested patients had undiagnosed DM. This was not significantly different from the prevalence in the matched control population (p= 0.09). There was no difference between patients with and without DM in average daily VAS (p= 0.46) nor maximum daily VAS (p= 0.44). The Oxford Shoulder Score was similar in the two groups (p= 0.23) and so was the ROM.
Conclusions: The prevalence of undiagnosed DM is low in patients with FS and does not differ from the general population. DM does not seem to affect the perceived severity of a FS.

No conflicts of interest reported

PRECISION OF BONE MODELS IN DYNAMIC RSA OF THE ELBOW AND DISTAL FOREARM

25.

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R
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Background: Dynamic radiostereometric (dRSA) analysis can be used to quantitatively measure changes in the three-dimensional in-vivo movements of bones, which can provide insight in the kinematics. However, analysis of the radius and ulna bones in both the elbow and forearm is challenging due to the long cylindrical shape. Using digitally reconstructed radiograph (DRR) based RSA, the position and orientation of the bones can be determined without markers.
Purpose / Aim of Study: To validate the precision of DRR based RSA compared to marker-based analysis.
Materials and Methods: Custom motorized fixtures to perform clinically relevant wrist (11 arms) and elbow (8 arms) motions were made. Subject specific bone models were created from CT and tantalum markers were inserted. Model- based RSA (RSAcore) was used to calibrate the first frame and initialize the bones. The complete recording was subsequently automatically analyzed by custom developed AutoRSA software. Marker analysis was independently performed in 3 images per dynamic recording. Precision was evaluated as systematic bias (mean difference) and random error (1.96*SD) for translations and rotations.
Findings / Results: In the elbow the mean systematic bias for translations (mm) was <0.17 for the proximal radius ($p<0.05$), <0.15 for the ulna ($p<0.05$). and <0.02 for the humerus ($p>0.21$). No systematic bias was found for rotations. Precision was ≤0.55 mm and ≤1°. In the distal forearm the mean systematic bias (mm/°) was <0.06 for the ulna ($p>0.17$) and <0.03 for the radius ($p>0.26$). Precision was ≤0.18mm and ≤1°.
Conclusions: DRR based RSA analysis using bone models provides a good precision for investigation of kinematics in the elbow and forearm. The method can be used for automated analysis of markerless dRSA studies for both pre-operative diagnostics and to evaluate kinematics after ligament or implant surgery.

No conflicts of interest reported

Muscle inflammation following supraspinatus tears

26.

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Background: Rotator cuff (RC) lesions are one of the most common conditions affecting the shoulder. The etiology of RC diseases is multifactorial but the supraspinatus (SS) tendon is particularly vulnerable to become lesioned. In patients with RC tears, increased numbers of inflammatory cells have been demonstrated in the inflamed synovial tissue. Recent studies have suggested that also the RC muscles become inflamed after RC tears and animal models suggest that acute inflammation plays a detrimental role in chronic muscle damage following RC tears.
Purpose / Aim of Study: The aim of this study was to characterize inflammation in humans suffering from a RC tear
Materials and Methods: Tissue samples were taken from the RC tissues at the time of surgery in 9 patients scheduled for surgery. Mean age was 58 years (40-61) years. All patients had a MRI validated SS tear. Control biopsies were obtained from the deltoid muscle. We used multiplex analysis, proteomics, histological and immunohistochemical analyses to study the inflammatory profiles of SS muscle and tendon, deltoid muscle and bursa.
Findings / Results: Multiplex analysis demonstrated differential expression levels of several matrix metalloproteinases. Also several inflammatory mediators were differentially expressed between RC tissues. Immuno-histochemical analyses of SS muscle demonstrated the presence of CD68+ macrophages, and CD3+ and CD8+ T cells. Proteomic analysis demonstrated the presence of inflammatory related proteins in the SS tendon and SS muscle.
Conclusions: We have shown that not only the tendon becomes inflamed following RC tendon tears but also the SS muscle shows sign of inflammation. Chronic inflammation differs between tendon and muscle and between muscles, which suggests that the pathophysiological mechanisms taking place in RC muscles may be a major contributor to RC disease.

No conflicts of interest reported

Risk factors of infection after shoulder arthroplasty. Incidence, infection-free survival and relative risks in 6877 primary shoulder replacements

27.

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Background: Deep infection after arthroplasty is associated with extensive consequences for patients and health care providers. Nonetheless, scientific data on incidence and risk factors for deep infection after shoulder arthroplasty is limited. Most studies report revision rates in general without focusing on infection.
Purpose / Aim of Study: The purpose of this study was to report the incidence of revision due to infection in primary shoulder arthroplasties and to identify risk factors associated with infection. Thus, the aim was to provide the surgeon with data in clinical decision- making and when informing the patient.
Materials and Methods: We included all primary arthroplasties reported to the Danish Shoulder Arthroplasty Registry (DSR) between 2006 and 2013 – comprising 6877 arthroplasties in 6555 patients. Incidence of infection was reported. We reported infection-free survival with Kaplan Meier and relative risks (RR) with Cox regression according to different risk factors. The risk factors included age, gender, diagnosis, primary arthroplasty design and previous surgery on the same shoulder.
Findings / Results: 55 (0.8%) were revised due to infection. The overall infection-free survival was 98.5 % (standard error = 0.3). Male patients, rotator cuff arthropathy, reverse arthroplasty and previous surgery showed the lowest survival estimates. The adjusted RR for infection was significant higher for male gender, previous surgery and reverse arthroplasty.
Conclusions: The incidence of infection was low. We found an increased RR for reverse arthroplasty, male gender and previous surgery.

No conflicts of interest reported

Risk of revision or clinical failure in 2,418 patients with stemmed hemiarthroplasty for acute proximal humeral fracture

28.

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Background: Revision rates are commonly used as primary outcome after shoulder arthroplasty for proximal humeral fractures. However, revision rates do not necessarily reflect the clinical outcome as some failures are never revised due to patient or surgery related factors.
Purpose / Aim of Study: The aim was to report revision rates, seven-year prosthesis survival and to determine the proportion of patients that are not revised despite an unsatisfactory clinical outcome.
Materials and Methods: The Danish Shoulder Arthroplasty Registry was used to obtain patients' demographics, surgical information and one-year Western Ontario Osteoarthritis of the Shoulder (WOOS) index on all patients who underwent a stemmed hemiarthroplasty for acute proximal humeral fracture between 2006 and 2012. Revision rate was used as primary outcome and the WOOS at one year as secondary outcome. The WOOS score was converted to percentages of a maximum score, with 100 being the best. A WOOS score below 30 was arbitrarily defined as a clinical failure.
Findings / Results: Mean age was 71.9 ± 11.3 years. 1,873 (77.5%) were women. 106 (4.4%) arthroplasties were revised. Luxation and rotator cuff failure were the most common reasons for revision. The cumulative seven-year survival rate was 93.8 %. 154 patients died (6.4%) and 45 were revised (1.9%) before answering WOOS, leaving 2,219 patients available for follow-up. 1,581 (71.2%) patients completed WOOS with a mean score of 54.9 ± 26.1. A WOOS below 30 was reported by 314 (13.0%) patients.
Conclusions: We reported a revision rate of 4.4%. However, 13.0% of patients reported a functional outcome which was regarded as a clinical failure. This indicates that a substantial number of clinical failures are not revised.

No conflicts of interest reported

Predictors of pain six months after arthroscopic shoulder surgery

29.

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Background: Arthroscopic shoulder surgery, e.g. subacromial decompression (ASD) and acromioclavicular resection (AC resection), usually results in significant improvement in pain and shoulder function; however some patients report persistent pain after shoulder surgery.
Purpose / Aim of Study: Thus, the aims of this prospective study were 1) to determine the incidence of pain six months after outpatient ASD and/or AC resection, and 2) to identify risk factors for persistent pain.
Materials and Methods: One-hundred-and-fifty patients completed Western Ontario Rotator Cuff Index (WORC), Single Assessment Numeric Evaluation (SANE), State-Trait Anxiety FORM Y (STAI), Hospital Anxiety and Depression Scale (HADS), and Pain Catastrophizing Scale (PCS) and were tested for endogenous pain modulation capacity. Patients with pain six months after surgery (pain intensity ≥3 on a numeric rating scale with impact on daily living) were examined by an experienced orthopaedic surgeon to identify the reasons for persistent pain.
Findings / Results: Data from 101 patients were available for analysis six months after surgery. Thirty-six patients (35.6%) had pain, with the surgeon able to identify reasons for the pain in ten patients (9.9%). Predictors of unexplained persistent pain included unemployment, ongoing insurance case, and a high t-STAI-score.
Conclusions: Persistent pain was prevalent in 35.6% of patients six months after ASD and/or AC resection, but this number was reduced after excluding patients with identified reasons for the pain. Several preoperative risk factors were identified. Thus, the current data highlights the importance of careful patient selection before surgery and of patient follow-up after surgery.

No conflicts of interest reported

ELBOW BIOMECHANINCS, RADIOCAPITELLAR JOINT PRESSURE, AND INTEROSSOUS MEMBRANE STRAIN BEFORE AND AFTER RADIAL HEAD ARTHROPLASTY 30.

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Background: Complex radial head fractures with associated elbow instability may be treated with a radial head implant (RHA).
Purpose / Aim of Study: To compare the elbow kinematics before and after anatomic RHA in an experimental study.
Materials and Methods: 8 human native elbows (mean age 82 years, range 61-89) were examined with dynamic radiostereometric analysis (dRSA) during forearm flexion with neutral rotation, and further in supination and pronation with/without a 10N varus-valgus stress. Results were compared with dRSA after insertion of an anatomic RHA (Acumed). Translations of the radial head in the x-, y- and z-directions relative to the humerus and to the ulna were measured. The radiocapitellar joint (RCJ) contact pressure and the tension within the interosseous membrane (IOM) was measured using a pressure sensor and a custom-made strain gauge.
Findings / Results: After RHA the radial head was displaced approximately 1.8mm medially and 1.4mm distally compared with the native radial head. During unloaded flexion motion the mean difference in translation between the native radial head and the RHA was <1mm (CI95 +/- 0.5mm) (p=0.00), and with varus- valgus loading the difference was <1.5mm (CI95% +/- 1.5mm) (p=0.00). The mean difference in RCJ contact pressure was <0.30 MPa (CI95% 0.40 MPa) during unloaded flexion motion (p=0.00). The tension in the IOM in supinated (p=0.03) and pronated (p=0.00) forearm position was higher for the RHA compared with native elbows. Varus-valgus stress in supinated and pronated forearm position decreased the IOM tension in the RHA elbows (p=0.00).
Conclusions: There were only submillimeter kinematic changes and small changes in RCJ joint pressure and IOM tension after insertion of an anatomical RHA in an experimental setting.

No conflicts of interest reported

Longterm clinical results in patients treated with arthroscopic release for elbow stiffness

31.

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Background: Elbow stiffness is most commonly caused by trauma, osteoarthritis, arthritis or infections. Development of arthroscopic technique has made arthroscopic arthrolysis more common for treatment of elbow contractures, although it is a technically demanding technique.
Purpose / Aim of Study: The purpose was to report the long-term functional and radiologic outcomes after arthroscopic surgery in elbow contractures both post-traumatic and degenerative.
Materials and Methods: All patients who received arthroscopic release between 2000 and 2005 where invited for clinical evaluations. So fare 127 patients (out of 197) were reviewed with a mean follow-up of 172 months (134 to 202). We performed the clinical follow-up with clinical examination of ROM, pain score (VAS), Mayo Elbow Performance Score (MEPS) and the Danish version of Oxford Elbow Score (D-OES). Furthermore, conventional x-rays anterior-posterior and side view of the elbow where obtained. Any reoperations and complications where recorded. All perimeters were compared with the patient's old journals.
Findings / Results: The mean ROM improved 15° in both pronation and supination, 15° in extension and 13° in flexion. The mean D-OES was 83 (48-100) and the average MEPS improved from 65 to 89. VAS improved on average 3,5 and patients reported a 22% better daily function of their elbow after surgery. 79 patients had surgery due to post-traumatic stiffness and 48 patients due to degenerative stiffness. 8 cases had complications, 3 ulnar neuropathy and 2 deep infections and 3 superficial infections. 4 patient had another operation due to complications.
Conclusions: Long term follow-up results shows that arthroscopy surgery for stiff elbow is safe, complications rate is low and it offers a useful improvement in ROM, pain, daily function and subjectively results.

No conflicts of interest reported

Good mid-term outcome and few complications after elbow hemiarthroplasty for acute distal humeral fractures in adults

32.

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Background: Distal intraarticular and multifragmantary humeral fractures pose a surgical challenge.Total elbow arthroplasty (TEA) is known method for treatment of distal humeral fractures, but the outcome of elbow hemiarthroplasty (EHA) is still limited.
Purpose / Aim of Study: The aim of this study was to report the functional and radiographic outcomes, in a consecutive series of Elbow hemiarthroplasty (EHA) in patients with acute distal humeral fractures.
Materials and Methods: From January 2011 to January 2016 thirty-one patients were treated with EHA for an acute distal humeral fracture. Four patients died before follow-up and 3 patients were unable to participate. Thus, twenty-four patients were included. Mayo Elbow Performance Score MEPS, Oxford Elbow Score OES, pain severity, and range of motion are used to evaluate the clinical outcome. Radiographic outcomes were assessed. The length of sick-leave was recorded.
Findings / Results: Two EHA were revised to a TEA. The remaining 22 patients had a complete follow-up. The mean age was 64 years and 12 patients were under the age of 65 years. The mean follow-up time was 30 months. The median MEPS was 85 and the median OES was 40. The median pain severity score was 2 (range 0-8) on a scale from 0-10. The median flexion/extension and supination/pronation arcs were 112.5 degree and 160 degree respectively. Two patients were re-operated, one because of stiffness and one because of infection (soft-tissue revision). Seven patient were occupationally- active, and six of them returned to the same occupation. The mean sick-leave was 3 months.
Conclusions: The outcome of EHA for the treatment of ureconstructable acute multifragmentary intraarticular distal humeral fractures seems promising in active patients. However ulnar and radia wear and component loosening may lead to a less promising outcome in the long term.

No conflicts of interest reported

Cuff-Tear Arthropathy: An Historical Review of 19th Century Sources

33.

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Background: The term cuff-tear arthropathy was first introduced by Charles Neer in 1977. It is a widely held belief that the condition was unknown prior to the description in the classical paper by Neer, Craig, and Fukuda in 1983. Cuff-tear arthropathy designates the end stage of a process characterized by massive rotator cuff tear, glenohumeral instability with upward migration of the humeral head, and painful arthritis.
Purpose / Aim of Study: In this historical review it is hypothesized that the pathogenesis and the pathoanatomical changes seen in cuff-tear arthropathy were well described and understood in the pre-radiographical era.
Materials and Methods: 19th century clinical case series, autopsy reports, monographs, dissertations, reviews, articles, editorials, letters, and illustrations were systematically searched from historical bibliographical databases and retrieved for relevance. Historical descriptions, discussions and illustrations were identified, presented and interpreted.
Findings / Results: The typical progressive pathoanatomical changes in bone, cartilage, capsule, muscles, tendons, joint fluid, and bursa were described in details and the pathogenesis was understood within a biomechanical framework. In particular, the consequences of the degeneration, displacement or rupture of the tendon of the long head of the biceps and the superior migration of the humeral head were well understood. Relevant historical nosological terms include 'chronic rheumatic arthritis of the shoulder' and 'partial luxation upwards of the humeral head'.
Conclusions: A thorough pathoanatomical and biomechanical understanding of the condition later termed cuff-tear arthropathy can be found in 19th century sources.

No conflicts of interest reported

Outcome of tibial component valgus subsidence in cementless Oxford unicompartmental knee replacement 34.

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Background: We shifted from the cemented to the cementless Oxford unicompartmental knee replacement (OUKR) in January 2015 to reduce the risk of cementing errors and mistaken revision from radiolucent lines. Upon the change we experienced a number of tibial fractures and tibial component subsidence. In September 2015 we altered our surgical technique, by gently tapping down the tibial component and moving the vertical cut as lateral as possible, to ensure the largest possible component.
Purpose / Aim of Study: To investigate if the new surgical approach altered the occurrence of tibial component subsidence and, in the case of subsidence, to investigate the 1-year outcome.
Materials and Methods: We performed a prospective intervention study. X-rays were taken postoperatively at 4 weeks and 1 year for all cementless OUKR operated in 2015 and 2016. 1 year after surgery, all patients were interviewed regarding satisfaction. Results were compared before and after the intervention.
Findings / Results: Subsidence occurred within 4 weeks in 42/187 women and 28/166 men. Subsidence before September 2015; 28/105 = 27%. After September 2015; 42/250 = 17%; (p =0,037). The tibial component subsided within the first 4 weeks; hereafter it remained stabile for the following 11 months in 49 (98%) of the cases. 38 patients (78%) were extremely satisfied, 8 (16%) were satisfied, and 4 (8%) were less satisfied. Two of the less satisfied patients were due to neuroma formation. The level of satisfaction was similar in patients before and after the intervention in September 2015.
Conclusions: Valgus subsidence of the tibial component in cementless OUKR may depend on the surgical technique. It may occur within the first 4 weeks postoperatively whereafter the component stabilizes. Valgus subsidence does not seem to affect patient-reported outcome 1 year postoperatively.

No conflicts of interest reported

The perioperative infection rate in total knee arthroplasty may be dependent on season

35.

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Background: Total knee arthroplasty (TKA) is a surgical procedure routinely performed, primarily as end-stage treatment for osteoarthritis, resulting in approximately 8000 primary procedures every year in Denmark. While many aspects of causes and risk factors for infections and TKAs have been extensively examined, none have, to the authors' knowledge, sufficiently explored\r\nthe relationship between seasonality and risk of perioperative infections
Purpose / Aim of Study: We performed a retrospective study to determine the rate of revision due to deep infection, defined as those revised within the first 2 year, for each month of the year . The aim of the study was to investigate wether there is a variation in infection rate after primary TKA based on the month the primary surgery was done
Materials and Methods: The study was based on a large dataset from the national Danish Knee Arthroplasty Registry (DKR). We received data on a total of 124.484 procedures and set out to identify all patients who, between January 1st 1997 and December 31st 2014, had undergone primary TKA resulting in revision surgery due to infection. The revision rate and relative risk for infection for each month were calculated and analyzed with Pearsons chi-square test.
Findings / Results: The revision rate due to infection was calculated for each season. Of procedures performed during summer, 1,02% ended in revision due to infection. In comparison, the remainder of the seasons had revision rates of 0,73% (fall), 0,82% (winter) and 0,80% (spring) (P = 0.013) The relative risiko between summer vs the rest was 1.31 [95% CI, 1.10 - 1.55]
Conclusions: The relative risk of revision surgery due to infection is 1.31 times higher if the primary TKA surgery is performed during the summer months compared to the remainder of the year. The reason for the increased infection rate is yet to be determined

No conflicts of interest reported

Treatment of Osteoarthritis with the Stromal Vascular Fraction of Abdominal Adipose Tissue - a Pilot Study

36.

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Dept. of Orthopedic Surgery, Zealand University Hospital

Background: Treatment of knee osteoarthritis (OA) with minimally manipulated cell therapies have gained increasing popularity. The stromal vascular fraction of abdominal Adipose tissue (SVF) is a rich source of mesenchymal stem cells. Studies using SVF have shown promising results.
Purpose / Aim of Study: To investigate the feasibility and safety issues of treatment of knee OA with intra-articular injection with SVF harvested and prepared using the Lipogems System.
Materials and Methods: The study was performed as a prospective cohort study with follow up after 3, 6 and 12 months. Primary endpoint was any adverse event at 3 months. Secondary endpoint was KOOS. Patients aged 18-70 years were eligible for inclusion if they had been diagnosed with osteoarthritis. Exclusion criteria were malalignment of the knee > 5 degrees, instability or BMI > 35. SVF was harvested through two stab incision just below the umbilicus and prepared for implantation using the Lipogems system; an enzyme-free technology that works through a mild mechanical tissue cluster size reduction. Implantation of 8- 16ml SVF in the knee was performed using a 21 gauge syringe.
Findings / Results: 20 patients were included and 19 participated in follow up. Mean (SD) age was 49 (9), weight 89kg (22), height 170cm (23). One adverse event was registered as a patient complaint of cosmetically changes to the abdominal subcutaneous tissue. 13 of 19 would go for the procedure again. At 3 months KOOS Pain increased 9 (p=0.003) points, Symptoms 4 (p=0.197), ADL 9 (p=0.008), Sport 13 (p=0.002) and QOL 15 (p=0.008). Differences dropped to border significant values at 6 and 12 months.
Conclusions: Treatment of knee OA with intra-articular injection with SVF harvested and prepared using the Lipogems System is feasible and safe. Efficiency of the treatment is questionable and is not evaluated in the present study.

No conflicts of interest reported

Patients with anteromedial osteoarthritis achieve the greatest improvement in patient reported outcome after total knee arthroplasty

37.

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Background: The osteoarthritic (OA) disease pattern of the knee is one of the determinants for choice of arthroplasty concept when knee replacement is indicated, but whether the disease pattern has a direct effect on postoperative outcome has not previously been investigated.
Purpose / Aim of Study: The aim was to investigate if different OA disease patterns and severity of osteoarthritis had an effect on postoperative outcome after receiving total knee arthroplasty (TKA).
Materials and Methods: 472 patients with complete pre- and 1-year postoperative patient reported outcome measures (PROM's) undergoing TKA surgery from January 2013 to November 2015 at one hospital were retrospectively identified and classification of the OA disease pattern were made on preoperative full weight bearing radiographs. During the investigated period no partial knee replacements were performed and measured resection was the universal technical approach. The outcome was development in PROM scores from pre- to 1-year postoperatively.
Findings / Results: The key findings showed the greatest improvement in mean PROM scores for anteromedial OA (AMOA) compared with other OA disease patterns; 3.2 points (95 % confidence interval (CI) 1.5-4.9, $p < 0.001$) in Oxford Knee score, 8.2 points (95 % CI 2.6-18.9, $p = 0.135$) in Forgotten Joint score and 0.08 points (95 % CI 0.02-0.14, $p = 0.002$) in EQ-5D score. Similar results were observed favoring bone-on-bone AMOA compared with AMOA that had only partial thickness cartilage loss.
Conclusions: Patients classified with AMOA achieve greater improvement in PROM scores after TKA surgery compared with other OA disease patterns. This finding has important implications for reporting, risk stratification and interpretation in TKA outcome studies, including randomized trials.

No conflicts of interest reported

Limited use of the orthopaedic surgeon's advice on non-surgical treatment for knee osteoarthritis – An observational cohort study. 38.

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Background: The Good Life with osteoArthritis in Denmark (GLA:D) programme consists of patient education and supervised exercise therapy and adheres to clinical guidelines for knee osteoarthritis (OA). Non-operative treatments like GLA:D may be beneficial when surgery is not considered timely.
Purpose / Aim of Study: To present the clinical course of action taken by patients advised to participate in GLA:D by an orthopaedic surgeon before deciding on undergoing knee replacement.
Materials and Methods: Patient records from all patients with knee OA consulting one orthopaedic surgeon in 2015 were reviewed to detect those being advised GLA:D participation. Radiologic OA was classified with Kellgren-Lawrence (KL) grade 0-4, none-severe. Results after 3 months were extracted from the GLA:D database, including a visual analogue scale (VAS) for knee pain (0-100, best-worst), and the Knee injury and Osteoarthritis Outcome score knee-related quality of life (QOL) subscale (0-100, worst-best).
Findings / Results: Out of 142 patients with primary referrals due to knee OA, 83 (58.5%) were advised to participate in GLA:D. They had a mean (SD) age of 65.0 (10.7) and 59 (62.8%) were female. They were either not eligible for surgery, or pending surgical decision and 34 (44.8%) had a KL grade 3-4. Only 18 (22%) patients participated in GLA:D, and 14 (17%) completed 3 months follow-up. For these patients, the mean (SD) VAS pain score improved from 61.4 (18.6) to 42.7 (25.1) ($p<0.001$), while knee-related QOL remained unchanged (from 41.5 (16.2) to 43.8 (12.3) ($p=0.535$)).
Conclusions: The majority of patients did not follow the surgeon's advice on non-surgical treatment. In those who did the significant pain reduction found indicates patient education and supervised exercise therapy being beneficial in patients prior to deciding on knee replacement, or if surgery is not indicated.

No conflicts of interest reported

Using wearable sensors to determine knee range of movement in knee arthroplasty patients. A pilot study. 39.

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Background: Range of motion (ROM) under specific activities may be related to patients' experience of the quality of knee function. It may be superior compared to measurements of passive ROM in an ambulatory.
Purpose / Aim of Study: The objective of this study is to investigate and develop a new method to determine dynamic knee function using wearable sensors.
Materials and Methods: 35 subjects aged 60-75 were included in the study. They met 1 of 3 criteria: Healthy (normal functioning knee), pre-operative or 3 months post-operative. We used 2 sensors with a magneto-, accelero- and gyrometer that measure the angle between the femur and tibia. With 2 sensors taped to the skin, patients performed 2 exercises; walk on treadmill 2 km/h and individually chosen fast pace. For reproducibility the exercises were carried out twice.
Findings / Results: Significant difference in knee function between the 3 groups was found. Subjects with healthy knee had significant higher active ROM (mean = 53.6°), angular velocity and acceleration than the 2 other groups. The post-operative's active ROM (mean = 43.4°) were significantly higher than the pre-operative group (mean = 37.4°), but the angular velocity and acceleration were not significantly different from the pre-operative group. Retests showed the method to be highly reproducible. The largest difference between the groups was observed when instructed to walk at a fast pace.
Conclusions: The sensors measures of dynamic ROM were reproducible and consistent with the degree of pathology. This method is simple and allows gait analysis to be telemetric in the patient's daily life, and it thus fundamentally differs from costly laboratory tests. The method can be used to monitor patients both pre- and postoperatively. Further studies will investigate whether the application of machine learning on the data can predict Oxford Knee Score.

No conflicts of interest reported

Isolated Tibial Insert Exchange after Primary Total Knee Arthroplasty

40.

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Background: Patients with Total Knee Arthroplasty (TKA) can be revised with isolated polyethylene liner exchange. The indication varies from pain, stiffness, recurrent effusion, wear or instability. The effectiveness of this procedure is quite controversial. An analysis of results based on these subgroups may give us knowledge about the best indication.
Purpose / Aim of Study: The aim of this study is to evaluate the results of isolated polyethylene exchange in patients with instability and pain.
Materials and Methods: From out database we identified all patients who underwent revision of a TKA with liner exchange in our institution in the period from 2010 to 2013. We included all patients with instability and pain as described by the surgeon. We excluded all patients who had other interventions. Patient reported outcome was evaluated with a KOOS and a Oxford Knee Score questionnaire and clinical assessment was conducted using Knee Society Score.
Findings / Results: We had a population of 19 patients, 12 women and 7 men. One patient had bilateral liner exchange. Mean increase in liner thickness was 5,8mm (2,5- 7,5mm). Mean follow-up time after revision was 44 months (30-60). Mean KOOS for categories Pain, other Symptoms and ADL was 62-64 but for Function in Sport and Recreation and for Quality of Life it was 27 and 43. Mean Knee Society Score and Function score was 66 and 69. Mean Oxford Knee Score was 29. Postoperatively, mean VAS in rest was 1 and in activity 4. Average time between the operations was 24 months.
Conclusions: Our results reveal poor outcome when isolated polyethylene liner exchange is performed on the indication instability and pain. Careful patient selection for this procedure may yield better results. Further studies are needed to confirm this.

No conflicts of interest reported

No association between surgical delay and mortality following distal femoral fractures. A study from The Danish Fracture Database Collaboration

41.

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Background: Surgical delay (SD) in patients with hip fractures has been shown to increase mortality. However, the effect of increased SD on mortality following distal femoral fractures has been sparsely investigated.
Purpose / Aim of Study: To show if a) SD or b) educational level of surgeon (ELS) affect mortality rates for patients with a distal femoral fracture.
Materials and Methods: Patients aged ≥50 years registered in the Danish Fracture Database for undergoing surgery of a distal femoral fracture (AO33A-C), excluding pathological, open, or high-energy trauma fractures, were included. Data included age, gender, American Society of Anesthesiologists (ASA) score, type of fracture and, ELS and SD. ELS was defined as "attending or above as surgeon", "attending or above as supervisor" or "below attending alone". SD was defined as hours (h) from radiological diagnostics until onset of surgery. Mortality data was provided by The Civil Registration System. Mortality rates were calculated using multiple logistical regression analysis.
Findings / Results: Data on 392 surgeries were included: Mean age 76 years (range 50-101), 79% of patients were female and 65% had an extraarticular fracture (AO33A). 8% were operated within 12 h, 33% within 24 h, 67% within 48 h and 83% within 72 h. ELS was "attending or above as surgeon" in 56% of all cases and "attending or above as supervisor" in 33%. Mortality was 7.1% at day 30 and 12.5% at day 90. The logistical regression analysis did not demonstrate any association between SD or ELS and mortality following surgery for a distal femoral fracture. Increasing age, male gender and ASA score >2 significantly increased both 30-day and 90-day mortality.
Conclusions: No association between SD or ELS, and mortality was found. These findings do not support the development of guidelines for decreasing SD in this population.

No conflicts of interest reported

Neural axis abnormalities in patients with adolescent idiopathic scoliosis - the role of MRI

42.

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Background: MRI-verified neural axis abnormalities (NAA) have been described in adolescent idiopathic scoliosis (AIS) and several risk factors have been associated with the presence of NAA. The clinical significance of these findings, however, is not clear.
Purpose / Aim of Study: The purpose of the present study was to determine the prevalence of NAA in a large cohort of AIS patients and evaluate the clinical significance of previously proposed risk factors.
Materials and Methods: We prospectively included AIS patients referred to our tertiary facility for evaluation. A full-spine MRI scan was performed on all included patients irrespective of curve magnitude or proposed treatment modality. Clinical records and radiographs were retrospectively reviewed. MRI was considered pathologic if syrinx, hydromyelia, Chiari malformation, diastematomyelia, tethered cord or other abnormalities.
Findings / Results: The mean major curve angle was 39 degrees and 58 % were thoracic. NAA was observed in 32 of 381 patients (9.1%). Twenty-one patients had hydromyelia, nine patients had syringomyelia, one patient had an arachnoid cyst and one patient had Chiari Malformation. Six patients were referred to neurosurgical evaluation but none received any neurosurgical treatment. There were no statistical significant difference observed between the NAA and no-NAA groups in terms of gender, major curve size, thoracic kyphosis, curve type, curve convexity, length of curve, curve progression or level of pain ($p \geq 0.07$).
Conclusions: To our knowledge, this is the largest consecutive cohort of patients with a diagnosis of AIS undergoing MRI, and we found no association between NAA and previously proposed radiographic and clinical parameters. MRI should not be implemented as a routine diagnostic tool in AIS evaluation, but may be indicated in specific subgroups of patients with AIS.

Conflict of interest:
Sidsel Fruergaard: institutional grant from Medtronic
Søren Ohrt-Nissen: recived an institutional grant outside this submitted work from K2M
Benny Dahl: institutional grant from K2M and Medtronic
Martin Gehrchen: institutional grant from K2M and Medtronic

Cross-Cultural translation, adaption and Reliability of the Danish modified version of AOFAS-Da and SEFAS-Da

43.

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Background: The American Orthopedic Foot and Ankle Society score (AOFAS) and the "Self-reported Foot and Ankle Score" (SEFAS) are patient-reported outcome measures used to assess ankle pain and functional outcome. They have not earlyer been translated into Danish.
Purpose / Aim of Study: The aim of this study was to cross-culturally translate and adapt AOFAS-Da and SEFAS-Da into Danish and perform reliability testing.
Materials and Methods: The two questionnaires were cross-culturally translated and adapted into Danish by process guidelines including translation, synthesis, back translation, expert committee review, and pretesting. Face validity was accessed in 10 patients with ankle and foot disorders and 5 people with a medical education. 60 patients completed the two questionnaires 6 weeks post-operatively (test, T1) and again at mean 9 days after (retest, T2). Pearson´s correlation was used to access test-retest and internal consistency was accessed with Cronbach´s Alpha. Floor and ceiling effects were considered present if > 15% of the patients achieved the worst score/floor effect or the best score/ceiling effect.
Findings / Results: Pearson´s correlation for SEFAS-Da was 0.93 (95%CI: 0.84-1.01) (n=60) and for AOFAS-Da, 0.92 (95%CI:0.83-1.02) while Cronbach´s alpha was 0.87 and 0.88 for SEFAS-Da and AOFAS-Da, respectively. No floor or ceiling effect was observed (T1: 0/48 for SEFAS and 1/60 for AOFAS. T2: 0/48 for SEFAS-Da and 1/60 for AOFAS-Da).
Conclusions: The Danish versions of AOFAS-Da and SEFAS-Da, showed strong reliability with internal consistency and test-retest reproducibility in patients with ankle related fractures.

No conflicts of interest reported

Medium to Long-term functionality and survival of HemiCap for hallux rigidus

44.

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Background: Hallux rigidus treated with HemiCap arthroplasty aims to reduce pain and preserve motion, but no mid/long term results exist.
Purpose / Aim of Study: To examine the functionality, pain and the revision rate of HemiCap implants.
Materials and Methods: 106 patients were operated with HemiCap (n=114) from 2006-2014, median age 53 years (16-80), 37 dorsal flange (DF) implants. A retrospective journal review collected revision data. Preoperative arthrosis degree, hallux valgus (HV), intermetatarsal (IM) and Distal Metaphyseal Articular Angle (DMAA) were measured. Preoperative pain levels by Visuel Analog Skala (VAS 1-10), American Orthopaedic Foot and Ankle Score (AOFAS 0-100 points) and Range of Motion (ROM) were available for 51 patients. Of the initial 106, 70 were eligible for reexamination and 47 partook in a cross sectional follow up where Self-Reported Foot and Ankle Score (SEFAS 0-48 points) was added to the previous measures. Statistics: Kaplan-Meier survival analysis, Cox-regression and paired t-tests.
Findings / Results: At 3, 5 and 7 years, the implant survival was 85%, 83% and 78%. All revised due to pain. DF, gender, preoperative arthrosis degree, HV, IM or DMAA did not influence the result. At mean 5 year follow up (n=47) mean (sd) dorsal ROM was 46(17) degrees, AOFAS was 84(9), VAS 2(1) and SEFAS 42(6) points. The DF made no significant difference for ROM or PROMs. 23 with pre- op data were re-examined and preoperative dorsal ROM changed from 21(6) to 42(18) degrees, VAS from 7(2) to 2(2) and AOFAS from 61(11) to 87(11) ($p < 0.001$).
Conclusions: The survival rate was acceptable. No predictors influenced implant failure and new design with dorsal flange is not evident clinically. Un-revised patients have significantly less pain, greater ROM, and better foot and ankle function than preoperatively, but data are biased by missing numbers.

No conflicts of interest reported

Spinal Injury Epidemiology based on patients referred to a Tertiary Care Centre: Pilot study from the SPinal INjury Epidemiology Database

45.

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Background: The epidemiology of spinal injuries is largely unknown. Most studies have focused on specific subpopulations of patients, specific trauma mechanisms, or specific spinal levels, and as such have not provided a complete overview of spinal injury epidemiology. Consequently, a comprehensive description of spinal injuries is of relevance.
Purpose / Aim of Study: Our study aimed to evaluate the epidemiology of spinal injuries in a general population. Specifically, we wanted to assess any difference in injury pattern amongst young and elderly patients.
Materials and Methods: All patients referred for a spinal injury to the Spine Unit at Rigshospitalet during a 4-month period, were prospectively registered regarding age, gender, trauma mechanism, and treatment. Younger patients were defined as patients ≤65 years of age.
Findings / Results: A total of 132 patients were registered during the study period corresponding to an annual incidence of 21.9/100,000. The ratio of male to female patients was 1:1.3, and 60% of patients were >65 years of age. 61% of injuries were the result of low-energy (LE) trauma, and significantly more female patients and patients >65 years of age sustained LE trauma (P<0.001). 25% of patients ≤65 years of age were treated surgically compared to 11% of patients >65 years of age. This difference, however, was not significant.
Conclusions: The incidence of elderly patients sustaining spinal injuries as a result of LE trauma, represent a group of considerable size in relation to total spinal injuries sustained in a general population, and one that is much larger than previously published. Further effort will be made to quantify the exact nature of this patient group, and the burden it represents compared to younger patients sustaining high- energy trauma.

No conflicts of interest reported

Low inter-observer agreement among experienced shoulder surgeons assessing overstuffing of glenohumeral resurfacing hemiarthroplasty based on plain radiographs

46.

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Background: Visual evaluation of post-implant radiographs is often used to assess the restoration of glenohumeral joint anatomy after shoulder replacement surgery and is a part of the decision-making process, when evaluating patients with inferior clinical results. However, information about the reliability of such a visual evaluation is lacking.
Purpose / Aim of Study: The aim of this study was to investigate the inter- and intra-observer agreement among experienced shoulder surgeons assessing overstuffing, implant positioning and sizing following resurfacing hemiarthroplasty (RHA) using plain standardized radiographs.
Materials and Methods: Six experienced shoulder surgeons independently classified implant inclination angle, sizing of the implant and if the joint seemed overstuffed, in 219 cases of post- implant radiographs. All cases were classified twice three weeks apart. Only radiographs with an anterior-posterior projection with a freely visible joint space were used. Non-weighted Cohen's kappa values were calculated for each coder pair and the mean used as an estimate of the overall inter-observer agreement.
Findings / Results: The overall inter-observer agreement for implant sizing (kappa: 0.48 and 0.41) and inclination angle was moderate in both rounds (kappa: 0.46 and 0.44), but only fair agreement was found concerning the evaluation for stuffing of the joint (kappa: 0.24 and 0.28). Intra-observer agreement for implant size and stuffing ranged from fair to substantial while the agreement for inclination was moderate to substantial.
Conclusions: We advise caution using conclusions based on this method in the decision-making process regarding revision surgery and for using the term overstuffing as an explanation for poor functional outcome.

No conflicts of interest reported

Reverse total shoulder arthroplasty for Cuff-Tear Arthropathy: Outcome, revision rate and indication for revision for 504 arthroplasties reported to the Danish Shoulder Arthroplasty Registry

47.

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Background: Reverse shoulder arthroplasty (RSA) is gaining increasingly popular. When used for cuff tear arthropathy the results are superior to that of hemiarthroplasty . Previous studies are, however, small and information about revision rates is limited

Purpose / Aim of Study: The aim of this study is to examine the patient- reported outcome and the risk of revision of RSA for CTA on a national level using data from the Danish Shoulder Arthroplasty Registry (DSR).

Materials and Methods: We reviewed all patients treated with RSA for CTA reported to the DSR from 2006 until 2012. Patient- reported outcome was assessed by a postal survey 12 months (10 to 14) post-operatively using the WOOS score. Revision rates were illustrated using the Kaplan Meier method and the hazard ratio was calculated using the cox regression model.

Findings / Results: The cumulative rate of revision within five years was 11,7%. The hazard ratio for men being revised was 3.6 (95% CI 1,9-7,0; p = <0,01). Common indications for revision were infection (2,2%) and luxation (2,6%). A complete questionnaire was returned by 372 patients (74%). The mean WOOS was 68. 14% had a WOOS score below 40 which is regarded as a clinical failure by the registry. There was no significant or clinical relevant difference in the mean WOOS between age groups (<65/>65 years) or gender. The Delta Mark III was a significant risk of clinical failure. Mean WOOS peaked to a maximum of 73 in 2010, but then decreased to 68 in 2012.

Conclusions: The incidence of RSA for CTA increased in the study period. The mean WOOS was acceptable, but has decreased in the most recent years. The high number of revisions in general and the high numbers of revision because of infection in particular are worrying It is important that RSA is used for the correct indications and with adequate surgical technique.

No conflicts of interest reported

Readmissions, length of stay and mortality after primary surgery for adult spinal deformity

48.

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Background: Adult spinal deformity (ASD) includes deformities in both the coronal and sagittal plane, with potential severe impact on health related quality of life. With increasing health care burden of ASD surgery, data on postoperative morbidity and mortality are highly relevant

Purpose / Aim of Study: To provide detailed information on postoperative morbidity measured by length of stay (LOS), readmissions and mortality within 90 days after instrumented surgery for ASD

Materials and Methods: A 10-year cohort study on all patients >18 years undergoing surgery for ASD in the Capital Region of Denmark. Patients were identified in the Danish National Patient Registry (DNPR) using procedure codes for instrumented spine surgery (KNAG/KNAK/KNAT*) and diagnosis of either kyphosis/lordosis or scoliosis (DM40, DM41, DM45*). Medical records were reviewed for all patients

Findings / Results: 366 patients were identified, with a mean age of 48.5 years (range 18 – 83) and a median LOS of 8 days (Interquartile range 6 – 11). LOS >11 days was observed in 104 procedures (28.4%) and was mainly caused by "medically" related issues (68.3%), including pain/mobilization difficulties. The 90-days readmission rate was 18.0 %. 68.2% readmissions were "medically" related due to opioid related side effects (18.2%) and pain/mobilization issues (15.2%). 31.8% of readmissions were "surgically" related and 16.7% required revision surgery. 90-days mortality was 0.8%, 2 patients died from cardiac arrest and 1 from surgical trauma

Conclusions: A median LOS of 8 days and a 90-day readmission rate of 18.0% indicate room for improvement regarding postoperative morbidity. A future focus on implementation of fast-track principles with early mobilization and opioid sparing analgesia may reduce LOS and postoperative morbidity as shown in hip and knee arthroplasty surgery

No conflicts of interest reported

Passive range of motion and clinical cut-off point of in ankle dorsiflexion are not correlated with gross motor function in children with cerebral palsy – a cross sectional study

49.

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Background: The Cerebral Palsy follow Up Program (CPOP) uses cut-off points (traffic light signals) to categorize passive range of motion (ROM) in: green, yellow and red in order to guide clinical decisions. The cut-off points are not evidence based and potential relationship with gross motor capacity and patient-reported gross motor function has never been established.
Purpose / Aim of Study: To investigate ROM and the traffic light categories for ankle dorsiflexion and their relationship with gross motor function in children with cerebral palsy (CP).
Materials and Methods: We conducted a cross-sectional study of 60 children with spastic CP at GMFCS level I-II, aged 5-9 years. ROM were measured as maximal ankle dorsiflexion with flexed and extended knee using goniometry and the categories applied using the cut-off points provided by CPOP. Furthermore 1-min walking distance (1-min walk), Gross Motor Function Measure (GMFM) and Pediatric Quality of Life Inventory Cerebral Palsy Module: movement and balance subscale (Pedsql) where collected. Correlations where investigated with Pearson correlation coefficients. Differences in the three groups based on the traffic light categories were investigated with one-way ANOVA.
Findings / Results: No significant correlation ($r2 < 0.2$, $p>0.05$) where documented between ROM versus 1-min walk, GMFM and Pedsql. Furthermore, the group mean values of the outcome measures in the traffic light categories did not differ.
Conclusions: Ankle dorsiflexion are not correlated with gross motor function, why the cut-off points used in CPOP are of limited clinical value in relation to gross motor capacity and patient-reported impairments in relation to movement and balance. As a consequence ROM and gross motor function may be considered as separate constructs, which may have impact on the decision-making of treatment for the patient group.

No conflicts of interest reported

A single magnetic controlled growing rod can drive double growing rod systems with apical control in EOS 50.

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Background: The magnetic controlled growing rod (MCGR) application in severe early onset scoliosis has increased over the last years worldwide, as they allow non-invasive lengthening. Disadvantages of the MCGR are the high initial costs and lack of apical control. To overcome these, we combined a single concave MCGR with a contralateral sliding rod system with apical control.
Purpose / Aim of Study: To investigate the feasibility, 3D correction, spinal growth and complications of this new MCGR-hybrid principle.
Materials and Methods: A consecutive series of patients treated with this new principle at two European spine centers were evaluated retrospectively, including all patients operated between Sept. 2014 and June 2016. Demographics and clinical parameters were recorded from patient files. Length, Cobb angles and rotation (Nash-Moe method), were measured on standard digital radiographs.
Findings / Results: Eighteen patients with a median age at treatment of 9 years with a median follow-up time of 24 months (range 11- 31). The frontal Cobb angle was reduced from mean 59 preoperative to 30 post- operatively and was maintained throughout follow-up. Rotation of the apical vertebra improved from mean 27 to 18 post-operatively but increased slightly to 20 during follow-up. Kyphosis decreased and lordosis was largely unaltered. Instrumented spine growth was maintained at a mean 12mm/year. One child had surgical revision due to progressive trunk shift. The same child fell and acquired T1 & T2 fractures that were treated conservatively. Another child is planned for revision due to MCGR distraction failure.
Conclusions: These early results show satisfactory 3D correction and maintained spinal growth with few complications. This new apical control single growth engine approach seems cost-effective in providing 3D correction and to maintain spinal growth in EOS.

No conflicts of interest reported

PRP-enriched Allogenic Cartilage Decreases Risk of Bone Bridge Formation after Physeal Injury in an Experimental Porcine Model

51.

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Background: The use of biological material is currently explored for prevention of bone bridge formation, however no novel treatment technique has been proposed. An improvement in current clinical practice can be of great value to the affected children.
Purpose / Aim of Study: To investigate the efficacy of allogenic cartilage combined with platelet-rich plasma (PRP) for physeal repair in a porcine experimental gap model.
Materials and Methods: The study was carried out in six immature pigs. Allogenic cartilage was harvested from low-weight-bearing parts of the femoral condyle in pigs from the same breed. The cartilage was frozen and stored. Preoperatively, autologous venous blood was drawn from the animal. It was centrifuged using a commercial PRP kit (GPS® III, Zimmer Biomet). Standardized cylindrical defects were created in both hind legs of all included animals mimicking a defect after resection of a physeal bone bridge. The right leg was randomized for filling with allogenic cartilage, PRP and Tiseel® (Group A) or PRP and Tiseel® (Group B). The left leg received the other treatment. The cartilage was thawed and rinsed with saline. Perioperatively, it was cut into small chips of approximately 1 mm. The cartilage was blended with the Tiseel® and enriched with 1 mL of PRP. The mixture was inserted into the empty defect upon randomization. The contralateral defect was filled with Tiseel® and enriched with 1 mL of PRP. All animals underwent MRI scanning at 14 weeks.
Findings / Results: Formation of a bone bridge occurred in one animal (17%) in Group B. No animals (0%) formed a bone bridge in Group A. Water- content MRI showed a mean of 16,7% higher water-content in Group A compared to B.
Conclusions: Allogenic cartilage chips can prevent the formation of bone bridges when combined PRP and Tiseel®. The use of allogenic cartilage can spare the joint cartilage.

No conflicts of interest reported

The effect of load management in adolescents between 10 and 14 years of age with patellofemoral pain – a prospective single-cohort intervention study including 151 adolescents

52.

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Background: Patellofemoral pain (PFP) affects 7% of adolescents, especially the highly sports active. Current exercise-focused treatments are only effective for 30%. Previous exercise-focused treatments have not modified and controlled sports activity. Thus, a different treatment strategy is warrented as many adolescents continue to engage in the same high level sports despite knee pain.
Purpose / Aim of Study: The purpose of this study was to investigate the effect of a novel treatment strategy focusing on load management among adolescents with PFP.
Materials and Methods: This pre-registered prospective cohort study included 151 adolescents from 10-14 years of age with PFP. The intervention lasted 12 weeks and included four visits with a physiotherapist. The intervention included activity modification (week 0-4) to reduce loading of the patellofemoral joint using an activity ladder paradigm including pain monitoring, progressive home-based strengthening exercises (week 4-12), and a progression model for return to sport (week 4-12). Primary outcome was self-reported recovery at 3 months on a 7-point Likert- scale ranging from "much improved" to "much worse". Adolescents were considered recovered if they reported "much improved" or "improved".
Findings / Results: The median age was 13 years and the median symptom duration was 18 months. 83% participated regularly in sports while 24% used analgesics for their knee pain at baseline. At 12 week follow-up, 87% completed the questionnaire, of which 86% reported they were recovered and 7% used analgesics. 90% were satisfied with the result of the treatment and 95% would recommend it to a friend.
Conclusions: Activity modification, progressive strengthening exercises, and return to sports following a progression model appears highly effective compared to previous exercise-focused trials among adolescents with PFP.

No conflicts of interest reported

Prevention of Bone Bridge Formation using Autologous Cartilage in an Experimental Porcine Model

53.

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Background: Bone bridges can occur due to physeal injury. This can lead to partial growth arrest and bone deformities. The current treatment is ineffective.
Purpose / Aim of Study: Investigate efficacy of autologous cartilage for physeal repair in a porcine experimental gap model.
Materials and Methods: Five immature pigs were included in the study. At baseline the medial part of the distal femoral physis was injured in both legs using a 6 mm cannulated drill. The drill was inserted 1.5 cm into the bone creating a standardized gap mimicking a defect after resection of a physeal bone bridge. The defects were rinsed with sterile saline. Upon randomization, the right leg was selected for either filling of defect with cartilage chips and Tiseel® (Group A, n =5) or Tiseel only (Group B, n=5). Cartilage was harvested from low-weight-bearing parts of the femoral condyle of the leg randomized for cartilage treatment. A sharp incision through the skin, patellar ligament and Hoffa's fat pad was made. The articular surface was exposed. Through two 6 mm punches sites were designated and harvested. The cartilage fragments were cut with a scalpel perioperatively into smallest possible sized chips. The chips were molted with the Tisseel® and inserted into the empty defect. Tiseel® was inserted into the contralateral empty defect. The animals were housed for 14 weeks. MRI was performed at 14 weeks.
Findings / Results: No bone bridges were found on MRI in Group A. In Group B one case of bone bridge formation was verified. The water- content measured on MRI, showed a greater mean value (9,5%) in Group B.
Conclusions: Bone bridges were prevented when autologous cartilage chips were added to the Tiseel®. This suggests that transplantation of autologous cartilage chips may play a role in preventing bone bridge formation.

No conflicts of interest reported

Structural hydroxyapatite tricalciumphosphate graft vs. tricortical iliac crest autograft in paediatric calcaneal lengthening osteotomies. The final results from a randomised controlled noninferiority trial. 54.

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Background: What if we could avoid donor site pain from harvest of iliac crest bone graft by using hydroxyapatitetricalciumphosphate (HATCP) as a structural bone graft for calcaneal lengthening osteotomies (CLO) in children?
Purpose / Aim of Study: To compare the structural durability of HATCP to autologous iliac crest bone graft in CLO for symptomatic flexible pes planovalgus (FPPV) by using radiostereometric analysis (RSA).
Materials and Methods: A randomised controlled two-group parallel non- inferiority design with equal randomisation ratio of 1:1 with one year follow-up. Patients symptomatic PPV aged between 5-16 years were included. The primary outcome measure was the stability of the osteotomy, assessed by RSA. Measurements were obtained on the 1st/2nd postoperative day, at 6 weeks, 8 weeks, 6 months and at one year follow-up. Secondary, the health related quality of life was assessed by the Oxford Ankle Foot Questionnaire, before surgery, at 6 months and one year follow-up. Other outcome measures were the postoperative pain, analgesics consumption and complications. Statistics: We would accept the HATCP group to loose no more than a mean of 2 mm lengthening of the osteotomy in comparison to the AUTO group at one-year follow-up.
Findings / Results: There were 7 patients in the HATCP group and 5 in the AUTO group. One patient was excluded after 8 weeks, due to revisional surgery The difference in graft compression between the two groups (HATCP graft compression minus AUTO graft compression) was 2.02 mm (two-sided 90% CI: 0.73; 3.29). Both groups showed similar improvement of the OxAFQ scores at final follow-up. Complications were more frequently observed in the HATCP group,
Conclusions: We find HATCP to be of limited value as a structural bone graft for calcaneal lengthening osteotomies in its current form.

No conflicts of interest reported

Intra-articular vs. Extra-articular Subtalar Arthrodesis: An Assessment of RSA Stability

55.

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Background: The surgical treatment of symptomatic flexible flatfoot in children depends on the severity of the malalignment of the hind and middle foot. The extra-articular subtalar arthrodesis (EAA) ad modum Grice is considerably less invasive than the intra- articular triple arthrodesis (IAA), but is it just as stable?
Purpose / Aim of Study: To assess the radiostereometric analysis (RSA) stability of the subtalar fusion in EAA and IAA.
Materials and Methods: 4-8 markers were inserted in both talus and calcaneus, which afterwards were used to analyse the RSA. The children were cast immobilized for 10 weeks, but allowed weight-bearing the last 5 weeks within the cast. RSA follow-up were planned 0, 5, 10 weeks, 6 and 12 months after surgery. RSA data were valid if CN < 150 and ME < 0.350.
Findings / Results: Eight EAA and 10 IAA were included in the study. In the analysis of both the EAA and the IAA group, there were considerable migration before achieving RSA stability. One EAA and two IAA remained RSA unstable until cast removal, but did not show signs of migration after cast removal. In this small population we did not see considerable different healing patterns between the two groups.
Conclusions: In the included groups we did not see differences in RSA stability between EAA and IAA.

No conflicts of interest reported

Validity and Reliability of an Ultrasound Measurement of the free length of the Achilles tendon. 56.

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Background: Valid length measurements of the different segments of the Achilles tendon, that connect to the three muscle bellies of the triceps surae are needed in order to investigate if differential elongation of the Achilles tendon takes place after rupture.
Purpose / Aim of Study: The purpose of this paper is to present data concerning accuracy and reliability of an ultrasound measurement of the free part of the Achilles tendon.
Materials and Methods: Both legs of 19 non-injured subjects were examined by MRI and ultrasound. The length from the distal tip of the soleus muscle to the tendon insertion on calcaneus was measured by three independent ultrasound examiners. Repeated ultrasound measurements were performed and compared to MRI measurements. Intra-rater and inter-rater reliability and the agreement between MRI and ultrasound were determined. Data were evaluated using the Intraclass Correlation Coefficient (ICC), the Standard Error of the Measurement (SEM) and the Minimal Detectable Change (MDC).
Findings / Results: The measurement showed excellent intra-rater reliability (ICC 0.94 [0.91;0.96], SEM 5mm and MDC 13mm) and inter-rater reliability (ICC 0.96 [0.93;0.97], SEM 4mm and MDC 11mm). Ultrasound measurements on average exceeded the MRI measurements by 2mm (n.s.); resulting in a measurement error of 5%.
Conclusions: The ultrasound measurement of the free part of the Achilles tendon showed good reliability and accuracy. For comparison between groups of non-injured subjects differences of more than 5mm can be detected. For repeated assessment of individual subject differences ≥ 13mm can be detected. The US measurement is a promising clinical tool to be further assessed in the setting of acute Achilles tendon rupture.

No conflicts of interest reported

Plantar Forces Mid-Term After Hemiarthroplasty With HemiCAP For Hallux Rigidus

57.

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Background: Hallux rigidus can be treated with a proximal hemiarthroplasty (HemiCAP) to preserve motion in the 1st metatarsophalangeal joint (MTPJ), but the effect is poorly documented.
Purpose / Aim of Study: We examined the plantar force variables (PFV) under the hallux the 1st, 2nd, and 3rd – 5 th metatarsal heads (MH) on patients with HemiCAP and compared to healthy controls and secondarily examined the correlations of the PFVs and the 1st MTPJ range of motion (ROM) and pain.
Materials and Methods: 41 were included, median OP date 2011(2007-2014), age 63(47-78). ROM measured by both goniometer and x-ray. Pain by VAS 1-10. Emed (Novel) Foot Pressure Mapping System measured peak force (N) and force/time integral (N/s). Force variables between operated feet and controls were compared by independent two-sample t-test or Wilcoxon rank sum test. Force variables association to ROM and pain by linear regression models.
Findings / Results: HemiCAP/Controls: Peak force (N): Hallux: 12(1-26)/20(4-30), 1st MH: 17(8-41)/24(14- 42), 2nd MH 24(15-37)/28(24-37), 3rd-5th MH: 27(18-36)/30(25- 35). Force/time integral (N/s): Hallux: 1(1- 4)/4(1-12), 1st MH: 5(2- 18)/7(3-11), 2nd MH 8(4-13)/10(7- 13), 3rd-5th MH: 9(6-15)/10(8- 14), ($p<0.05$ for all). Dorsal ROM of the operated feet was median 45 degrees (range 10-75) by goniometer and 41 (16-70) by x-ray. An increase in ROM reduced the PFVs under the hallux, but not under the MHs. Most patients reported no pain and no correlation to PFVs were found.
Conclusions: As expected increased dorsiflexion reduces the force/time integral, but a mid-term HemiCAP does not restore the joint motion to normal. Decreased PFVs under the hallux may reflect a patient reluctance to load the first ray although plantar forces were not linked to pain. Most report minimal pain, but the pain score is biased by missing numbers and exclusion of revisions.

No conflicts of interest reported

Operative management of femoral Focal Fibrocartilaginous Dysplasia in children

58.

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Background: Focal Fibrocartilaginous Dysplasia (FFCD) is an extremely rare disorder causing angular deformities of the long bones in children. The condition is defined by a diafyseal fibrous tether preventing the natural sliding of periosteum during growth resulting in a hemiepiphysiodesis effect causing angular deformities. The location of the lesions are predominantly in the proximal tibia, although distal femoral, humeral and ulnar cases have been reported. No definitive consensus has been proposed regarding treatment. Spontaneus resolution of the deformity is primarily reported for tibial cases. Operative management may include excision of the tether, periosteum and curettage as well as corrective osteotomies.
Purpose / Aim of Study: To report on a case of femoral FFCD with operative management.
Materials and Methods: Operative management of a confirmed case of FFCD is presented with preoperative radiographical and Magnetic Resonance Image (MRI) evaluation in addition to a thorough peroperatively illustration of the operative management. Furthermore the postoperative angular correction is documented.
Findings / Results: A 22 months old boy referred for specialist children's orthopaedic evaluation presented with progressive unilateral genu vara. Clinical evaluation showed bowing of the distal femur and subsequent radiographical examination revealed a lesion on the distal medial femoral diaphysis with an angular medial deformity. An MRI was performed under general anesthesia revealing a fibrous tether confirming the diagnosis of FFCD. The tether was treated surgically by excision of both the tether and surrounding periosteum and curettage.
Conclusions: FFCD with a medial femoral location can be operatively managed by open excision of the tether and medial periosteal release with subsequent correction of the angular deformity.

No conflicts of interest reported

Obturator pyomyositis related to staphylococcus aureus bacteremia: can mimic or be complicated by ipsilateral septic coxitis

59.

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Background: Staphylococcus aureus (SA) bacteremia can develop into a broad array of infections foci, which can be difficult to recognize initially. Obturator pyomyositis (OP) is a rare differential diagnosis in patients presenting with fever and complaints from the hip area.
Purpose / Aim of Study: We would like to bring attention to a rare but important cause to fever and hip pain.
Materials and Methods: Four patients with OP were identified from 2013 to 2017. Patient files, radiological examinations and microbiological etiology were reviewed.
Findings / Results: Patients included 3 children (age 6-12) and 1 adult (age 31). Patients presented with fever (38.5-40.5 °C), pain from the hip/groin area, a limp and elevated CRP (21.7-236.2 mg/L). 4/4 hip ultrasound examinations at admission were without joint effusion. OP was diagnosed by MRI 3 days after admission in 3/4 patients and after 7 days in 1 patient. Diagnosis in the last patient was delayed 6 days by use of CT and PET CT as initial imaging. 4 patients had affection of the internal obturator muscle, 3 included the external obturator muscle and 2 patients developed ipsilateral hip joint effusions. 4/4 initial blood cultures were positive for SA and patients were started on empiric antibiotics prior to surgery. Drainage was performed 1 day after MRI. 2 patients received a hip arthrotomy, 2 patients obturator muscles were incised and 1 patient received an additional ultrasound guided drainage procedure. Initial abscess/joint fluid samples were positive for SA except for the patient with delayed MRI.
Conclusions: Although not common OP as a course of hip pain should be suspected in patients with fever, hip pain and SA bacteremia. OP caused by SA can be accompanied by ipsilateral septic coxitis. We advocate MRI as the best modality to diagnose OP and to distinguish it from septic coxitis.

No conflicts of interest reported

Does missed primary information lead to complications in Achilles tendon ruptures? A preliminary case series. 60.

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Background: The results of functional treatment of Achilles tendon ruptures (ATR) are dependent on validity on all aspects of the treatment including primary information of the patient. Due to presentation of several consecutive patients with DVT and severe edema in our clinic, we decided to investigate if primary information was sufficient.
Purpose / Aim of Study: To assess the quality of patient information after ATR.
Materials and Methods: Case series of 7 consecutive patients with ATR seen in the outpatient clinic 2-5 days after initial treatment. All patients follow a standardized protocol for functional rehabilitation, our department has been thoroughly informed and we have a very precise instruction regarding anti thrombotic treatment, edema prophylaxis and risk signs. The hand-out patient information is also very thorough and given to the patient at the first contact. Our questionnaire focus on the information given to the patient concerning DVT prophylaxis at first contact. Diagnosis were secured clinically and orthosis was checked.
Findings / Results: 7 patients, all male, age 22-82 yrs. Time from rupture to treatment 1-2 days (6) and 10 days (1). 4/7 did not receive the hand-out patient information, 1 did not receive Xarelto (severe edema and familiar disposition of DVT), 1 had pressuremark from the orthosis, 1 (age 82) were weightbearing. Additional treatment: 4 patients received the hand-out patient information, 2 orthosis were changed to a cast. 1 received extra padding in the orthosis, 4 received information on edema prophylaxis, 2 were instructed in use of crutches without weightbearing.
Conclusions: These preliminary results are discouraging and will lead to our continuous use of an early control in the outpatient clinic. Further investigation should reveal how we can improve the quality of patient information and treatment.

No conflicts of interest reported

Early results with the X-pander® trial cup in primary hip replacement. 61.

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Background: Correct placement of the un-cemented cup is important in terms of stability and longevity of the hip. The X-pander® measures both the geometry of the acetabulum and the bone quality. The current report is part of a multicenter trial.
Purpose / Aim of Study: The aim of this registrations study is to examine whether the use of X-pander in primary hip replacement improves cup fixation and adaptation among trainee doctors.
Materials and Methods: Immediately after the operation, the surgeon fills out an evaluation form.
Findings / Results: Among the 14 evaluation forms filled out, the use of X-pander led to change in cup size in 3 cases (21%) and further reaming in 2 cases (14%). The surgeons (n=2) felt more secure with cup placement (12 / 14) and did not find any drawbacks with X-pander (11 / 14).
Conclusions: The surgeons involved have in general expressed their satisfaction with the functionality and clinical value of X-pander®. The device has the potential improve cup-placement by trainee surgeons. A radiological evaluation is planned.

No conflicts of interest reported

A Systematic Review and Meta-analysis of treatment of Ankle Fractures with Syndesmotic Rupture; Suture-Button Fixation vs. Cortical Screw Fixation

62.

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Background: Ankle fractures accompanied by syndesmotic rupture are a complex challenge for orthopedic surgeons. Sufficient reduction and stabilization of the syndesmosis is important to prevent early degeneration of the ankle joint and to optimize clinical outcomes.
Purpose / Aim of Study: To systematically review the literature comparing the suture-button fixation method to the cortical screw fixation method when treating syndesmotic rupture.
Materials and Methods: A systematic review of the literature including Cochrane, Pubmed and Embase was performed. Following search terms were used: ankle fractures, syndesmosis rupture, tibiofibular syndesmosis injury, ankle joint, tightrope and suture button. Inclusion criteria were comparison studies, acute ankle fractures with syndesmotic rupture, adult patients and Coleman score >60. Cadaveric studies, chronic instability, open fractures, polytraumas and arthropathies were excluded. Two investigators independently reviewed titles and relevant abstracts. Reoperation and malreduction rate were compared in a meta- analysis.
Findings / Results: Six studies with 275 patients were included: Two RCT's, two prospective and two retrospective cohort studies. All studies used similar surgical techniques. Functional outcomes (AOFAS & OM) were not quantitative comparable. No significant less number of malreduction events were detected in the suture- button group (RR=0.19, (95% CI, 0.03;1.04) P=0.06). Significant lower reoperation rate was detected in the suture-button group (RR=0.21, (95% CI, 0.06;0.69) P=0.01).
Conclusions: The suture-button technique showed significant lower reoperation rate and tendency towards less malreduction and better AOFAS scores. This finding is clinical relevant, however, this conclusion is primarily based on two studies, and therefore, the issue demands further research.

No conflicts of interest reported

Increased risk of revision in total knee arthroplasties following high tibial osteotomy is explained by patient demographics

63.

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Background: High tibial osteotomy (HTO) is used to treat primary osteoarthritis (OA) of the medial or lateral knee chamber in young active patients. The aim is to relief pain while preserving the knee joint thus postponing the need for arthroplasty. However, the influence of HTO on the survival of a subsequent total knee arthroplasty (TKA) is still debated.
Purpose / Aim of Study: We conducted this nation-wide registry study to evaluate the influence of HTO on the survival of TKA.
Materials and Methods: From the Danish Knee Arthroplasty Registry, we retrieved 1,049 TKA inserted from the 1st of January 1997 till the 31st of December 2015 in knees previously treated with HTO. We compared these with 63,954 de novo TKA without prior surgery. We analyzed demographics and calculated the estimated survival by Kaplan-Meier analyses and multi-variate Cox regression covering prior HTO, sex and age. In addition, we compared the indications of revision between the groups.
Findings / Results: The proportion of males were significantly higher in the prior-HTO group (57% vs 35%, $p<0.001$) and the patients were significantly younger at the time of TKA with a median age of 62 as opposed to 70 years ($p<0.001$). TKA inserted in knees previously treated with HTO had an inferior estimated survival ($p<0.001$) with a crude hazard ratio (HR) of 1.70 (95% CI: 1.38-2.10, $p<0.001$). However, after adjustment for the differences in sex and age the two groups had a similar risk of revision with an adjusted HR of 1.17 (95% CI: 0.96-1.42, $p=0.11$). Instability showed a trait of been more frequent in the prior-HTO group (25% vs 18%).
Conclusions: In this nation-wide registry study TKA following HTO were revised more often than de novo TKA. However, our analyses suggest that the increased risk of revision is due to younger age and increased percentage of males in this group rather than the prior HTO.

No conflicts of interest reported

Resurfacing hemiarthroplasty versus reverse shoulder arthroplasty in treatment of cuff tear arthropathy - a matched-pair analysis

64.

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Background: Resurfacing hemiarthroplasty (RHA) has previously been used for cuff tear arthropathy (CTA). Reverse shoulder arthroplasty (RSA) has, however, emerged to be the treatment of choice for CTA. The efficacy and risk of revision of RSA have, however, never been compared with RHA.
Purpose / Aim of Study: To compare the patient-reported outcome and the number of revision between RHA and RSA for CTA.
Materials and Methods: We included CTA patients from the Danish Shoulder Arthroplasty Registry (DSR) from 1st January 2006 to 31st December 2013. 110 RHA cases were matched by age and sex with 219 RSA controls. The Western Ontario Osteoarthritis of the Shoulder (WOOS) Index at 1 year was used as primary outcome and revision, defined as removal or exchange of any component or the addition of a glenoid component, as secondary outcome.
Findings / Results: The mean WOOS of RHA and RSA were 53 (SD=28) and 70 (SD=25) respectively. The mean difference was 16, p<0,001, 95% CI (9; 24). The revision rate of RHA was 6% (n=6) and the revision rate of RSA was 7% (n=16), p=0,28. In patients below 70 years of age the median WOOS of both RHA (n=14) and RSA (n=25) was 56, p=0,72. In patients above 70 years of age the median WOOS of RHA (n=58) and RSA (n=118) was 48 and 79. The difference of 31 was statistically significant, p<0,001.
Conclusions: In this nationwide cohort RSA had a statistically significant better patient-reported outcome compared with RHA especially in patients older than 70 years. In patients under 70 years of age the WOOS score was low with no difference between RHA and RSA. The results support the use of RSA in the treatment of CTA in patients older than 70 years of age. The outcome of RHA and RSA in patients younger than 70 years was disappointing disregard arthroplasty type, and the treatment of CTA in young patients remain a challenge.

No conflicts of interest reported

Preoperative systemic bone quality does not affect tibial component migration in knee arthroplasty. A 2 year RSA study of 101 consecutive patients. 65.

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Background: Bone quality and other preoperative predictive factors may affect the survival of knee arthroplasty. Early implant migration in the first 2 postoperative years measured with RSA has been shown to predict long- term implant survival of knee arthroplasty.
Purpose / Aim of Study: To explore the association between preoperative bone quality and tibial component (TC) migration.
Materials and Methods: Longitudinal case study investigating the predictors of TC migration (RSA) at 2 years postoperative follow up in 101 patients (65 female) with total knee arthroplasty (TKA) or unicompartmental knee arthroplasty (UKA). Three TCs were investigated: cementless NexGen trabecular-metal monoblock, cemented NexGen stemmed, and cemented Oxford medial UKA. Predictors comprised clinical risk factors for osteoporosis, DXA, bone turnover markers (BTMs), and osteoarthritis grade. Clinical outcome was assessed by OKS. The acceptable migration threshold at 1 year was set at 0.54mm MTPM according to Piljs et al. (Acta Orthop 2012).
Findings / Results: Patients had a mean age of 67.7 years (range 39-87), and 15 had osteoporosis. At 1 year, 52.5 % had a migration below the "acceptable" threshold, and the remaining TCs were considered "at risk" for later premature failure. There was no significant difference in BTMs and the grade of osteoarthritis between groups below and above the acceptable migration threshold ($p>0.07$), and mean total OKS score was similar between the two groups ($p=0.65$). We found no difference in TC MTPM at 2 years (3 implant types combined) comparing patients with and without osteoporosis ($p=0.34$). Implant sub-type TC MTPM migration was also alike for patients with and without osteoporosis ($p>0.06$).
Conclusions: Migration of tibial components was not affected by preoperative osteoporosis, bone turnover markers and local osteoarthritis grade in the knee.

No conflicts of interest reported

Preoperative Patient Reported Outcome Measures in the Prediction of Outcome in Arthroplasty of the Basal Joint of the Thumb

66.

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Background: Indication for thumb carpometacarpal joint (CMC-1) arthroplasty is clinical and radiographic osteoarthritis of the joint resistant to conservative treatment.
Purpose / Aim of Study: The purpose of this study was to evaluate Patient Reported Outcome Measures as a predictor of outcome.
Materials and Methods: 157 consecutive patients prospectively answered Quick-DASH questionnaire preoperatively and at 6 months following interposition arthroplasty of the basal joint of the thumb. Student T-test was used comparing pre- and postoperative values. The questionnaires ability to predict outcome was assessed using multiple regression analysis. $P<0.05$ was considered statistically significant.
Findings / Results: The mean preoperative Quick-DASH was 46.41 (SD 15.64). The mean postoperative Quick-DASH was 22.89 (SD 19.40). Showing an average improvement of 23.52 (SD 24.93), $P < 0.0001$. The mean improvement in Quick-DASH values for patients who were satisfied (n=122) or unsatisfied (n=35) was 28.89 (SD21.71) and 4.81 (SD 26.67), respectively, $P = 0.00012$. The multiple regression analysis showed a correlation between the preoperative Quick- DASH and the improvement in Quick- DASH, $P < 0.0001$. I.e. a higher preoperative score resulted in greater improvement. Age and gender did not correlate with the postoperative values $P = 0.127$ and 0.377, respectively. A preoperative Quick-DASH score of less than 30 resulted in improvement at follow-up in only 54 % of patients.
Conclusions: CMC-1 arthroplasty is an effective treatment of thumb CMC osteoarthritis. There is a strong correlation between the preoperative Quick DASH and the improvement in Quick- DASH at 6 months follow-up. Quick-DASH score may therefore assist in the decision making in the operative treatment of osteoarthritis of the basal joint of the thumb.

No conflicts of interest reported

EQUIVALENT FEMORAL STEM FIXATION WITH HI-FATIGUE AND PALACOS BONE-CEMENTS. A 2 YEAR RANDOMIZED CONTROLLED TRIAL WITH RADIOSTEREOMETRIC ANALYSIS

67.

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Background: Long-term fixation of cemented femoral stems relies on several factors including cement-adhesion and -fatigue. Hi-Fatigue Bone Cement (HF) is a third-generation high viscosity bone cement that initially, during and after mixing, has a lower viscosity compared to Palacos® Bone Cement (P). This allows for low porosity, good mechanical strength, and a stable bone-cement interface with optimal bone penetration. P shows excellent 10-year survival with CPT-stem (98.7%) and is considered gold standard. Subsidence of cemented femoral stems at 2-year follow-up has been shown to predictive of revision.
Purpose / Aim of Study: The purpose of the study was to compare stem subsidence after fixation with HF and P bone cements.
Materials and Methods: The study design was a patient- blinded, randomized, controlled study. Based on a sample size calculation, fifty-two patients with osteoarthrosis (age>70, t-score>-2.5) were block- randomized to HF (Zimmer) or P (Haereus). Patients received CPT stems (12-14 conus Cr-Co) (Zimmer) and 6-8 tantalum beads. Bone- cements were vacuum-mixed and the time for cement phases systematically registered. Supine stereoradiographs were obtained, and clinical outcomes were OHS and VAS pain. Follow-up was performed at postop, 3 and 6 months, 1 and 2 years.
Findings / Results: Mean subsidence was similar (p=0.68) for HF (1.12 mm (SD 0.42)) and P (1.19 mm (SD 0.38)). There were no differences in total translation (p=0.67) and total rotation (p=0.15). Mean OHS was 41.5 (SD 8.6) and mean VAS pain was 1.1 (SD 2.2) (p>0.78). Cement working times were similar, but the curing time was longer for H (13:43 min) than for P (11:35 min) (p= 0.00).
Conclusions: Fixation of the CPT femoral stem was equivalent with Hi-Fatigue and Palacos bone cements up to 2 years follow-up. Based on the predictive value of RSA we also expect equivalent long-term results.

No conflicts of interest reported

Effect of preoperative methylprednisolone on orthostatic hypotension during early mobilization after total hip arthroplasty - a randomized, double-blind, placebo-controlled trial

68.

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Background: Orthostatic hypotension (OH) and intolerance (OI) are common after total hip arthroplasty (THA) and may delay early mobilization as well as increase the risk of fainting and falling. The pathology of OH and OI includes a dysregulated postoperative vasopressor response, by a hitherto unknown mechanism.
Purpose / Aim of Study: We hypothesized that OH and OI could potentially be related to the inflammatory stress response which is inhibited by steroid administration. Consequently, this study evaluated the effect of a preoperative high- dose methylprednisolone on OH and OI early after THA.
Materials and Methods: A randomized, double-blind, placebo-controlled study in 59 patients undergoing elective unilateral THA with spinal anesthesia and a standardized multimodal analgesic regime. Patients were allocated (1:1) to preoperative intravenous (IV) methylprednisolone (MP) 125 mg or isotonic saline (C). OH, OI and cardiovascular responses were evaluated using a standardized mobilization protocol preoperatively, 6, and 24 hours after surgery. Systolic (SAP) and diastolic (DAP) arterial pressure and heart rate (HR) were measured non-invasively (Nexfin®). The systemic inflammation was monitored by C- reactive protein (CRP).
Findings / Results: At 6 hours postoperatively, 11 (38%) versus 11 (37%) patients had OH in group MP and group C, respectively (RR 0.97 (0.58 to 1.64; p=0.92)), whereas OI was present in 9 (31%) versus 13 (43%) patients (RR 1.29 (0.79 to 2.11; p=0.33)), respectively. At 24 hours postoperatively, the prevalence of OH and OI did not differ between groups (p=0.24 and p=0.11, respectively), though CRP levels were significantly reduced in group MP (p<0.001).
Conclusions: Preoperative administration of 125 mg methylprednisolone did not reduce the prevalence of OH or OI compared with placebo despite a reduced systemic inflammatory response.

No conflicts of interest reported

Incidence of hip and knee replacements in rheumatoid arthritis patients following introduction of biological DMARDs: an interrupted time series analysis using nationwide Danish health care registers

69.

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Background: Previous data have been conflicting regarding an impact of biological Disease Modifying Anti-Rheumatic Drugs (bDMARDs) on the incidence rate (IR) of total hip/total knee replacement (THR/TKR) in rheumatoid arthritis (RA) patients.
Purpose / Aim of Study: To investigate the impact of bDMARD introduction for the treatment of RA on the IR of THR and TKR compared with general population comparators (GPC).
Materials and Methods: Interrupted time-series analysis using the National Patient Register. Each incident RA patient diagnosed at a rheumatology department from 1996-2011 was matched with 10 GPC. We calculated 5-year age- and sex-standardised IR of THR and TKR for RA patients and GPC diagnosed/matched in each 6-month period from 1996-2011. Trends in the pre-bDMARD era (1996-2001) were compared with trends in the bDMARD era (2003-16) using segmented linear regression and a 1-year lag period (2002-03) at the time of bDMARD implementation.
Findings / Results: We identified 30 868 incident RA patients (mean age 58 years, 70% women) and 301 527 GPC. THR: For GPC, the IR increased throughout the entire study period (1996 IR: 2.9/1000 PY; year 1996-2001: +0.11/1000 PY; year 2003-16: +0.02/1000 PY). For RA patients, the IR decreased from 1996 to 2016 (1996 IR: 8.7/1000 PY; year -0.36/1000 PY). TKR: The IR increased among RA patients from 1996-2001 (1996 IR: 5.9/1000 PY; year +0.19/1000 PY), but immediately started decreasing from 2003 (year -0.20/1000 PY). The IR increased in GPC throughout the entire study period (1996 IR: 0.4/1000 PY; year 1996-2001: +0.21/1000 PY; year 2003-16: +0.08/1000 PY).
Conclusions: In 1996, the IR of THR and TKR was 3 and 15-fold higher among RA patients compared with GPC. In RA patients, bDMARD introduction was associated with decreasing IR of TKR, but not THR. IR of THR and TKR increased for GPC throughout the entire study period.

No conflicts of interest reported

Survival of hip resurfacing arthroplasty and the Mitch proximal epiphyseal replacement - Results from the Danish Hip Arthroplasty Registry

70.

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Background: The Mitch proximal epiphyseal replacement (PER) was developed to preserve proximal femoral bone and minimize femoral neck fracture associated with hip resurfacing arthroplasty (HRA). There are no mid-term results on HRA from Denmark and to our knowledge, there are no studies on the Mitch PER.
Purpose / Aim of Study: 1) To study survival and risk of revision for HRAs compared to cementless metal-on-polyethylene total hip arthroplasty (MoP THA). 2) To study the survival and risk of revision for the Mitch proximal epiphyseal replacement (PER) compared to MoP THA.
Materials and Methods: Using propensity score, we matched 1) 1.057 HRA to 1.057 cementless MoP THA and 2) 202 Mitch PER to 1010 cementless MoP THA from the Danish Hip Arthroplasty Register. To estimate the relative risk (RR) of revision, we used regression with the pseudo-value approach and treated death as a competing risk. 95% confidence intervals were estimated.
Findings / Results: 1) Median follow-up was 7.7 (interquartile range (IQR): 6.4-8.4) years for HRA and 7.5 (IQR: 6.2-9.1) for MoP THA. The cumulative incidence for any revision of HRA at 10 years follow-up was 11.0% (CI: 8.5-12.3) and 6.3% (CI: 5.6-6.4) for MoP THA. The RR of revision was 1.57 (CI: 1.16-2.12) for HRAs at 10 years follow-up. By excluding the ASR components, the RR of revision at 10 years was 1.26 (CI: 0.90-1.78). 2) Median follow-up was 6.6 (IQR: 5.8-7.5) years for Mitch PER and 6.6 (IQR: 5.7-7.3) years for MoP THA. The cumulative incidence of revision was 9.6% (CI: 4.2-17.7) for Mitch PER and 5.4% (CI: 5.1-5.7) for THA MoP at 8 years. The RR of revision was 2.08 (CI: 0.97-4.48) for Mitch PER at 8-years of follow-up.
Conclusions: Both HRA and Mitch PER had increased risk of revision compared to the cementless MoP THA. When excluding ASR, the HRA group had similar risk of revision compared to MoP THA.

No conflicts of interest reported

Normal values and variation of acetabular angles measured by computed tomography in normal hips

71.

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Background: Acetabular angles are commonly measured when assessing a person for hip dysplasia but we have little knowledge of normal values of these angles.
Purpose / Aim of Study: The purpose of this study was to report normal values and variation of acetabular angles and to investigate gender differences.
Materials and Methods: Retrospectively, we recruited 96 subjects, 52 females, 63±12 years who had undergone computed tomography (CT) as part of examination for lymphomas in 2013 at Aarhus University Hospital. After CT, the subjects completed the Oxford Hip Score. Eight subjects indicated hip problems and 3 had missing data and those 11 were excluded from the material. The center-edge (CE), the acetabular-index (AI), the anterior-sector (AASA), the posterior-sector (PASA) and the acetabular-anteversion angle (AcAV) for both hips were measured on CT images by an experienced radiologist. The acetabular angles are reported for right and left hip as mean ± SD degrees and compared for females and men by a two-sample t-test.
Findings / Results: The CE angle [right;left] averaged [34±6;35±5]. The AI angle averaged [3±6;1±5]. The AASA averaged [58±7;60±9]. The PASA averaged [94±7;95±7]. The AcAV averaged [18±5;18±5]. The AASA was lower (p=0.03), the PASA higher (p=0.04) and the ACAV higher (p=0.0006) for females compared to men.
Conclusions: We found considerable variation in the normal values for acetabular angles. There were gender differences in the sector angles and for the ACAV, the latter supported by previous studies having described the female acetabulum as being more forward-oriented than those of men. Awareness of normal values is important when we attempt to diagnose the pathological hip conditions.

No conflicts of interest reported

Feasibility and Safety of Same-Day Total Hip Arthroplasty – A Retrospective, Single-Center Observational Study in 116 Patients

72.

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Background: Length of hospital stay (LoS) following Total Hip Arthroplasty (THA) has been markedly reduced and same-day THA was recently introduced. So far, satisfactory safety and patient reported outcomes have been reported from this innovative procedure but a larger cohort is needed to provide data that may establish safety and feasibility.
Purpose / Aim of Study: The aim of the current investigation was to evaluate feasibility and safety of same-day THA in a selected Danish population.
Materials and Methods: Consecutive patients scheduled for same-day THA between Oct 2015 - Jun 2016 were included. Inclusion criteria were primary THA, motivation for a same-day procedure, age >18 years, ASA I or II, and the presence of a support person who remain with the patient 24 hr after surgery. Data were collected retrospectively from local hospital records. Outcome measures were; complications during admission, discharge readiness (before 9 PM), length of hospital stay, causes of delayed discharge, prevalence of readmission and mortality at 90-day follow-up.
Findings / Results: From 669 elective THA patients, 116 subjects were scheduled for same-day THA. 102 of 116 (88 %) were discharged according to plan with a median LoS of 10 hr. Median LoS for patients with delayed discharge was 25 hr. The primary causes of delayed discharge in 14/116 patients (12%) were: dizziness (nausea), pain and wound seepage. No hip dislocation, fracture, or any other serious complications occurred during admission. In 7 patients (6%), perioperative blood loss was above 400 ml, but all were discharged as planned. At follow- up, two patients (1.7%) had been readmitted due to infection and dislocation, respectively. In 114 patients (98 %) there were no readmissions and no fatalities.
Conclusions: The results indicate that same-day THA is feasible and safe in a selected group of patients.

No conflicts of interest reported

Association between periacetabular osteotomy (PAO) and the occurrence of hip dysplasia in among relatives of Danish patients – a cross-sectional study. 73.

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Background: Background: Studies indicate that the risk of hip dysplasia is increased in cases where relatives suffer from PAO, especially first- degree relatives.
Purpose / Aim of Study: Purpose: The aim of this study is thus to investigate the association between uni- or bilateral PAO, the occurrence of hip dysplasia within the family, and the degree of family relations.
Materials and Methods: Material and Method: This cross-sectional study consists of 815 consecutive PAO patients treated from 1998 to 2016. The information about gender, uni- or bilateral PAO and age at the time of surgery was obtained from the clinical PAO database at Aarhus University Hospital. Information about the occurrence of hip dysplasia within the family familial was collected through questionnaires. The association was assessed by using logistic regression analysis, and was divided into 615 unilateral and 200 bilateral PAO patients.
Findings / Results: Results: Patients, who have first-degree relatives with hip dysplasia, had a 72% (OR= 1.72, 95% CI 1.17; 2.50) higher occurrence of bilateral PAO than patients without familial occurrence of hip dysplasia. This association was statistically significant (p=0.005), even when adjusting for gender and age at the time of surgery. Corresponding association was not shown among any other degree of relationship.
Conclusions: Conclusion: Danish patients with hip dysplasia who have first-degree relatives with hip dysplasia have increased odds of being surgically treated for bilateral PAO compared to patients without relatives with hip dysplasia. In other words having bilateral PAO indicates a greater likelihood of hip dysplasia being hereditary. Thus, this study reveals a potential new target group where genetic investigation may identify individuals with higher risk of hip dysplasia.

No conflicts of interest reported

Custom Triflanged Implant in Reconstruction of Severe Acetabular Bone loss and Pelvic discontinuity after Total Hip Arthroplasty. 74.

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Background: Revision of a failed total hip arthroplasty (THA) with massive acetabular bone loss and pelvic discontinuity is a reconstructive challenge. Treatment options includes morselized bone graft and structural allograft used with uncemented hemispherical acetabular components, cages, porous metal augments, and cup- cage reconstruction.
Purpose / Aim of Study: The purpose of this study was to evaluate the use of a new custom-made triflanged implant for acetabular reconstruction.
Materials and Methods: We reviewed 31 patients, mean age 63.7 (48-86) years) with a failed THA and severe bone loss or pelvic discontinuity, that underwent revision THA from 2010 to 2017. Mean follow-up was 44 (10-84) months. The implant for acetabular reconstruction was custom- manufactured from Zimmer Biomet on the basis of a three-dimensional model of the hemipelvis created from computed tomography (CT). Preoperative radiological evaluation was made by x-ray and CT-scan and postoperative evaluation by x-ray. The Harris Hip score was performed and the acetabular bone defects were all classified as type IV/V according to the Gross classification.
Findings / Results: The mean outer diameter of the cup was 56 (52 to 62) mm. No significant intraoperative complications occurred. Mean Harris Hip score was 81 (68-97). Survivorship defined by implant failure was 100% Twenty-eight patients (90%) were free of revision. Four patients experienced dislocation (12%), two treated with a constrained liner. One re-infection (3%) revised and treated with life-long antibiotic.
Conclusions: The Custom made triflange implant for pelvic discontinuity provides a stable and rigid fixation on host bone with overall low early revision rate.

No conflicts of interest reported

A Comparison of Measurements of Center-Edge angle between Supine-Pelvis Radiograph and Supine AP-Hip Radiograph, Intra- and interobserver study

75.

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Background: DDH is one of the common causes of OA of the hip. Wiberg worked out a radiographic measurement, the center-edge angle(CE).
Purpose / Aim of Study: -To compare the reproducibility of CE measurements using Supine AP-Pelvis or supine AP-hip computed radiography (CR) -To investigate intra- & interobserver reproducibility between radiologists & orthopaedic surgeons.
Materials and Methods: We selected CRs of 40 patients, under the age of 60 yrs with a mean age of 40,8. The pelvis & hip CRs of all patients were anonymized & given a random order so that hip and pelvis CRs won't be recognized as paired observations 2 radiologists & 3 orthpaedic surgeons measured CE-angle of both pelvis & hip CRs without instruction/training. 2 weeks after the 1st round all CRs were given a different random order & CE-angles measured again Using Bland Altman Plots to compare the measurements of 1st & 2nd round, and to compare the measurements in pelvis vs. hip CRs. We also measured correlation coefficient for all observers & used Z-test to compare them.
Findings / Results: By using Bland Altman Plots to compare the two rounds, we found rather high limits of agreement (+/- 6-11°) with all observers in angle measurements of both pelvis & hip CRs. The same variation in angle measurements was found by using pelvis CRs or hip CRs. There was high correlation coefficient in all observers between CE angle of pelvis & CE angle of hip CRs, with range of (0,85-0,92), and no significant difference between observers (P- value 0,14-0,47)
Conclusions: There was low reproducibility of CE angle measurements regardless of using pelvis or hip CRs There was no difference in reproducibility between radiologists and orthpaedic surgeons in measurements of CE angle So, CE angle measurements must be interpreted with care, detailed instruction & training of observers in angle measurements may be required.

No conflicts of interest reported

Ultrasound sensitivity and specificity for adverse reaction to metal debris in patients with total hip arthroplasty

76.

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Background: MRI is the most used technique for detection of adverse reaction to metal debris (ARMD), although it is costly and less available than ultrasonography (US). Few studies have measured whether US can detect ARMD.
Purpose / Aim of Study: We aimed to investigate the sensitivity and specificity of US for ARMD in patients with total hip arthroplasty (THA). We also investigated the sensitivity and specificity of US for ARMD in patients with THA with pain.
Materials and Methods: 74 patients with primary unilateral THA were included in a prospective cohort: 37 with modular neck femoral stem, 37 with nonmodular femoral stem. All patients had pain assessed and their operated hip scanned with MRI and US to look for pseudotumour (PT) and trochanteric bursitis. Results of the MRI scans were used as the gold standard when calculating sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of US.
Findings / Results: 21 patients had pain, and 53 patients had no pain. Mean age at surgery and a follow-up of 2.7 years were similar in the two groups. There were 5 PTs in the group with pain and 23 PTs in the group without pain (p=0.183). Prevalence of trochanteric bursitis was similar in the two groups (p=0.07). The sensitivity and specificity of US to detect PTs were 0.67 and 0.91, respectively, with a PPV of 0.82 and a NPV of 0.83. In patients with pain, US had a sensitivity and specificity to detect PTs of 0.60 and 0.88, respectively, and had a PPV of 0.60 and a NPV of 0.88. The sensitivity and specificity of US to detect trochanteric bursitis was 0.07 and 0.84, respectively, with a PPV of 0.09 and a NPV of 0.80.
Conclusions: US cannot replace MRI, but US did find some ARMD not seen on MRI, why it is a useful supplement to MRI for diagnosing ARMD in patients with THA. US did not perform better when used for patients with pain.

No conflicts of interest reported

Preoperative progressive resistance training in patients with hip dysplasia - a feasibility study

77.

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Background: Exercise as treatment for optimizing surgical outcomes of periacetabular osteotomy (PAO) is sparsely investigated. Nevertheless, improving hip muscle strength through progressive resistance training (PRT) may optimize function and outcome of surgery.
Purpose / Aim of Study: To examine if PRT is feasible in patients with hip dysplasia (HD). A secondary purpose was to investigate patient reported outcomes, muscle performance and hip muscle strength following PRT.
Materials and Methods: The patients performed 8-weeks (20 sessions) of supervised PRT. Feasibility was evaluated as adherence, the number of dropouts and adverse events. Visual analog scale (VAS) was reported after each exercise and one day after training sessions. Pre- and post the intervention patients completed the Copenhagen Hip and Groin Outcome Score (HAGOS), performed two hop-tests and had their hip extensor and flexor peak torque assessed by isokinetic dynamometry.
Findings / Results: 16 patients, mean age 28 (range 22-40) years, completed the PRT intervention. No patients dropped out and no adverse events were recorded. Adherence to training was 90.3% ±9.0%. Acceptable pain levels (VAS ≤50) were reported during 95% of exercise sessions and 92.3% when assessed on the day after a training session. Four out of six HAGOS subscales improved ($p < 0.05$), as did standing distance jump (8.3cm 95%CI [1.2, 15.3]) and countermovement jump (1.8cm 95%CI [0.7, 2.9]) on the affected side. Isokinetic concentric hip flexion peak torque showed significant improvements (15.8 Nm 95%CI [5.9, 25.8]) on the affected side, as did isometric hip flexion (11.0 NM 95%CI [1.1, 21.0]).
Conclusions: Supervised preoperative PRT is feasible in patients with HD scheduled for PAO. Furthermore, PRT may improve pain levels, patient reported outcomes, functional performance and hip flexion muscle strength.

No conflicts of interest reported

Short-term result of a pyrocarbon implant in the STT joint for osteoarthritis

78.

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Background: Only one pilot study have been presented in 2006 of a Scaphoid Trapezium Pyrocarbon Implant (STPI) in the scaphoid-trapezium- trapezoid (STT) joint.
Purpose / Aim of Study: In a prospective study to present our short- term results of a STPI implant in the STT joint in patients with osteoarthritis.
Materials and Methods: Postoperatively a cast was used for four weeks followed by rehabilitation. All patients were evaluated preoperatively six, 12 and 26 weeks postop. and then yearly with ROM, grip strength, pinch, key-pinch, VAS scores for pain, Quick-DASH, PRWE and patients satisfaction. X-Ray performed preop., 3 months postop. and thereafter yearly. Twenty-eight patients were operated on, 11 men and 17 women. Mean age was 63 years (51-78).
Findings / Results: Mean follow-up was 24 months (range 3- 48). Extension/flexion of the wrist was preop. 54/60 degrees and at follow-up 54/60 and radial/ulnar flexion preop. 19/41 and at follow-up 14/42. Radial abduction/palmar abduction of the CM1 joint was preop. 42/43 degrees and at follow-up 41/45. Opposition of thumb preoperatively 0.6 cm and postop. 0.1 cm. Grip strength not affected by the procedure, 24 Kg respectively 24 kg. Pinch/key-pinch (Kg) preop.: 4.6/5.0 and at follow-up: 5.4/6.0, (NS/NS). VAS pain (mm of 100) was preop. at rest/activity 47/72 and at follow-up 22/36 ($p<0.01$). Radiographic optimal position of the implant seen in 22 patients and dislocation in two. Quick DASH improved from 49 preop. to 32 $p<0.01$) at latest follow-up. PRWE changed from 63 preop. to 27 ($p<0.01$) at follow-up. Satisfaction (mm of 100) was preoperatively 20 and at follow- up 63 ($p<0.01$). No infections encountered but seven implants (25%) revised.
Conclusions: Short-term results with this STPI pyrocarbon implant in the STT joint are promising concerning pain, PROM, but revision rate was alarmingly high.

No conflicts of interest reported

POLYETHYLENE WEAR OF A DUAL-MOBILITY ARTICULATION IN TOTAL TRAPEZIOMETACARPAL ARTHROPLASTY

79.

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Background: Dual-mobility (DM) articulation provides good stability in trapeziometacarpal (TMC) arthroplasty but the thin polyethylene (PE) liner raises concern about possible wear issues.
Purpose / Aim of Study: To evaluate cup fixation and PE wear of a press-fit conical DM cup.
Materials and Methods: A case-study of the first 111 consecutive patients (111 hands, 89 females) with Eaton stage 2-4 osteoarthritis (June 2013-May 2015). Moovis Elektra 9mm conical press-fit cup with UHMWPE DM liner and 5mm CoCr metacarpal head was used. Model-based radiostereometry (RSA) was used to measure cup fixation and PE wear. Cup subsidence was evaluated in the length axis of the cup. Polyethylene wear was measured as head/neck migration with respect to cup model feature points. Double RSA examinations were obtained for precision (95% agreement limits). RSA and PROMs were evaluated at baseline, 3 months, 1 and 2 years.
Findings / Results: Patients were mean 58 years (range 42-76). Precision was 0.15 mm. Cup subsidence was 0.02 mm (SD 0.35) at 2 years. Total cup translation (TT) at 2 years was mean 0.46 (SD 0.48) mm, and increased from 3 months to 2 years (p=0.01). At 2 years 13 cups (15%) had migrated more than 1mm TT (p=0.00), but no cups were revised. 3 trapeziums fractured intraoperatively and 2 patients had intraprosthetic dislocation of the dual-mobility liner. Clinical function improved (p=0.000) by VAS_rest 3 (SD 3), VAS_activity 5 (SD3), and qDASH 31 (SD 20). Bedding-in of the PE liner was 0.15mm (SD 0.16) until 3 months (p=0.001). PE wear was 0.06mm (0.17mm) from 3 months until 2 years (p=0.002), and 0.003mm (SD 0.13) between 1 and 2 years.
Conclusions: At 2 years followup Moovis Elektra cup fixation was acceptable for most implants (85%) and clinical improvements significant. There was bedding-in of the PE liner until 3 months, but after 1 year PE wear was small.

No conflicts of interest reported

The Pronator Quadratus muscle after volar plating: Ultrasound evaluation of anatomical changes correlated to patient reported clinical outcome

80.

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Background: After volar plating of distal radius fractures (DRF) repair of the Pronator Quadratus (PQ) muscle with sutures has been reported durable. It is not clear how the muscle reacts if not repaired. Furthermore, it is uncertain if a retracted muscle correlates to worse functional outcome or complications.
Purpose / Aim of Study: To investigate with ultrasound the anatomy of the PQ muscle after volar plating with PQ repair or non-repair and to correlate the ultrasound findings to patient reported outcome.
Materials and Methods: The participants were recruited from a clinical trial where they were randomly allocated to repair or non-repair of the PQ muscle after volar plating of DRF. The participants and radiologist were blinded to group allocation. Ultrasounds of both fractured and contralateral wrists were performed three months after surgery. Ultrasound measurements included difference in length of PQ muscles between the injured and un-injured side, retraction of PQ muscles and tendon complications. The length and retraction measurements were correlated to complications and Patient Related Wrist Evaluation (PRWE).
Findings / Results: The mean difference in length between the injured and the un-injured side in the non- repair group was 4.39mm and in the repair group 2.68mm with a mean difference between the two groups of 1.71mm (CI-95% = [0.09; 3.33]; p = 0.04). However, there were no clinically or statistically differences in complications or PRWE between the two groups. Retraction of the PQ muscle was only found in the non-repair group. We found no difference in complications or PRWE between the retracted and non- retracted groups.
Conclusions: PQ length was significantly shorter and retraction significantly larger without repair of the PQ muscle. However, neither length nor retraction correlated significantly with complications or PRWE.

No conflicts of interest reported

SIMILAR PRESS-FIT FIXATION WITH A SPHERICAL AND A CONICAL CUP DESIGN IN THETRAPEZIOMETACARPAL JOINT: A RADIOSTEREOMETRIC ANALYSIS WITH A PIG BONE MODEL

81.

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Background: Cup loosening in trapeziometacarpal (TMC) joint arthroplasty is a problem, and therefore new cup designs have been introduced. We have formerly validated a pig bone model for evaluation of TMC cup fixation by use of radiostereometric analysis (RSA).
Purpose / Aim of Study: to compare bone fixation of a spherical and a conical TMC cup.
Materials and Methods: 9 conical Moovis (Stryker) and 10 spherical "Type T" (Besnoska) cups were inserted into the trapezium equivalent pig bone using original instruments and surgical technique. Periprosthetic 1mm beads were inserted, and the bones were fixed with cement in a 20° angle. Static RSA was performed at baseline, after a low- pressure cyclic test (300 cycles, 150N), and after push-in loading until visual failure (up to 1100N). Cup subsidence was evaluated in the length axis of the cup, and double RSA examinations were obtained for assessment of precision by 95% agreement limits.
Findings / Results: Precision of cup subsidence was 0.1mm, and at 600N push-in load 9 Type T cups and 3 Moovis cups migrated above the precision limit ($p=0.18$). Up to 750N push-in load both cup types migrated ($p<0.04$), but similarly between groups ($p=0.06$), with subsidence of 0.16mm (sd 0.2) for the T type cup and 0.53mm (sd 0.52) for the Moovis cup. In all, 7 Type T cups and 4 Moovis cups failed by visual judgement ($p=0.18$), which coincided with 1mm cup subsidence. The failure pattern was subsidence of 1mm or more associated with a cup tilt of 8° -18° for the Type T cup, while the Moovis cup only subsided.
Conclusions: Cup subsidence was similar with press- fit fixation of spherical and conical cup designs. Both cup types sustained failure loads resembling a forceful pinch (750N). Bone quality is poorer in patients and stresses the importance of osseointegration prior to loaded hand activities.

No conflicts of interest reported

Short-term result of a pyrocarbon implant in the TMC joint for osteoarthritis

82.

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Background: Different prostheses have been used for several decades in the TCM joint with a high revision rate for some prostheses.
Purpose / Aim of Study: To present short-term results of a Pyrocarbon implant (Pyrocardan) in the trapezometacarpal joint (TMC).
Materials and Methods: A pyro disc used as a spacer between first metacarpal bone and trapezium bone. A cast used for 4 weeks followed by rehabilitation. All patients were evaluated preoperatively, 6, 12 and 26 weeks postoperatively and then yearly with ROM, grip strength, pinch, key-pinch, VAS scores for pain, Quick- DASH and patients satisfaction. X-Ray performed preoperatively, 3 months postoperatively and thereafter yearly. Twenty-six patients operated 13 men and 13 woman. Mean age 60 years (45-79). Six additional operations performed on other thumb, finger and wrist joints. One patient operated later with arthrodesis in MP1 joint in same thumb.
Findings / Results: Follow-up was 23 months (range 3-46). Radial abduction/palmar abduction was preoperatively 38/38 degrees and at follow- up 41/41. Opposition of thumb was 0 cm (0-3.5) versus 0.5 (0-5.5) postoperatively. Grip strength in KgF preoperatively was 23 (range 6-50) and at follow-up 27 (7-48), $p<0.05$. Pinch/key-pinch (Kg) preoperatively 4.5/3.7 and at follow-up 5.0/5.6, (NS/NS). VAS pain (mm) was preop. at rest/activity: 48/80 and at follow- up: 11/49, $p<0.05$. Radiographic migration of one implant. Quick DASH preop.: 48 (16-86) and at follow-up; 28 (0-75) ($p<0.01$). Satisfaction (mm of 100) preop.: 20 (0-94) and at follow-up: 79 (5-100) ($p<0.01$). No infection. One implant revised (3.8%).
Conclusions: Short-term results with a pyrocarbon implant in the TMC joint concerning pain, grip strength, Quick-DASH and patient satisfaction are favorable. Longer follow-up and a larger series of patients operated on with this new technique is needed.

No conflicts of interest reported

IDENTIFICATION OF PREDICTORS FOR EFFECT OF OPERATION FOR OSTEOARTHRITIS IN THE TRAPEZIOMETACARPAL JOINT WITH A TOTAL JOINT REPLACEMENT

83.

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Background: The potential effect from a hand operation as well as the potential risk is wide-ranging. An unsuccessful result after hand surgery will not only affect the patient but could also lead to increased expenses for the community (sick days) along with the potential loss of working capacity.
Purpose / Aim of Study: To identify potential predictors of low effect of operation for osteoarthritis in the trapeziometacarpal joint using total joint arthroplasty (TMTJA).
Materials and Methods: The study includes 287 patients with a mean age of 58.8 years (range 41-80) treated with TMTJA. In bilateral patients only data from the hand first treated was used. The patients were followed prospectively with hand function (DASH), pain score at rest and activity (VAS) and grip strength preoperatively and after 12 months. A positive outcome was defined as: DASH improvement >19 point, VAS improvement >3, grip strength improvement >15%. A combined positive outcome was defined as: a combination of at least 2 positive outcomes. Logistic regression was used to test for predictors of a negative outcome.
Findings / Results: There was no effect of age or sex. The probability of a positive outcome depended on the preoperative scores in DASH, VAS and grip strength. This means that if scores were already "good" prior to surgery a positive outcome was difficult to achieve. Preoperative grip strength was the only outcome measure with significant effect on the combined positive outcome ($p<0.001$). 55% had improvements in grip strength, 65% in DASH, 70% in VAS and 70% in combined positive outcome.
Conclusions: There was no isolated predictor for effect of operation with TMTJA. The probability of a positive effect was better with a preoperative high VAS, high DASH and low grip strength.

No conflicts of interest reported

STATIC AND DYNAMIC RADIOSTEREOMETRIC ANALYSIS FOR EVALUATION OF INSTABILITY IN THE DISTAL RADIOULNAR JOINT BEFORE AND AFTER TFCC LESIONS

84.

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Background: Injury of the Triangular Fibrocartilage Complex(TFCC) can lead to distal radioulnar joint(DRUJ) instability. Wrist arthroscopy is the gold standard diagnosing TFCC injuries since current imaging examinations are insufficient.
Purpose / Aim of Study: To evaluate DRUJ kinematics without and with TFCC lesions using radiostereometry(RSA).
Materials and Methods: DRUJ stability of 10 human donor arms were evaluated with static RSA during Piano Key test and with dynamic RSA(dRSA) during radial-ulnar wrist motion. Recordings were obtained before and after cutting first the distal component(dc-TFCC) at the ulnar styloid, and next the proximal component(pc-TFCC) from the ulna fovea. Lesions were checked with wrist arthroscopy. CT based bone models were used for kinematic analysis with non-commercial AutoRSA software. Ulnar variance, DRUJ gapping and DRUJ translation was calculated. Anatomical coordinate system was used.
Findings / Results: Static RSA: The Piano Key test had a mean 1.80mm(CI95 0.64-2.95) DRUJ translation with intact TFCC, increasing to mean 2.66mm(CI95 1.80- 3.52) with dc-TFCC/pc-TFCC lesion($p=0.02$). dRSA: DRUJ gapping and ulnar variance was reduced in ulnar wrist deviation compared to radial wrist deviation with both intact and cut dc-TFCC and pc-TFCC($p<0.01$). The change in gapping and ulnar variance was similar before and after lesion of the TFCC($p>0.07$). DRUJ translation was mean 0.83mm(CI95 0.57- 1.09) with intact TFCC. After dc-TFCC lesion DRUJ translation was similar($p=0.13$), while a combined dc-TFCC/pc-TFCC lesion increased($p=0.02$) DRUJ translation to mean 1.36mm(CI95 0.95-1.77).
Conclusions: Successive lesion of the dc-TFCC and pc-TFCC resulted in increasing DRUJ instability. dRSA is a novel non-invasive, low-dose radiological method. dRSA options in vivo quantification of DRUJ stability in patients during symptom provoking wrist motions.

No conflicts of interest reported

The value of magnetic resonance imaging (MRI) and ultrasound (UL) in diagnosing UCL ruptures of the thumb 85.

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Background: Ulnar collateral ligament (UCL) tear of the first fingers MCP joint is a common injury in the hand that often lead to surgery due to suspicion a Stener lesion. If the UCL is undisplaced, surgery might not be necessary but a reliable diagnostic imaging has not yet been evaluated.
Purpose / Aim of Study: To evaluate if MRI or UL is sufficient to distinguish between different types of UCL lesions in patients with clinical UCL ruptures of the thumb.
Materials and Methods: From 1/6 2014 to 31/5 2017 all patients with a clinical UCL rupture diagnosed in the Emergency Department at Odense University Hospital was referred for a preoperatively MRI and UL of the injured thumb. The MRI and UL was conducted by senior consultants with specialty in musculoskeletal radiology. The result of the MRI and UL was blinded to the hand surgeon who made an intraoperatively assessment of the UCL lesion which was deemed as the Gold Standard (GS). A sample size estimated 30 patients using 99 % sensitivity, 0.05 accuracy and 50 % Stener prevalence. After 15 patients, a new calculation was performed using the actual Stener prevalence yielding 46 patients.
Findings / Results: 50 patients were included. The mean age (standard deviation) was 41.4 (16) and there were 64 % males. 5 patients did not have a UCL lesion and the MRI had 80 % sensitivity (SN) and 100 % specificity (SP) while the UL did not find any normal UCL compared to GS. The undisplaced UCL lesion and no lesion was grouped and MRI had 67 % SN and 96 % SP while UL had 67 % SN and 61 % SP compared to GS. Grouping only Stener lesion, the MRI had 67 % SN and 82 % SP while UL had 42 % SN and 82 % SP compared to GS.
Conclusions: Neither MRI or UL could with 100 % sensitivity diagnose undisplaced or Stener UCL lesions of the thumb in patients with clinical UCL rupture.

No conflicts of interest reported

Management of TFCC injuries – short term results of foveal re-attachment by ulnar tunnel technique

86.

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Background: Today, the most common cause of prolonged pain and disability after distal radius fracture is ulnar-sided wrist pain. Triangular fibrocartilage complex (TFCC) injury is present in up to 80 % of patients with displaced DRF.
Purpose / Aim of Study: We report first experiences with our preferred method of foveal repair in TFCC reconstruction.
Materials and Methods: Between April 2013 and June 2016, 10 patients have been operated arthroscopically, by modified ulnar tunnel technique for foveal re-attachment of TFCC injury. All patients had ulnar sided wrist pain and MR verified foveal TFCC injury. All patients had some grade of instability of the Distal Radioulnar Joint (DRUJ) and a positive hook test. Average time from the injury to the reconstruction was 23 months (3–96 m). There were 4 men and 6 women with a mean age of 24 years (16 – 40y). All patients were immobilized for 3 weeks. Mean follow-up was 24 months (12–48m). Retrospective evaluation included assessment of pain (VAS score), satisfaction, DRUJ instability, range of motion (ROM), grip strength and Disabilities of the Arm, Shoulder and Hand (quick- DASH) Score.
Findings / Results: No complication during the operative procedures or the post-op period was seen. All patients but one achieved full stability and showed improvement at the evaluation as well as full satisfaction. Both grip strength, pain and q-DASH values improved significantly ($p<0.05$). Mean grip strength of the operated hands showed a 23 % increase after the operative treatment (95 % of strength of the contralateral side). ROM improved, especially in pronation and supination. In one case, we observed recurrent pain and instability of the DRUJ.
Conclusions: Preliminary results of foveal repair of the TFCC injury provided satisfactory results with a few observed complications. The presented knotless technique simplifies the procedure.

No conflicts of interest reported

Arthrodesis of the Proximal Interphalangeal Joint

87.

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Background: Arthrodesis of the proximal interphalangeal joint is indicated in patients with painful and incongruent joints. Many techniques have been proposed, but literature on the results is sparse.
Purpose / Aim of Study: The purpose of this study was to assess healing and complication rate after arthrodesis of the proximal interphalangeal joint using plate fixation (PLF) or Kirschner- wire fixation (KWF).
Materials and Methods: We retrospectively analyzed 33 charts with a minimum follow-up of 2 years. 15 patients were operated on with the Leibinger plate, 5 patients were operated with the Variax plate and 13 patients were operated on with KW fixation. Patients were evaluated radiographically and clinically at 6-8 weeks postoperatively. Fisher's exact test was used for binary data and Mann-Whitney test for numerical data. $P<0.05$ was considered statistically significant.
Findings / Results: In 19 of 20 cases, healing was obtained within 8 weeks postoperatively in the PLF group. One patient was not seen until 12 weeks postoperatively, healing was obtained at this point. 8 of 13 cases healed within 8 weeks in the KWF group. 5 cases required more than 8 weeks to obtain healing (range 12-36 weeks) showing a lower fusion rate at this stage as compared to PLF ($P=0.023$). In the KWF group 4 cases had the K-wires removed in an outpatient setting and 4 patients in the OR, one Leibinger plate had to be removed in the OR. One patient had an amputation in the PIP joint after KWF because of continous pain for over 6 months. Mean number of outpatient visits to the clinic following PLF was 4.5 and for KWF 5.53 ($P=0.19$).
Conclusions: Proximal interphalangeal joint arthrodesis can be achieved with either plate fixation or K-wire fixation. Union was eventually obtained in all patients. Fusion time is significantly shorter using plate fixation when comparing to K-wire fixation.

No conflicts of interest reported

Superior Healing in Small Joint Fusion in the Hand Using the Acutrak 2 Headless Compression Screw as Compared to Kirschner Wires

88.

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Ortopædkirurgisk afdeling, Herlev & Gentofte

Background: Various methods for arthrodesis in the small joints of the hand are described and no single method has proven superior.
Purpose / Aim of Study: The purpose of this study was to assess healing and complication rate after arthrodesis of the distal interphalangeal joint or the thumb interphalangeal joint using the Acutrak 2 headless compression screw or Kirschner wires.
Materials and Methods: We retrospectively analyzed 147 consecutive primary fusions performed with the Acutrak 2 headless compression screw (n=107) or Kirschner wires (n=40) in 139 patients. Healing was assessed clinically and radiographically at 6 to 8 weeks postoperatively. Follow-up was 12 months.
Findings / Results: In 95 of 107 cases, healing occurred at 6 to 8 weeks postoperatively following arthrodesis using the Acutrak 2 headless compression screw. Seven cases healed after 8 weeks. Secondary surgery with screw removal was required in 11 cases. In five cases, the screw was removed due to prominence of the screw, in two cases due to infection, and in four cases because of nonunion. In 29 of 39 cases, fusion had occurred at 6 to 8 weeks postoperatively following arthrodesis using Kirschner wires showing a lower fusion rate at this stage as compared to the Acutrak 2 headless compression screw group (Chi-square = 9.5, $p<0.01$). Another eight joints in the K-wire group fused at some point after 8 weeks of follow-up yielding a total fusion rate of 93% which was no different than a total fusion rate of 96% in the Acutrak 2 headless compression screw group (Chi- square = 0.7, $p = 0.4$).
Conclusions: Arthrodesis in the small joints of the hand can be achieved with either the Acutrak 2 headless compression screw or Kirschners wires. A shorter time to fusion using the Acutrak 2 headless compression screw as compared to Kirschner wires should be considered when choosing between the two methods.

No conflicts of interest reported

The effect of cortisone in High-Volume Injection in Chronic Midportion Achilles Tendinopathy – A randomized double-blinded prospective study

89.

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Background: High-Volume Injection therapy (HVI) seems to show promising results in chronic Achilles tendinopathy (AT). HVI consist of a large volume of saline with a small amount of cortisone.
Purpose / Aim of Study: To determine the effect of cortisone in HVI compared to the volume (saline) effect in AT.
Materials and Methods: A total of 28 men (age, 18 to 59 years) with chronic (> 3 month) AT were included and followed for 6 month. All participants performed eccentric training and randomized to either 1) HVI injection with cortisone (HVI+: cortisone, saline and local anesthetic) or 2) HVI injection without cortisone (HVI%: saline and local anesthetic). Outcomes included function and symptoms (VISA-A), self-reported tendon pain during activity (visual analog pain scale [VAS]) and ultrasonographic imaging (tendon thickness and intratendinous vascularity). Outcomes were assessed at baseline and at 6, 12, and 24 weeks of follow-up.
Findings / Results: VISA-A scores improved in both groups at all time points ($p<0.05$), with greater improvement in HVI+ (mean ± SEM; 6- wks=31 ± 3 points; 12-wks=32 ± 5 points) versus HVI% (6-wks=14 ± 3; 12-wks=18 ± 3;) at 6 and 12 weeks ($p<0.05$) but with no differences at 24 weeks (HVI+ = 26 ± 3; HVI% = 24 ± 3). VAS scores improved in both groups at all time points ($p<0.05$), with greater decrease in HVI+ (6-wks= 55 ± 3 mm; 12-wks= 53 ± 5 mm) versus HVI% (6- wks=16 ± 3 mm; 12-wks=25 ± 5 mm) at 6 and 12 weeks ($p<0.05$) but with no differences after 24 weeks (HVI+ = 40 ± 7 mm vs HVI% = 34 ± 6). Tendon thickness showed a significant decrease in both groups at all time-points ($p<0.05$), with a greater decrease in HVI+ versus HVI% at 6 and 12 weeks ($p<0.05$) but with no difference at 24 weeks.
Conclusions: Treatment with HVI with or without cortisone in combination with eccentric training in chronic AT seems effective in reducing pain, improving activity level and reducing ultrasound tendon thickness and intra- tendinous vascularity. HVI with cortisone seemed more effective than without cortisone in the short term, and we argue that there is a cortisone effect in HVI treatment.

No conflicts of interest reported

NO EFFECT OF PLATELET RICH PLASMA AS COADJUVANT TO MI-CROFRACTURE FOR THE TREATMENT OF CHONDRAL DEFECTS

90.

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Background: Microfracture (MFx) remains a dominant treatment strategy for symptomatic articular cartilage defects. Autologous platelet-rich plasma (PRP), may improve biological cartilage repair as an adjunct to MFx.
Purpose / Aim of Study: To assess the histological quality of cartilage repair after MFx with and without repeated local injections of PRP for the treatment of full-thickness focal chondral defects of the knee.
Materials and Methods: Two full-thickness chondral defects (Ø = 6 mm) were surgically performed in the medial and lateral trochlea of each knee in six skeletally mature Göttingen minipigs. The two treatment groups were 1) MFx with one weekly PRP injection for three weeks (n=12), and 2) MFx alone (n=12). The animals were euthanized after six months. Samples of both whole blood and PRP were analysed with an automated hematology analyzer to determine the concentrations of platelets and nucleated cells. The composition of cartilage repair tissue was assessed using gross appearance as-sessment, histomorphometry and semi-quantitative scoring (ICRS II).
Findings / Results: The average fold increase in platelets was 6.2 ± 1.3. Leukocyte concentration decreased in PRP samples by an average fold change of 1.5 ± 0.1. Our macroscopic findings showed that the defects in the MFx+PRP-treated group, were filled with an irregular, partially rough tissue similar to the MFx- treated group. No significant difference in hyalin cartilage, fibrocartilage or fibrous tissue content and ICRS II scores was found between the groups.
Conclusions: Four repeated local injections of leukocyte-reduced PRP after MFx in the treatment of full-thickness cartilage injuries demonstrated no beneficial effects in terms of macroscopic and histological cartilage repair tissue quality.

No conflicts of interest reported

Better failure rates with recent compared to early primary anterior cruciate ligament reconstruction using anteromedial portal for drilling of the femoral tunnel. 91.

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Background: Registry studies have suggested increased revision rates and inferior clinical outcomes when using the newer anteromedial (AM) technique for femoral drill hole placement compared to the more established transtibial (TT) technique in primary anterior cruciate ligament reconstruction (ALC-R).
Purpose / Aim of Study: The aim of this study is to compare the techniques from two different time-periods, namely the period when the AM-technique was initiated and a more recent period when it has been established as a common technique.
Materials and Methods: Respectively 8.436 and 8.862 primary ACL- R were registered in the Danish Knee Ligament Reconstruction (DKRR) between January 2007 to December 2010 and January 2012 to December 2015. Relative risk (RR) for revision ACL-R, positive pivot- shift, increased instability (KT-1000 > 2mm) and patient-reported outcome was used to compare the outcome of the two periods.
Findings / Results: The AM-technique went from being used in 23% in 2007-10 to 84% in 2012-15. The relative risk (RR) for revision surgery in the AM (2007-10) cohort compared to TT (2007-10) cohort was 1.55 (P < 0.00). Comparing AM (2012-15) to TT (2012-15), no difference was found. In the 2007-10 period, the one-year postoperative RR for positive pivot-test was 1.28 (P<0.00), and for instability was 1.45 (P<0.00), both in favour for the TT- technique. There was no significant difference in the period from 2012-15
Conclusions: We found an increased RR of revision ACL- R, increased rotational and sagittal instability when using the AM technique in the period from 2007-10 compared to the TT technique. However, there was no significant difference between the techniques in the period from 2012-2015. This could indicate that the results found in the period 2007-10 may have been caused by a learning curve when introducing a new and more complex procedure (AM)

No conflicts of interest reported

Quantifying the risk of developing knee osteoarthritis following knee injury - a systematic review and meta-analysis

92.

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Background: Knee injury is reported as an osteoarthritis (OA) risk factor.
Purpose / Aim of Study: To quantify the risk of knee OA following anterior cruciate ligament (ACL) injury, meniscal injury or combined ACL and meniscus injury.
Materials and Methods: Five major databases were searched up to April 1st 2015 and references from included studies and relevant systematic reviews were screened. Two authors independently screened and assessed identified studies for eligibility. Inclusion criteria: prospective or retrospective studies, ≥ 2-year follow-up after knee injury, ≥ 18 years, un- injured contralateral knee or matched control group for comparison, knee OA defined by radiographs or symptoms. Risk of bias were assessed by the SIGN50 tool. Meta-analysis applied based on the logarithmic transformed Odds Ratio (OR) of developing knee osteoarthritis. Study heterogeneity were assessed by I-square statistics. Study registration: PROSPERO (ID: CRD42015016900).
Findings / Results: A total of 4559 papers were identified in the search, 261 full-text were screened and 46 papers included. Knee OA diagnosis was based on radiographs in 96% of studies. For ACL injury, 12 studies were included (185.276 participants, mean age 28.0, 35% females), OR for developing knee OA was 4.2 (95% CI: 2.4-7.6). Meniscal injury, 20 studies (6.211 participants, mean age 33.0, 23% females), OR 5.8 (95% CI: 3.9-8.6). Combined injury, 18 studies (1295 participants, mean age 25.5, 32% females), OR 7.0 (95% CI: 4.8-10.4). Inconsistency between study estimates for different injury types were between 57-91%. Risk of bias assessment rated two studies of high quality, 43 acceptable, and one study unacceptable.
Conclusions: The risk of OA development following an ACL or a meniscal injury is 4 and 6 times higher compared to a non-injured knee. When sustaining a combined injury, the risk is 7-fold.

No conflicts of interest reported

One-year results after Pediatric ACL Reconstruction using physeal sparing technique. 93.

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Background: Concern about growth disturbances around the knee after traditional ACL reconstruction in the skeletal immature patient has led to interest in physeal sparing ACL reconstruction techniques. There is limited data that describe clinical results with these techniques.
Purpose / Aim of Study: The purpose of the study was to describe the short-term subjective and objective outcome after physeal sparing ACL reconstruction technique in skeletal immature patients.
Materials and Methods: Until December 2015, 57 skeletal immature patients underwent a physeal sparing ACL reconstruction using quadrupled Semitendinosus autograft using the Flipcutter drilling system (Arhtrex) for the preparation of bone sockets and Tightrope (Arthrex) as both femoral and tibial fixation. The patients had a mean age at 13,5 (11-15) and were assessed preoperatively and one year postoperatively using KT1000, manually pivotshift testing and PEDI-IKDC. The results were compared to a comparable cohort of patients (N=42) operated from 2001-2010 with a transphyseal technique using femoral endobutton fixation and tibial extracortical fixation with washer and bicortical screw.
Findings / Results: In the physeal sparing group the properative KT-1000 laxity was improved from 4,6 to 1,6mm. In the historical group from 5,2 to 1,1 mm. (NS). We found pivot-shift more than grade 1 one year after surgery in 2/57 patients compared to 0/42 the historical group (NS). The mean PEDI IKDC was after one year 86,6 (53-100) compared to IKDC in the historical group 78,6. (NS)
Conclusions: We found good results after one year with physeal sparing ACL reconstruction technique, but with no difference compared to a transphyseal technique. However, we describe early results and longer observation and growth disturbance evaluation is needed to validate the future role of the physeal sparing technique in ACL reconstruction in skeletal immature patients.

No conflicts of interest reported

Changes in total lower limb support moment in middle-aged patients undergoing arthroscopic partial meniscectomy

94.

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Background: The total lower limb support moment (TSM), is the sum of positive sagittal plane moments at the hip, knee and ankle, and is required to support body mass during gait and may be altered following arthroscopic partial meniscectomy (APM).
Purpose / Aim of Study: To test the hypothesis that a) individuals prior to surgery demonstrate reduced TSM and relatively higher distribution of ankle and hip moments as a potential strategy to spare/unload the injured knee and b) following surgery TSM outcome measures of the injured leg will be closer to the contralateral leg.
Materials and Methods: Individuals with a medial degenerative meniscal tear eligible for APM were recruited. To estimate changes in peak TSM, and positive ankle (ASM), knee (KSM), and hip (HSM) moments, 3D motion analysis of walking at self-selected speed prior to APM and 12 months after APM was performed.
Findings / Results: Patients (n = 21) were middle aged (age: 45.9 ± 6.3 years), slightly overweight (BMI: 25.9 ± 3.6 kg/m2) and the majority male (71%). At baseline a statistically significant lower KSM (30%, P = 0.048) and a tendency towards a lower peak TSM (9%, P = 0.099) were observed for the APM compared with the contra-lateral leg. Following surgery a more equal distribution of support moment variables were observed since a statistically significant between-leg change (baseline versus 12 months follow-up) for peak TSM (mean [95% CI]; -0.49 [-0.96; -0.01], P = 0.047) was observed.
Conclusions: Individuals prior to APM demonstrated a potential strategy to spare/unload the injured knee. The observed differences were not present at 12 months post- APM. Whether these changes in TSM strategy should be considered a normalization towards a 'healthy joint load distribution' or a contributor to the high risk of knee OA development in patients undergoing APM needs to be established.

No conflicts of interest reported

Lateral Patellar Instability Treated by Non-Anatomic Functional Reconstruction of the Medial Patellofemoral Ligament Using the Medial Collateral Ligament of the Knee as a Pulley

95.

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Background: In surgical treatment of lateral patellar instability, the reconstruction of the medial patellofemoral ligament (MPFL) has become a gold standard to re-establish the medial soft tissue's strength in restraining lateral patella displacement.
Purpose / Aim of Study: The study investigates the outcomes of a novel operative method for non-anatomic functional MPFL recon-struction using the medial collateral ligament (MCL) as a pulley.
Materials and Methods: The cohort consisted of 149 patients (160 knees) with lateral patellar instability, who underwent MPFL re-construction with the MCL pulley from 2010 to 2015 at Kolding and Odense. Patient records were reviewed retrospectively and a questionnaire study registered patient answers (n = 104; 69.8 %) for the following patient-reported outcome measures: Kujala and Tegner-Lysholm knee scoring scales, EuroQol EQ-5D-3L, and other relevant aspects. Non-parametric statistics were performed due to non-Gaussian distribution.
Findings / Results: 89.4 % of the 160 knee operations had a postoperative course without problems; for 5.0 % and 5.6 % knees minor or major postoperative complications were found respectively. Medial knee tenderness after 6 weeks was registered for 12.5 % of the knees. With an interquartile range (IQR) of 68-91, the median Kujala score was estimated to 81, whilst the Tegner-Lysholm score was 87 (IQR: 74-94). The EQ-5D-3L showed to be 0.84 (IQR: 0.78-1.0). None of the patients characterised their operation as poor, 3.1 % re-ported it as fair, and 96.1 % had a well to excellent result from their operation. Compared to pre-surgery, 2.5 % described a worse knee outcome. 8.2 % no difference and 89.3 % had a better outcome.
Conclusions: Using the MCL pulley in functional reconstruction of the MPFL seems promising with low rate of complica-tions and little or no medial tenderness after 6 weeks.

No conflicts of interest reported

Completeness of the Danish Hip Arthroscopy Registry

96.

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Background: The Danish Hip Arthroscopy Registry (DHAR) started in 2012 to assist in quality assurance of hip arthroscopy in public and private hospitals.
Purpose / Aim of Study: To report completeness of patient characteristics and patient reported outcome measures (PROMs).
Materials and Methods: We analyzed completeness of DHAR by comparing it against the Danish National Patient Register (DNPR) and reported the proportion of registrants in DHAR to DNPR. We further determined if a differential follow-up rate occurred by comparing baseline demographics (age and sex), activity level measured by the Hip Sports Activity Scale (HSAS) and PROMs of those who responded to the 1-year follow-up against those who did not. The PROMs were the Copenhagen Hip and Groin Outcome Score (HAGOS) and the International Hip Outcome Tool – short version (iHOT12).
Findings / Results: From February 2012 to February 2016, 3,016 arthroscopic hip surgeries were registered in DHAR and 5,501 in DNPR. The proportion of completed increased from 35% for the first six months to 43, 57, 59, 61 and 68% for the last period. As of June 2017, 1,594/2,059 (77%) had completed 1-year follow-up questionnaires and 158 patients (<1%) had returned 1-year follow-up questionnaires but were not registered in the surgical database. At 1-year follow-up, more males (45 vs. 39%, $p = 0.021$) and more participating in sports at competitive level (15 vs. 9%, $p < 0.001$) did not respond. Age, all subscales of HAGOS and the iHOT12 score did not differ between responders and non- responders.
Conclusions: During its first four years, the reporting of arthroscopic surgeries in DHAR had increased from 35 to 68%. One-year follow-up data is available for 77%. More commonly, men participating in competitive sports did not return 1-year follow-up questionnaires.

No conflicts of interest reported

Good mid-term results after hip arthroscopy: a retrospective study of 84 patients with femoroacetabular impingement followed for a minimum of 6 year

97.

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Background: Short-term outcome after hip arthroscopy for femoroacetabular impingement (FAI) have been reported to be successful. However, mid-term and long-term outcome are sparsely reported.
Purpose / Aim of Study: To report the mid-term patient-reported outcome in a consecutive cohort and to investigate the relationship between cartilage lesions and the conversion rate to total hip arthroplasty (THA).
Materials and Methods: Eighty-four FAI patients with a joint space width of > 3 mm operated by the senior author were retrospectively followed for 6–8 years. The conversion rate to THA, the peri- operative findings and the patient-reported outcome (HAGOS, HSAS, and EQ5D) were assessed
Findings / Results: Fifteen out of 84 (18 %) patients were converted to THA. The 5-year cumulative conversion rate was 17,1 % (CI: 8.5 %; 24.9 %). The THA group was significantly older (p=0.021), with a mean age of 46.7 years (95% CI: 42.8; 50.6) compared to 39.7 years (95% CI: 36.9; 42.4) in the non-conversion group. In the THA group 13 out of 15 patients were 40 years or older (p=0.009). A high-grade acetabular cartilage lesion was associated with a higher risk of conversion to THA. Thirteen out of 15 with Beck grade 3–4 were converted (p=0.015). No significant associations were observed between the peri-operative findings and PROMs in the non-conversion group. Sixty- four patients out of 69 (93 %) were willing to have the arthroscopy performed again.
Conclusions: The mid-term results of arthroscopic hip- preserving surgery show conversion rates to THA of 18 %, high patient satisfaction and good functional outcome. High-grade cartilage lesions and an age of 40 years and older are risk factors for conversion to THA.

No conflicts of interest reported

Does a clinical algorithm improve the one year results after hip arthroscopy with labral repair ?- a retrospective study

98.

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Background: Hip arthroscopy (HA) is indicated for symptomatic intraarticular pathologies of the hip, not related to hip dysplasia, acetabular retroversion or osteoarthritis. Even though the underlying pathologies are different, clinical symptoms are similar, and triaging these patients to the right treatment is therefore challenging

Purpose / Aim of Study: We aimed to evaluate, if a clinical decision algorithm (CDA) for patients with hip pain could change treatment outcome. We hypothesized that the algorithm would allow early and precise triage and thereby a higher precision of correct treatment

Materials and Methods: We implemented a CDA for patient selection in January 2015. 46 consecutive patients undergoing HA with labral repair one year before (group A) and one year after (group B) implementation were evaluated with Copenhagen Hip And Groin Score (HAGOS) before and 3 and 12 months after surgery. Data were analyzed using a two-way repeated- measures ANOVA test

Findings / Results: There were 46 patients (24 males (M), 22 females (F)), average age 35yr (M) and 37yr (F), of which 20 were in group A and 26 in group B. There were no difference in HAGOS score (each domain) between the two groups prior to surgery. Both groups showed significant improvement in all subdomains of the HAGOS 3 and 12 months after surgery. The improvement from 12 to 52 weeks in the domain Physical Activity was significantly higher in group B compared to group A ($p<0,00$) and near-significant preoperatively to 52 weeks ($p=0,052$). However, when comparing the other domains, no significant differences could be seen between groups after 12 months

Conclusions: This retrospective case-control study support the hypothesis, that a standardized clinical algorithm for patient selection for hip arthroscopy with labral repair is an advantage for treatment outcome, probably due to better patient selection

No conflicts of interest reported

Similar and good fixation of cementless and cemented Oxford® Partial Knee Tibial Trays at 5 years follow-up. A Randomized RSA Study

99.

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Background: Cementless fixation of Oxford® Partial Knee Tibial Trays is gaining in pass on the market and has promising results.
Purpose / Aim of Study: To compare fixation of cementless and cemented (gold standard) Oxford® Partial Knee TT up to 5 years follow-up.
Materials and Methods: 79 patients (48 men) were randomly allocated to surgery with cementless (CL) hydroxyapatite-coated (n=25) or cemented (C) (n=54) Oxford® Partial Knee tibial trays (Biomet) in a multicenter study. Femoral components were either single-pegged or double-pegged in the cemented group and double-pegged in the cementless group. Refobacin bone cement (Biomet Inc.) was used. Evaluation of implant migration, and clinical outcomes (OKS) was performed at 6 weeks, 3 and 6 months, and 1, 2, and 5 years.
Findings / Results: CL migrated more than C at all follow-ups ($p<0.01$), however migration stabilized at 6 months follow-up. At 5 years CL (n=23) migrated 0.49mm (sd 0.34) and C (n=48) migrated 0.38mm (sd 0.63) mean total translation ($p=0.01$). 5 year subsidence was higher for CL compared to C ($p=0.01$). Between 2 and 5 years CL migrated 0.09mm (sd 0.10) and C migrated 0.13mm (sd 0.33) total translation ($p=0.48$). 16% of CL and 22% of C migrated more than 0.2mm total translation between 2 and 5 years follow-up ($p=0.55$). At 5 years mean OKS was 39 (range 12-48) and similar between groups ($p=0.47$) with comparable improvement from baseline ($p=0.18$). 91.6% with C and 94.1% with CL were satisfied with the result ($p=0.91$).
Conclusions: Cementless Oxford® Partial Knee tibial trays migrated initially but stabilized at 6 months probably due to osseointegration. Between 2 and 5 years follow-up cementless fixation was as good as cemented fixation (gold standard). Functional results were good and satisfaction high and equivalent in both groups.

No conflicts of interest reported

Optimal treatment of clavicle fractures is not an "all operative" or "all non-operative" approach: a single-blinded randomised controlled trial comparing non-operative and operative treatment of displaced midshaft fractures. 100.

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Background: Displaced, midshaft fractures represent approximately 50% of all clavicle fractures and have been the subject of an on-going debate as to what type of initial treatment is superior.
Purpose / Aim of Study: To investigate whether operative treatment (OT) compared to non-operative treatment (NOT) results in better patient-reported outcomes for displaced midshaft clavicle fractures in adults and to compare union and reoperation rates between the two groups.
Materials and Methods: A randomised controlled trial with recruitment of 120 healthy adults with an acute completely displaced midshaft fracture, at two Danish Hospitals. By randomisation, patients were allocated to either NOT (simple sling) or OT (locking plate). Follow-up was at 6 weeks, 6 and 12 months. Primary outcomes: DASH and Constant Scores. Secondary outcomes: fracture non-union rate and events leading to secondary surgical interventions.
Findings / Results: Nine were lost to follow-up. Characteristics: median age 38 years (18-63), 84% males and 69% Edinburgh type 2B1 fractures with no statistical difference between the groups. At 6 weeks DASH was better in the OT group ($p < 0.001$), but no between-group differences in DASH or Constant Scores were seen at 6 or 12-month follow-up ($p=0.106$). Secondary surgical intervention was needed in 15 (26%) patients in the NOT group compared to 14 (26%) in the OT group. The non- union rate was 14% (n=8) in the NOT group compared to 2% (n=1) in the OT group ($p=0.004$).
Conclusions: Short-term recovery is better, and the overall union rate is significantly higher following OT. Despite this, we found no difference in functional outcome between the groups at 6 and 12 months. None of the treatment options can claim absolute superiority, and it seems warranted that future treatment strategies involve stratified pathways instead of "all-OT" or "all- NOT" approaches.

No conflicts of interest reported

A randomized study of in-cast intermittent pneumatic foot-compression in the preoperative treatment of malleolar fractures

101.

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Background: Malleolar fractures are often complicated by tissue swelling due to soft tissue injury, haemorrhage and secondary inflammation. This can lead to severe oedema and compromise the ability to perform surgery due to blister formation or the inability to close the skin after surgery. In this situation, the patient's operation are typically delayed. To prevent this, studies has shown that the use of intermittent pneumatic compression (IPC) has the potential benefit of reducing oedema and tissue swelling.
Purpose / Aim of Study: The aim of this study was to investigate whether patients requiring surgery because of malleolar fractures, has a lower diagnosis-to-surgery time when using IPC, than patients without the IPC.
Materials and Methods: Patients were randomized to either in- cast IPC or only cast-immobilization. The attending orthopaedic surgeon decided when the patient was ready for surgery, and was based on objective findings. The IPC was used continuously until arrival at the OR and in both groups extremity was elevated. Based on prior data we performed a sample size calculation estimating a power of 80% (â:0,20) and a significance level of 5% (á:0,05) which estimated a total of 42 patients in each group.
Findings / Results: In the randomized cohort we included 97 patients, 57 women and 40 men with a mean age of 52 (19-83). 48 were randomized to both IPC and cast, and 49 to only cast. In the IPC and bandage group there were an average diagnosis-to-surgery time of 18 hours and in the bandage group 35 hours with a significant difference (P=0.004). We registered 3 delays due to swelling in the IPC and cast group and 13 delays due to swelling in the cast only group (P=0.007).
Conclusions: The use of in-cast intermittent pneumatic foot compression in this randomized study significantly reduced the diagnosis-to-surgery time.

No conflicts of interest reported

Effect of prophylactic high-dose methylprednisolone on postoperative delirium in elderly patients undergoing hip fracture surgery; a double-blind, randomised, placebo-controlled trial.

102.

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Background: Postoperative delirium is a common complication in elderly patients after hip fracture surgery. Neuroinflammation due to stress response might be a key element in the pathophysiological mechanisms to most postoperative delirium.
Purpose / Aim of Study: If prophylactic high single dose methylprednisolone could attenuate the stress response and thereby lower the severity of postoperative delirium in elderly patients after hip fracture surgery.
Materials and Methods: A randomised, double-blind, placebo-controlled trial. Patients were aged ≥ 65 years, admitted with hip fracture and able to give informed consent. They were allocated to receive either i.v. methylprednisolone (125 mg), or placebo as soon as possible after admission and confirmed hip fracture. The primary outcome was severity of postoperative delirium assessed once daily with the Confusion Assessment Method delirium severity scoring system for the first three postoperative days.
Findings / Results: 117 patients were included in modified intention-to- treat analyses of the primary outcome. There was no significant difference in median cumulated CAM-S score between the methylprednisolone group (1 [IQR 0-6]) and the placebo group (2 [IQR 0-9.5]), p= 0.294. The incidence of postoperative delirium (defined as CAM-S > 5) was significantly lower in the methylprednisolone group (10 out of 59 [16.7%]) compared with the placebo group (19 out of 58 [31.7%] odds ratio [OR] 2.39, 95%CI 1.00 to 5.72;p=0.048). The median cumulated postoperative fatigue score was significantly lower in the methylprednisolone group (5 [IQR 2-6]) compared with the placebo group (6[IQR 4-8]), p=0.008.
Conclusions: Prophylactic high-dose methylprednisolone to elderly patients with hip fracture might have a preventive effect on postoperative delirium and fatigue after surgery.

No conflicts of interest reported

Quadricepstendon grafts reduce donor site morbidity for anterior cruciate ligament reconstruction compared to hamstring graft - a prospective and randomized study

103.

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Background: Anterior Cruciate Ligament reconstruction (ACLR) with quadricepstendon graft (QTB) has recently shown reduced donorsite morbidity compared to patellatendon graft. Hamstring graft is the most used graft type for ACLR. It is unknown if QTB graft also reduce donor site morbidity compared to hamstring graft and whether knee stability and function are similar to hamstring graft.
Purpose / Aim of Study: The purpose of this study was to compare clinical outcome including donorsite morbidity of ACLR using QTB or hamstring graft in a prospective randomized study. We hypothesized reduced donorsite morbidity for QTB grafts compared to hamstring grafts.
Materials and Methods: From 2013-15, a total of 99 patients were included in the present study. Inclusion criteria were isolated ACL injuries in adults. 50 patients were randomized to QTB grafts and 49 to hamstring grafts. Anteroposterior knee laxity measured with a KT-1000 arthrometer. Patient evaluated outcome were performed by KOOS, subjective IKDC score and Tegner function score. Donor site morbidity was evaluated by the validated "Donor-site-Related Functional Problems following ACL reconstruction score and a detailed questionnaire.
Findings / Results: Donor site symptoms were present in 30 % of patient in the QTB group and 52 % of patients in the hamstring group ($p < 0.05$). The donor site morbidity score was 82 and 74 for the two graft types ($p < 0.05$). At one- year follow-up there was no difference between the two groups regarding subjective patient outcome, knee function and objective knee laxity.
Conclusions: The use of the Quadriceps Tendon Bone graft results in less donor site morbidity than hamstring BTB grafts and has similar subjective and knee stability outcome. The QTB graft could be a better graft alternative for ACLR than hamstring grafts.

No conflicts of interest reported

NO EFFECT OF PLATELET RICH PLASMA AS COADJUVANT TO AUTOLOGOUS PARTICULATED CARTILAGE FOR THE TREATMENT OF CHONDRAL DEFECTS

104.

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Background: Repair of chondral injuries by use of cartilage chips has recently demonstrated clinical feasibility. Autologous platelet-rich plasma (PRP), may offer promise in improving clinical outcomes as an adjunct to cartilage chips treatment.
Purpose / Aim of Study: To assess the histological quality of repair cartilage tissue after autologous cartilage chips treatment (CC) with and without repeated local injections of PRP for the treatment of full-thickness focal chondral defects of the knee.
Materials and Methods: Two full-thickness chondral defects (Ø = 6 mm) were surgically performed in the medial and lateral trochlea of each knee in six skeletally mature Göttingen minipigs. The two treatment groups were 1) CC with one weekly PRP injection for three weeks (n=12), and 2) CC alone (n=12). The animals were euthanized after six months. Samples of both whole blood and PRP were analysed with an automated hematology analyzer to determine the concentrations of platelets and nucleated cells. The composition of cartilage repair tissue was assessed using gross appearance as-sessment, histomorphometry and semi-quantitative scoring (ICRS II).
Findings / Results: The average fold increase in platelets was 6.8 ± 1.7. Leukocyte concentration decreased in PRP samples by an average fold change of 1.9 ± 0.8. Histological evaluation demonstrated no significant difference in hyalin cartilage (CC+PRP: 18.7% vs. CC: 19.6%), fibrocartilage (CC+PRP: 48.1% vs. CC: 51.8%) or fibrous tissue (CC+PRP: 22.7% vs. CC: 21.8%) between the treatment groups.
Conclusions: Four repeated local injections of leukocyte-reduced PRP after CC in the treatment of full-thickness cartilage injuries demonstrated no beneficial effects in terms of macroscopic and histological repair tissue quality.

No conflicts of interest reported

Tranexamic acid does not increase the postoperative risk of cardiovascular events or death after total hip arthroplasty surgery. A population-based study from the Danish Hip Arthroplasty Register

105.

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Background: There remain concerns that routine use of tranexamic acid (TXA) during primary total hip arthroplasty (THA) might increase the postoperative risk of cardiovascular events. We aimed to estimate the risks of primarily venous thromboembolism (VTE) and secondarily; deep vein thrombosis (DVT), pulmonary embolism (PE), myocardial infarction (MI), ischemic stroke and all-cause mortality within 30 days after surgery.
Purpose / Aim of Study: To determine the safety of perioperative tranexamic acid during primary THA in Denmark.
Materials and Methods: Using the Danish Hip Arthroplasty Register, the Danish National Patient Register and the Danish National Database of Prescriptions we included a total of 45,290 patients with primary THA from 2006 to 2013. 38,586 patients received perioperative TXA while 6704 did not. 1:2 Propensity score matching on age, gender, year of surgery, known risk factors for cardiovascular disease, the Elixhauser Comorbidity Index and income resulted in a final cohort of 6002 and 12,004 individuals, unexposed and exposed to TXA respectively. Cox regression survival analysis was used to calculate hazard ratios (HR) and 95% confidence intervals (CI) for the validated outcomes.
Findings / Results: In the matched cohort we found no statistically significant effect on VTE (HR = 1.18; 95% CI, 0.83- 1.68), DVT (HR = 1.15; 95% CI, 0.78-1.68), PE (HR = 1.50; 95% CI, 0.60-3.78), MI (HR = 0.83; 95% CI, 0.46-1.50), ischemic stroke (HR = 0.89; 95% CI, 0.39-2.01) or all-cause mortality (HR = 0.73; 95% CI, 0.41-1.28).
Conclusions: Use of TXA is not associated with the risk of VTE, DVT, PE, MI, ischemic stroke or all-cause mortality after primary THA. Perioperative use of TXA for primary THA seems safe.

No conflicts of interest reported

Cup orientation after total hip arthroplasty is not challenged by obesity or preoperative anatomical properties of the acetabulum. 106.

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Background: Acetabular component orientation is a crucial parameter in predicting unfavourable clinical results following primary Total Hip Arthroplasty (THA), such as dislocation or bearing surface wear. Therefor factors, which can potentially influence cup positioning following THA, should be substantially studied.
Purpose / Aim of Study: Study of influence of easily identifiable preoperative radiographic features and demographic parameters on cup malpositioning after primary THA.
Materials and Methods: 1326 consecutive and unselected patients received primary uncemented THA, between 2011 and 2015. Standardized posterolateral approach, by 9 high volume surgeons was used. Sex, age, American Society of Anesthesiologists score (ASA), BMI, Tönnis score, Lateral Center Edge angle (LCE) and Anterior Center edge angle (ACE) were registered. Postoperative features such as abduction and version of the cup recorded. Logistic regression models were used to analyse probability of cup malpositioning.
Findings / Results: There was not any significant higher risk of cup malpositioning in patients with BMI over 30 when compared with patients with lower BMI (Odds Ratio: 0.89, 0.67-1.20, P-value: 0.45). Patients with preoperative severe osteoarthritis did not have a higher risk of postoperative cup malpositioning (Odds Ratio: 1.10, 0.80-1.49,P-value: 0.56). Neither ACE between 30 and 50 degrees (OR: 0.76, 0.55-1.05, p: 0.09) nor ACE > 50 (OR: 0.70, 0.46-1.05, P: 0.08) pose a special risk to cup malpositioning.
Conclusions: Neither BMI nor preoperative anatomical status seems to be a predictive preoperative factor for malpositioning of the cup after primary THA. This could be explained by the posterolateral approach, which allows the surgeon excellent visibility or the experience of high volume surgeons might play a role.

No conflicts of interest reported

107.

Statin treatment is not associated with the postoperative risk of cardiovascular events or death after total hip arthroplasty surgery. A population-based study from the Danish Hip Arthroplasty Register.

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Background: Statins may reduce the risk of postsurgical cardiovascular complications following non-vascular surgery.
Purpose / Aim of Study: To determine whether short-term preoperative statin treatment was associated with a reduced risk of cardiovascular events after total hip arthroplasty (THA).
Materials and Methods: Using the Danish Hip Arthroplasty Register, the Danish National Patient Register and the Danish National Database of Prescriptions we included 60073 primary THA patients without a history of statin use. Of these 2227 were prescribed statins during the 365 days before their primary THA. 1:4 Propensity score matching new users to non- users of statins on age, gender, year of surgery, known risk factors for cardiovascular disease, the Elixhauser Comorbidity Index and income resulted in a final cohort of 1674 and 6696 individuals. The primary outcome was venous thromboembolism (VTE). Secondary outcomes were deep venous thrombosis (DVT), pulmonary embolism (PE), myocardial infarction (MI), ischemic stroke and all-cause mortality. Cox regression survival analysis was used to calculate hazard ratios (HR) and 95% confidence intervals (CI).
Findings / Results: We found no statistically significant effect on VTE (HR = 1.0; 95% CI, 0.50-1.9), DVT (HR = 1.1; 95% CI, 0.6-2.3), PE (HR = 0.7; 95% CI, 0.1-3.0), MI (HR = 1.2; 95% CI, 0.5-3.0), ischemic stroke (HR = 1.0; 95% CI, 0.2-4.7) or all-cause mortality (HR = 0.3; 95% CI, 0.1-1.1).
Conclusions: Short term statin use before primary THA is not associated with a reduced risk of VTE, DVT, PE, ischemic stroke, MI or death from all causes.

No conflicts of interest reported

Is newer better? Revision risk of total hip arthroplasty with the newer Echo Bimetric stem compared to the preceding Bimetric stem

108.

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Background: In 2010, the cementless Echo Bimetric hip stem was introduced in Denmark. This stem was a redesigned version of the cementless Bimetric stem with a smooth, tapered stem tip; distal extension of the circumferential porous plasma splay; and 2 metaphyseal geometeric options.
Purpose / Aim of Study: We aimed to compare the 5-years revision risk of the total hip arthroplasty (THA) in patients operated with the cementless Echo Bimetric stem and its predecessor, the Bimetric stem.
Materials and Methods: Based on data from the Danish Hip Arthroplasty Register, all cementless THAs with the cementless Echo Bimetric or Bimetric stem were identified. Patients were followed until revision, death, emigration, or end of study period (May 1, 2017). We performed regression with the pseudovalue approach with death as a competing risk to estimate the relative risk (RR) of any revision with 95% confidence intervals at 5–years follow-up, and adjustments were made for sex, age, primary diagnosis femoral head size, and duration of surgery.
Findings / Results: A total of 28,223 cementless THAs were identified: 2,307 (8%) had the Echo Bimetric stem and 25,916 (92%) the Bimetric stem. The mean follow-up was 2.8 (2.7-2.9) for Echo Bimetric and 7.1 (7.1-7.2) years for Bimetric. At 5-years, the cumulative incidence for any revision was 4.4% (3.1-6.3) for Echo Bimetric and 4.8% (4.6-5.1) for Bimetric. The adjusted RR for any revision of the Echo Bimetric stem was 0.92 (0.75-1.13) compared to the Bimetric stem. Also the adjusted RR for revision due to aseptic loosening of the stem was similar in the two groups (p=0.96).
Conclusions: There was no difference in revision risk between the Echo Bimetric and the Bimetric stem in THA in this study period. Whether the Echo Bimetric stem is superior to the Bimetric stem on the longer term remains to be established.

No conflicts of interest reported

Does year of surgery influence revision risk of cemented primary total hip arthroplasty – results from the Danish Hip Arthroplasty Register (DHR)

109.

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Background: The percentage of patients who received cemented total hip arthroplasty (THA) in Denmark decreased by 60 % from 1995 to 2015. This could affect the outcome of cemented THA due to less experience with the cementing technique.
Purpose / Aim of Study: We aimed to compare the revision risk of cemented THA operated in 4 different time periods from 1995 to 2015 in order to explore time trends in revision risk.
Materials and Methods: All cemented THA registered in the DHR (n=44,254) were included. Dual mobility cups (n=1,731), cancers (n=535), and missing data on confounders (n=61) were excluded. We defined 4 time periods: 1995-1999 (Period 1=reference), 2000-2004 (Period 2), 2005-2009 (Period 3), and 2010-2015 (Period 4). Using regression with the pseudo-value approach with death as a competing risk we estimated the relative risk (RR) of any revision with 95% confidence intervals at 3-months and 6–years follow-up. RRs were adjusted for sex, age, primary diagnosis, femoral head size, and duration of surgery.
Findings / Results: We included 14,366 (34%), 12,210 (29%), 9,442 (22%), and 5,925 (14%) THAs in Periods 1-4, respectively. The cumulative incidences of any revision at 6-years follow-up were 3.5% (3.2-3.8), 2.9% (2.7-3.3), 3.7% (3.3-4.1), and 4.3% (3.8-5.0) for Periods 1-4, respectively. At 3-months follow-up, the adjusted RRs of any revision were 1.67 (1.03- 2.72); 2.80 (1.67-4.69); and 4.36 (1.87-10.2) for Periods 2-4 compared to Period 1. At 6-years follow- up, the adjusted RRs were 0.89 (0.76-1.04) for Period 2; 1.20 (1.02-1.42) for Period 3; and 1.53 (1.18-2.01) for Period 4.d 4.
Conclusions: The RR for any revision was increased for the recent time periods in the immediate postoperative phase and decreased for Periods 2-4 with longer follow-up. The findings may be a result of less experience with cemented THA and possible unmeasured confounding.

No conflicts of interest reported

91% infection free survival after cementless one-stage revision in chronic periprosthetic hip joint infection. 110.

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CORIHA RESEARCH GROUP

Background: Cementless one-stage revision in chronic periprosthetic hip joint infections has been limited evaluated.
Purpose / Aim of Study: The purpose of this study was to evaluate a specific treatment protocol (CORIHA protocol) in this patient group in regards to re-infection, mortality, revisions for other causes than PJI and to perform failure analysis in the cases of re-infection.
Materials and Methods: The study was performed as a multicentre, proof-of-concept, observational study with prospective data collection. Patients included were treated with a cementless one-stage revision according to an a priori defined treatment algorithm at 8 participating departments of orthopaedic surgery between 2009 -2014 and enrolled in a 2-year follow-up program. 10 surgeons performed the procedures with no correlation between surgeon and final outcome. 56 patients were included. All patients had a minimum of 2 years follow-up with a mean follow-up time from the procedure of 4 years.
Findings / Results: The cumulative incidence of re-revision due to infection was 8.9% (CI 3.2%-18.1%). The 1 and 5 year survival incidence was 96% (CI 86%-99%) and 89% (CI 75%-95%). Three patients had an aseptic revision performed: two patients suffered post-operative periprosthetic fractures managed with a relevant osteosynthesis and one patient had stem subsidence with exchange performed, none resulted in re-infection. Failure analysis of the 5 re-infections did not detect a clear pattern as to the cause of failure.
Conclusions: We found that cementless one-stage revision in chronic periprosthetic hip joint infections has low re- reinfection rates in selected patients and is readily comparable to published success rates following a two-stage revision. Cementless one-stage revision in chronic periprosthetic hip joint infections can be used as a valuable first-line treatment strategy.

No conflicts of interest reported

High relative reliability and responsiveness of the forgotten joint score-12 in patients with femoroacetabular impingement undergoing hip arthroscopic treatment. A prospective survey-based study.

111.

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Background: The forgotten joint score-12 (FJS-12) may be an advantageous questionnaire in young patients with high hip function and a low level of pain.
Purpose / Aim of Study: We investigated the reliability and the responsiveness of the FJS-12 in patients with femoroacetabular impingement (FAI) undergoing hip arthroscopic treatment.
Materials and Methods: 50 patients were included in the reliability study and 34 patients were included in the responsiveness study. Test-retest reliability was assessed with intra class correlation coefficient (ICC), standard error of measurement (SEM) and minimal detectable change (MDC). Responsiveness was assessed from testing correlations between the FJS-12 and the Copenhagen Hip and Groin Outcome Score (HAGOS) of the change score, effect size (ES) and standardized response mean (SRM). Floor and ceiling effect was defined as present if the amount of patients obtaining the maximum (100) and minimum score (0) exceeded 15%.
Findings / Results: The relative reliability was high (ICC = 0.9, 95% CI: 0.8-0.9) and the absolute reliability was low (SEM = 11, MDCindividual = 32, MDCgroup = 4.5). The responsiveness was high and the change score was highly correlated with the subscale "pain" from the HAGOS and moderately correlated with the subscale "ADL". Furthermore, the FJS-12 exceeded or equalled the HAGOS subscales in ES and SRM. Below 15% of the patients scored the maximum or minimum score.
Conclusions: The FJS-12 has high reliability, high responsiveness to change and shows no floor or ceiling effect.

No conflicts of interest reported

Intra- and inter-observer variability in computed tomography assessment of gaps after primary cementless total hip arthroplasty

112.

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Background: Progressive radiolucency is often used as a measure of the performance of the cup and bearing surface in total hip arthroplasty (THA). Traditionally, radiolucency is assessed on plain x-rays, but CT scans can accurately assess gaps around the acetabular component. However, it is time consuming. Therefore, a faster measurement protocol was developed to measure total gap dimensions on postoperative CT scans.
Purpose / Aim of Study: The aim was to validate the measurement protocol in terms of accuracy, and intra- and inter-observer variability.
Materials and Methods: Patients (N=41) receiving a primary cementless THA between July 2015 and March 2016 at one hospital that were enrolled in a RCT were included in this study. Post-operative CT scans were analyzed for gaps around the acetabular cup. The protocol is a manual segmentation in axial view at 0%, 12.5%, 25%, 37.5%, 50%, 67.5%, 75%, 87.5%, and 100% of the gap. The slices in between were interpolated by the software. Two observers individually measured the gap volume, and it was compared to full segmentation.
Findings / Results: In 95% of the subjects a gap was found, volume ranging from 0.18 to 7.33 ml (median 2.05 ml). The ICC for intra-observer variability was 0.988 and 0.997. The inter-observer ICC was 0.962. Using linear mixed model, a difference of 0.42 ml (p=0.017) was observed in gap volume between the observers. There was no statistically significant difference observed in volume between the protocol and assessment by full segmentation.
Conclusions: The measurement method is accurate in assessing the gap volume when compared to full segmentation of CT scans. The intra-observer variability is good, and the inter-observer variability is within the levels of expected precision. As bearing surfaces improve and the osteolytic potential decreases, assessment of gaps by CT-scan is a useful tool.

No conflicts of interest reported

Women and patients with high BMI have the lowest preoperative forgotten joint score prior to total hip arthroplasty

113.

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Background: The Forgotten Joint Score (FJS) is a measurement for patients' awareness of their joint in daily life. Identifying factors that can explain preoperative FJS levels, can potentially help the clinician to better prioritize patients for THA (Total Hip Arthroplasty).
Purpose / Aim of Study: The purpose of this study was to identify possible factors that explain the variance of preoperative FJS levels and evaluate the relationship between preoperative FJS and other preoperative Patient Reported Outcome Measures (PROMs) such as Oxford Hip Score (OHS), Harris Hip Score (HHS), EQ-5D and EQ-VAS.
Materials and Methods: Four-hundred and fourty-four hips with completed preoperative PROMs and radiographs undergoing primary unilateral Total Hip Arthroplasty (THA) between December 2014 and June 2016 were included in the study. Age, gender, Body Mass Index (BMI), FJS, OHS, HHS, EQ-5D, EQ-VAS were obtained prior to surgery. Tönnis osteoarthritis grade and joint space width were evaluated on preoperative radiographs. A multiple regression analysis was performed to identify factors that could explain the variance of preoperative FJS and simple linear regressions were performed to predict preoperative FJS from other preoperative PROMs.
Findings / Results: Females and patients with high BMI had the lowest preoperative FJS ($p < 0.005$). Preoperative FJS was best predicted by OHS ($R^2=49.3$) followed by HHS ($R^2=40.3$), EQ-5D ($R^2=22.7$) and lastly by EQ-VAS ($R^2=7.9$)($p < 0.005$).
Conclusions: Women and patients with high BMI had the lowest preoperative forgotten hip joint score and were hence more aware of their hip. FJS had the best correlation to OHS followed by HHS and had the worst correlation to EQ-VAS. This information may be used for improved patient selection.

No conflicts of interest reported

Muscle-tendon related pain in 100 patients with hip dysplasia: prevalence and associations with self-reported hip disability and muscle strength

114.

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Background: Intra-articular injury has been described as primary cause of pain in hip dysplasia. At this point, it is unknown whether external muscle-tendon related pain coexists with intra-articular pathology.
Purpose / Aim of Study: The primary aim was to identify muscle- tendon related pain in 100 patients with hip dysplasia. The secondary aim was to test if muscle-tendon related pain is linearly associated to self-reported hip disability and muscle strength in patients with hip dysplasia.
Materials and Methods: One hundred patients (17 men) with a mean age of 29 +/-9 years were included. Clinical entity approach was carried out to identify muscle-tendon related pain. Muscle strength was assessed with a handheld dynamometer and self-reported hip disability was recorded with the Copenhagen Hip and Groin Outcome Score (HAGOS).
Findings / Results: Iliopsoas- and abductor-related pain were frequently identified with prevalences of 56% (CI 46; 66) and 42% (CI 32; 52), respectively. Adductor-, hamstrings- and rectus abdominis-related pain were less common. There was a significant inverse linear association between muscle- tendon related pain and self-reported hip disability ranging from -3.35 to -7.51 points in the adjusted analysis ($p<0.05$). Likewise an inverse linear association between muscle-tendon related pain and muscle strength was found ranging from -0.11 Nm/kg to -0.12 Nm/kg in the adjusted analysis ($p<0.05$).
Conclusions: Muscle-tendon related pain seems to exist in about half of patients with hip dysplasia with a high prevalence of muscle-tendon related pain in the iliopsoas and the hip abductors and affects patients' self-reported hip disability and muscle strength negatively.

No conflicts of interest reported

Diagnostic performance of post-operative interference gap assessment on plain radiographs after cementless primary THA.

115.

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Background: In clinical settings, implant performance of cementless THA is often evaluated by radiolucency on plain X-rays. Radiolucency on direct post-operative radiographs is often classified as interference gaps. Studies use different criteria to define a gap. However, the diagnostic performance of plain radiographs and the optimal definition for gaps is unknown.
Purpose / Aim of Study: The aim was to evaluate the diagnostic performance of radiographic assessment of post-operative interference gaps after primary THA by comparing it with CT confirmed gaps. The secondary aim was to define optimal cut-off criteria for assessing interference gaps on plain radiographs.
Materials and Methods: Patients (N=40) with a primary cementless THA performed between July 2015 and March 2016 were enrolled in the study. Acetabular radiolucency was assessed on post-operative AP pelvic digital radiographic images by two observers independently. The maximum width and percentage of coverage in the three Delee and Charnley zones were reported. Gap volume was measured by manual segmentation on CT images.
Findings / Results: 95% of patients had a gap on CT. When defining a gap as a lucency >50% of a zone, the interrater agreement was 0.241. Sensitivity was 65.8% for observer 1 (Kappa= 0.432), and 86.8% for observer 2 (Kappa=0.383). When defining a gap as a lucency with a width >1mm, the interrater agreement was 0.302. The sensitivity was 55.3% (kappa=0.452) and 50% (kappa=0.95) for observer 1 and observer 2. The ROC-curve resulted in an optimal threshold of 0.65mm (AUROC=0.888) and 0.31 mm (AUROC=0.961) for the two observers.
Conclusions: The diagnostic performance of plain radiographs to detect interference gaps is not optimal. Evaluating progression of radiolucency on radiographs should be performed in the light of these findings.

No conflicts of interest reported

Association between comorbidity and post-operative health-related quality of life in total hip arthroplasty patients

116.

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Background: By reducing pain and improving hip function, a total hip arthroplasty (THA) improves the health related quality of life (HRQol). However, using patient reported outcome measures, approximately 10% of patients report some degree of dissatisfaction after surgery. The pre- operative comorbidity burden may play a role in predicting THA patients with little or no benefit of a THA.
Purpose / Aim of Study: We examined whether the post-operative patient reported HRQol measured with the EQ-5D at 3 and 12 month of follow-up was dependent of the comorbidity burden in THA patients treated due to osteoarthritis.
Materials and Methods: THA patients treated at the Regional Hospital West Jutland from September 2008 to December 2013 formed the basis for the study. Comorbidity burden was measured with the Charlson Comorbidity Index (CCI). Pre- surgery hospital history for all patients was collected using an administrative database. Patients were divided into three groups; no comorbidity burden, low comorbidity burden (CCI 1-2) and a high comorbidity burden (CCI 3+). Patient reported HRQol was measured using the EQ-5D pre-operative and at 3 and 12 month follow-up. Analysis were carried out with multiple linear regressions and adjusted for age and gender.
Findings / Results: In total 1,582 THA patients were included (86%). A positive association between comorbidity burden and HRQoL was found at 3 month follow up for THA patients with a high comorbidity burden (coef: 0.09 (CI: 0.03 – 0.16) compared to patients with no comorbidity burden. After 12 month follow up there was no association between comorbidity burden and HRQoL.
Conclusions: After 3 month, patients with a high comorbidity burden gained the most from a THA. The lack of association after 12 month may be a consequence of the additional comorbid conditions having a stronger impact on the patient reported HRQol.

No conflicts of interest reported

Topical analgesia prior to percutaneous k-wire removal in upper extremity fractures in children

117.

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Background: Routinely kirshner wires are left above skin level to facilitate removal once the fracture is sufficiently healed. In children wire removal may be associated with pain and discomfort. The procedure is frequently done in the outpatient clinic without any anesthesia or analgesia.
Purpose / Aim of Study: Prior to implementing topical analgesia as a standard procedure, we wanted to evaluate potential benefits of topical analgesia on pain associated with wire removal. We conducted a study comparing the intensity of pain with or without topical analgesia.
Materials and Methods: The study was conducted as a prospective study with 81 patients included in two consecutive groups. Mean was age 8.5 years (range 4-14). The first 40 patients were allocated to wire removal without analgesia. The following 41 patients underwent removal after topical application of Emla (lidocaine, prilocaine) around the wires one hour prior to the procedure. Pain scores were recorded prior to wire removal/application of Emla and after wire removal using FPS-R (4-12 years) and a numerical scale (1-10) (12-17 years) indicating baseline pain and the maximum level of pain. Data were normally distributed and evaluated using student's t-test.
Findings / Results: We found no statistically significant effect of topical analgesia vs. no topical analgesia. Both groups had similar baseline scores; mean 1.1 vs. 1.2 (p=0.78). Increase in the level of pain was 3.7 vs. 2.9 (p=0.28).
Conclusions: Based on this study, topical analgesia does not provide any positive effect on pain related to wire removal. Besides the expenses related to acquisition, application of Emla prolongs the stay in the outpatient clinic for these young patients and may also cause local side effects. Therefore, topical analgesia with Emla is not warranted as a standard procedure for children undergoing wire removal.

No conflicts of interest reported

A Prospective RCT comparing The Fibular Nail vs ORIF in Ankle Fractures in adult patients under age 65

118.

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Background: The standard treatment for lateral malleolar fractures has for a long period been ORIF with screws and plates. In recent years a new fixation, fibular nail, has been developed for treating the fractures in a less invasive manner. An RCT study in the age group above 65 did show an advantage in the form of significantly fewer wound complications and deep infections.
Purpose / Aim of Study: The purpose of this is to compare the outcomes of fibular nailing vs standard ORIF of ankle fractures in patients under the age of 65.
Materials and Methods: The study was conducted as a multicenter, RCT study including Hvidovre University Hospital and Edinburgh Royal Infirmary. All patients between the age of 18-65 suffering a lateral malleolar fracture were included after oral and written consent, independently of an eventual medial malleolar fracture. All patients were followed for two years. The outcome was evaluated as a combination of radiographic results, PROM and a clinical examination including wound appearance.
Findings / Results: A total of 127 patients were included. Three patients withdrew their consent during the course of the study, two with plate and 1 nail. In terms of wound complications, the groups were similar, though there was a tendency towards more wound pain in the plate group. One severe wound breakdown occurred in the plate group. In the nail group five patients had to be treated with a plate, in four due to narrow fibular canal and one due to comminuted distal fracture.
Conclusions: In young patients fibular nailing is a reliable method of fixation, as the ORIF and nail showed equivalent clinical outcomes. Unlike in the elder age group, the nail did not show any significant advantage in preventing wound complications. The nail is an addition to the armoury in the treatment of ankle fractures.

No conflicts of interest reported

Regain of the pre-fracture basic mobility at the time of acute hospital discharge is associated with the risk of 30-day mortality and readmission – A 1-year nationwide register study of 5,554 Danish patients with hip fracture

119.

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Background: The regain of pre-fracture basic mobility status at acute hospital discharge is considered an important first step for patients recovering from a hip fracture (HF). The Cumulated Ambulation Score (CAS) is a validated measure of basis mobility used in all patients with hip fracture in Denmark and registered in the nationwide Danish Multidisciplinary Hip Fracture Database (DMHFD).
Purpose / Aim of Study: The aim of the study was to examine the association between the regain of pre-fracture basic mobility at the time of acute hospital discharge, and mortality and readmission within 30 days post-discharge in patients with HF.
Materials and Methods: Using the DMHFD we identified 5,554 patients, aged ≥ 65 years admitted with an acute HF from Dec.1, 2015 to Nov. 30, 2016, at all the 25 Danish HF operating hospitals, and with both a pre-fracture and discharge CAS score. Regain of basis mobility was defined as achieving the same or above the total pre-fracture CAS score at discharge.
Findings / Results: Only 37.9% (n=2,107) patients regained their pre-fracture basic mobility level, and with a 30-day mortality of 2.3% (n=48) compared with 7.2% (n=246) of patients who did not regain their pre-fracture basic mobility level ($p<0.001$). Correspondingly, 14.5% (n=300) and 17.8% (n=599) of patients were readmitted within 30 days of discharge ($p<0.001$). Crude and adjusted odds ratio for death and readmission will be presented during the DOS Congress.
Conclusions: In this large national HF registry study of 5,554 Danish patients we found that the regain of pre-fracture basic mobility level before acute hospital discharge was strongly related to both 30-day mortality and readmission. This indicates the importance of basic mobility independence as a primary early rehabilitation goal, and that the CAS could be considered as an outcome parameter in other HF registries.

No conflicts of interest reported

Oedema treatment after ankle fracture

120.

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Background: Ankle fractures treated with open reduction internal fixation (ORIF) have a high percentage of wound complications. By reducing the oedema, the wound complications might be lowered.
Purpose / Aim of Study: To investigate the influence of compression stocking (CS) on complications after primary ankle fractures treated with open reduction internal fixation (ORIF).
Materials and Methods: February 1st 2013, CS was introduced as a standard treatment for all patients after surgical treatment with ORIF for ankle fractures for minimum duration of 6 weeks. Data was retrieved from the hospital database 2 years prior and after the introduction date. All health records were reviewed for type of procedure, age, sex, diabetes, smoking, Gustilo-Anderson classification, American Society of Anaesthesiologists (ASA) score, use of tourniquet, suture type, and complications. All x-ray images were classified according to AO- classification.
Findings / Results: 187 patients were included, 74 in the CS group and 113 in the control group. The median (InterQuartile Range – IQR) age was 52.0 (38.8-63.3) years. There were no baseline differences in age, sex, diabetes, smoking, ASA score or open/closed wounds. However, there was a higher percentage in the CS group of tourniquet use ($p<0.001$), monocryl sutures ($p<0.001$), and complex fractures ($p<0.002$). 23.0% had wound healing complications after 6 weeks in the CS group compared to 13.3% in the control group ($p<0.001$). In total, there were 19.5% complications in the CS group and 33.8% in the control group. The were 2.7% major complications within 1 year in both groups ($p<0.765$).
Conclusions: There may be bias in the CS group due to higher rate of tourniquet use, monocryl sutures and complex fractures but CS does not seem to lower the wound complications within 6 weeks after surgery.

No conflicts of interest reported

Knee pain after tibial shaft fracture treated with intramedullary nailing in a 6-year follow-up of 223 cases. 121.

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Background: The treatment of choice for unstable diaphyseal fractures in the tibia is reamed insertion of an intramedullary nail (IMN) with the additional placement of interlocking screws. The most common complication after insertion of an IMN as treatment of tibial shaft fractures is chronic knee pain with reported rates between 10 % and 87 % with a mean of 47,4 % in metaanalyses.
Purpose / Aim of Study: The primary objective of this study is to evaluate the long-term outcome after inserting an IMN in patients with a tibial shaft fracture using an injury-specific questionnaire.
Materials and Methods: This study includes patients operated on five Danish hospitals. A database search was made using operational codes for insertion of an IMN in a five- year period. All patients who had undergone surgery with the insertion of an IMN in the tibia were included. Patients then received a KOOS-questionnaire by mail with questions regarding knee-specific symptoms, stiffness, pain, function and life quality. Questionnaires were filled out and returned to the corresponding physician for further analyze.
Findings / Results: A total of 351 patients were found eligible to enter the study. Questionnaires were sent out and 236 patients responded. 13 did not meet the inclusion criteria and were excluded. 223 (63,5%) patient questionnaires were analyzed. Mean age was 47,9 years at the time of surgery. 63 % were men and 37% women. Follow-up time ranged from 1,7 to 6,7 years. Patients in this study reported worse KOOS- scores than the reference population in all subscales.
Conclusions: With a follow-up time of over 6 years after IMN of tibia shaft fractures, patients experience more knee- specific symptoms, pain, limitations in sports and daily living and the study population reported lower scores of quality of life compared with a reference population.

No conflicts of interest reported

Rates of complications in lateral vs. dual plating in tibial plateau fractures

122.

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Background: Previous studies have shown a preponderance of deep infections and lack of healing in the dual plating treatment, compared to lateral plating in tibial plateau fractures.
Purpose / Aim of Study: To compare the number of complications after osteosynthesis of tibial plateau fractures by dual plating vs. isolated lateral plating.
Materials and Methods: We performed a retrospective cohort study of all patients at Kolding hospital that underwent ORIF for proximal tibia fractures by lateral or dual plating during all of 2010 through 2014. Data was collected by electronic journal review including radiology, physiotherapy and final ambulatory appointment. 107 patients were identified. 18 patients were excluded. Of the remaining 89 patients 11 were treated with dual plating. The mean follow-up time was 10.4 months. We compared both major complications (deep infection, insufficient osteosynthesis, Non-union, post-traumatic arthrosis and other serious complications) and minor complications (superficial infection, wound healing problems, discomfort from implanted material and arthroscopy surgery) between the two groups.
Findings / Results: We found no significant differences in the number of minor and major complications between the two groups. We found a high overall complication rate of 45% compared to earlier studies. Excluding the patients re-operated due to discomfort from the implanted material the rate drops to 37%. For major complications alone, the rate is 21.3%. The deep infections rate (n=4) is 4.5% which equals the rate found in other studies.
Conclusions: Operating a tibial plateau fracture with plating comes with a high risk of complications. Deep infections overall are rare. We observed a high rate of overall complications but no differences between the two groups.

No conflicts of interest reported

Quadriceps tendon rupture. Anchor or transosseous sutures? 123.

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Background: Quadriceps tendon rupture(QTR) is an invalidating injury typically in need of surgical reinsertion. When dealing with ruptures at the tendon-bone junction either transosseous sutures or anchor fixation are the most well described methods for repair.
Purpose / Aim of Study: The aim of this study was to compare these two surgical methods by reviewing the current literature.
Materials and Methods: A systematic search of the literature was performed using MEDLINE, EMBASE and The Cochrane Central Register of Controlled Trials to identify studies using either transosseous sutures or anchor fixation for patients with QTR, with outcome measures being either extension lag, range of motion, re-rupture or Lysholm score.
Findings / Results: 31 studies containing 163 patients were included, and divided in to two groups based on surgical intervention, 10 studies containing 45 patients regarding anchor fixation and 22 studies containing 118 patients regarding transosseous sutures. One study contained both interventions. In the anchor fixation group 3 out of 46 QTRs (6.5%) had an extension lag. No patients had a range of motion <120° postoperatively and no re- ruptures were reported. Average Lysholm score was 91,4. In the transosseous suture group 10 out of 83 QTRs (12.1%) had an extension lag, and 29 out of 95 QTRs (30.5%) had a range of motion <120° postoperatively. 3 re-ruptures out of 145 QTRs (2.1%) were reported. Average Lysholm score was 86.9.
Conclusions: This study may indicate a slight advantage postoperatively regarding extension lag, range of motion, re-ruptures and Lysholm score when operating QTR with suture anchors opposed to transosseous sutures. Given a low patient count, mainly low evidence studies, and a differing amount of patients in the two groups, further studies, preferably randomized controlled studies, must be conducted.

No conflicts of interest reported

Altered long-term health-related quality of life in patients following patella fractures - A long-term follow-up study of 49 patients treated with current methods

124.

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Background: The literature lacks studies providing long- term patient-reported, functional and radiological outcomes on patients with patella fractures treated with modern treatment modalities.
Purpose / Aim of Study: The primary aim was to investigate the long- term health-related quality of life (HRQOL) in adult patients treated for traumatic patella fractures. The explorative aim was to report the associations between HRQOL and knee osteoarthritis, muscle strength and gait function.
Materials and Methods: The study was designed as a cohort study. All patients treated for patella fractures at Aalborg University Hospital between January 2006 and December 2009 were identified. Patients between 18 and 80 years were considered for inclusion. All fractures were either treated with splinting or open reduction and internal fixation. Data were collected by retrospective chart review and clinical examination of patients. The main outcome measure for HRQOL was the EQ5D-5L index score. The classifications by Sperner and Kellgren/Lawrence were applied to evaluate osteoarthritis. Knee and associated knee problems were evaluated with KOOS. Muscle strength was measured with a dynamometer. Gait was analyzed using a pressure-sensitive mat.
Findings / Results: 49 patients were included with a mean follow-up time of 8.5 years (range 7-10) and a mean age of 53.9 years. The mean EQ5D-5L index value was 0.741 (95% CI 0.675-0.807), being significantly worse compared to an established reference population. Knee osteoarthritis, muscle strength and gait patterns were not associated with HRQOL, except for gait speed, which was found to have a weak positive correlation to HRQOL (P=0.03).
Conclusions: At 8.5 years following a patella fracture, HRQOL was significantly worse compared to an age-matched reference population.

No conflicts of interest reported

The diagnostic accuracy of ultrasonography compared to conventional radiography for diagnosis of extremity fractures in the emergency department: a pilot project

125.

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Background: To investigate the chance to adopt ultrasonography (US), a non-invasive technique entailing no exposure to ionizing radiation, for diagnosing fractures performed by non-radiologist physicians.
Purpose / Aim of Study: To compare diagnostic accuracy of radiography and US for diagnosis of suspected extremity fractures. An emergency physician received minimal standardised training in the use of US to evaluate fracture suspicion in extremities. Results were compared with routine radiography. The patient was treated according to the latter. The hypothesis was that US is as sensitive and specific as conventional radiography in diagnosing fractures in extremities.
Materials and Methods: The study was conducted over a 3-month period and included 25 patients with a clinical suspicion of an extremity fracture. The inclusion criteria were a clinical trauma history and a suspected extremity fracture on objective examination. The exclusion criteria were fractures not localised in an extremity, hemodynamic instability, open fractures, neurovascular lesions, deformities indicative of fractures and bones containing orthopaedic hardware. The X-rays were analysed by a radiologist while a blinded emergency physician performed the US.
Findings / Results: Prevalence of fractures was 44%. The sensitivity of US in detecting fracture was 63.64% (95% CI: 30.79;89.0) and the specificity was 100% (95% CI: 76.84;100). The positive predictive value of US was 100% and the negative predictive value was 77.78% (95% CI: 61.56;88.44).
Conclusions: US of suspected extremity fractures is useful and accurate to invalid a fracture suspicion but not reliable to diagnose a fracture. However, due to the small study population, more studies are required before US can be recommended as a screening modality. For future studies, a higher level of training of the ER doctors should be considered.

No conflicts of interest reported

Posterolateral approach to the ankle - early complications following ORIF. Early results from the PRO-Malleol study

126.

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Background: The posterolateral approach to the distal tibia is reported to be safe, allowing anatomical reduction of posterior malleolar fractures improving outcome
Purpose / Aim of Study: To examine postoperative complications within the first 3 months following posterior fragment fixation using variable angle locking plates (VA-LCP) through the posterolateral approach
Materials and Methods: Adult patients with trimalleolar fractures treated with variable angle plate fixation of the posterior fragment through a posterolateral approach, as dictated by a standardized algorithm in our clinic, were included prospectively from June 2016 to January 2017. Radiological and clinical follow-up was performed in a dedicated ankle fracture out-patient clinic as part of the "PRO-Malleol Algorithm study" (clinicaltrials NCT03107767)
Findings / Results: 42 patients with mean age 55y (range 26-79) were included. Thirty patients had AO/OTA fracture type 44B3, and twelve 44C-type (8C1, 3C2, 1C3). 71% of patients were allowed full weight bearing from day one. Two patients had severe complications, one requiring reoperation due to deep infection and one patient suffered severe pain with suspected complex regional pain syndrome. Two patients had superficial wound infection requiring only oral antibiotics. Five patients had superficial wound problems/minor defects without infection, which were managed with conservative treatment in the out-patient clinic and all healed. There were no cases of thromboembolic events
Conclusions: Complications were seen in 21% of patients, 4.7% having severe complications requiring either reoperation, readmission to hospital or with severe impairment of everyday life 3 months after surgery. We believe that the posterolateral approach is safe and that a severe early complication rate <5% can be tolerated for patients with complex trimalleolar fractures

No conflicts of interest reported

Displaced isolated lateral malleolar fractures – Outcome at 3 months following non-operative treatment: Early results from the PRO-Malleol study

127.

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Background: Operative treatment of isolated lateral malleolar fractures is often considered if fracture displacement is >2mm, combined with apparent rotation of the distal fibular fragment
Purpose / Aim of Study: To examine functional outcome after 3 months and need of secondary surgery in a prospective cohort
Materials and Methods: Adult patients with isolated lateral malleolar fractures, without talar shift or observed ankle displacement, were allowed full weight bearing in a walker boot. Patients were reassessed with weight bearing radiographs after 1 week. At follow up (6 and 12 weeks) questionnaires including satisfaction, VAS and Olerud Molander ankle scores (OMAS) were completed. Follow up was set in a dedicated ankle fracture out-patient clinic as part of the "PRO-Malleol algorithm" study
Findings / Results: In 31 of 102 patients treated non-operatively, fractures were displaced >2mm and with apparent rotation of the distal fragment. All 31 patients had AO 44B1/B2.1 type fractures. At 6 weeks all reported to be satisfied, with median VAS score 1.4 and OMAS 43 (fair) [5 – 75]. However, at 3 months 4 patients were not-satisfied, median VAS increased to 1.9 and three patients had persisting pain, no signs of union and later required surgery. Two patients reported decreased sensibility corresponding to the deep peroneal nerve. Median OMAS was 63 (good) [30 – 100] at 3 months. No secondary talar shift or thromboembolic events were observed
Conclusions: 28/31 patients (90.3%) with >2 mm displacement and apparent rotation of the distal fibula were successfully managed non-operatively at 3 months follow up. If long term functional outcome is satisfactory, non-operative treatment should be considered for displaced isolated lateral malleolar fractures, despite a non-union rate of 9,7%, as primary surgical treatment for these patients is also not without risk

No conflicts of interest reported

Composite Biomaterial as a Carrier for Bone Active Substances for Metaphyseal Tibial Bone Defect Reconstruction in Rats

128.

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Background: Method of choice for reconstruction of cavitary bone defects after curettage of bone lesions, such as giant cell tumors of bone (GCT), remain controversial. Local zoledronic acid (ZA) has shown promising results as a local adjuvant in the treatment of GCT.
Purpose / Aim of Study: To investigate if a composite biomaterial (CBM) can be used for delivery of ZA, and bone morphogenic protein 2 (BMP-2).
Materials and Methods: 50 Sprague-Dawley rats were allocated to one of five groups (n=10/group) according to treatment of a 3- mm unicortical metaphyseal defect in the proximal tibia: 1) Empty defect; 2) Bone allograft; 3) CBM (CERAMENT™|G, BONESUPPORT AB); 4) CBM and ZA; 5) CBM, ZA and BMP-2. At 4-weeks, in-vivo micro-CT imaging was performed. At 8-weeks, all animals were examined with ex-vivo micro-CT, DXA, and histology.
Findings / Results: In-vivo micro-CT images at 4-weeks showed significantly higher mineralized volume (MV) in the defect in all CBM-treated groups. Ex-vivo micro-CT and DXA at 8-weeks showed that addition of ZA, even without BMP-2, increased MV, although the highest MV was seen in the BMP-2-treated group. Qualitative histological analysis found normal cortical bone architecture in the empty and the allograft groups, without convincing signs of trabecular bone formation inside the defect area. Trabecular bone and remnants of CBM were seen inside the original defect in all CBM-treated groups. The addition of ZA increased cortical thickness, and addition of BMP-2 further increased callus size with a visible callus extending beyond the margins of the old cortex.
Conclusions: The biomaterial used in our study can carry anabolic (BMP-2) and anti-catabolic (ZA) agents, which appears to significantly enhance bone mineralization beyond mere physical defect filling.

Conflict of interest:
Peter Frederik Horstmann: BONESUPPORT AB, Sweden
Lars Lidgren:Board member, BONESUPPORT AB, Sweden

Risk of revision, prosthetic joint infection and death following total hip or total knee arthroplasty in patients with rheumatoid arthritis – a nationwide cohort study from Denmark

129.

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Background: Previous studies have implied that rheumatoid arthritis (RA) patients are at increased risk of prosthetic joint infection (PJI) but not death following total hip and total knee arthroplasty (THA and TKA, respectively). Biological disease modifying anti-rheumatic drugs (bDMARDs) can halt the development of joint erosions in RA, but it is unknown if they affect risks of revision, PJI and death.
Purpose / Aim of Study: To investigate risk of revision (10-year), PJI (1-year) and death (1-year) following THA/TKA in 1) RA compared with osteoarthritis (OA) patients; and 2) bDMARD compared with non-bDMARD treated RA patients.
Materials and Methods: To investigate risk of revision (10-year), PJI (1-year) and death (1-year) following THA/TKA in 1) RA compared with osteoarthritis (OA) patients; and 2) bDMARD compared with non-bDMARD treated RA patients.
Findings / Results: We identified 3913 RA and 120,499 OA patients. RA patients had decreased SHR for revision (0.71; 95%CI 0.57-0.89), but increased SHR for PJI (1.84; 95%CI 1.55- 2.18) and HR for death (1.58; 95%CI 1.47- 1.69) compared with OA patients. In DANBIO, 345 of 1946 registered RA patients with THA/TKA received a bDMARD within 90 days before surgery. These patients did not have a statistically significant increased SHR for PJI (1.61; 95%CI 0.70-3.69) nor HR for death (0.75; 95%CI 0.24-2.33) compared with non- bDMARD treated.
Conclusions: We found an increased risk of PJI and death in RA compared with OA patients following THA/TKA. bDMARD exposure was not associated with statistically significant increased risks of PJI nor death; however, estimates were numerically increased and more studies are needed to confirm no excessive risk exists.

No conflicts of interest reported

Microcalorimetric detection of staphylococcal biofilm growth on various prosthetic biomaterials after exposure to daptomycin

130.

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Background: Prosthetic joint infection involves bacterial biofilm formation.
Purpose / Aim of Study: Primary aim of this in vitro study was to test the efficacy of daptomycin to eradicate staphylococcal biofilms on various orthopedic implant surfaces and materials. Secondary aim was to quantitatively estimate the formation of staphylococcal biofilm.
Materials and Methods: We tested six clinically important biomaterials: cobalt chrome alloy, pure titanium, grid-blasted titanium, porous plasma-coated titanium with/without hydroxyapatite, and polyethylene. Biofilms of S. aureus and S. epidermidis were formed on the samples and thereafter exposed to daptomycin. Samples were subsequently sonicated in order to detect dislodged biofilm bacteria and transferred to a microcalorimeter for real-time measurement of growth related heat flow. Minimal biofilm eradication concentration (MBEC) was determined as the lowest concentration (mg/L) of daptomycin required to eradicate the biofilm bacteria on the sample. The time (hours) to detection expressed as the heat flow >50 µW (TTD- 50) indirectly quantifies the initial amount of biofilm bacteria, with a shorter TTD-50 representing a larger amount of bacteria.
Findings / Results: Median MBEC of S. aureus biofilm on smooth metallic surfaces was significantly lower than the rough metallic surfaces. Variations of MBEC in experiments with S. epidermidis biofilms on test samples with smooth or rough surface was found non-significant. Mean TTD-50 of S. aureus biofilms on rough metallic samples was significantly lower than smooth metallic samples and polyethylene. Mean TTD-50 with S. epidermidis biofilm on smooth metals was also significantly higher than their rough counterparts.
Conclusions: Growth of biofilm bacteria on orthopedic materials are variably influenced by exposure to the potent antimicrobial effect of high-dose daptomycin.

No conflicts of interest reported

Radiographic biodegradation patterns of a hydroxyapatite / calcium sulfate biocomposite. Results from a large animal bone defect model.

131.

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Background: Ceramic biomaterials can be used as bone graft substitutes for reconstruction of bone defects. However, post-operative imaging features are often unique and difficult to interpret, particularly without histological correlation.
Purpose / Aim of Study: The aim of this study was to establish a clinically relevant large animal bone defect model that allows further characterisation, analysis and correlation of imaging and histology findings.
Materials and Methods: Standardised bone defects (diameter 2.5cm, depth 2cm, volume approx. 10ml) were created in the medial femoral condyles of ten merino-wool sheep (age 2 -4 years). The defects were filled with a ceramic biomaterial (Cerament BVF or G), allograft or left empty for comparison. After the initial procedure on the right hind leg, an identical intervention was performed on the contralateral side 3 months later, so that a spectrum of differentially treated bone voids could be obtained by sacrifice at various time points post-implantation.
Findings / Results: We present our radiographic results after a follow-up of 12 months and describe a consistent pattern of radiographic signs of biodegradation of the implanted biomaterial which overlaps the simultaneously ongoing process of bone formation. We consistently observed a radio-dense area in the periphery of the lesion ("halo sign") progressively migrating towards the spherical biocomposite remnant, located at centre of the treated defects ("marble sign"). Both signs became more and more indistinct from surrounding cancellous bone and progressively disappeared with time.
Conclusions: We have established a large animal model, which appears to reproduce comparable radiographic post- implantation features regularly observed in clinical cases. This model provides valuable information regarding conclusive interpretation of basic & advanced imaging features.

No conflicts of interest reported

Characterization of the remodeling events contributing to trabecularization of cortical bone: A study on human fibula diaphysis

132.

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Background: The trabecularization of cortical bone leads to the fragilization of the bones in elderly.
Purpose / Aim of Study: To investigate the intracortical remodeling events contributing to this endosteal trabecularization.
Materials and Methods: Fibular diaphysis specimens from 19 patients (14 men, 5 women, 43–75 years) undergoing a jaw reconstruction. All specimens were plastic embedded, µCT scanned and sectioned along the scanning plan, making it possible to investigate the same canals analyzed in 3D by µCT and in 2D by histology.
Findings / Results: The 3D analysis showed a 3.5-fold higher porosity and canals with a 3-fold larger diameter at the endosteal half compared to the periosteal half. The 2D analysis of these canals as intracortical pores showed that large pores (>100 µm diameter) were 3.3-fold more frequent in the endosteal half than in the periosteal half. A histological characterization of 948 pores revealed that these enlarged pores are preferentially resorptive pores overlapping with the pore of a preexisting parent osteon showing no signs of bone formation. The odds of being such a resorptive pore were 1.6- fold higher in the endosteal half than in the periosteal half, and 6-fold higher in the enlarged pores (>100 µm diameter) than in the smaller pores. The enlarged resorptive pores often resulted in coalescence of two or more pores. The odds of finding these enlarged coalescent resorptive pores were 1.9- fold higher in the endosteal half than in the periosteal half, and 8-fold higher in the enlarged pores (>100 µm diameter) than in the smaller pores.
Conclusions: Both the 2D and 3D analyses showed that the cortical trabecularization may in part result from the accumulation of enlarged resorptive pores/canals in the endosteal part of cortex, suggesting that the bone formation is uncoupled from the bone resorption in these pores.

No conflicts of interest reported

Regenerative tissue after matrix-associated cell implantation has better quality using amplified chondrocytes compared to synovial derived stem cells in a rabbit model

133.

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Background: The autologous chondrocyte implantation is an accepted method to treat cartilage lesions. However, known problems regarding donor site morbidity and the 2-step design make the search for cell alternatives ongoing.
Purpose / Aim of Study: Aim of the study was to test the potential of SMSC to regenerate cartilage using a matrix-associated implantation.
Materials and Methods: SMSC were able to form cartilage in- vitro. In an osteochondral defect model of the medial femoral condyle in rabbits, a collagen type I/III membrane was seeded with either amplified allogenic chondrocytes or SMSC and then transplanted into the lesion. A tailored piece synovial membrane served as a control. Besides macroscopic and histological evaluation, the regenerated tissue was examined biomechanically analyzing thickness, instant and shear modulus.
Findings / Results: The evaluation of the macroscopic degree of healing using the ICRS score and the area of healing did not show differences between the groups after 6 weeks. Moreover, the thickness of the regenerated tissue was higher in all intervention groups than in natural cartilage, but there was no difference between the groups. However, the instant and shear modulus, reflecting the biomechanical strength, was superior in the implantation group using chondrocytes. Histologically, the regenerated lesions after matrix- coupled chondrocyte implantation had a more chondrogenic structure and expressed more proteoglycans, which was reflected by a lower Pritzker Score compared to the controls. In the repair tissue of all groups the collagen types I, II, X were expressed without statistical differences.
Conclusions: Regenerated cartilage using undifferentiated SMSC for matrix-associated implantation in a defect model in rabbits did not show a comparable or higher quality than the current standard utilizing amplified chondrocytes.

No conflicts of interest reported

Time spent on alcohol rub prior to surgery – Does time feel faster with increasing age? 134.

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OMG - Orthopedic Myth Grinders

Background: Guidelines recommend pre-wash followed by antisepsis using alcohol rub for 120 sec. Senior surgeons seem to possess the ability to perform a full surgical hand antisepsis in no time while younger surgeons are left scrubbing and rubbing for infinity. Possibly due to a changed perception of time as mental timing of 120 sec is reduced by 28.3 sec in persons over 50 years compared to under 30 years.
Purpose / Aim of Study: To investigate if time spent on surgical hand antisepsis declines with age, and whether this can be explained by senior surgeons' perception of time.
Materials and Methods: The study was performed as a cross sectional study at three orthopedic departments in Denmark. First, 32 orthopedists at different age were secretly timed during alcohol rub prior to surgery. Secondly, the individual perception of 120 seconds was examined on 64 orthopedists. Attitude towards surgical hand antisepsis was surveyed with a questionnaire send to all orthopedists at the departments.
Findings / Results: Orthopedists under 50 years of age used significantly longer time (mean 112 vs 74) on alcohol rub (p=0.034). No significant difference in perception of time (mean 135 vs 123) between orthopedists over and under 50 years (p = 0.102) was found. Nor was there any significant difference between age groups or rank when asked if they performed hand disinfection according to guidelines.
Conclusions: Orthopedists are not affected by mental aging as is the case in the normal population. Furthermore, orthopedics seem to be able to accelerate time when in the operating theater, a capability that is increasingly acquired with age. Orthopedists are aware of standard guidelines and convinced they follow them. This study presents new observations adding to the mythic nature of the orthopedic surgeon. Further studies are needed to understand the depth of the mystery.

No conflicts of interest reported

Identification of procedures for simulation-based training in orthopedic surgery through a national general needs assessment

135.

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Background: Simulation-based training as an educational modality has grown increasingly popular over the last two decades. However, many interventions have relied more on what simulators were commercially available or local interests as opposed to the need of the trainees. This is in contrast to the theory that curriculum development is a stepwise approach starting with needs assessment.
Purpose / Aim of Study: The aim of this study was to conduct a national general needs assessment to identify technical procedures within orthopedic surgery that should be integrated into a simulation-based curriculum
Materials and Methods: A three-round iterative Delphi method was completed. Key persons (n=97) in the educational milieu were selected to participate. Round 1 was brainstorming where all possible procedures for simulation training were identified. In round 2, each department (n=27) answered a survey exploring frequency of procedures, how many should perform the procedure and risk for patients. Feasibility for simulation was explored by a steering group. In round 3, the key persons had the opportunity to eliminate and re-prioritize items from the prioritized list created during round 2.
Findings / Results: Round 1 had a response rate of 66%, round 2 100% and round 3 65%. In round 1, 194 items were included and after round 3, they were reduced to a prioritized list of 34 procedures. The five highest ranked procedures were 1) Basic principles of osteosynthesis, 2) Osteosynthesis of proximal femur fracture, 3) Surgical approaches of the lower extremity, 4) Basic surgical techniques and 5) Surgical approaches of the upper extremity.
Conclusions: This study generated a prioritized list of procedures that are highly relevant and suitable for simulation-based training and will serve as a foundation for future development of simulation-based curriculum in orthopedic surgery.

No conflicts of interest reported

Mortality analysis and Failure to Rescue in dysvascular lower extremity amputees: implications for future treatment protocols. 136.

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Background: Extremely high 30-days mortality rates in excess of 30% have been reported following major dysvascular lower extremity amputations (LEA). The treatment of these patients is most often challenged by several competing co- morbidities. However, an enhanced treatment program seems to decrease 30- days mortality rates below 20%, but the potential and limitations for further reduction in mortality and morbidity are unknown.
Purpose / Aim of Study: To analyzes postoperative causes of 30-days mortality in an enhanced treatment program, and to introduce Failure to Rescue (FTR) in LEA surgery.
Materials and Methods: The medical charts of 195 consecutive LEA procedures were reviewed independently by three of the authors, and deaths during hospitalization following amputation were classified according to consensus.
Findings / Results: 31 (16%) patients died within 30-days after surgery. Patients with diabetes or transfemoral amputation (TFA) were in significantly higher risk of 30-days mortality in a log binominal regression model [p=0.007 & p=0.029)]. Patients who died had a higher incidence of sepsis [20% vs. 4%, p=0.008] and pneumonia [32% vs. 4%, p<0.001] compared to those alive. 4 deaths were classified as "definitely unavoidable", 4 as "probably unavoidable", and 23 as "FTR". When compared to the survivors with complications, the FTR rate was 27%. Of the FTR deaths, 20 patients had at some time-point active lifesaving care curtailed. The 22 patients who died in the TFA sub- group received significantly more blood transfusions (p=0.020) compared to the 88 patients alive in the TFA group.
Conclusions: It seems warranted that future initiatives should be directed at enhanced sepsis and pneumonia prophylactic actions, in addition to close monitoring of hemodynamics in anemic patients, with the potential to further reduce morbidity and mortality rates.

No conflicts of interest reported

Minimal Access vs. Open Spine Surgery in Patients with Metastatic Spinal Cord Compression. Preliminary Results from a One-Center Randomized Controlled Trial

137.

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Background: Minimally access spine surgery (MASS) is considered less morbid than open surgery (OS), but evidence from studies comparing MASS with OS in patients with metastatic spinal cord compression (MSCC) is limited. We examined the feasibility and efficacy of MASS versus OS in a randomized controlled study with 50 MSCC patients.
Purpose / Aim of Study: The objective of this study was to assess whether patients operated with MASS would experience a shorter operation time and less perioperative bleeding than patients treated with OS.
Materials and Methods: During 2012 to 2017 a total of 50 MSCC patients were included in a one-center, randomized controlled trial with 1-year follow up. Patients were randomized to either MASS or OS. Only patients with MSCC between T5 to L3 where included. Patients with Tokuhashi score ≤ 4, in need of sacral or iliosacral instrumentation. All patients were operated with posterior pedicle screw instrumentation two levels above and two levels below the metastatic level. In the MASS-group decompression was done through a localized incision at the metastatic level. A p-value < 0.05 was considered statistically significant.
Findings / Results: The mean age was 67 years (range 43- 89) and 40% were men. The mean operation time was longer for patients operated with MASS when compared to OS; 140 min vs. 118 min. However, this difference was not statistical significant (p = 0.09). The peri- operative blood loss in the MASS-group was significantly smaller than in the OS- group; 234 ml vs. 650 ml (p = 0.0037). There was no significant difference in the amount of revisions in the MASS versus the OS group; with two revisions in each group.
Conclusions: Surgical treatment of symptomatic MSCC with MASS technique results in significantly and clinically relevant less of blood loss to open surgery.

No conflicts of interest reported

Patient reported outcomes after surgical treatment for cervical radioculopathy. 138.

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Background: It is estimated that 10.000 patients seek medical care due to cervical radiculopathy every year in Denmark. Although the natural course is usually favorable, around 20 % undergo surgery for cervical degenerative disease every year in Denmark. We evaluated the results of anterior cervical decompression and fusion over a 4 year period from a single Danish center for spine surgery.
Purpose / Aim of Study: The purpose of this study is to present how the clinical outcome data correlates to postoperative satisfaction, and how many of our patients have improved clinically relevant at the 1 year follow up.
Materials and Methods: This study is a retrospective study based on prospectively collected data from 252 consecutive patients treated with anterior cervical decompression and fusion over 1- 3 levels. Data in the DaneSpine registry was collected pre- and postoperatively, and at 1 year after surgery. The outcome measures were Neck Disability Index (NDI), European Quality of Life 5D (EQ-5D), visual analogue score (VAS) and Short Form-36 Physical Component Summary (PCS).
Findings / Results: Of 252 cases enrolled 201 (79%) had follow-up data available at a minimum 1-year post-operatively. The mean preoperative NDI was 40.20 and improved to 23.48. Mean EQ-5D was 0.50 and improved to 0.70, and mean VAS arm was 59.68 improved to 27.31. All improvements were statistically significant. 72% were back to work 1 year after surgery. 61.5% were satisfied one year after surgery, and only 6 % were dissatisfied. Postoperative satisfaction was statistically correlated to achieving MCID on all parameters except EQ-5D.
Conclusions: Patients who undergo anterior cervical discectomy and fusion can expect improvement in their pain and disability, with 73% of patients reporting a positive change in health status after surgery.

No conflicts of interest reported

Bacterial biofilms: A possible mechanism for chronic infection in patients with lumbar disc herniation – A prospective proof-of-concept study using fluorescence in-situ hybridization.

139.

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Background: A relationship has been suggested between lumbar intervertebral disc herniation (LDH) and chronic bacterial infection frequently involving P. acnes, which is known to cause chronic infection through the formation of biofilm.
Purpose / Aim of Study: To assess whether a disc infection involving biofilm formation is present in patients with LDH.
Materials and Methods: Patients with LDH undergoing primary discectomy were prospectively included. Patients operated for spinal fractures or deformities were included as controls. Bacterial 16S rDNA was purified and amplified by real-time polymerase chain reaction (PCR). Sanger sequencing was performed on PCR positive samples. Formalin- fixed paraffin embedded tissue sections were stained using fluorescence in situ hybridization with peptide nucleic acid probes (one P. acnes specific probe and one universal bacterial probe). To visualize bacterial aggregates, tissue sections were examined for the first 50 included patients by confocal laser scanning microscopy (CLSM).
Findings / Results: A total of 51 LDH patients and 14 controls were included. Bacterial DNA was detected by PCR in 16/51 samples in the LDH group and 7/14 controls (p=0.215). Sequencing identified bacteria in 9/16 and 6/7 PCR positive samples in the LDH and control groups, respectively. CLSM demonstrated tissue-embedded bacterial aggregates with host inflammatory cells in 7/44 LDH patients and no controls. Only one sample positive for aggregates by CLSM was positive for bacterial 16S rDNA by PCR.
Conclusions: CLSM demonstrated bacterial aggregates and inflammatory cells in 16% of LDH patients, suggesting chronic bacterial infection. Discordance between molecular and microscopic analyses highlights the importance of a dual-approach diagnostic strategy to discriminate infection versus contamination.

No conflicts of interest reported

Coccydynia, Outcome 1 year after surgical treatment of 138 consecutive patients. 140.

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Background: Coccydynia caused by falling or giving birth is mostly reported in females in the age 30-60 years. Many treatment modalities have been suggested including special pillows, steroid injections, special physiotherapy and pain medication.
Purpose / Aim of Study: The purpose of this study is to report the outcome, 1 year after surgery with partial or complete removal of the coccyx.
Materials and Methods: Patients with a duration of symptoms more than 12-18 months after trauma, no effect of conservative treatment and reported pain VAS > 3 in sitting position, are referred to treatment. Surgery with full or partially removal of the coccyx bone is suggested. Al patients are treated with 2-3 diagnostic steroid injections prior to surgery, to ensure the coccyx is inducing the pain. All patients are recorded in the Danespine database, and the statistics are performed with Stata version 1.2
Findings / Results: 138 consecutive patients were evaluated 3 and 12 months after surgery. 3 months after surgery, 40 % of the patients are pain free in sitting position, 47 % of the patients are experiencing some degree of discomfort in sitting position but are improved and 13 % of the patients are still experiencing pain while sitting. 99 patients are satisfied, 1 year after the surgery. 22 patients have hoped to have a bigger improvement and 17 patients are not satisfied. 32 patients developed infections after surgery and received antibiotics, 5 reoperations was performed, 3 due to infections and 2 due to rupture of the skin after return to normal daily living 3 months after surgery.
Conclusions: Patients with severe symptoms and pain duration of more than 12-18 months, should be referred for spine surgical evaluation. Partial or complete resection of the coccyx, is a safe procedure, with a satisfactional outcome in most patients.

No conflicts of interest reported

Natural Course of Local Bone Mineralization after use of a Composite Bone Graft Substitute as Filling Material for Cavitary Bone Defects. A Prospective Evaluation using Sequential DXA Measurements

141.

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Background: Mineral bone graft substitutes enjoy increasing popularity for a variety of indications, however, little objective data is available for most of these products. Dual-energy X-ray Absorptiometry (DXA) is an established method that allows non-invasive, objective and precise quantification of bone mineralization.
Purpose / Aim of Study: To objectively quantify changes in bone mineralization following bone defect reconstruction using a composite bone graft substitute.
Materials and Methods: We performed sequential quantitative bone- mineral-density (BMD) measurements using DXA in a prospective cohort of 17 patients (F/M: 7/10, mean age 46 (17-69) years)) with 18 bone- defects, reconstructed with a composite (60% calcium-sulphate/ 40% calcium-phosphate) bone- graft-substitute (CERAMENT™|BONE VOID FILLER (BVF) or CERAMENT™|G, BONESUPPORT AB) following intralesional curettage of benign bone lesions between July 2014 and March 2016. For comparison, additional control scans of the opposite extremity were performed after 1 year. Results are presented as mean (95% Confidential interval).
Findings / Results: BMD decreased faster in the first 12 weeks (42 mg/cm2/week), compared to the period between week 12 and 52 (3 mg/cm2/week). After one year, BMD-values remained 25% (4-47%) higher on the operated side (p=0.032), when compared to a corresponding area in the contra-lateral extremity, while no differences were seen, when bilateral areas just adjacent to the bone defect was compared (p=0.419).
Conclusions: BMD decreases rapidly during the initial 12 weeks after bone-defect reconstruction with this particular bone-graft substitute, which is likely due to expected resorption of its calcium-sulphate component. Subsequently, the rate of BMD-reduction decelerates, and focal BMD-levels remain at least equal to or higher than the non-operated side after 1 year.

Conflict of interest:
Peter Frederik Horstmann: BONESUPPORT AB, Sweden

Two double rod systems with apical control in EOS; Magec growth engine (MCGR) versus open interval distraction: Early 3D correction and spinal growth

142.

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Background: The application of MCGR in severe EOS has increased over the last years worldwide.
Purpose / Aim of Study: Our aim was to compare non-surgical 3- month interval MCGR lengthening to 6- month interval intraoperative manual lengthening in EOS; focusing on spinal growth and 3D correction.
Materials and Methods: Two cohorts of each 18 children were analyzed. The MCGR-hybrid-cohort, median age 9 (6.4-15.8) received a new MCGR hybrid principle, using a single MCGR to drive concave distraction combined with an apical control passive sliding rod construct on the convexity, median follow-up 1.3 years (0.5-2.1). The second cohort, median age 10 (4.5- 14.8) received a similar apical control construct (the CB system), using conventional open surgical distraction, median follow-up 1,5 years (0.9-1.9).
Findings / Results: Frontal Cobb angle improved in both groups; from mean 64 to 31 after MCGR-Hybrid, ($p<0.01$), and from mean 77 to 38 after conventional technique, ($p<0.01$). This 51% initial correction after MCGR-Hybrid vs. 49% after conventional technique was maintained in both groups. The mean apical vertebral rotation (Nash-Moe method) improved significantly in both groups, but was partially lost. There was a significant decrease in thoracic kyphosis from 27 to 20 after MCGR-hybrid and from 33 to 17 after conventional technique, and largely unchanged lordosis. T1-S1 spine growth rate was 11 mm/year in the MCGR-Hybrid-group vs. 7mm/year in the conventional-group, (NS).
Conclusions: We demonstrated significant early 3D scoliosis correction by double rod systems with apical control. Spinal growth seemed to be superior following short interval MCGR lengthening. This may underline the negative effect of posterior tethering following long interval distraction.

No conflicts of interest reported

A rod construct with differentiated rigidity improves the restoration of thoracic kyphosis in surgical treatment of adolescent idiopathic scoliosis

143.

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Background: All-pedicle screw instrumentation has been shown to induce hypokyphosis in adolescent idiopathic scoliosis (AIS).
Purpose / Aim of Study: Compare postoperative sagittal alignment between three rod constructs with different rigidity profiles.
Materials and Methods: A dual-center retrospective cohort study was conducted involving two consecutive cohorts operated with all- pedicle screw instrumentation for AIS. Three different rod constructs were used: A hybrid construct (HC) consisting of a normal circular rod on the convex side and a beam-like rod (BR) on the concave side, a standard construct (SC) using bilateral BRs in the full length of the fusion and a modified construct (MC) where the rod transitions from a beam-like shape to a circular shape at the cranial fusion levels. Radiographs were analyzed preoperatively and at the first postoperative follow-up.
Findings / Results: The HC, SC and MC groups included 23, 70 and 46 patients, respectively. The groups did not differ significantly in preoperative radiographic parameters, mean preoperative main curve or mean curve correction. The mean postoperative TK was 23.1±6.3º, 19.6±7.6º and 23.4±6.9º in the HC, SC and MC groups, respectively (p=0.013) and the mean change in TK was -3.5±11.3º, -7.1±11.6º and 0.1±10.9º, respectively (p=0.005). The MC group had significantly higher postoperative TK and less loss of TK compared to the SC group (p≤0.018). A postoperative TK ≤ 10º was found in 12 patients (17%) in the SC group, one patient (5%) in the HC group and one patient (2%) in the MC group (p=0.021).
Conclusions: We found significantly better restoration of kyphosis with the use of bilateral modified rods compared to bilateral standard rods. In the modified- and hybrid construct group the rate of severe postoperative hypokyphosis was significantly lower than in the standard group.

Conflict of interest:
Benny Dahl: institutional grants from K2M and Medtronic
Martin Gehrchen: institutional grants from K2M and Medtronic

Validation of the Danish version of the Musculoskeletal Tumour Society Score (MSTS) questionnaire – a measurement of functional outcome for sarcoma patients

144.

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Background: The Musculoskeletal Tumour Society Score (MSTS) questionnaire is a physician/patient-completed questionnaire designed to assess functional outcome for patients with sarcomas in the extremities.
Purpose / Aim of Study: The purpose of this study was to validate the Danish version of the MSTS questionnaire.
Materials and Methods: The MSTS was translated according to international guidelines. Patients operated for sarcomas and aggressive benign tumours were invited to participate in the study. The psychometric properties of the Danish version of the MSTS were tested in terms of validity and reliability. Spearman's rank coefficient was used to test the validity by comparing with the Toronto Extremity Salvage Score (TESS). The Intraclass Correlation Coefficient (ICC) was used to evaluate inter- and intra-rater reliability. Cronbach's alpha was used to test for internal consistency. Spearman's rank coefficient was used to compare the MSTS lower extremity version with the objective test, Timed Up & Go (TUG).
Findings / Results: 240 patients (78 upper/162 lower extremity) participated in the study. 38% and 23% of the patients scored maximum in the upper and lower extremity version of the MSTS, respectively. The validity was found to be good. The inter-rater reliability and the intra-rater reliability was found to be excellent for the upper and lower extremity version of the MSTS. The internal consistency for the upper and lower extremity version was good. When comparing the lower extremity MSTS score with the TUG, we found a poor correlation.
Conclusions: The psychometric properties have shown good validity and reliability of the Danish MSTS version. However, this study found a ceiling effect in the MSTS score. Furthermore, the MSTS score seems not to be an expression of objective functional outcome.

No conflicts of interest reported

Is revision surgery a risk factor for decreased survival in patients with metastatic bone disease? 145.

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Background: Patients experiencing a pathological fracture or painful bony lesion due to metastatic bone disease in the appendicular skeleton (MBDA) are frequently treated with a total joint replacement (TJR), which is in risk of revision surgery.
Purpose / Aim of Study: To estimate implant and patient survival after primary and revision TJR due to MBDA.
Materials and Methods: A retrospective study of patients having primary and revision TJR due to MBDA from 01/01/03 to 31/12/13. 287 patients (mean age 64 (21-90) years, 170 males/117 females) received 289 primary TJR (in 270 patients) and 22 revision TJR (in 17 patients). Survival time was calculated from the day of surgery until death or end of study (09/30/16). Statistics: Kaplan-Meier survival analysis (95%-CI) and log-rank test for comparison of subgroups.
Findings / Results: The 1-, 2- and 5-year survival rates after surgery for primary TJR was 44% (95%-CI: 39-50), 32% (95%-CI: 26-37), and 13% (95%-CI: 8-17) and 45% (95%-CI: 23-67), 30% (95%-CI: 10-50), and 10% (95%-CI: 0- 23) for revision TJR, p=0.465. No difference in the amount of major complications between primary TJR (17 major complications=5.88%) and revision TJR (2 major complications=9.09%). The cumulative 1-, 2- and 5-years implant survival rate for primary TJR was 98% (95%-CI: 96-100), 93% (95%-CI: 89-98), and 85% (95%-CI: 76-94) and 90% (95%- CI: 71-100), 90% (95%-CI: 71-100) and NA for revision TJR (p=0.273).
Conclusions: No differences in implant or patient survival were found between primary and revision TJR. It indicates that MBDA-surgery does not reduce patients expected survival even though several procedures are performed. We suggest not refraining from revision surgery in MBDA patients, and always choosing a primary implant that is expected to outlive the patient.

No conflicts of interest reported

Soft-tissue sarcomas of the thoracic wall; surgical margin and malignancy grade's impact on survival and local recurrence. 146.

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Background: Soft tissue sarcomas (STS) of the thoracic wall are often studied in combination with either sarcomas of the extremities, or with bone tumors of the thoracic wall.
Purpose / Aim of Study: The aim was to assess the impact of surgical margin and malignancy grade on survival and local recurrence for STS of the thoracic wall and compare results with studies of STS in extremities.
Materials and Methods: 86 patients were diagnosed with a non- metastatic STS located in the thoracic wall and treated surgically at the Aarhus Sarcoma Centre between 1995-2013. Overall survival (OS) and local recurrence free rate (LRFR) were estimated using the Kaplan-Meier method. Cox proportional hazards model was used to determine prognostic factors for survival and local recurrence.
Findings / Results: 5-year OS was 56%. Intralesional/marginal resection resultet in an increased mortality (multivariate cox: HR 3,09, CI 95%: 1,25- 7,63) compared to wide resection. Patients with intermediate/high grade tumors had a higher risk of dying (multivariate cox: HR=8,24, CI 95%: 1,02-66,87) compared to patients with low grade tumors. 5-year LRFR for intermediate/high grade tumors was 80%. None of the patients with low grade tumor had local recurrence. Intralesional/marginal resection had no significant impact on local recurrence (HR = 1,00 CI 95%: 0,24- 4,16). Studies including STS of extremities have shown higher 5- year OS rates and 5-year LRFR.
Conclusions: Intermediate/high malignancy grade was an unfavourable prognostic factor for survival and local recurrence. Wide margin increased survival, but did not affect local recurrence. STS of the thoracic wall showed lower mortality and higher local recurrence rate compared to STS of the extremities, suggesting that the removal of STS of the thoracic wall should be more aggressively to increase mortality and reduce local recurrence.

No conflicts of interest reported

Patient survival following joint replacement due to metastatic bone disease: comparison of overall survival between cohorts treated in two different time periods

147.

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Background: Patients suffering from a pathological/impending fracture due to metastatic bone disease in the appendicular skeleton (MBDA) will often benefit from a total joint replacement (TJR). We hypothesize that improvements in primary cancer treatment will be reflected in an improved survival for patients who undergoes TJR due to MBDA.
Purpose / Aim of Study: To test if patient survival has improved over time after TJR due to MBDA.
Materials and Methods: A retrospective study of patients receiving primary TJR due to MBDA from 01/01/03 to 31/12/13. Survival was calculated from the day of surgery until death or to end of study (09/30/16). Statistics: Kaplan-Meier survival analysis (with 95%-CI), log-rank test and non-parametric tests for comparison of subgroups: patients having TJR in the early period between 2003-2008 (n=130) and patients having TJR in the late period between 2009-2013 (n=140).
Findings / Results: 270 patients (mean age 64 (21-90) years, 160 males/110 females) received 270 primary TJR. The cumulative 1-, 2- and 5- year survival rates after surgery for the early cohort was 41% (95%-CI: 32-49), 29% (95%-CI: 21-37), and 13% (95%-CI: 7-19) and 48% (95%-CI: 40-56), 34% (95%-CI: 26-42), and 11% (95% CI: 5-17) for the late cohort, p=0.458. The time from diagnosis of cancer to MBDA-surgery was shorter in the early cohort (p<0.001). A minor difference was found when comparing residual cancer disease after MBD surgery (p=0.045), showing a greater amount of patients was cancer-free after surgery in the late cohort.
Conclusions: Our study indicates that improved treatment of primary disease postpone time to surgical intervention for MBDA, but does not prolong the survival after surgical intervention. These findings can be due to lead time bias and further studies are needed.

No conflicts of interest reported

Quadriceps tendon graft harvest has less donor site morbidity than semitendinosus/gracilis graft harvest after ACL-reconstruction. 148.

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Background: It is well known that graft harvest at Anterior Cruciate ligament (ACL) -reconstruction leads to donor site morbidity. Typical donor site symptoms are muscle pain (MP), muscle weakness (MW), muscle cramp (MC) and muscle strain sensation (MS). Quadriceps Tendon (QTB) graft harvest for ACL-reconstruction is increasingly used. Donor site morbidity after QTB graft harvest has not been described in details.
Purpose / Aim of Study: The purpose of this present study is to compare the donor site morbidity of two groups of patients who underwent ACL-reconstruction with a graft from either semitendinosus/gracilis (STG) or QTB. We hypothesized less donor site morbidity with QTB graft harvest compared to STG graft harvest.
Materials and Methods: Ninety-nine patients were included in the present study. STG grafts were used in 49 patients and QTB grafts were used in 50 patients. The patients completed a questionnaire 12 month after surgery and included questions concerning: MP, MW, MC and MS from the donor muscle group.
Findings / Results: Twenty-five patients (52%) in the STG- group have donor-site problems, compared to 14 patients (30%) in the QTB-group ($p<0.05$). The distribution of donor site morbidity for STG is (MP, MW, MC, MS) 13, 20, 16 and 17 patients and for QTB it is 8, 12, 6 and 2 patients respectively. QTB harvest result in less MW and MS than STG harvest. Twenty-three (92%) patients of the STG-patients experience the donor morbidity symptoms in relation to Sport compared to 9 (64%) in the QTB-group. Four patients in the STG categorize their donor site morbidity as severe, compared to 2 patients in the QTB- group.
Conclusions: The findings in the present study demonstrate that STG graft harvesting leads to more donor site morbidity than the QTB graft. In the STG-group MW and MS are the biggest problems compared to the QTB-group.

No conflicts of interest reported

Retrospective analysis for treatment of proximal tibial fractures with a complete metaphyseal component in two centers with different distinct strategies: Open reduction and internal fixation (ORIF) and Ilizarov frame (Odense, Denmark) versus ORIF an

149.

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Background: The optimal method for fixation of proximal tibial fractures with a complete metaphyseal component is unknown.
Purpose / Aim of Study: The purpose of this study was to compare external fixation with the Ilizarov wire frame and internal fixation with locking plates.
Materials and Methods: We carried out a retrospective cohort study with patients from two level 1 trauma centers treated with either external fixation or internal fixation. Adult patients with nonpathological fractures classified as Schatzker type VI or OA 41 A2-A3, C1-C3 were included. Combined clinical and radiological bone healing was the primary outcome. Secondary outcomes included infection rate, range of motion of the knee, axial alignment of the knee, re-operation rate after 6 months, heterotopic ossification and signs of post-traumatic osteoarthritis. Minimum follow up time was 3 months. All data was gathered from patient records and radiographs.
Findings / Results: 62 patients were treated with external fixation and 68 with plate fixation. Time of healing was slightly shorter in the plate fixation group concerning a higher proportion of patients healed after 3-6 months compared to external fixation (67.7% vs 47.1%, p=.017). No difference was seen in the rates of non-union (p=.099). Heterotopic ossification was more prevalent following plate fixation (13.2% vs 1.6%, p=.013). External fixation was associated with a higher rate of superficial infections (40.4% vs 2.9%, p=.000). The initial displacement and the injury severity (ISS) significantly influenced the incidence of non-unions in both groups.
Conclusions: Locking plates might have a shorter time of healing, but otherwise these methods are comparable with different complication profiles.

No conflicts of interest reported

Systematic review of treatment for lumbar spinal stenosis

150.

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Background: Lumbar Spinal stenosis is treated in different ways. Physiotherapy and manual treatment are two ways of conservative approaches. The neurogenic symptoms are treated with different types of medication. Surgical decompression is an invasive treatment.
Purpose / Aim of Study: The aim of this study is to examine the evidence of conservative and surgical treatment for lumbar spinal stenosis by a review of the literature for the last 10 years.
Materials and Methods: Literature search for randomised studies dealing with symptomatic lumbar spinal stenosis was performed. A protocol for the literatur search performed by the national board of health was the basis for the literature seach. Studies in english, german and scandinavian languages were included.
Findings / Results: There is no evidence for conservative treatment for lumbar spinal stenosis. Neurogenic pain may be relieved with Gabapentin, but there is risk of side effects. In the last 10 years no studies deal with ordinary pain medication for radiating leg pain. Surgical decompression relives leg pain and improves physical and mental outcomes and there is a low risc of complications.
Conclusions: Surgical decompression for symptomatic lumbar spinal stenoses should be considered in case of failed conservative treatment and/or in case of severe and long lasting symptoms. There is a need for future randomised studies concerning conservative treatment, pain medication and surgery for symptomatic lumbar spinal stenosis.

No conflicts of interest reported

The Influence of Tibial Slope on ACL Graft Failure Risk is Dependent on Graft Positioning

151.

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Background: Increased lateral tibial posterior slope (LTPS) is associated with higher ACL reconstruction (ACLR) failure rate. Transportal central femoral footprint ACLR is associated with higher failure rate compared to transtibial high anteromedial footprint ACLR due to graft anisometry.
Purpose / Aim of Study: The purpose of this study was to investigate whether the influence of tibial slope on ACL graft failure risk is dependent on graft positioning.
Materials and Methods: Out of 1480 consecutive hamstring ACL reconstructions, 30 transportal (central femoral tunnel placement) and 30 transtibial (high anteromedial tunnel placement) ACLR failures were evaluated and matched one- to-one with non-failure control participants by age, sex, graft and surgical technique. Lateral tibial slope was assessed on MRI using the technique described by Hashemi.
Findings / Results: The risk of graft failure in the transportal group increased by 40.5 percent per degree of increasing LTPS (odds ratio 1.4; 95% CI, 1,05 - 1,87; p=.02). The transportal failure group showed a significantly higher mean tibial slope of 8.6 degrees compared to both the transportal control group with 7.1 degrees (p=.03) and the transtibial failure group with 7.2 degrees (p=.04). Increased tibial slope was associated with shorter time to reconstruction failure (p=.002). The difference between slopes in the transtibial failure group (7.2 degrees) compared to the transtibial control group (7.1 degrees) was not significant (p=0.56).
Conclusions: Increased LTPS is associated with increased risk of graft failure only in transportal ACLR, not in transtibial ACLR. Slope related graft strain may be potentiated by anisometric ACL graft placement. Especially in paediatric ACLR, where increased LTPS is found, non- isometric ACL graft placement should be avoided.

No conflicts of interest reported

Improved function and relief of pain after THA is not translated into increased daily physical activity one year after surgery. 152.

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Background: Total Hip Arthroplasty (THA) relieve pain and increase function in patients with hip osteoarthritis (OA). Yet, it is unclear if THA leads to higher levels of daily physical activity (PA).
Purpose / Aim of Study: To describe changes in objectively measured PA, and self-reported pain and function until one year after THA in an elderly population.
Materials and Methods: 20 patients (11 males, mean age 75+/-5) with hip OA received a Dual Mobility THA. PA was monitored during two-week periods using a tri-axial accelerometer mounted on the lateral thigh. % time sitting and standing, transfers from sit to stand (nrSSTs) and daily steps was estimated using a MatLab algorithm. Self-reported function and pain were obtained using Oxford Hip Score (OHS) and Visual Analog Scale (VAS). All measures were collected pre-operative (BL), 3 and 12 months after surgery.
Findings / Results: Sitting time decreased from 64% (SD: 12%) at BL to 58% (SD: 11%) at 3 months (p=0.01) followed by an increase to 66% (SD: 12%) at 12 months (p=0.01). Standing time increased from 26% (SD: 10%) at BL to 32% (SD: 11%) at 3 months (p=0.004) but decreased to 25% (SD: 10%) at 12 months (p=0.01). OHS increased from 24 (IQR= 8) at BL, to 38 (IQR: 6) at 3 months (p<0.001), and 46 (IQR:6) at 12 months (p<0.001). VAS at rest decreased from 3.5 cm (IQR: 3 cm) at BL to 1 cm (IQR: 0 cm) at 3 months (p<0.001) and 0 cm (IQR: 0 cm) at 12 months (p<0.0001). VAS during activity decreased from 7 cm (IQR: 4 cm) at BL to 1 cm (IQR: 1 cm) at 3 months (p=0.0001) and 0 cm (IQR: 0 cm) at 12 months (p=0.0001).
Conclusions: Although patients' hip pain and function improved one year after surgery, PA only increased up to 3 months, and then dropped to BL levels. This indicates that improved function after THA has a potential to be translated into PA, but this conversion does not seem to take place on the long term.

No conflicts of interest reported

Population-based epidemiology of 344 calcaneus fractures

153.

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Background: The literature lacks recent epidemiology studies of the incidence, trauma mechanism and fracture classification of calcaneus fractures
Purpose / Aim of Study: The purpose of the present study was to provide up-to-date information concerning the incidence of calcaneus fractures in a large and complete population and report the distribution of fractures, trauma mechanism and patient baseline demographics
Materials and Methods: Population-based epidemiological study of all patients treated for a calcaneus fracture in a 6-year period from 2005 to 2010 at Aalborg University Hospital. Retrospective reviews of clinical and radiological records. All fractures were classified according to the AO and Sanders classifications following review of x-rays and computer tomography (CT) scans.
Findings / Results: A total of 328 patients were treated for 343 calcaneus fractures between 2005 and 2010. The mean age at time of fracture was 47.6 (19.9 SD) years. The mean age for males was 43.0 (18.1SD) years, and for females 57.5 (20.0SD) years. The gender distribution was 68.4% males and 31.8 % females. The overall incidence of calcaneus fractures between 2005 and 2014 was 9.9 /100,000/year. For males, the incidence was 13.6/100,000/year, and for females, 6.3/100,000/year. Of the 343 calcaneus fractures 176 (51.3%) were extraarticular (AO type 83-A). Of the remaining 167 intraarticular fractures, Sanders Classfication type 3 was the most common of all fractures representing (49.7%).
Conclusions: This study shows an incidence of 9.9/100,000/year during a six-year period between 2005 and 2010. The most common fracture type in all age groups was AO type 83-A (extraarticular), representing 51.3% of all fractures. The predominant mode of injury was fall from above 1m (65.6%) followed by fall from standing height (8.8%).

No conflicts of interest reported

Clinical outcome of patella stabilizing surgery including trochleoplasty for treatment of recurrent patellar dislocations and severe trochlear dysplasia. 154.

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Background: Patella instability is highly correlated to trochlea dysplasia (TD). Severe TD leads to biomechanical and kinematic changes that may require surgical correction in order to obtain successful surgical treatment of patella instability. Failure after patella stabilizing surgery may be caused by lack of correction of severe TD.
Purpose / Aim of Study: The purpose of this present study is to clarify the effect on patella stability and subjective outcome in patients who had trochleoplasty performed as additional procedure to surgical treatment of patella instability or after failed patella instability surgery.
Materials and Methods: Twenty-two patients operated between 2013 and 2017 were included in the present study. 3 males and 19 females. Mean age is 24 years (15-41 years). They all had more than 5 dislocations of the patella and a positive J-sign prior to this operation. 13 patients had one or more previous unsuccessful patellofemoral surgeries. Trochleoplasty was performed using the Bereiter technique either open or arthroscopically. Kujala score and Pain numeric rating scale (NRS) were used to evaluate the effects of intervention.
Findings / Results: Eight patients (36%) had a trochleoplasty procedure done bilaterally. 18 patients (82%) had TD Dejour type D, 3 patients 14% type C and 1 patient type B (4%). The procedure was done arthroscopically in 50% of the patients. The Kujala score increased from 52 preop. to 70 at 1-year follow up. The NRS score at rest decreased from 3,1 to 1,7 and NRS at exercise decreased from 5,4 to 3,2. 5 patients (23%) had a reoperation due to arthrofibrosis. None of the patients had a redislocation of the patella.
Conclusions: Trochleoplasty is a surgical procedure and should be considered in the treatment of recurrent patellar dislocation in cases with severe TD and when previous patellofemoral surgery was unsuccessful.

No conflicts of interest reported

POPULATION-BASED EPIDEMIOLOGY AND INCIDENCE OF DISTAL FEMUR FRACTURES

155.

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Background: Fracture of the distal end of the femur are rare, with the literature reporting a prevalence of 0.5% of all fractures. Incidence rates of distal femur fractures has only been reported in a small number of studies with the most resent reporting an overall incidence during a one-year period (2010-2011) from an adult and well-defined population in Scotland as 7.0/100,000/year. The literature lacks recent epidemiology studies of the incidence, trauma mechanism and fracture classification of distal femur fractures.
Purpose / Aim of Study: To provide up-to-date information concerning the incidence of distal femur fractures in a large and complete population and to report on the distribution of fracture classification, trauma mechanisms, and patient baseline demographics
Materials and Methods: Retrospective reviews of clinical and radiological records were performed on distal femur fractures in the Northern Region of Denmark between 2005 and 2010.
Findings / Results: A total of 293 patients were treated for 302 distal femur fractures. The mean age for males was 44.0 (26.8SD) years, and for females 71.6 (24.0SD) years. The gender distribution was 33.4% males and 66.6% females. The overall incidence of distal femur fractures was 8.7/100,000/year. After the age of 60 years a rapid increase in the incidence of distal femoral fractures was observed for both genders with a large female predominance. Low energy injuries were the most common mode of injury in both genders (97%), with approximately 61% being the result of a fall from standing height. AO classification type A was the most common of all fractures (38.6%).
Conclusions: This study shows an incidence of 8.7/100,000/year of distal femur fractures. After the age of 60 years a rapid increase in the incidence of distal femoral fractures was observed for both genders with considerable female predominance.

No conflicts of interest reported

The clinical use of cut-off points in range of motion of the lower extremities and the association with gait summary measures in children with cerebral palsy

156.

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Background: Critical threshold values of range of motion (ROM) during clinical examinations of children with cerebral palsy (CP) have been implemented by the Danish Cerebral Palsy Follow-up Program (CPOP) for the purpose of early detection of restricted movements of joints and potential intervention.
Purpose / Aim of Study: The aim of the present study was to test the hypothesis that ROM measures in children with CP were associated with gait function by means of Gait Profile Score (GPS) and Gait Variable Score (GVS), and to determine if ROM threshold values (red, yellow and green), influences gait function.
Materials and Methods: 60 children with CP classified in GMFCS I- II, age 5-9 years, were included. Clinical examination of ROM of lower extremities was performed according to procedures described by CPOP. Gait summary measures (GPS and GVS), calculated through 3-dimensional gait analysis, were collected at baseline from the CPinMOTION trial (ClinicalTrials.gov: NCT02160457).
Findings / Results: Overall, the children demonstrated impaired gait function (GPS: 10.5, IQR: 8.2-11.7). Weak associations were found between GVS and ROM measures of clinical examination ($r2 = 0.19$-0.25, $p<0.05$). Multiple regression combining ROM of knee extension, hip extension and hip external rotation explained 10.5 % of variance in gait. Differences in GVS between ROM categories red vs. green were demonstrated in hip extension ($p<0.05$) and ankle dorsiflexion with extended knee ($p<0.05$).
Conclusions: Clinical examination of ROM demonstrated weak association with gait summary measures in the present group of children with CP. Distinction of the thresholds of ROM categories and the association with gait function may be questioned and needs further examination, as an indication for intervention.

No conflicts of interest reported

Single- and dual energy QCT around acetabular cups in total hip arthroplasty using 3-dimensional segmentation

157.

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Background: Bone density measurements around hip implants are challenged by artifacts and the complex anatomy of the acetabulum. We developed 3D segmentation software and used dual energy CT to reduce artifacts.

Purpose / Aim of Study: To test the between-scan agreement and reliability of segmentation software and to compare bone mineral density (BMD) measurements in single- and dual energy CT (SECT and DECT)

Materials and Methods: 24 male patients with total hip arthroplasty (12 cemented and 12 uncemented) were scanned and rescanned using SECT and virtual monochromatic DECT images. 3D- ROIs were defined slice-by-slice and BMD was calculated adjacent to the acetabular cup.

Findings / Results: Mean BMD for SECT was 411 mg/ccm with a between scan difference of 21 mg/ccm, p=<0.0001 in the uncemented cup. DECT showed a mean BMD of 153 mg/ccm with a difference of 10 mg/ccm, p<0.0001. Around the cemented cup the mean BMD for SECT was 523 mg/ccm with a between-scan difference of 14 mg/ccm, p=0.25 and 186 mg/ccm in DECT with a difference of 6 mg/ccm, p=0.15. ICC was >0.95 with more narrow limits of agreement in DECT compared with SECT. Computed tomography dose index (CTDI) was 25% higher with DECT and subjective image quality was better in SECT.

Conclusions: Equally reliable BMD measurements adjacent to acetabular cemented and uncemented cups can be performed using the segmentation software. The absolute between-scan agreement was better in DECT. Virtual monochromatic DECT with fast kVp switching may be beneficial in estimating BMD adjacent to metal implants, but radiation dose and image quality should be taken into consideration. BMD cannot be measured interchangeably with SECT and DECT.

No conflicts of interest reported

Complication-rate of severe complications after lumbar discectomy

158.

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Background: Accurate knowledge on complication rates following lumbar discectomy is important, when obtaining informed consent from the patients and balancing the surgeon and the patient's expectation about surgery
Purpose / Aim of Study: The purpose of the present study is to determine the complication-rate of severe complications after lumbar discectomy.
Materials and Methods: All patients who underwent primary discectomy due to lumbar disc herniation from June 2010 to February 2017 at Center for Spine Surgery and Research, Middelfart were included. Data on new onset neurological deficits and urinary disorders were reported by physiotherapists at follow-up consultations one month postoperative. Data on: thrombosis, embolism, urinary retention, perioperative infection, root injury or cauda equina reported by surgeons at discharge, and data on: deep infection, thrombosis or embolism up till 3 months postoperative, reported by patients one year postoperative, were collected from the national spine surgery database DaneSpine.
Findings / Results: 129 the 2596 patients identified had experienced at least one severe complication after surgery (5%). Distribution of complications: Thrombosis (8), embolism (1), urinary retention (5), root injury (8), cauda equina (3), infection perioperative (1), deep infection (25), new neurological deficits (40), new urinary disorder (53). 15 patients experienced two complications.
Conclusions: In this study the rate of serious complications after primary lumbar discectomy is 5%. However which complications are considered severe needs further discussion, as well as by whom, when and how they should be reported. Furthermore one should be aware that some deficits could actually be a consequence of the primary disc herniation.

No conflicts of interest reported

Hip Fractures in Denmark: Incidence and Mortality from 1996 to 2012

159.

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Background: Hip fractures are a well-known cause of mortality, especially for the older patients and in patients suffering osteoporosis.
Purpose / Aim of Study: The aim of this study was to investigate the time-trend in incidence of hip fractures and mortality after 30 days in the adult Danish population between 1996 and 2012.
Materials and Methods: Participants were any patient aged 18 years or above registered in the Danish National Patient Registry with a hip fracture in Denmark during the period from the 1st of January 1996 to the 31st of December 2012. Outcomes were defined as 1) diagnosis of hip fracture or 2) all-cause mortality 30 days after diagnosed hip fracture. The National Central Civil Register, which contains information about death and migration, was used to analyse the mortality rate.
Findings / Results: The total number of hip fractures decreased 33% from 11.339 in 1996 to 7,665 in 2012. The mean age for first hip fracture during the period 1996-2012 for women was 80 years for women and 74 years for men. The incidence in hip fracture was 217 per 100,000 in 1996 and 137 per 100,000 in 2012, higher for female. The mean age for mortality 30 days after hip fracture in the period 1996-2012 was 85 years for women and 82 years for men.
Conclusions: Our present study showed a continuously decrease in incidence of hip fracture for women and a slight decrease in incidence for men. Explanations could be interventions including ant-osteoporotic medication, an increased attention paid to the fall phenomenon, increased use of glucocorticoids, a remarkably increase in preventive health consultations. Male's death rate were higher than female's. Variables which affect death rate after hip fractures are sex, time to surgery and comorbidities. Interventions as orthopedic- geriatric were made to decrease mortality. Further interventions are needed.

No conflicts of interest reported

Volar locking plate surgery fails to restore the anatomy after distal radius fracture

160.

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Background: Recent studies question the clinical advantage and cost effectiveness of volar locking plates. Here, we investigate whether volar plating can restore the anatomy after distal radius fracture.
Purpose / Aim of Study: The purpose of the study was to determine the radiologic outcome after volar plating of distal radius fractures. Our hypothesis was that volar locking plate surgery restores the anatomic angulation and length of the radius.
Materials and Methods: 576 patients (median age 63, 78% women) were treated with 2 different volar locking plates (VariAx and Acu-Loc) over a period of 3.2 years by 64 surgeons. Three independent observers evaluated angulation and ulnar variance (>2mm) on the latest radiographs before surgery and postoperatively at 0 and 5 weeks.
Findings / Results: The mean angulation was -18.0 ±5.4 and 15.5 ±11.2 degrees for volarly and dorsally displaced fractures, respectively. After surgery, there was no statistically significant difference between volarly and dorsally displaced fractures and the type of plates. Immediately after surgery the mean angulation was -4.5 ±6.3 degrees. After 5 weeks the mean angulation of -3.9 ±7.0 degrees did not statistically differ from the immediately postoperative measurements, p=0.79. Thus, the anatomic angulation of -12 degrees was not achieved (p<0.001). The mean differences between the three independent observers were minor, ranging from 0.3-1.8 degrees at the different time points (p<0.05). Shortening of the radius (>+2mm ulnar variance) was still present in 13% (95%CI 10-16) after surgery.
Conclusions: Contrary to common perception, volar locking plate surgery did not restore normal anatomy in terms of volar angulation and radial length. The clinical implication is unclear, because functional outcome was not available.

No conflicts of interest reported

XIAPEX® is a viable first-line treatment of MCP Dupuytrens contractures, however inferior in PIP joints. 1 to 4 year follow-up of 178 joints

161.

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Background: The optimal minimal invasive treatment for Dupuytren contractures remains debated. Xiapex is a treatment introduced into the commercial marked since its approval in 2009. When introducing new efficacious modalities into everyday practice the effectiveness of these must be properly evaluated.
Purpose / Aim of Study: The aim of this study was to evaluate the effect of xiapex treatment at Regionshospitalet Horsens after minimum one-year follow-up (FU).
Materials and Methods: 118 MCP joints and 60 PIP joints treated from Jan 2013 to May 2016 were available for follow-up. Mean FU were 2.5 years (95%CI 2.4-2.6). Mean age at treatment was 68 years (95%CI 67-69). 82% was male. 37 had received treatment in the affected joint prior to our XIAPEX, 21 percutaneous needle fascioctomi, 12 open surgery and 4 XIAPEX. XIAPEX® treatment was performed according to manufactures guidelines. Outcomes were 1) absolute change in extension deficit (ED) in degrees from baseline to follow-up in metacarpo phalangeal (MCP) and proximal interphalangeal (PIP) joints 2) contraction recurrence defined as ED above 20degrees, 3)Hurst endpoint defined as ED below 5 degrees .
Findings / Results: Baseline mean ED 49° (range 20° -90°) for MCP and 56° (range 20°-90°) for PIP. Immediately after cord rupture the mean ED 0° (range 0°-10°) for MCP and 8° (range 0°-80°) for PIP. The absolute change in ED was 48° (95%CI 46-51) for MCP and 47° (95%CI 42-52) for PIP. Contraction recurrence rate was 89% (95%CI 83-95) for MCP and 22%(95%CI 11-32) for PIP. Hurst endpoint was reach in 74% (95%CI 66-82) for MCP and 5% (95%CI 0-11) for PIP. 91% of the evaluated patients were willing to have XIAPEX treatment again if necessary. No safety aspects were detected at FU.
Conclusions: XIAPEX® is a viable first-line treatment of MCP Dupuytrens contractures, however inferior in PIP joints.

No conflicts of interest reported

Closed reduction and casting of paediatric forearm fractures in Denmark - a lost art? 162.

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Background: Children have great potential for fracture remodeling. A large proportion of pediatric forearm fractures can be treated safely with closed reduction and casting. A cast index (CI) above 0.8 can be used as a predictor for loss of reduction. Studies have shown that these injuries are increasingly being managed with surgery and internal fixation. This trend does not appear to be backed by clinical research. We conducted a survey on training and knowledge of closed treatment techniques amongst specialist orthopaedic surgeons and trainees in Denmark.
Purpose / Aim of Study: Our aim was to investigate if the level of knowledge and training of closed reduction and casting techniques was associated to doctors' preferred treatment of paediatric forearm fractures.
Materials and Methods: An electronic questionnaire was distributed to responders through all orthopaedic departments in Denmark and the Facebook page of YODA (forum for orthopedic trainees in Denmark).
Findings / Results: 236 doctors completed the survey. 152 (65%) favored surgical treatment. Only 59 (25%) were able to correctly identify CI as a predictor for loss of fracture reduction. Doctors who lacked knowledge of closed treatment techniques were significantly more likely to prefer surgical treatment and significantly less likely to apply casts independently.
Conclusions: Closed reduction and casting of paediatric forearm fractures is a safe, noninvasive technique with good results if performed properly. Surgical treatment is preferred by a majority of responders but our survey indicates that lack of experience with closed techniques affects treatment preference. We recommend that casting techniques become a formal part of the curriculum for Danish orthopaedic trainees.

No conflicts of interest reported

Strength in soft tissue sarcoma patients after limb-sparing surgery in the extremities – preliminary results

163.

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Background and purpose: Only few studies have investigated strength in soft tissue sarcoma patients by using objective measurements.
Purpose: This study intends to determine the effects of limb-sparing surgery on the functional outcome measured by strength at the first 3 months in soft tissue sarcoma patients.
Methods: Patients who underwent surgery for a soft tissue sarcoma in the extremities at Aarhus University Hospital were included. Patients with disseminated disease or patients who had undergone replacement surgery in the disease-affected extremity were excluded. Patients completed a dynometric muscle test with the Biodex System 3 dynamometer before surgery, 1 month and 3 months after surgery on both the disease-affected and healthy side. The results were compared to normative data. A percentage between the obtained value compared to the expected value was calculated.
Results: This study included 25 patients who completed pre-operative measurement, while 13 patients completed 1 months and 3 months after surgery measurement. There was no significant difference found between healthy and disease-affected side pre-operatively and 3 months after surgery ($p=0.57$ and $p=0.10$, respectively). However, 1 month after surgery the healthy side was significantly stronger ($p<0.01$). Before surgery patients had a mean strength on 78.96% of the expected (95%-CI: 72.11-85.81). 1 month after surgery, they had a mean strength on 77.90% of the expected (95%-CI: 68.46-87.34). While 3 months after surgery patients had a mean strength of 77.48% of the expected (95%-CI: 65.46-89.49).
Conclusion: We did not find any significant difference in function, measured by the dynamometer, between the disease-affected side and the healthy side after 3 months. However, soft-tissue sarcoma patients have significant reduced strength when compared to healthy people.

No conflicts of interest reported

Hematoma Following Fasciectomy for Dupuytrens Disease

164.

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Background: Complications following fasciectomy for Dupuytren's Disease (DD) include digital nerve injury, wound healing complications, necrosis, hematoma formation and infections.
Purpose / Aim of Study: The purpose of this study was to evaluate the number of postoperative complications, and hematomas in particular following fasciectomy for DD.
Materials and Methods: 362 patient charts were retrospectively reviewed. Postoperative events were recorded. Student T-test was used for numerical values. Chi-Square and Fisher's Exact test was used for binomial outcomes. $P<0.05$ was considered statistically significant.
Findings / Results: No patients had ongoing treatment at the time of follow up (1-3 y). The mean age at follow-up was 67.6 years (SD 9.1, range 34- 95 y). There were 43 wound defects (11.9 %), 27 hematomas (7.5 %), 14 recurrences (3.9 %) and 11 infections (3 %) postoperatively. Those with postoperative hematoma had a mean of 9.75 (SD 4.2) outpatient visits postoperatively, those without had 3.71 (SD 2.8), $P<0.0001$. Infections occurred in 2.3 % of patients without postoperative hematoma and in 16.7 % of patients with postoperative hematoma, $P=0.0065$. There were no differences in wound defects or recurrence rates when comparing patients with postoperative hematomas to those without, $P>0.05$. The use of anticoagulants, the use of tobacco or whether the patients were operated on by junior doctors under supervision did not vary on any parameters, $P>0.05$. Operating on three or more fingers in one setting compared to one or two fingers resulted in more postoperative outpatient visits ($P=0.007$), wound defects ($P=0.049$), and hematomas ($P=0.012$).
Conclusions: Operating on three or more fingers leads to more complications and should be avoided when possible. A postoperative hematoma results in significantly more postoperative outpatient visits and more infections.

No conflicts of interest reported

Early results of the Arcos Modular Femoral Revision System by single center retrospective data collection

165.

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Background: The ArcosTM Modular Femoral Revision System is a comprehensive, press-fit revision stem design including various possibilities for modular proximal and distal reconstruction in femoral revision THA surgery.
Purpose / Aim of Study: To evaluate the early results after femoral revision in a consecutive series of patients operated in the period August 2011 to December 2014 at Gentofte Hospital.
Materials and Methods: 118 patients (mean age=67(39-95) years, F/M=61/57) were included in the study with a clinical observation time of 2.5 to 5 years. The material included all femoral revisions (index operation cemented or uncemented THA, causes of revision septic and aseptic loosening). Clinical examination including present function of the hip assessed by HHS, OHS, EQ5D and radiographic evaluation was performed. The primary endpoint was the rate of re- revisions using data from the Danish Hip Arthroplasty Registry, the Patient Administrative System and the National Patient Registry. Secondary endpoints were the rate of complications (dislocations, periprosthetic fractures, infection (re-infection) and the present function of the hip. Statistics: Kaplan Meier survival analysis
Findings / Results: Of the 118 patients, 15 patients died in the interim and were consequently only included in the implant survivorship analysis. 68 patients attended the follow-up control. 11 (9%) hips were re-revised due to infection (n=5), aseptic loosening (n=2), fracture (n=2) or other causes (n=2). The 1, 3, and 5 year probability of implant survival (95% confidence interval) was 99% (87%-97%), 91% (86%-96%) and 88% (81%-96%) respectively.
Conclusions: The early results of the Arcos Femoral Revision System are promising. The early survival of the implant is acceptable, and the clinical results are satisfying in spite of an often preoperatively severely damaged femoral bone.

No conflicts of interest reported

Clinical outcome after fibula rod osteosynthesis as a salvage procedure in bi- or trimalleolar ankle fracture. A retrospective study.

166.

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Background: Ankle fractures are one of the most common skeletal injuries and increasing in the elderly population. Controversy remains concerning the choice of optimal treatment of unstable ankle fractures in patients with vulnerable soft tissue.
Purpose / Aim of Study: To investigate the functional and radiological outcome after isolated osteosynthesis of lateral malleolus with Fibula Rod after bi- or trimalleolar ankle fracture in this selected patient group.
Materials and Methods: We performed a retrospective review of all patients who underwent primary surgery for an unstable bi- or trimalleolar ankle fracture and were treated with isolated osteosynthesis of lateral malleolus using the Fibula Rod System (Acumed®) at Nordsjaellands Hospital between 01.01.12–31.12.16. A total of 62 patients were included. Demographic- and fracture-dependent data, function, x-ray and postoperative complications where evaluated (mean follow up 10,5 months).
Findings / Results: 97,4% of fractures of the lateral malleolus and 53,9% of fractures of the medial malleolus where healed at last x-ray. In total, 11,3% of them had pain ad last follow up. There was no significant connection between postoperative pain and healing of the medial malleolus. The complication rate was 19,2% caused by infection, screw migration and fracture dislocation. The postoperative function was significant ($p<0,00$) dependent on the preoperative function.
Conclusions: Fibula Rod as a salvage procedure in high-risk patients, where soft tissue is too vulnerable for common osteosythesis after AO-principles, gives acceptable functional and radiological outcome.

No conflicts of interest reported

Update and external validation of the SPRING score for prediction of survival in patients having surgery for metastatic bone disease the appendicular skeleton

167.

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Background: The SPRING (Sørensen, PeteRsen, hINdsø, Gerds) score was introduced in 2016 as tool to assist the surgeon in the decision making of a surgical implant that will outlive the patient in the treatment of metastatic bone disease in the appendicular skeleton (MBDA). The scores performance in a population based cohort is pending.
Purpose / Aim of Study: Refit and external validate the SPRING score in a population based cohort.
Materials and Methods: 270 patients having surgery with total joint replacement for MBDA from January 2003 – December 2013 was used to refit the model and an independent cohort of 165 patients having surgery in the Capital Region of Denmark from May 19, 2014 to May 18, 2016 was used as a validation cohort. Survival outcome was predicted at 3, 6 and 12 months after surgery using a logistic regression model fitted with primary cancer, pre-operative hemoglobin, fracture versus impending fracture, Karnofsky score, visceral metastases, multiple bony metastases and American Society of Anaesthesiologist's score. We evaluated using Brier score, AUC of ROC and calibration plots.
Findings / Results: The predictive scores obtained showed AUC values of 81.9 % (C.I.: 72.5%-91.2%),84.5% (C.I.: 75.6%-93.3%) and 85.8 (C.I.: 76.7-94.9%) at 3, 6 and 12 months respectively. Brier score was 0.155, 0.162 and 0.152 at 3, 6, 12 months respectively. The model showed good calibration at all three end- points.
Conclusions: The SPRING score is applicable to a general population to estimate residual life expectancy after surgery for MBDA and can assist the surgeon in decision making in regard to surgical solution.

No conflicts of interest reported

The effect of orthoses, alignment adjustment and exercise for the young patient with anterior knee pain. 168.

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Background: Anterior knee pain (AKP) is a common knee problem seen in adolescents and young adults characterized by non- specific knee pain, pain when climbing stairs, riding a bike, walking and running. This leads to an impairment of both recreative and activities of daily living.
Purpose / Aim of Study: The purpose of the present study is to investigate the effect of a 3 months multimodal intervention including AKP- education, exercise program, footwear adjustment and foot orthoses in AKP patients.
Materials and Methods: 42 patients (Age 19 (10-32)) with the diagnosis AKP were included in a consecutive prospective cohort. The patients were educated in AKP and were instructed in a 3 months exercise program focusing on hip abduction, hip external rotation and normal movement pattern. Footwear was adjusted (for patients with angle valgus) and foot orthoses were recommended to patients with too much foot roll (pronation). Kujala score and Pain numeric rating scale (NRS) were used to evaluate the effects of intervention. Intraarticular knee pathology was excluded by MRI and clinical examination.
Findings / Results: The Kujala score improve from 71 to 86 months after 3 months. The NRS- rest and NRS-Walk improve from 3.0 to 1.3 and 6.4 to 3.0 respectively. All improvement are statically significant ($p<0.01$). 55% of the patients have at clinical improvement (>10 points on the Kujala score) and 57% and 74% had a clinical improvement on the NRS-rest and NRS-walk, respectively (≥ 2 points improvement). None of the patients have a decrease in outcome scores after 3 months.
Conclusions: An AKP multimodal treatment strategy focusing at footwear, orthoses and simple hip muscle exercise the patient significantly improve functional outcome and reduce pain. Further investigation is needed to evaluate the long time follow up.

No conflicts of interest reported

1 year results after distal biceps tendon repair with double incision technique – a prospective cohort study with 34 consecutive patients

169.

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Background: With an incidence of 1-2/100.000 the distal biceps tendon rupture is an often overlooked injury. Surgical approach and the post-operative treatment is varying depending on the surgeons preference
Purpose / Aim of Study: The purpose of this prospective case study was to analyze the outcome after implementation of a standardized treatment regime
Materials and Methods: From September 2011 to February 2015 41 patients underwent reinsertion of the distal biceps tendon with a modified Boyd-Andersen technique. Post-operatively all patient were immobilized in an elbow cast for 2 weeks, followed by 6 weeks partial mobilization in a hinged brace. Active supination/pronation was allowed from day 1, active flexion/extension was restricted and gradually increased. All patients received pre- operative instructions by a ergotherapist, followed by 8-12 weeks supervised training. Elbow function was documented by the Oxford Elbow Score and by measuring active ROM (AROM). Data was collected prospectively before and 3, 6 and 12 months after surgery. 7 patients were excluded while 34 patients were included
Findings / Results: All 34 patients improved significantly ($p<0.00$) in the Oxford Elbow Score from pre-operatively median 22 to median 42. AROM (flexion/extension) improved significantly from pre-operatively mean 120,3 (SD 35,67) degrees to 145.9 (SD 18,36) degrees after 12 months ($p<0,00$) while AROM (supination/pronation) decreased from mean 161,6 (SD 15,89) degrees pre-operatively to 157,5 (SD 17,33) degrees after 12 months, although not significantely ($p=0.365$). Compared to the un-injured side, there was no significant difference in flexion/extension ($p<0,00$), but in supination/pronation ($p=0.009$)
Conclusions: Following our rehabilitation protocol for distal biceps tendon repair all 34 patients in this prospective case series, achieve excellent results in AROM and ADL

No conflicts of interest reported

Cut-points for maximal knee-extension strength indicating sarcopenia is associated with functional performance four months after hip fracture. 170.

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Background: Debate exists regarding the definition of sarcopenia and when to be sarcopenic. Lately, Menant et al. (Osteoporosis Int 2016) showed that isometric knee- extension muscle strength cut-points with values of the lowest sex-specific quintile; <23.64 kg for men and <15.24 kg for women could predict sarcopenic conditions.
Purpose / Aim of Study: To investigate if these cut-points gave similar associations in the outcome of older adults with a hip fracture (HF) after ceased municipality-based rehabilitation.
Materials and Methods: Eighty (62 women) older adults with a mean (SD) age of 76.6(7.8) years (46 with a femoral neck - and 34 with a trochanteric fracture) were evaluated four months after HF. Maximal isometric knee-extension strength in the non-fractured limb with cut-points by Menant et al. were compared with the Timed Up & Go (TUG) test; the 10 m walk test (10mWT), and the 6-minute walk test (6MWT).
Findings / Results: The maximal knee-extension strength was on average 27.7(14.1) kg in men and 16.8(7.4) kg in women (p=0.005), and of whom 28% and 26% respectively (p=0.8), had signs of sarcopenia. The group with signs of sarcopenia performed significantly (p<.03) worse in the TUG (mean diff. 3.02 [95%CI: 1.67 to 4.37] seconds), walked slower in the 10mWT (0.23 [0.1 to 0.35] meter per second), and walked a shorter distance in the 6MWT (66.64 [29.9 to 103.19] meters), compared to the non- sarcopenic group.
Conclusions: Although confirming the findings by Menant et al. in older adults with HF, our findings probably underestimate the presence of sarcopenia in the HF population. Thus, the estimate of approximately 25% with signs of sarcopenia after ceased rehabilitation was established in a group of older adults with a high pre-fracture functional level, which underlines the importance of muscle strength exercises offered to all older adults with HF.

No conflicts of interest reported

Conservative treatment of excessive anterior pelvic tilt: A systematic review

171.

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Background: Excessive anterior pelvic tilt has been linked to pain and dysfunction of the hip and pelvic region. Conservative treatment (e.g. manual therapy and physical training) is suggested in correcting the tilt and eventually related symptoms. However, the effectiveness in reducing excessive anterior pelvic tilt in adults is unknown.
Purpose / Aim of Study: To systematically review studies investigating the effectiveness of conservative treatment in reducing anterior pelvic tilt in adults and evaluate the quality of evidence.
Materials and Methods: MEDLINE, EMBASE, Web of Science and Cochrane (CENTRAL) were searched for relevant studies up to February 2017. Conservative intervention studies on adults aiming at reducing anterior pelvic tilt were included. Titles/abstracts screening was done by one reviewer and full text articles were assessed for methodology quality by two reviewers using Cochrane Collaboration's tool for assessing risk of bias in RCT's and the ROBINS-I tool (Risk Of Bias In Non-randomized Studies - of interventions). Data was synthesized qualitatively. The GRADE approach was used to determine the overall quality of the evidence. PROSPERO protocol id: CRD42017056927
Findings / Results: Four studies, two RCT´s and two trials without control, were included (n=5047). All four interventions were different and had duration from one day up to eight weeks. Two studies intervened on symptomatic and two on healthy subjects, respectively. Three of the studies demonstrated a significant reduction in anterior pelvic tilt. The two studies intervening on symptomatic subjects demonstrated a significant reduction in pain and disability, respectively.
Conclusions: Very low quality of evidence suggests that further studies are needed to clarify whether conservative treatment may reduce anterior pelvis tilt and reduce symptoms in relation to faulty posture.

No conflicts of interest reported

Return to work after lumbar disc surgery is related to the length of preoperative sick leave. 172.

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Background: Lumbar disc herniation (LDH) is associated with high morbidity and significant socio-economic impact as the majority of the patients are of working age.
Purpose / Aim of Study: The purpose of this study was to determine the impact of length of sick leave on the return-to-work rate after lumbar disc herniation surgery.
Materials and Methods: Single-centre study of LDH patients who underwent surgery from 18 May 2009 through 28 November 2014. Data were collected prospectively from the DaneSpine database. Questions in DaneSpine include preoperative length of sick leave and working status one year postoperatively.
Findings / Results: A total of 678 patients were included and 72% of the patients had returned to work one year after their surgery. The rate of patients returning to work decreases significantly with the length of preoperative sick leave. Among the patients who were on sick leave prior to their surgery, 83% returned to work if surgically treated within 3 months. In contrast, only 50% of those whose sick leave exceeded 3 months returned to work.
Conclusions: The present analysis suggests that the return-to- work rate after lumbar disc herniation surgery is affected by the length of sick leave.

No conflicts of interest reported

Plating assisted bone transport in the femur using a motorized lengthening nail - a new technique

173.

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Background: Open femoral fractures with bone loss are difficult to treat.
Purpose / Aim of Study: A new technique to treat femoral bone loss, using a plate and a motorized lengthening nail is presented.
Materials and Methods: Three patients with extra articular femoral bone defects from open fractures were operated in 2016. The patients were evaluated for LLD, MAD, time to weight bearing, defect size, complications. Follow up was minimum 30 weeks. Surgical technique: After debridement and external fixation, a plate spanning the defect is inserted, maintaining length and rotation. Meticulous surgical planning was done using long standing radiographs and radiographs of contralateral femur with a calibration device to estimate correct length. After 6 weeks, negative biopsies and negative infection count (WBC,CRP) were found. The nail was then inserted in a retrograde or antegrade fashion and a transport segment created with a drill bit osteotomy. Some shortening was necessary to allow soft tissue closure in two cases. In one case the nail was pre- distracted to allow retrograde transport (pulling the segment)
Findings / Results: Average defect size was 75 mm. All patients were fully weight bearing at 25 weeks. LLD was zero,15 and 45 mm respectively. MAD was within normal limits in all cases. All patients displayed some degree of heterotopic ossification and reduced knee motion. All patients needed grafting and a docking procedure
Conclusions: The presented technique is simple and efficient, eliminating the side effects of external fixation. It may reduce treatment time compared to alternative methods. Femoral fractures with bone loss are prone to cause quadriceps fibrosis and heterotopic ossification, that may require further surgery, irrespective of which bone substitution method is used. Strict infection control and meticulous surgical planning is required.

No conflicts of interest reported

Greater interlimb difference in hip muscle mass in patients with metal-on-metal hip arthroplasty compared to metal-on-polyethylene hip arthroplasty at midterm follow-up.

174.

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Background: Metal-on-metal (MoM) total hip arthroplasty (THA) and hip resurfacing arthroplasty (HRA) was presumed to provide superior functional outcomes compared to metal-on-polyethylene (MoP) THA.
Purpose / Aim of Study: To compare muscle mass and power, block-step test and patient reported outcomes between MoM THA/HRA and MoP THA patients.
Materials and Methods: 51 MoM THA/HRA (33 male) and 23 standard MoP THA (8 male) patients participated in a cross- sectional study mean 6.5 (0.6 – 12.5) years postoperative. Muscle mass was measured by total- body Dual energy X-ray Absorption scans and muscle power in a Leg Extensor Power Rig. Block- step test estimates were obtained with an Inertial Measurement Unit. Clinical outcome scores were Harris Hip Score (HHS) and The Copenhagen Hip and Groin Outcome Score (HAGOS).
Findings / Results: MoM THA/HRA patients had a greater interlimb difference in hip muscle mass compared to MoP THA patients (P=0.02), but otherwise, the interlimb differences in muscle masses and power was similar (P>0.05). Muscle mass of the thigh and calf area in both legs, and muscle power in both legs was higher in MoM THA/HRA patients compared to MoP THA patients (P<0.009). Block step time asymmetry when ascending was lower in MoM THA/HRA patients compared to MoP THA patients (P=0.03). HHS and HAGOS were similar between groups (P>0.07).
Conclusions: MoM THA/HRA patients had a higher interlimb difference in hip muscle mass which could be related to surgical factors, or to an inflammatory response to the metal wear debris. Furthermore, MoM THA/HRA patients had less block-step time asymmetry when ascending compared with MoP patients.

No conflicts of interest reported

Is discontinuation of vitamin-K-antagonist necessary prior to elective TKA surgery? 175.

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Background: For patients undergoing Total Knee Arthroplasty (TKA) and simultaneously in anticoagulation treatment with vitamin-K antagonist (VAK), the treatment is usually discontinued prior to surgery. However, studies have shown high frequency of thromboembolic (TE) complications with discontinued VAK.
Purpose / Aim of Study: Thus, aim of this study was to describe intraoperative, 24 h calculated total blood loss (TBL) and complications for primary TKA without discontinuing VAK.
Materials and Methods: Eight consecutive patients undergoing TKA and in VAK treatment were enrolled; 7 had unilateral TKA and 1 bilateral TKA. All 8 patients discontinued VAK, and all TKA were performed in a fast-track setup without use of tourniquet. Patient demographics, intra-and postoperative data plus complications within 90 days were recorded. TBL was calculated by Gross' formula.
Findings / Results: Seventy-five % were men, age and BMI were 73 y (IQR 68y-78y) and 31 (IQR 26-35), respectively, 63 % were ASA III and 6 patients and high TE risk whereas 2 patients had low TE risk. Surgical time was 49 min (IQR 44-55 min). All procedures were performed with International Normalized Ratio (INR) in therapeutic range. Calculated TBL for unilateral TKA's was 1273 ml (IQR 1141-1428 ml), intraoperative blood loss was 200 ml (IQR 100-200) and 2 patients had blood transfusions, 1 and 2 units respectively. Length of stay (LOS) was 3 days (IQR 2.8-4.3 days). The bilateral TKA had a TBL of 3029 ml. No complications related to anticoagulation or surgery were recorded < 90 days.
Conclusions: TKA without discontinuation of VAK might increase TBL slightly, though; TBL was comparable to published data on patients without VAK. Considered the frequency of TE complications with paused VAK in high-risk patients, this descriptive study indicates a benefit of not discontinuing VAK for TKA surgery.

No conflicts of interest reported

Evalutation of AC joint reconstruction using modified Weaver Dunn operation

176.

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Background: Surgical reconstruction of acromioclavicular joint (ACJ) dislocations has been performed in our department using the modified Weaver Dunn procedure with either a PDS band or an anatomical designed Baltzer ACJ-hook plate as temporary reinforcement
Purpose / Aim of Study: Aim of this study was to assess clinical outcome of reconstructions of ACJ dislocation using our two traditional techniques.
Materials and Methods: From 01.01.2014 until 01.07.2016 forty patients were operated for ACJ reconstruction due to an clinically unstable ACJ with modified Weaver Dunn technique with either a PDS band or a Baltzer ACJ hook plate as a temporary reinforcement. Clinical evaluation was done with the Oxford Shoulder scoring system. 34 patients returned the questionnaire (20 patients operated with a modified Weaver Dunn with PDS band and 14 patients operated with a with a Baltzer plate). A separate subjective evaluation of the cosmesis of the operation was included in the evaluation. The Baltzer ACJ-hook plate was removed surgically after 6-8 weeks in GA, whereas the PDS band is reabsorbabel and no secondary operation is needed.
Findings / Results: The mean Oxford Score was 37.4 (37,3 for the PDS group and 37,6 for Baltzer plate group). Median was 44 (36-47) , p = 0.91. There was no statistically significant differences in any of the clinical outcomes between the two different techniques. 25 patients had good results (score 30-48) and 9 patients had moderate to unsatisfied results. The result of cosmetic satisfaction was in favour of the PDS band.
Conclusions: Our results is similar to other studies with reconstruction of the chronic unstable ACJ with failure rates between 15-25 %. The modified Weaver Dunn procedure offers an acceptable solution to an unstable ACJ in symptomatic patients using either a temporary reinforcement with the PDS band or the Baltzer plate.

No conflicts of interest reported

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