

# DOS BULLETIN



NR. 3

APRIL 2009

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# **DOS BESTYRELSE**

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## **Formand**

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## **Næstformand**

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## **Redaktør**

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## **Sekretær**

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## **Betingelser for optagelse i DOS**

Alle læger med dansk autorisation kan optages i Dansk Ortopædisk Selskab.  
Anmodning om indmeldelse i DOS kan kun ske via hjemmesiden:  
[www.ortopaedi.dk](http://www.ortopaedi.dk)  
Aktivér linket "Meld dig ind i DOS" og udfyld ansøgningen sammen med oplysninger om personlige data.

## **DOS-Bulletin**

### **Udgiver**

Dansk Ortopædisk Selskab

### **Ansvarshavende redaktør**

Sajida Afzal

### **Web-page**

[www.ortopaedi.dk](http://www.ortopaedi.dk)

### **Redaktion og annoncer**

c/o Annette van Hauen  
HovedOrtoCentret, 3342  
Rigshospitalet  
Blegdamsvej 9  
2100 København Ø  
e-mail: [annette.van.hauen@rh.regionh.dk](mailto:annette.van.hauen@rh.regionh.dk)

### **DTP & Tryk**

Kandrup Bogtryk  
Århusgade 88, 2100 København Ø  
Tlf. 3543 6000 · Fax 3543 6008  
[tryk@kandrup.dk](mailto:tryk@kandrup.dk) · [www.kandrup.dk](http://www.kandrup.dk)

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## **DEADLINES FOR NÆSTE BULLETIN**

**ANNONCER: Fredag den 1. maj 2009**

**TEKST: Fredag den 22. maj 2009**

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## **Leder**

### ***Et historisk Forårsmøde i Dansk Ortopædisk Selskab***

Det forestående Forårsmøde i Odense her i 2009 – ser ud til at blive ganske historisk, idet det indtil videre er det sidste forårsmøde i selskabets mangeårige historie.

Forårsmøderne ligger med sikkerhed dybt forankret i mange ortopædkirurgers minder. Dagene bliver tiltagende lyse, varmen er kommet og bøgen springer ud – så er det tid til at komme til DOS Forårsmøde. De nyudsprungne bøgetræer ved møderne i Svendborg og på Munkebjerg Hotel, stormvejr og udstilling i telte ved mødet i Middelfart, samt den tætte tåge der forhindrede os i at komme hjem fra mødet på Bornholm er nogle af de ”forårsminder”, der ligger langt fremme i bestyrelsens erindringer.

For ca. 10 år siden besluttede selskabet at forårsmøderne udelukkende skulle holdes i Odense, Aalborg og Aarhus. Udstillingen var vokset i en grad, så det ikke længere var muligt at tilbyde vores samarbejdspartnere i industrien tilfredsstillende forhold.

Og nu står vi så foran yderligere forandringer i selskabets mødestruktur. Foråret er præget af hektisk mødeaktivitet i Europa i fagområdernes europæiske pendant, EFORT er overgået til årlige møder, NOF holder deres biannuale møder og mange valfarter til møder i USA (AAOS / ORS / Current Concept mm). Da DOS i foråret 2010 er vært for NOF-mødet, samt i forsommeren 2011 er vært for EFORT kongressen har bestyrelsen fundet det uhensigtsmæssigt at afvikle forårsmøder i disse to

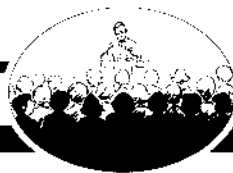
år. Vi har overvejet, om der kunne etableres fælles-sessioner på de to møder, inklusive en generalforsamling, men vi er nervøse for at DOS's initiativer vil "drukne" i de øvrige aktiviteter.

Bestyrelsen har derfor, efter moden overvejelse, fundet det passende, at foretage en justering af vores mødestruktur. Allerede fra efteråret 2010 vil selskabets medlemmer i oktober måned opleve den nye struktur. DOS-møderne udvides med én dag, således at onsdagen inddrages som en officiel DOS-dag. Der lægges op til 3 parallelle videnskabelige sessioner – såfremt der fremsendes tilstrækkeligt med kvalificerede arbejder, industri-sponsorerede frokost-sessioner, samt et øget antal faglige symposier – som etableres i tæt samarbejde med de 9 fagområder. Onsdag formiddag bliver fagområdernes – hvor de kan afvikle deres egne møder / generalforsamlinger, ligesom DOS' generalforsamling og efterfølgende Gallamiddag uforandret placeres torsdag eftermiddag og aften. Som noget nyt vil Poster-præsentationen få ophøjet fokus, bl.a. rykkes sessionen frem til torsdag formiddag. Der vil være udstilling fra onsdag morgen til fredag middag. Tirsdagen vil ligeledes blive inddraget til afvikling af de aktiviteter, der for nuværende afvikles om onsdagen, så som Workshops for yngre kolleger og længerevarende specifikke symposier. Tirsdagen er dog ikke en officiel DOS-møde-dag.

Vi håber selskabets medlemmer vil finde den nye mødestruktur tillokkende, og håber ligeledes de ledende overlæge vil acceptere at selskabets medlemmer får mulighed for at deltage på alle mødedagene.

Bestyrelsen vil således ønske jer alle et rigtigt godt forårsmøde. Og husk at bruge god tid i udstillingen sammen med vores samarbejdspartnere fra industrien.

*Bestyrelsen*



## **Dansk Ortopædisk Selskabs Forårsmøde 2009**

**Onsdag den 29. april til fredag den 1. maj**

**Radisson SAS H.C. Andersen Hotel, Odense  
onsdag den 29. april til fredag den 1. maj 2009**

Velkommen til Forårsmøde i Odense og Region Syddanmark.

Ortopædkirurgisk afdeling ved Odense Universitetssygehus har nu igen æren af sammen med Dansk Ortopædisk Selskab at byde velkommen til selskabets forårsmøde i Odense og dermed i Region Syddanmark.

Omgivelserne vil de fleste kende fra tidligere møder og traditionen tro har vi bestilt godt vejr, og udsprungne bøger, således at vi også kan nyde de ydre omgivelser.

Vi ser frem til at selskabets medlemmer, meget gerne med ledsagere, møder talstærkt frem til et par forhåbentlig frugtbare dage, med udveksling af faglig viden, inspiration til vores daglige virke og socialt samvær i gode rammer.

Som vanligt er der torsdag aften arrangeret gallamiddag med efterfølgende dans. Også til dette arrangement håber vi på stort fremmøde.

På gensyn i Odense og Region Syddanmark.

*Niels Dieter Röck*

## **Udstillere**

<b><i>Firma</i></b>	<b><i>Stand nr.</i></b>	<b><i>Areal</i></b>
Allergan	6	3
ArthroCare Scandinavia ApS	18	3
Artimplant AB	8	3
Astra Tech A/S	20	3
Bayer A/S	9	3
Biomet Danmark ApS	2	12
Boehringer Ingelheim Danmark A/S	16	3
B. Braun Aesculap	19	3
DJO Nordic AB	17	3
Fischer Medical ApS	23	3
Helios Anatomic ApS	4	4
Hemax Medical ApS	7	4
KCI Medical ApS	31	3
KEBO MED	13	3
LJ Medical Orthopaedics A/S	10	3
Medtronic Danmark A/S	21	3
Mærsk-Andersen as	24	3
Nordic Medical Supply A/S	1	16
Norpharma A/S	30	3
Noscomed Medical Supply A/S	22	3
Ortotech	3	8
Osmedic ApS	5	3
Protesekompagniet	15	9
Scandinavian Customized Prosthesis	14	3
Sports Pharma Ortosupport ApS	25	3
Simonsen & Weel A/S	29	3
Smith & Nephew A/S	26	9
Stryker Danmark	28	3
Swemac Orthopaedics AB	12	6
Synthes A/S	27	8
Viking Medical Scandinavia ApS	11	5

# Udstilling







# **DOS Forårsmøde 2009**

29. april – 1. maj, Odense

Onsdag 29. april 2009

**13:00 – 16:00 Lokale A:**

**DOS symposium**

Registerbaserede studier versus randomiserede kliniske studier:

Styrker og svagheder

**13:00 – 17:00 Lokale B**

**Workshop for turnus- og introduktionslæger i ortopædkirurgi**

## **Mødeoversigt**

*Torsdag 30. april 2009*

<b>Room A</b>	<b>Room B</b>
<i>12:00 - 13:00 Frokost</i>	
<i>13:00 - 14:30</i> <b>Session I</b> <b>Knæ/Idræt/Andet</b> <i>Chairmen:</i> <i>Michael Krosgaard &amp;</i> <i>Lasse Rasmussen</i>	<i>13:00 - 14:30</i> <b>Session II</b> <b>Traume</b> <i>Chairmen:</i> <i>Morten Schultz Larsen &amp;</i> <i>Henrik Palm</i>
<i>14:30 - 15:30 Kaffe og Udstilling</i>	
<i>15:30 - 17:30</i> <b>Generalforsamling</b>	
<i>19:00 - ?</i> <b>Galla middag</b>	

**Indtegning på bordplan til middagen  
slutter torsdag kl. 15:30!!!**

**Påklædning: Smoking eller mørkt tøj.**

**Der fremsendes billetter til frokosten torsdag,  
men ikke til middagen.**

**Frokostbilletten skal afleveres til betjeningen.**

## **Mødeoversigt**

*Fredag 1. maj 2009*

<b>Room A</b>	<b>Room B</b>
09:00 - 10:30 <b>Session III - Hofte I</b> <i>Chairmen: S. Solgaard &amp; J. Penny</i>	09:00 - 10:30 <b>Session IV - Ryg Chairmen:</b> <i>Stig M. Jespersen &amp; T. Andersen</i>
<b>10:30 - 11:30 Kaffe og Udstilling</b>	
11:30 - 12:00 <b>DOS – Honorary Lecture</b> <i>Stephen Cannon, President, British Orthopaedic Association “How does private praxis influence Orthopaedic Surgery in UK?”</i>	
12:00 - 12:45 <b>Professoral tiltrædelsesforelæsning</b> <i>Professor Peter Magnusson Institut for Idrætsmedicin, Bispebjerg Hospital ”Musculoskeletal Rehabilitation”</i>	
<b>12:45 - 13:45 Frokost og Udstilling</b>	
13:45 - 14:45 <b>Session V - Hofte II</b> <i>Chairmen: Benn Duus &amp; Søren Overgaard</i>	13:45 - 14:45 <b>Session VI - Eksperimentel</b> <i>Chairmen: Ebbe Stender &amp; Hans Gottlieb</i>
<b>14:45 - 15:00 Kaffe</b>	
15:00 - 16:00 <b>Session VII - Posters</b> <i>Chairmen: Per K. Andersen, Finn B. Christensen &amp; Camilla Ryge</i>	
16:00 - 16:30 <b>Uddelinger</b>	

# **Dansk Ortopædisk Selskabs Generalforsamling**

Torsdag den 30. april 2009 kl. 15:30

## **DAGSORDEN:**

- 1) Valg af dirigent
- 2) Formandsberetning
- 3) Udnævnelse af æresmedlem
- 4) Udvalgsberetninger
  - a) Uddannelsesudvalget
  - b) UEMS
  - b) EFORT
  - d) NOF
  - e) Beretning fra arbejdsgrupper og øvrige udvalg
    - i) DRG
    - ii) NIP
  - g) Beretning fra Fagområder
- 5) Kassererens beretning
  - a) DOS-Fonden
  - b) Regnskab
  - c) Kontingent 09 - 10
- 6) Valg til bestyrelse og udvalg
- 7) Eventuelt



## **Formandsberetning til Generalforsamlingen i Dansk Ortopædisk Selskab den 30. april 2009**

Efter generalforsamling i Aalborg i maj 2008 kunne bestyrelsen byde velkommen til næstformand *Benn Duus*. Bestyrelsen har således i det forgangne år bestået af:

Redaktør *Sajida Afzal*, kasserer *Bo Sanderhoff Olsen*, sekretær *Benny Dahl*, næstformand *Benn Duus* samt formand *Per Kjærsgaard-Anderesen*. Formanden for DOS' Uddannelsesudvalg *Finn Bjarke Christensen* samt selskabets nye Web-redaktør *Steen Lund Jensen* deltager traditionelt i bestyrelsesmøderne, herved sikres det at beslutninger og aktiviteter hele tiden er opdateret på hjemmesiden samt implementeret i Uddannelsesudvalget. Bestyrelsen er yderst tilfreds med at *Steen Lund Jensen* sagde ja-tak til jobbet som webmaster – hvorved selskabet som afløser for *Klaus Hindsø* har fået en ny meget kompetent kollega til at varetage den for selskabet så vigtige rolle.

Der skal lyde en tak mine kolleger i bestyrelsen samt Bjarke og Steen for et godt samarbejde i det forgangne år. Vi har haft mange store opgaver – og I har alle ydet en fornem indsats.

Bestyrelsen har i det forgangne år afholdt 8 bestyrelsesmøder samt et Seminar sammen med Uddannelsesudvalget, repræsentanter for de 9 fagområder samt vores samarbejdspartnere fra industrien.

I det forgangne år (perioden 1. januar 2008 til 31. december 2008) er selskabets medlemsantal atter vokset til nu rekordstort 920. Der skal lyde en særlig velkomst til vores 66 nye medlemmer:

Mohammad Adwan  
Azfar Alam  
Wisam Al-hashimi  
Jaafar Ghariabi Al-Rabae  
Thomas Andersen  
Kiran Anderson  
Linda Christie Andrea  
Zafar Bahadirov  
Ilija Ban  
Christine Bargfeldt  
Rasmus Buck Bendtson  
Karen Toftdahl Bjørnholdt  
Pernille Blus-Pedersen  
Anders Ploug Boesen  
Stig Brorson  
Stefano Cecere  
Bekir Sitki Demirbas  
Gazelle Djafari  
Mahminir Eizadpanah  
Thomas Foged  
Casper Foldager  
Klaus Hanisch  
Peter Hansen  
Søren Juul Hansen  
Mohammed Jafar  
Thomas Jakobsen  
Peter Egede Jensen  
Ture Karbo  
Andrius Kazlauskas  
Louise Klingenberg  
Britt Mejer Knudsen  
H. Jens Kristinsson  
Waldemar Kubacki  
Mindaugas Mikuzis  
Samir Munir  
Michael Mølmer  
Anne Mørup-Petersen  
Tobias Nygaard

Elith Bjarne Olsen  
Anders Wallin Paulsen  
Jens Brahe Pedersen  
Daniela Penciu  
Juozar Petruskevicius  
Anders Philipsen  
Vidminas Ramoska  
Claudia Ulla Rasmussen  
Jakob Fraes Rasmussen  
Martin Schou  
Hassan Shakir  
Louise Lau Simonsen  
Mette Skorstad  
Ann Sobrón  
Jerzy Stiasny  
Rasmus Stokholm  
Arne Michael Storås  
Torben Stryhn  
Robert Svardal-Stelmer  
John Løvenhardt Sørensen  
Peter Toft Tengberg  
Theis Muncholm Thillemann  
Finn Tranberg  
Claus Tvedesøe  
Karen Petra Weigert  
Jens Christian Werlinrud  
Annika Winther  
Srdjan Zivanovic

**I samme periode har vi mistet  
4 medlemmer som er afgangt  
ved døden:**

Bent Skielboe  
Jørgen Reimers  
Arne Bjørn Christensen  
Knud Tophøj

## **DOS's daglige forretninger**

Bestyrelsen vil gerne takke Annette van Hauen for en meget omhyggelig varetagelse af selskabet daglige gøremål. Annette er jo en "institution" i DOS – og kender "Gud og hvermand" – samt kan gengive alle tidligere problemstillinger i selskabet. Annette er gået på pension fra sit arbejde i det offentlige – og selskabet kan ikke forvente at Annette kan eller vil varetage selskabets sekretariatsopgaver i de næste mange år. Derfor er bestyrelsen påbegyndt et analyse arbejde af hvorledes sekretariats- og bestyrelsesfunktioner optimalt bør struktureres for de kommende 5 til 10 år. Inspirationen er kommet fra det hollandske selskab, som har ansat en administrativ person på halvtid til at varetage mange af de gøremål som bestyrelsen i dag selv gør, f.eks. sagsbehandling og korrespondance. Bestyrelsen har derfor haft et indledende møde med DOS's revisor og advokat omkring potentielle scenarier. Bestyrelsen vil holde selskabets medlemmer løbende orienteret om processen i såvel DOS Bulletin, på hjemmesiden – samt naturligvis på de kommende generalforsamlinger.

## **Specialeplanlægningen**

Specialeplanlægningen blev en meget intens proces over 8 måneder afsluttet i sommeren 2008, med specialets egen Specialerapport og den efterfølgende Specialeudmelding fra Sundhedsstyrelsen. Det blev til et digert værk på ca. 40 sider. Der skal lyde et stort tak til såvel arbejdsgruppen samt ikke mindst til fagområderne, som alle deltog aktivt i beskrivelsen af faget på de af Sundhedsstyrelsen udmeldte 4 niveauer: Hovedfunktion, Regionsfunktion, Højt Specialiseret Funktion samt Udenlands- / Udviklingsfunktion. Dialogen med Sundhedsstyrelsen omkring udarbejdelsen af både Rapporten og Specialeudmeldingen har bestyrelsen oplevet som positiv. Der har naturligvis i en sådan proces været områder hvor Sundhedsstyrelsen og arbejdsgruppen havde divergerende synspunkter, men efter vores vurdering aldrig for faget "alvorlige" uenigheder. Alle fra bestyrelsen var repræsenteret i arbejdsgruppen – og vi havde det fælles mål at specialeplanlægningen ikke måtte "atomisere" specialet, men tværtimod skulle søge at fastholde alle fagområderne under ortopædien, for i alle sammenhænge at stå fagligt stærkere overfor såvel myndighederne samt andre specialer og organisationer. Der har som omtalt kun været meget få "knaster" som skulle files af – og bestyrelsen oplever efterfølgende at der nu er udfærdiget en ene-

stående beskrivelse af vores speciale i detaljer, vi ikke har set i de tidligere Specialerapporter. En speciel bemærkning skal der gives til det ryggkirurgiske fagområde, hvor der efter en række møder med det neurokirurgiske speciale og Sundhedsstyrelsen nu er anlagt en fælles linje de to specialer imellem omkring diagnostik, indikation samt valg af kirurgisk teknik, ligeledes på de degenerative lidelser i columna cervicalis. Det har så efterfølgende medført, at de ryggkirurgiske enheder i de to specialer, på anmodning af Sundhedsstyrelsen, har iværksat udfærdigelse af fælles Guidelines – en proces der forventes færdig allerede her i 2009. Men resultatet af selve specialeplanlægningen kommer vi nok først til at se i de kommende år, når Regionerne sammen med Sundhedsstyrelsen skal dimensionere og placere Regionsfunktionerne samt de Højt Specialiserede Funktioner.

### **Faglig profil**

Det forgangne år blev ligeledes året hvor der blev implementeret nye vilkår ved ansøgning af hoveduddannelsesstilling. En ad hoc nedsat arbejdsgruppe under DOS med Søren Overgaard som formand har sammen med Danske Regioner igennem de sidste 2 år arbejdet på at færdiggøre beskrivelsen af blandt andet den såkaldte Faglige Profil, der skal være til stede på ansøgningstidspunkter. Blandt de nye tiltag er, at der allerede midtvejs i Introduktionsstillingen skal kunne udfærdiges en status over den uddannelsessøgende. Det er ligeledes nyt, at en central del i ansættelsesproceduren er Den Strukturerede Ansættelsessamtale. DOS foreslog Danske Regioner at der blev nedsat et nationalt ansættelsesudvalg – men Regionerne ønskede at der skulle være et ansættelsesudvalg i hver af de 3 Uddannelsesregioner. Man kunne frygte at det vil betyde en del ekstraarbejde til hvert af de 3 udvalg – da ansøgerne kan søge alle 3 regioner – og da der regionerne imellem ikke koordineres omkring ansøgningstidspunktet og den efterfølgende ansættelsesproces. Men – de første runder har allerede kørt i de 3 Uddannelsesregioner – og tilbagemeldingerne til bestyrelsen har stort set udelukkende været positive. Der skal lyde et stor tak til især *Søren Overgaard* – men også de øvrige i ad hoc gruppen for arbejdet med at få såvel profilen beskrevet og godkendt i Danske Regioner samt opstarten med smidiggørelse af de første ansættelsesrunder.



## **Dansk Medicinsk Selskab**

Dansk Medicinsk Selskab er en ”paraplyorganisation”, der varetager de medicinske specialers interesser overfor primært myndighederne med Sundhedsstyrelsen og Sundhedsministeriet i spidsen. DOS har i de forgangne år oplevet at vurderinger og beslutninger, som er udarbejdet via Dansk Medicinsk Selskab omkring forhold, som i stor grad vedrører vores speciale – er kørt forbi selskabet uden, at vi hverken er informeret eller hørt – førend en intervention stort set er umulig. Her tænkes på udpegning af medlemmer til repræsentation i Det Nationale Råd vedrørende Specialeplanlægningen, bemanningen af skadestuen, placering af basislæger i det ortopædkirurgiske speciale m.m. Bestyrelsen besluttede derfor, at selskabet måtte tættere på, hvor processerne og dermed beslutningerne starter. Bestyrelsen samt selskabets øvrige delegerede mødte således alle op på Dansk Medicinsk Selskabs generalforsamling og gjorde selskabets synspunkter gældende. På samme vis fik vi indvalgt *Niels Dieter Röck* i Dansk Medicinsk Selskabs bestyrelse – og det er nu bestyrelsens opfattelse, at selskabet herved er klædt betydeligt bedre på til de kommende opgaver med vores speciales interesse, som måtte ”dryppe ned på” Dansk Medicinsk Selskab via myndighederne. I forlængelse af dette har bestyrelsen sammen med de øvrige skærende specialer, som er repræsenteret i Kirurgisk Forum, udfærdiget forslag til vedtægtsændringer i Dansk Medicinsk Selskab, forslag som vil blive fremlagt på deres næste generalforsamling.

## **Akut medicinsk fagområde**

Som en del af aktiviteterne under Dansk Medicinsk Selskab har der været nedsat en Styregruppe og Arbejdsgruppe til beskrivelse af Det Akutmedicinske Fagområde. I Styregruppen deltog på vegne af DOS først *Claus Munk Jensen* siden hen *Peter Gebuhr*, medens *Niels Dieter Röck* har deltaget i Arbejdsgruppen. Beskrivelsen er nu færdiggjort og blev præsenteret på et møde i Lægeforeningen i efteråret. Det var bestyrelsens ønske, at man skulle fokusere på at etablere et egentligt speciale – men det var der hverken flertal for blandt de forsamlede specialer eller fra myndighedernes side – måske fordi det tager minimum 5-7 år at uddanne speciallæger til varetagelse af området – og så længe venter Sundhedsstyrelsen ikke med at sætte ”skibet i søen”. Bestyrelsen har tidligere i DOS Bulletin detaljeret beskrevet, hvorledes det forventes at det rent praktisk kommer til at forgå i de akut medicinske modtageafsnit set

fra ortopædkirurgernes side – men den endelige tegning hertil er nok ikke færdiggjort.

## **NOF**

I april 2008 var det hollandske selskab vært ved NOF-kongressen. Med 500 deltagere – heraf dog ca. halvdelen fra Holland, må kongressen siges at være ”godkendt”. I maj 2010 skal DOS være vært ved NOF-kongressen, som afvikles i Musikhuset i Aarhus. Med *Kjeld Søballe* som kongrespræsident, *Søren Overgaard* som Scientific Chair, *Michael Ulrich-Vinther* som kasserer og selskabets formand som bestyrelsens repræsentant er organisationskomiteen allerede godt i gang. First Announcement er udsendt. Bestyrelsen håber, at rigtig mange danske kolleger vil deltage i NOF-kongressen – især da der nu ikke afholdes et DOS forårsmøde.

Midt i april måned skal bestyrelsen deltage i et fællesmøde med alle de øvrige nationale bestyrelser under NOF – sammen med NOF’s board. Mødet afvikles i Estland – som skal være vært for NOF-kongressen i 2012. Da mødet på tidspunktet for færdiggørelse af den skriftlige beretning ikke har været afviklet, vil detaljerne først kunne fremlægges i den mundtlige beretning.

## **EFORT**

Hvordan ser verden ud om 10 år??? Et altid interessant spørgsmål – og i relation til DOS og tilhørende aktiviteter, så er det nok umuligt at spørge om. Der er dog ingen tvivl om, at DOS om 10 år er et stabilt og stærkt selskab, der har fat i medlemmerne, samt qua selskabets størrelse er centrale aktører i den danske sundhedsverden. Men hvad med EFORT? Bestyrelsen har en klar fornemmelse af at EFORT stille og roligt er ved at skabe et europæisk pendant til AAOS. Der er centralt i EFORT stor fokus på uddannelse, niveauet for de årlige kongresser samt ikke mindst for hvorledes ortopædien i Europa kan forenes, på trods af de store nationale forskelle på såvel den ortopædkirurgiske struktur samt ikke mindst kultur og historie.

I 2011 skal DOS som anført være vært for den 12. EFORT kongres. Kongressen afvikles i Bella Centret og arbejdet med de afsluttende planeringer er stille og rolig gået i gang. EFORT har engageret sig med et

Italiensk Kongresbureau til 4 kongresser, til og med København 2011 – så selskabets arbejde bliver primært i relation til de sociale og videnskabelige aktiviteter. Der forventes et stort ”ryk ind” – med op til 10.000 deltagere fra hele verden. Det bliver suverænt den største opgave for DOS igennem tiderne – og DOS har derfor etableret en lokal Organising Committee bestående af bestyrelsen, *Søren Overgaard* og *Klaus Hindsø*. Bestyrelsen håber at rigtig mange af vores medlemmer finder det attraktivt at deltage i mødet som afvikles i Bella Centeret i dagene 1. til 4. juni 2011.

I 2010 skal DOS være vært for *EFORT's Travelling Fellowship*. Ca. 25 yngre ortopæder fra hele Europa tropper op og skal på én uge besøge flere afdelinger i Danmark. Camilla Ryge – som netop selv har været *Travelling Fellow* i Østrig i 2008 – har sammen med bestyrelsen påtaget sig opgaven at arrangere opholdet. Tak til alle de danske afdelinger som velvilligt modtager og underviser vores yngre kolleger fra Europa – samt ikke mindst tak til Camilla.

### **DOS-møder i fremtiden**

Da DOS i såvel 2010 som 2011 er vært i forårsmånederne for henholdsvis NOF og EFORT møderne, har bestyrelsen nøje overvejet om det var tiden til et skift i vores mødestruktur. Efter en kortvarig nedgang i antal tilmeldte foredrag og posters har vi igennem de sidste år på ny mærket en markant fremgang. Det kunne egentlig tale for fastholdelse af 2 årlige møder. Men foråret er et ”pres” på os alle. Der er nu årligt EFORT, NOF hvert andet år samt ikke mindst en møderække i fagområderne. Bestyrelsen finder derfor, at den nuværende fase – med NOF og EFORT-møderne i Danmark de kommende år - er et passende tidspunkt at overgå til et årligt møde. I vil derfor allerede fra 2010 opleve at Generalforsamlingen er flyttet fra forårsmødet til Årsmødet i København i oktober. Af samme årsag har bestyrelsen valgt at udvide Årsmødet med en enkelt dag – således at onsdagen er en officiel DOS-dag. Bestyrelsen arbejder ligeledes på en model for, hvorledes vores kommende årlige kongresser kan afvikles i forskellige byer og lokaliteter. Vi håber på medlemmernes accept af den nye struktur – der fra os alle – ikke mindst bestyrelsen - kræver megen fokus, når vi nu kun mødes én gang om året.

## **Uddannelsesudvalget**

Formanden for UDDU – som vi i dagligdagen kalder udvalget – vil selv fremlægge status, men bestyrelsen vil gerne takke *Finn Bjarke Christensen* og hans kolleger i UDDU for den store indsats i 2008-2009. UDDU er et centralt organ under DOS. Udvalget varetager mange betydningsfulde opgaver for vores selskab – og for bestyrelsen er det yderst trygt at vide, at man på den vis kan sikre den videre proces i de mange uddannelsesmæssige opgaver der kommer ind over bestyrelsens bord.

## **DRG udvalget**

På samme måde vil bestyrelsen gerne takke *Svend Østgaard* for et ikke alene meget stort, men også særdeles vigtigt arbejde for selskabet på DRG-området. DRG er blevet et økonomisk omdrejningspunkt for såvel de offentlige som de private sygehuse – og det er meget afgørende, at vi i selskabet holder fokus på dette.

## **Privathospitaler**

2008 blev atter et år, hvor der kom skelsættende forandringer på det private område. Regeringen har med deres politik forøget trafikken af offentlige patienter, som omvisiteres til behandling i privat regi. Det har medført en naturlig oprustning på privathospitalerne, men ligeledes medført at mange af specialets kompetente speciallæger enten er skiftet til en fuldtidsansættelse i privat regi eller er ansat på deltid respektive som konsulent. Med den tiltagende aktivitet i de private klinikker, er det en betydelig del af specialets kirurgiske og dermed undervisningsmæssige ressourcer, som afvikles i privat regi. Det har derfor været meget naturligt, at DOS sammen med Sundhedsstyrelsen har vurderet, hvorledes dette uddannelsespotentiale kan udnyttes til gavn for vores uddannelsessøgende yngre kolleger. Der pågår aktuelt en beskrivelse af 3 uddannelsesforløb, hvor dele af hoveduddannelsen foregår i privat regi. Det er bestyrelsens klare intention, at disse forløb bør og skal etableres, men det er ligeledes bestyrelsens klare holdning, at en uddannelse i privat regi skal dimensioneres efter hvilket uddannelsesstilbud der kan gives på det aktuelle sted, samt ikke mindst, at det sikres at der uddannes i kirurgiske færdigheder – da vi jo er et skærende speciale.

Med den tiltagende flytning af speciallæger til aktiviteter i privat regi, er der et naturligt spørgsmål som trænger sig på. Hvad betyder det for kva-

liteten af behandlingen i det offentlige? Da det typisk er erfarne kolleger, som vælger skiftet til privat regi, kan der potentielt opstå manglende kvalifikationer på afdelinger, som almindeligvis tilbyder denne specialiserede behandling – ligesom der kan opstå vakancer i vagtlagene. Bestyrelsen ser på dette med stor opmærksomhed – ligesom vi er meget bevidste om, at hvis vores medlemmer i forlængelse af en fuldtidsansættelse i det offentlige, placerer betydelige ressourcer i et konsulentjob i privat regi, potentielt foreligger en risiko for en negativ effekt på specialets ”drive” på det videnskabelige område. Det er derfor med stor interesse at vi i morgen skal høre *Dr. Stephen Cannon* – formand for British Orthopaedic Association fortælle om udviklingen i England på netop disse områder.

*Per Kjærsgaard-Andersen*



## Uddannelsesudvalget orienterer

### Revision af målbeskrivelser

Der er under uddannelsesudvalget i DOS nedsat et ad hoc udvalg der varetager og koordinerer revision af målbeskrivelser for introduktions- og hoveduddannelse. Udvalget består af et medlem fra uddannelsesudvalget, et medlem udpeget af UDDU samt fagets postgraduate kliniske lektorer i de tre regioner.

Udvalget er i gang med revision af målbeskrivelsen for introduktionsuddannelsen. Der foreligger 8 nye kompetencekort der erstatter de 4 oprindelige. Det er disse kort der refereres til i Den faglige profil og på vurderingsskemaet. De vil blive lagt ind i målbeskrivelsen snarest (ligger hos SST).

Konstruktive forslag til ændringer i målbeskrivelse modtages gerne på mail til Uddannelsesudvalget.

### Ansøgning til HU-stilling

Læger der søger ansættelse i HU-stilling skal indsende følgende:

- Ansøgningsskema med motiveret ansøgning.
- CV – inkl. redegørelse for supplerende relevante aktiviteter
- Vurderingsskema
- Udtalelse fra vejleder, UAO og ledende overlæge

Læger der har fået godkendt introduktionsstilling behøver ikke udtalelse, men en sådan kan selvfølgelig vedlægges. Vurderingsskema skal medsendes.

Faglig profil, vurderingsskema og skabelon for struktureret ansættelsesamtale kan findes på respektive uddannelsessekretariats hjemmeside.

Der findes ikke længere officielt skema til opgørelse af operationsaktivitet, men det anbefales at medsende en struktureret og underskrevet liste. Det anbefales ikke at medsende operationsliste i form af ustrukturerede dataudskrifter.

Der vil på DOS hjemmeside inden længe foreligge en udførlig checkliste til brug for ansøgere til introduktions- og hoveduddannelsesstillinger og deres vejledere.

*Uddannelsesudvalget*

### **Rettelse**

Vi beklager fejl i teksten under ”Uddannelsesudvalget informerer”, i sidste Bulletin. Der skulle stå ”Ansøgning til **Hoveduddannelsesstilling** og ikke **Introduktionsstilling**.”

# **Valg**

**Ved DOS Generalforsamling 2009 afholdes valg**

## **Uddannelsesudvalg:**

Niels Wisbech og Thomas Lind er på valg.  
De er begge villige til genvalg.

Henrik Palm bliver den nye Hoveduddannelsesrepræsentant,  
uden kampvalg.



**Onsdag den 29. april 2009**

13:00 – 16:00

**DOS symposium, Odense**

**Registerbaserede studier versus  
randomiserede kliniske studier:  
Styrker og svagheder**

Dansk Selskab for Hofte- og Knæalloplastikkirurgi ønsker ved ovenstående session at opdatere foreningens medlemmers kompetencer i forbindelse med udførelse og vurdering af registerbaserede studier sammenholdt med randomiserede kliniske studier.

Symposiet er relevant for alle yngre læger som overvejer eller er i gang med klinisk forskning samt speciallæger i ortopædkirurgi.

Tilrettelæggelse: Dansk Selskab for Hofte- og Knæalloplastikkirurgi ved professor, overlæge, dr. med., forskningsleder Søren Overgaard i samarbejde med Klinisk Epidemiologisk Afdeling ved afdelingslæge, ph.d. Alma B. Pedersen

**Program**

- 13.00 - 13.45 Ortopædiske databaser og Sundhedsstyrelsens registre - gennemgang
- 13.45 - 14.00 Pause
- 14.00 - 14.30 Registerbaserede studier - styrker og svagheder (afdelingslæge Alma B. Pedersen)
- 14.30 - 15.00 Randomiserede kliniske studier - styrker og svagheder (forskningsoverlæge Søren P. Johnsen)
- 15.00 - 15.30 Randomiserede kliniske studier - erfaring fra en ortopæd (overlæge Lars Borris)
- 15.30 - 16.00 Debat i plenum

Tilmelding er ikke nødvendig. Det serveres kaffe og kage i forbindelse med symposiet.

**Onsdag den 29. april 2009**

13:00 – 17:00

**Workshop for turnus, basis og  
introlæger i ortopædkirurgi**

Til DOS forårsmøde i Odense vil der onsdag den 29. april blive afholdt workshop for yngre læger med interesse i ortopædkirurgi

Workshoppen vil til forårsmødet omhandle:

**Hoftenære frakturer –  
hvordan de behandles operativt.**

Der er plads til 30 deltagere, medicinstuderende kan deltage hvis der er plads.

Der vil først blive holdt et spændende oplæg af:

Dr. Anders Troelsen, Aabenraa Sygehus og dr. Henrik Palm, Hvidovre Hospital.

Herefter vil der være workshop i 2 hold, med en kaffepause midtvejs og skift mellem workshops.

Der vil blive mulighed for at prøve forskellige osteosynteser på kunstknogler, bla. osteosynteser med skruer, skinner og søm, samt proteser, og der vil være mulighed for at afprøve en operationssimulator.

Man vil således kunne prøve alle de kendte metoder til behandling af disse frakturer.

Workshoppen tæller 4 timer og der udstedes kursusbevis,

Tilmelding Michael Brix, DOS Uddannelsesudvalg,  
mail: michaelbrix@mail.dk inden 1.4.09

Deltagelse koster 100 kr., som indsættes på kontonr: 95703086895

Skriv ”Tilmelding til work-shop” og husk navn !!!

# **Torsdag den 30. april 2009**

13:00-14:30 Lokale A

## **Foredragssession I: Knæ/Ildræt/Andet**

Chairmen: Michael Krogsgaard, Lasse Rasmussen

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**Fredag 1. maj 2009**

11:30 – 12:00 lokale A

***DOS - Honorary Lecture***

*Stephen Cannon*

*President British Orthopaedic Association*

***How does private praxis influence  
Orthopaedic Surgery in UK?***

**Fredag 1. maj 2009**

12:00 – 12:45 lokale A

***Professoral tiltrædelsesforelæsning***

*Professor Peter Magnusson  
Idrætsmedicinsk Klinik, Bispebjerg Hospital*

***Musculoskeletal Rehabilitation***

# **Fredag 1. maj 2009**

13:45 – 14:45 Lokale A

## **Foredragssession V: Hofte II**

**Chairmen: Benn Duus, Søren Overgaard**

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# ***Abstracts***

# PROSPECTIVE EVALUATION OF OPEN TROCHLEOPLASTY IN PATIENTS WITH RECURRENT PATELLA DISLOCATION AND SEVERE TROCHLEA DYSPLASIA

*Lars Blønd*

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**INTRODUCTION** Since a dysplastic trochlea has been identified as the main pathomorphology in recurrent patellofemoral instability, trochleoplasty have become an accepted and established surgical solution(1;3;4). In cases with dysplasia von Knoch et al found a Kujala score of 95, after a mean follow-up of 8.3 years(5). Shoettle et al have in biopsies 9 months postoperatively, found histologically normal cartilage(2).

**MATERIAL AND METHODS** Six consecutive patients with recurrent patella instability and grade C or D dysplasia (graded by x-ray and MRI) and a positive patella apprehension test at 30 degrees of knee flexion were included. Median age was 22 years (20-25). All had an open trochleoplasty with release of a cartilage flake with a chisel, deepening and lateralization of the trochlea with a round burr, and reinsertion of the flake with vicryl bands. The mean follow-up was 26 month (13 – 40).

**RESULTS** At follow-up, all patient had negative patella apprehension test and have not experienced subluxations. The median Kujala score had increased from 48 (43-64) to 78 (71-92). The median KOOS score was pre/post-operatively: pain 50/89, symptoms 52/75, ADL 63/92, Sport 13/70, QOL 19/63.

**CONCLUSION** The results from this small series of open trochleoplasty are comparable to other series, and comparable to results obtained by stabilizing patient without dysplasia. The prospective use of the KOOS score is new in the evaluation of patients troubled by patellofemoral instability, and the score seem to be useful for this condition. After these cases, we have developed an arthroscopic trochleoplasty, and has therefore stopped the open technique.

# SCAPULOTHORACAL ARTHROSCOPY, A PROSPECTIVE STUDY

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**INTRODUCTION** The snapping scapula is a relative common, however often overlooked, cause of shoulder pain and shoulder inability. The origin of the pain is mainly an inflamed bursa caused by a bony prominence on the superiomedial scapula angle or eventually as a result of muscular imbalance causing a tilted scapula. In cases refractory to physical therapy and local steroids, satisfactory results have been reported by bursectomy and resection of the superiomedial angle of the scapula by a number of authors.

**MATERIAL AND METHODS** The inclusion criteria were persistent scapulothoracic pain for more than six months, failure of physiotherapy and completion of the WORC score preoperatively. From 2006 through 2008, 9 out of 13 patient (5 women, 4 men) with a mean age of 41(19-62) had a scapulothoracic arthroscopy and fulfilled the criteria on inclusion. At follow-up at a median of 9 months (3–31 months) the WORC score were repeated. In 7 cases the history was without sudden onset of pain, and in one of the cases the pain was related to a trauma. 3 patients had previously been operated in the shoulder with no effect on their scapulothoracic pain. 6 patients experienced transient effect of steroid injection in the bursa. At the operation the scapulothoracic bursa and the superomedial scapula angle was partially resected.

**RESULTS** All patient experienced less pain at follow up. The WORC score improved from an average 36,4(10-64) preoperative to 77,1 (30-100) at the time of follow-up. No complications were registered.

**CONCLUSION** This prospective study indicates that scapulothoracic arthroscopy give good short time results for patients with refractory painful scapulothoracic bursitis.

# RESECTION ARTHROPLASTY AFTER FAILED CARPO-METARPAL JOINT PROSTHESIS

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**INTRODUCTION** Total joint prosthesis in CMC joint arthritis of the thumb has been associated with high failure rates. Implant loosening is often treated with resection arthroplasty, and the purpose of this study was to compare the results in patients treated with resection arthroplasty after failed total joint prosthesis with patients with Elektra total joint prosthesis without radiological or clinical signs of failure.

**MATERIAL AND METHODS** We did a case-control study comparing 10 patients aged 53.5 years (47-63) treated with resection arthroplasty after failed total joint prosthesis with 11 Elektra total joint prosthesis in 10 patients aged 55.8 (45-63) without radiological or clinical signs of failure. The failed implants were 7 Elektra implants and 3 MOJE. The observation time in the resection arthroplasty group was 32 months (6-52) and in the Elektra group 38 months (25-49). We used the DASH score for self reported functional evaluation, and the Kapanjii opposition test for evaluation of movement. Grip strength was compared to the contra lateral hand and divided into <75%, 75-90% and >90%.

**RESULTS** We found no difference in DASH score, in the pinch grip related self reported function or in pain between the two groups. In eight out of ten patients in the resection group the finger movement was comparable to the Elektra group. The last two patients had both restricted abduction and opposition. Grip strength was significantly lower in the resection group ( $p < 0.01$ ) compared to the Elektra group.

**CONCLUSION** Resection arthroplasty after failed total joint prosthesis results in an acceptable function of the thumb compared to the original implant, but grip strength seems to be reduced after implant removal.

# DOES OVERWEIGHT AND OBESE INFLUENCE THE OUTCOME 1 YEAR AFTER TOTAL KNEE-ARTHROPLASTY

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**Background:** In Denmark there are every year performed 5000 total knee Arthroplasty(TKA).The association between overweight and outcome are not clear.The purpose of this studie,was to exanimte the association between body mass index(BMI)and outcome 1 year after TKA. Method and material: 158 patients, 116 woman and 42 men,who had a TKA Sygehus Sønderjylland Sønderborg, between January 1. 2005 – December 31. 2006. Each patient was followed from operation to 1 year after. There were four outcome measures;functional score,knee score, functional improvement and knee improvement. Data was collected from journals and the database Dansk Knæalloplastik Register. Results: For woman there was significant association between BMI and knee improvement score – 0,97 ( $p=0,003$ ). The correlations coefficient for knee score was significant ( $p=0,04$ ). There was significant association between all four measures, for patients > 65 years of age. Functional score( $p=0,006$ ),knee score ( $p=0,01$ ),functional improvement-1,09 ( $p=0,017$ )and knee improvement-1,14( $p=0,006$ ).For the patients<65 years of age,there was a positively significant drop 1,47( $p=0,001$ ).At the Functional score there was not significant association with BMI for patients<65 years of age. Conclusion: There are association between BMI and knee score and for woman there is association between BMI and knee improvement.Only when stratifying for age,there was found association between BMI and functional score, and BMI and functional improvement. For the four outcome measures there was significant association whit BMI, for patients > 65 years of age. In the measure, functional improvement, there was a positive significant association with BMI for the workers < 65 years of age. In this group the functional improvement got better when the BMI was higher.

# **RADIOGRAPHIC EVALUATION OF CEDELL OSTEOTOMY VS. SCARF OSTEOTOMY FOR MODERATE TO SEVERE HALLUX VALGUS**

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**INTRODUCTION** Until 1998 we used the Cedell procedure when the intermetatarsal (IM) angle was higher or equal to 15 degrees. From 1998 we used a Scarf osteotomy when IM angles were equal to or greater than 15 degrees and lower than 20 degrees, if the IM angle were equal to or greater than 20 degrees we used the Cedell procedure. Aim: To compare the radiographic correction in two groups of patients where the Scarf and Cedell osteotomy was used on the same indication.

**MATERIAL AND METHODS** Fifty-one Cedell and 73 Scarf procedures were done. In bilateral operated only the first operated side was included. Reason for exclusion: Scarf: 12 bilateral, 8 missing x-rays, 21(15>IM angle K 8805;20). Cedell: 7 bilateral, 2 missing x-rays, 16 (15>IM angle K 8805;20), 3 pseudoarthrosis. After exclusion 29 Cedell and 46 Scarf procedures were available for radiographic evaluation. Nonparametric Mann-Whitney test was used for comparing of two independent groups.

**RESULTS** There was no statistical significant difference between the Scarf and Cedell procedure with respect to preoperative HV and IM angles and no statistical significant difference between the correction of the HV and IM angles with the Scarf or the Cedell procedure (see table below). Median Range Scarf/Cedell) Scarf/Cedell) p-value HV-preop. 35/38 (22-47)/(30-50) 0.048 IM-preop. 15/ 16 (8-19) /(12-19) 0.265 HV-correction 15/ 17 (÷5-30)/(÷3-33) 0.206 IM-correction 6 / 8 (0-11) /(÷5-16) 0.070.

**CONCLUSION** The study indicates that the Cedell procedure only obtains a small non-significant improved radiographic measured correction compared to the Scarf procedure. The price for this small improvement is 3 cases of pseudoarthrosis in the Cedell group.



# RECONSTRUCTION EX VIVO: THE APPLICABILITY OF ACL TENDON GRAFTS FOR CELL INVESTIGATIONS

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**INTRODUCTION** Treatment options of pathological tendon have remained limited and one reason might be the insufficient knowledge about fibroblasts in human adult tendon. The behavior of cells in human tendon and the development of bioengineered tendon-like tissue are central in our research.

**MATERIAL AND METHODS** Tendon fibroblasts were isolated from the semitendinosus and gracilis tendon obtained from ACL reconstruction surgery. Following disruption of cell shape and junctions, immunological analyses visualized time-related changes. Cell embedded fibrin clots were constructed by adding fibrinogen and thrombin to tendon fibroblasts in medium.

**RESULTS** Following disruption of cell shape and contacts, tendon fibroblasts rapidly rebuilt cell morphology with actin-rich cytoplasmic protrusions. During this process, fibroblasts developed cell-cell contacts with adjacent cells to establish a cellular network. Preliminary results revealed that tendon fibroblasts are viable in fibrin constructs, that they exert forces resulting in matrix contraction and that the structure and stiffness of the matrix influences cell behavior.

**CONCLUSION** Cell-cell junctions in tendons are suggested to be critical for tissue integrity and cellular function. In pathological tendon, these characteristics are severely disturbed. Our data show that tendon fibroblasts keep the ability for cell contact formation ex vivo and indicate that cells require distinct cues for contact development. 3D constructs appear to be a cornerstone in cell research ex vivo to study (mal-)adaptations to different exposures. Our results indicate that human tendon fibroblasts embedded in a fibrin matrix can be used for tendon-like tissue engineering in the near future.

# **ANALGESIC EFFICACY OF INTRACAPSULAR VERSUS INTRAARTICULAR LOCAL ANALGESICS AFTER TOTAL KNEE ARTHROPLASTY**

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**INTRODUKTION** The analgesic effect of local infiltration analgesia (LIA) in total knee arthroplasty (TKA) may be prolonged with postoperative administration of additional local analgesics in the wound but the optimal site for delivery has not been determined.

**MATERIAL AND METHODS** In a double-blind trial in a fast-track setup with high-volume intraoperative LIA, 60 patients scheduled for TKA were randomized to receive an intraarticular epidural catheter or an intracapsular multiholed catheter with administration of 20 mL of 0.5% ropivacaine 6 and 24 hours postoperatively; analgesic efficacy during rest and mobilization was assessed for 3 hours after injection.

**RESULTS** Pain at rest and during mobilization was reduced up to 3 hours after injection of ropivacaine 6 and 24 hours postoperatively with no statistically significant difference between the two groups apart from improved analgesia with intraarticular administration upon straight leg lift. A subgroup analysis in patients reporting pain >30 mm on the VAS prior to injection showed improved analgesia upon knee flexion with intracapsular infiltration. Overall, analgesic efficacy was insignificantly better with intracapsular vs. intraarticular administration (most p-values < 0.1 but > 0.05).

**CONCLUSION** When using the LIA technique in TKA, the intracapsular catheter may be favored over the intraarticular catheter to facilitate functional rehabilitation.

## **CASE DEFINITIONS OF KNEE OSTEOARTHRITIS IN 4.151 UNSELECTED SUBJECTS: RELEVANCE FOR EPIDEMIOLOGICAL STUDIES**

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**INTRODUCTION** The aims of the present study were threefold: 1) to examine the distribution of knee joint degeneration in a large, standardized radiologic material, 2) to examine the relationships between self reported knee pain and radiologic OA, and 3) to examine the natural history of radio-morphological change over time in both asymptomatic and symptomatic subjects.

**MATERIAL AND METHODS** The Copenhagen osteoarthritis study – COS is a substudy of the Copenhagen City Heart Study. From the third inclusion of the CCHS (1992–1994) 4.151 subjects were randomly selected for subsequent standardized radiography of the pelvis, the knees, the hands, the wrists and the lumbar spine. Images were analyzed and knee joint OA was classified according to the radiographic atlas of Kellgren & Lawrence. JSW was measured at three sites within both the medial and lateral compartments.

**RESULTS** For the entire cohort the prevalence of knee joint OA, all grades was 25 % for men and 30 % for women. Age stratification documented increasing knee joint OA both in regard to prevalence and morphological severity. Knee pain was universally correlated to the K & L severity of OA. In a subgroup with no features of radiologic OA, a significant and linear decline in minimum-JSW by increasing age was found for both sexes and for both knees.

**CONCLUSION** We found a clear relationship between self reported knee pain and radiologic degeneration. Pain was proportionally related to the severity of degenerative change. We also demonstrated a significant diminishing of joint space width with increasing age in individuals without apparent radiologic degeneration.

# OPEN-WEDGE OSTEOTOMY - HISTOMORPHOMETRIC EVALUATION OF THREE BONE GRAFT MATERIALS

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**INTRODUCTION** Open-wedge high tibia osteotomy is an established joint preserving treatment of medial knee osteoarthritis. The procedure does, however, leave a bone-gap which must heal properly. In a randomized controlled study, we investigated histological bone healing of three different bone graft materials: Local bone autograft (trabecular bone chips released within the osteotomy gap), iliac crest autograft and the injectable calciumphosphate cement (ICPC) Calcibon®.

**MATERIAL AND METHODS** One year postoperatively, during plate removal, cylindrical core biopses were retrieved for histology. Quantitative histomorphometry was performed using stereological software in three regions of interest: Trabecular bone adjacent to defect, osteotomy gap, and cement-bone interface at the osteotomy gap for the Calcibon group. Bonevolume fractions and trabecular thickness was estimated. In the Calcibon group, bone and fibrous tissue covered surface fractions of the cement-bone interface was estimated.

**RESULTS** No statistically significant differences were found between the two bone graft groups regarding bone volume fraction (BV/TV) and trabecular thickness. BV/TV of the defect was 24 % in the local bone autograft group and 27 % in the iliac crest autograft ( $p = 0.44$ ). Trabecular thickness was  $11 \pm 9.56$  mm and  $9.7 \pm 5.6$  mm ( $p = 0.40$ ) in the local and iliac crest autograft groups respectively. ICPC induced a mixed bone and soft tissue healing response with bone ingrowth to 45 % of the cement surface and fibrous covering of 55 %.

**CONCLUSION** Local bone autograft healed to the same quality of bone as iliac crest bone autograft. Calcibon was largely unresorbed after one year in the tibial osteotomy gap, and exhibited both bone and soft tissue ongrowth.

# **SURGICAL MANAGEMENT OF CHILDREN WITH OSTEOGENESIS IMPERFECTA USING THE FASSIER-DUVAL INTRAMEDULLARY NAIL**

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*Bjarne Møller-Madsen og Michael Davidsen.*

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**INTRODUCTION** Osteogenesis imperfecta is a heterogeneous group of collagen type 1 defects. The resulting fragile bone with increased risk of fractures and deformity is the primary orthopaedic challenge. The current report presents our experience with the Fassier-Duval intramedullary nail in the first ten patients.

**MATERIAL AND METHODS** The first ten children who had been operated between 2005 and 2008 with the Fassier-Duval (FD) nail were reviewed. Median follow-up was 2 years and 3 months (Range 1 - 4 years and 3 month).

**RESULTS** In 10 children 19 operations on 14 femora and 6 operations on 6 tibia were performed. 6 operations were primary FD nail insertions. The mean age at insertion was 3 years. 7 patients had previously been treated with other devices. In this group the mean age at insertion of the FD nail was 6 years. In both groups mean admission was 4,5 days. 5 operations were reoperations due to complications. 5 patients had a fracture despite the nail. 3 were reoperated due to bending or perforation of the nail. 2 were treated conservatively. All 5 healed uneventfully. 1 patient was reoperated 3 times. There were no infections, neurological- or vascular damage. At follow-up 6 patients were walking without any aid. 2 were mobilised with walkingaids. 2 were mobilised in wheelchair. No radiographic evidence of growth arrest has been noted secondary to the crossing of the epiphysealplate by the nails.

**CONCLUSION** Our result supports the reported benefits of extensible intramedullary device in children suffering from osteogenesis imperfecta. Minimizing the crippling effects of OI is aimed at reducing the risk of fracture, correcting deformity and improving ambulatory status. There are also complications with the Fassier-Duval nail.

# SHOOTING INJURIES RECEIVED AT RIGSHOSPITALET TRAUMACENTER 1998-2008

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**INTRODUCTION** Media interest in incidents involving firearms and other weaponry is high. This study presents the incidence and types of injuries sustained during the last ten years.

**MATERIALS AND METHODS** Shooting associated cases recorded in RHTC from 1.1.98 - 10.5.08, were identified using freetext search in computerized hospital records and 164 cases were identified. One patient found dead at scene and 22 suicidal attempts were excluded. The remaining 141 cases were divided into two subgroups: Firearm (123 cases) and non-firearm injuries (18 cases). Four patients were shot by police officers. Two cases were occupational related (1 policeman, 1 doorkeeper).

**RESULTS** The 117 non-occupational firearm cases not induced by law enforcement officers were mostly young males (106 males, median age 27, range 16-63, 11 females, median age 29, range 17-49). The annual and daily incidence was as follows: 1998-5, 1999-9, 2000-9, 2001-9, 2002-13, 2003-7, 2004-7, 2005-14, 2006-15, 2007-23. Mo-11, Tu-21, We-14, Thu-7, Fri-16, Sat-14, Sun-34. Six patients were received in the period 01.01.08-10.05.08. Six early deaths (few hours after arrival) and 1 later death (few days) were recorded. The most frequent injured body regions were: Head & neck (6), chest (11), abdomen (18) and extremities (62), with 11 patients having lesions in two or more regions. Twenty patients with minor superficial injuries had only wound debridement performed and was not admitted. Fiftyone patients with more serious injuries (median ISS = 22,5, range 9-61) were admitted for surgical procedures, with the most frequent being laparotomy (17), thoracotomy (10) and fracture treatment (24). Fourteen had S-ethanol >20mmol/litre.

**CONCLUSION** An increase in incidence of firearm injuries was found. Most lesions were not lethal, but 27 patients underwent major surgical procedures.

# **CONTINUOUS TRAINING OF ALL MEMBERS OF A TRAUMA TEAM ORGANIZATION RESULTS IN A FASTER INITIAL EVALUATION AND TREATMENT OF TRAUMA PATIENTS**

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**INTRODUCTION:** During the most recent decades focus has been on improvement of the initial evaluation and treatment of the severely injured. At Århus hospital a Trauma center with formalized manning was founded in 1997 and since then the initial evaluation and treatment protocols have been increasingly systematized through continuous training of the trauma team and audit of individual trauma cases. The purpose of the present study was to test the hypothesis: “practice makes perfect” with focus on the time spent in the emergency room for the initial evaluation and treatment of severely injured patients.

**MATERIAL:** Consecutive data from 4124 admissions to the Trauma center at Århus hospital during the period between 2000 and 2008.

**RESULTS:** The sex distribution in 2000 was 65% men and 35% women and it remained the same throughout the entire study period. 31.3% of the patients in 2000 had ISS>15 compared with 21.9% in 2008. For all patients, irrespective of ISS score, the median time spent in the emergency room for initial evaluation and treatment was 50 mins. in 2000 and it was steadily reduced through each of the following years to a median of 26 mins. in 2008 ( $p<0.001$ ). For patients with ISS>15 the median time spent was also reduced from 50 mins. in 2000 to 28 mins. in 2008 ( $p<0.001$ ). In 2000 the median time interval between arrival in the emergency room and performance of the first chest x-ray was 7 mins. for all patients irrespective of ISS score which was reduced to 5 mins in 2008 ( $p<0.001$ ) and for patients with ISS>15 these intervals were 6 mins. and 5 mins., respectively ( $p<0.011$ ).

**CONCLUSION:** Utilization of continuous training of trauma teams resulted in a significant reduction of the time spent on initial evaluation after the patient’s arrival in hospital.

## A NATIONWIDE AUDIT IN HIP FRACTURES

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**INTRODUCTION:** The incidence of hip fracture in Denmark is about 10.500 per year. Mean age is 80 years, and the patients have huge medical co-morbidity with risk of postoperative complications. Denmark is divided into five regions with a number of different clinical guidelines for patients with hip fracture. As a national audit never has been made, the purpose of this study was to evaluate the outcome after hip fracture in Denmark.

**MATERIAL AND METHODS:** The study was initiated by Unit of Perioperative Nursing. 594 consecutive patients undergoing surgery for hip fracture were studied retrospectively from medical record and nursing journals reviews between August and December 2007. The audit was performed by five nurses, one in each of the five regions. Hospitals with more than 50 Hip fracture patients a year was included. Focus was on anaesthesia, pain treatment and length of stay (LOS) in hospital.

**RESULTS:** 30 hospitals participated. 50 % used a fascia iliaca compartment block (FICB) preoperatively. The overall mean time from admission to surgery was median 22 hours. In Region I 57 % of the patients had general anaesthesia, in other regions of Denmark it vary between 19-27 %. 28 % of all patients in Denmark had routine pain assessment. 98 % of all patients had Paracetamol, 90 % had Opioids, 22 % had Cox2 inhibitors/NSAID and 16 % had FICB. Only the Region II used continuous epidural analgesia (25%). Local infiltration anaesthesia was not used in the Region II but in the other four regions (4-12 %). The overall LOS varying between 8-15 days.

**CONCLUSION:** This study presents data from the first nationwide audit on patients with hip fractures in Denmark. The clinical course and outcome differs between the five regions. Implementation of evidence-based analgesia is required.



# **CORRELATION BETWEEN SPECIFIC CELL CLUSTER AND REGENERATIVE RELATED GROWTH FACTOR IN PATIENTS WITH HIP FRACTURES**

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**INTRODUCTION:** We isolated circulating mononuclear cells (MNC) from patients with traumatic or surgical hip traumas to study the cellular or humeral response during bone regeneration. Flow cytometric analysis of the mesenchymal progenitor cell (MPC) compartment of MNCs revealed the existence of at least two specific homogeneous cell clusters. The temporal changes of these clusters were correlated to changes of the phylogenitically well preserved growth factor YKL-40 to underline the involvement and central role of these cells in bone regeneration.

**MATERIAL AND METHODS:** A total of 9-10 consecutive blood samples were obtained from 10 patients with total hip replacements and 8 patients with hip fractures until 12 weeks after bone trauma. MNCs, sera- and plasma proteins were isolated from the blood samples. The phenotype of MPC was characterized by multi parametric flow cytometry. Serum concentration of YKL-40 was quantified by ELISA.

**RESULTS:** Flow cytometry analysis of surface markers on MNCs determined the phenotype of a specific homogeneous cell cluster. This phenotype is defined by the presence of CD73, CD105, CD144 and the lack of CD45 on MNCs. These surface markers are related to MPCs. The involvement in bone regeneration is indicated by a significant positive correlation to the growth factor YKL-40.

**CONCLUSION:** Flow cytometry analyses identified and characterized a specific homogeneous population of MPCs in patients regenerating bone traumas, based on the combination of surface markers, which are associated to MPCs. The integrity of this cell cluster is underlined by the strong correlation between the temporal changes of the surface markers.

# RESULTS USING THE MICRONAL™ FOR INTRAMEDULLARY FIXATION OF DISTAL RADIUS FRACTURES

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**INTRODUCTION.** Micronail is a minimally invasive system for fixation of extraarticular distal radius fractures as well as intraarticular fractures without diastase of the distal radius articular surface.

**MATERIAL AND METHODS.** Retrospective analysis of 60 patients with distal radius fractures having undergone surgery with MICRONAIL from December 2006 until September 2008. The study consists of 48 women and 12 men, median age 65 years (range 18 – 90 years). After a follow up period of at least 6 months, the patients were evaluated in regards to functional outcome and radiological status in terms of dorsal angulation and inclination of the radius articulating surface, as well as shortening of distal radius. For the statistical analysis a paired t-test was used.

**RESULTS:** We find good results concerning functional outcome (Quick-Dash score and modified Gartland & Werley score). All patients showed acceptable positioning of the fracture postoperatively. There was no significant difference between post-op radiographs and follow up radiographs. Some patients reported paraesthesia in the area of the scar radial to the wrist. No infections were found.

**DISCUSSION:** Our preliminary results indicate that MICRONAIL is a good method for minimally invasive intramedullary fixation of distal radius fractures. There is a good functional outcome, and radiological positioning of the fracture is maintained one year post-operatively.

## **TRAUMATIC HIP DISLOCATION - A 13-YEAR CASE SERIES 1995-2007**

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**INTRODUCTION** Traumatic hip dislocation (THD) is a true orthopaedic emergency. We present the incidence of total hip replacement (THR) following THD in a 10-year series with at least 1-year follow up. **MATERIAL AND METHODS** Patients (pts), admitted to Rigshospitalet 1.1.95-31.12.07 with (w/) THD, were identified in hospital records as ICD10 "S73.0". Available admission radiographs were reviewed, fractures classified according to AO. Pts who subsequently had a THR on the affected side were identified through the Danish Hip Register. The remaining pts, were contacted for a phone interview incl. EQ-5D and the pain/function sections of Harris Hip Score (HHS) (max. score 91).

**RESULTS** Thirty-one pts (25 m, 6 f), mean age 39 (18-75). One had anterior dislocation. Of the posterior dislocations, 16 were associated w/ acetabular fracture (#), 3 w/ femoral head # and 5 w/ acetabular and femoral head #s. In 24 cases closed reduction was performed (all within 24hrs); unsuccessfully in 5 cases. Sixteen had traction applied. Surgery was performed after an average of 3 days (1-8): 20 ORIF of acetabular #, 1 ORIF of femoral head #, 1 primary THR. Early complications: Sciatic nerve palsy (8 pts, all w/ acetabular #), wound infection (4 pts), pulmonary embolism (1 pt). Mean follow up was 67 months (17-126). Two pts had died of cancer. Seven pts had a THR, 2 w/ femoral head #, 3 w/ acetabular #, 2 w/ acetabular and femoral head #s. Nineteen pts were interviewed: Median HHS 79%. The pts without # had a higher HHS, median 93% (p=0.15, Mann-Whitney U test); none of these had a THR. **CONCLUSION** THD resulted in THR in 7/31. THD without fracture did not lead to THR within 27-118 months. The morbidity following THD is in large part determined by the associated fractures.

# THE VALIDATION OF THE OTTAWA ANKLE RULES IN A DANISH EMERGENCY DEPARTMENT

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**INTRODUCTION** To validate the Ottawa Ankle Rules (OAR) to predict significant fractures in a Danish clinical setting

**MATERIAL AND METHODS** We designed an interventional study in the A&E, Kolding Hospital. The intervention and control groups consisted of all patients presenting with a blunt trauma of the ankle within 12 months. Patients in the first 6 months were included in the control group. The intervention consisted of a 45 minutes introduction to the OAR to the new group of junior doctors. Flyers and poster were distributed. There were 882 and 1014 patients respectively in the control and intervention group.

**RESULTS** The main outcome of the study was a reduction in the number of preformed radiographs and an increase in diagnostic sensitivity. In the control group 62% of the patients were referred to radiographs, while only 57% in the intervention group. OAR had a sensitivity of 0.988, while the usual examinations techniques in the control group resulted in a sensitivity of 0.969. The rules failed in identifying 2 ankle fractures: a shaft fracture of the fifth metatarsal and 6 mm avulsion of the distal fibula. Both were diagnosed within the first week and treated conservatively, when returning to the hospital, as the OAR recommended in cases of no clinical improvement. When using the OAR, the radiology department would approximately perform 89 ankles and midfoot x-rays less a year, which is equivalent to 7.6 %.

**CONCLUSION** Use of the OAR in our clinical setting resulted in an increased diagnostic safety in detecting significant ankle fractures and in a reduction of unnecessary radiographs of the ankle and midfoot. We believe that the implementation of OAR could be beneficial to many emergency departments in Denmark and possibly in other similar settings.

# DIFFERENCE IN ASA-SCORE OF PATIENTS WITH PROXIMAL FEMURAL FRACTURES

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**INTRODUCTION** The National Indicator Project (NIP) for proximal femur fractures shows remarkable differences in preoperative ASA-scores between the hospitals in Horsens and Viborg. 59% of the patients in Horsens are categorized in ASA group III, 36% in Viborg. In Viborg ASA score is reported by surgeons, in Horsens anesthesiologists.

**MATERIALS AND METHODS** Using the 234 available medical records of 237 patients included in the NIP project in Viborg from 16.08.07-15.08.08, each patient's ASA score from the surgeon and the anesthesiologist has been compared. Furthermore, based on these medical records, the patients ASA scores have been estimated a third time by a single person, an experienced surgeon.

**RESULTS** Using the anesthesiologists' estimates instead of the surgeons' changes the percentage of ASA III patients in Viborg to 41,4%. This reduces the difference between Horsens and Viborg from 23 to 17,6 percentage point, still a significant difference. Anesthesiologists and surgeons in Viborg had estimated different ASA-scores in 108 of the 234 patients. The third estimate agreed with the anesthesiologists in 56 cases and the surgeons in 27 cases. 24 cases were inconclusive, one case in between.

**CONCLUSION** Assuming there is no difference in health within the background population in Horsens and Viborg, presumably the divergence can be explained by traditionally determined differences in estimating ASA-score among staff on the two hospitals. The differences in ASA-score between the anesthesiologists and the surgeons in Viborg suggest that ASA is a very observer-biased scoring system. This is consistent with a survey by CM Jensen et al., which documents that even among anesthesiologists the estimated ASA-score diverges.

# IN VITRO LYMPHOCYTE ASSAY FOR HYPERSENSITIVITY TO METALS DURING THE FIRST TWO POSTOPERATIVE YEARS USING TWO DIFFERENT RESURFACING HIP ARTHROPLASTIES

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**INTRODUCTION** Recent papers have suggested that metal hypersensitivity in a few cases could cause periprosthetic lymphocyte accumulation leading prosthetic loosening. The purpose was to measure the lymphocyte activation and proliferation in vitro by re-exposure of the cells to cobalt, chromium, nickel and titanium and to correlate the lymphocyte assay data to the serum concentration of metals and plasma cytokines.

**MATERIAL AND METHODS** In a prospective clinical study with the ASR (DePuy) and ReCap (Biomet) resurfacing hip implants blood samples were collected one and two years postoperatively, lymphocytes were isolated by density gradient centrifugation, cultured in a medium containing the patient's serum and exposed to metal salts. Cells were analyzed by flow cytometry, evaluating number, viability, size and CD69 activation. A negative control and a positive control (phytohaemagglutinine) were included in the assay, and the responses to the metals were calculated in proportion to controls. 11 patients were assessed at one and two years follow up, 16 patients were assessed only at two years. Serum chromium and cobalt were measured preoperatively, six months, one year and two years postoperatively by graphite furnace absorptiometry. Plasma cytokines were measured by multiplexed immunoassay.

**RESULTS** In the assay the negative and positive controls gave the expected responses. When exposed to metals no response was found in the lymphocytes in any patients. There were no difference in response between one and two years.

**CONCLUSION** The results seems to indicate that the metal hypersensitivity is a rare condition in metal on metal arthroplasty. The results indicate that the method can be used to monitor hypersensitivity to implant metals.

# **CUP POSITION AND SERUM CONCENTRATIONS OF CHROMIUM AND COBALT DURING THE FIRST TWO POSTOPERATIVE YEARS USING TWO DIFFERENT RESURFACING HIP ARTHROPLASTIES**

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**INTRODUCTION** A major concern in metal on metal bearings has been the elevated serum concentrations of cobalt and chromium. Recent papers have demonstrated a correlation to cup inclination. The purpose was to assess the correlation between cup inclination, cup anteversion and head angles in relation to serum metal concentrations during the first two postoperative years after arthroplasty with two commercially available resurfacing hip implants.

**MATERIAL AND METHODS** A prospective clinical study with the ASR (DePuy) (14 patients) and ReCap (Biomet) (16 patients) resurfacing hip implants. X-rays were taken two years postoperatively measuring the cup inclination and anteversion as well as the head angles in relation to the longitudinal axis of the collum femoris. Serum chromium and cobalt were measured preoperatively, six months, one year and two years postoperatively by graphite furnace absorptiometry.

**RESULTS** In the individual patients, irrespective of the implant, a significant correlation was found at 6 months between serum cobalt concentrations and head angle. At six months and one year a significant correlation was found between serum chromium and cup inclination. No significant differences were found between the two implants in relation to inclination, anteversion and head angles, but a “subsignificant” value ( $p=0,06$ ) was found in the inclination where ASR had a higher inclination (Mean  $52,8^\circ$ , SD  $7,3^\circ$  versus  $48,0^\circ$  SD  $6,2^\circ$ ) than ReCap. Serum metal chromium and cobalt concentrations increased significantly after the operation in both groups, there was a significant difference in serum chromium at one and two years between ASR and ReCap.

**CONCLUSION** The results indicate that steep cups is one of the factors that can cause elevated serum chromium concentrations.

# SERUM CHROME LEVELS SAMPLED WITH STEEL NEEDLE VS. PLASTIC IV CANNULA. DOES METHOD MATTER?

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**INTRODUCTION** The increasing popularity of metal-on-metal articulations (MoM) in total hip arthroplasty has raised concerns about the metal-ions released. Measuring the serum ion-level of the patients is challenging and contamination should be avoided due to very low concentrations. We aimed to investigate whether IV. cannula versus steel needle or the "first flush" procedure affected serum-ion concentrations in the sample.

**MATERIAL AND METHODS** We sampled 16 healthy volunteers. Two 6 mL samples were drawn through either a steel needle (Vacutainer®) or a plastic tube (Venflon Pro), and analysed for chromium and cobalt content using FI-ICP-MS. Detection limits for chromium ranged from 0.04 to 0.08 ng/mL and for cobalt 0.2 ng/mL.

**RESULTS** Cobalt was below the detection limit in all cases. We found the following median (range) chromium levels; needle first sample: 0.14(0.04-0.223) ng/mL, needle second sample: 0.08(0.04-0.161) ng/mL, plastic first sample: 0.04(0.02-0.129) ng/mL and plastic second sample: 0.04(0.02-0.081) ng/mL. There were significant differences ( $p < 0.05$ ) between the two methods for both "flushes", but not between the first or second flush for either method. However, with a p-value of 0.06 the needle method came close.

**CONCLUSION** There is a small but statistically significant contamination from the steel needle compared to the plastic cannula. The median contribution of 0.04 ng/mL for the 2.steel needle samples is in the grey-area around the detection limit. That contamination is not clinically relevant in MoM studies, and in these studies either method can be used. In studies where low chromium levels are expected, we suggest using plastic cannulas. Due to great variation in the first sample, we suggest discarded it if using the steel-needle.



# NEURAPRAXIA AFTER HIPARTHROSCOPY

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**INTRODUKTION:** During the past years hiparthroscopy has become widely accepted in the treatment of the painful hip, especially FAI (femoroacetabular impingement). The arthroscopic resection of parts of the femoral neck and the acetabulum as well as the refixation/debridement of the acetabular labrum is technically challenging and requires temporary distraction of the hip joint. The longer the time of distraction, the higher the risk of transient neurapraxia. Transient neurapraxia is the most common postoperative complication and occurs in 0,5-10%. Therefore a maximum time of 120 min distraction followed by at least a 30 min break is advocated.

**MATERIAL:** From april 2007 to january 2009 50 patients (29 men and 21 women) underwent a hiparthroscopy at the Hvidovre University Hospital and Copenhagen Private Hospital using the same protocol. The time of the first distraction was median 111 min. (30-135), followed by a pause of 40 min. (10-90) and a second distraction with a median of 40 min. (0-115). Follow-up after 8 and 26 weeks, where after patients with dysesthesia received a separate questionnaire by mail. Patients who did not return their questionnaire were interviewed by phone.

**RESULTS:** Data from 46 patients (92%) were included. The day after surgery 29 patients (58%) suffered from dysesthesia. Dysesthesia persisted more than 4 weeks in 18 patients (36%) and more than 8 weeks in 10 patients (20%). 3 patients (6%) had ongoing dysesthesia at the back of the foot after 6 month. None of the male patients experienced erectile dysfunction.

**CONCLUSION:** Within the first 8 weeks following arthroscopy of the hip joint dysesthesia is a common finding. It is seldom permanent despite long distraction time. A correlation between long distraction time and neurapraxia could not be found.

# ASSESSMENT OF THE CEMENTING QUALITY AFTER HIP ARTHROPLASTY: A COMPARISON OF BARRACK'S GRADING WITH A NEW CEMENTATION SCORE

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**INTRODUCTION** Barrack's cement grading is widely used to assess cementation quality in hip arthroplasty; previous researchers have, however, questioned the accuracy of this method. The aim of present study was to determine the quality of cementation technique for the femoral stem using: 1. the well-known five-scale Barrack's grading system (Mulroy et al., 1995) and 2. a new simplified radiological evaluation method proposed by the authors.

**MATERIAL AND METHODS** Each observer independently assessed 100 AP radiographs (50 hemi hip arthroplasties (HHA) and 50 total hip arthroplasties (THA) using Barrack's grading system. The evaluation was repeated on 50 radiographs (25 HHA and 25 THA) 1 year after the first analysis. Other 25 postoperative radiographs of HHAs were examined twice within 1 month by the same three observers. The new evaluation method allowed the rating of cementing quality as "good" or "poor". To determine the reliability of both methods, inter- and intra-observer agreement was calculated using weighted kappa statistics.

**RESULTS** We found fair to substantial intra-observer agreement using Barrack's grading system, (K 954; = 0.34, 0.53, 0.74), whereas levels for inter-observer agreement were lower (K 954; = 0.35, 0.46, 0.49). Using the new evaluation method, the levels of intra-observer agreement were similar to those we found with Barrack's grading (K 954; = 0.29, 0.39, 0.565), but the variation of inter-observer agreement was wider (K 954; = -0.14, 0.18, 0.57).

**CONCLUSION** We found that both the system proposed by the authors and Barrack's grading system have a high rate of intra- and inter-observer disagreement. When introducing new methods in cementing technique and new prosthetic designs, more precise evaluation methods than a simple visual radiographic assessment (i.e. radiostereometry, EBRA) should be used.

# **OSSEOINTEGRATION OF IMPLANTS INSERTED PRESS-FIT WITH PARATHYROID HORMONE AS ADJUVANT THERAPY**

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**INTRODUCTION** Long-term survival of uncemented total joint replacements is dependent on secure and early fixation. This is achieved by press-fit insertion at surgery and subsequent osseointegration. PTH is bone anabolic when administered intermittently. We test the hypothesis that systemic human PTH (1-34) improves early implant bone ongrowth and peri-implant bone density of press-fit inserted implants.

**MATERIAL AND METHODS** In 20 dogs cylindrical titanium alloy porous coated implants (6x10mm) were inserted press-fit (0.1 mm under-drill) in the extraarticular cancellous bone site of proximal tibia. Test animal were postoperatively randomised to daily treatment of placebo or parathyroid hormone rhPTH (1-34)(teriparatide)(Bachem) 5 kappa 956;g / kg s.c. After 4 weeks specimen blocks were harvested and evaluated by stereological histomorphometry (CAST-grid system, Olympus Denmark). Endpoints were bone-to-implant contact and tissue density in 500 kappa 956;m regions of interest. Data were not normally distributed and two-sample Wilcoxon rank-sum test was applied with p-value < 0.05 considered statistically significant.

**RESULTS** At the implant interface tissue median (interquartile range) density for PTH was 0,193 (0,157-0,229) for bone, 0,796 (0,764-0,822) for marrow and 0 (0-0,009) for fibrous tissue, as for control 0,163 (0,148-0,168) for bone, 0,837 (0,832-0,852) for marrow and 0 (0-0) for fibrous tissue. Bone tissue showed no significant differences. In the pericentric region the tissue fraction for PTH was 0,238 (0,211-0,276) for bone, 0,752 (0,724-0,785) for marrow and 0 (0-0,007) for fibrous tissue, as for control 0,219 (0,201-0,235) for bone, 0,781 (0,765-0,799) for marrow and 0 (0-0) for fibrous tissue.

**CONCLUSION** Parathyroid hormone does not improve initial osseointegration of orthopaedic implants inserted press-fit in normal cancellous bone.

# CHANGES IN BONE MINERAL DENSITY DURING THE FIRST TWO POSTOPERATIVE YEARS USING TWO DIFFERENT RESURFACING HIP ARTHROPLASTIES

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**INTRODUCTION** Resurfacing hip implants are believed to conserve the bone tissue, rendering better possibilities for later revision. The purpose was to monitor changes in bone mineral density adjacent to the prosthesis during the first two postoperative years after arthroplasty.

**MATERIAL AND METHODS** A prospective clinical study with the ASR (DePuy) (14 patients) and ReCap (Biomet) (16 patients) resurfacing hip implants. Mean follow up  $27.2 \pm 3.4$  months. Hip function was assessed prior to surgery and after one year as leg press (arbitrary units). Bone mineral density (g/cm<sup>2</sup>) was assessed adjacent to the prosthesis prior to, 6 weeks and 12 months after operation in four regions: 1: Below stem, 2: Above stem, 3: At stem basis, and 4: Upper femur from below the lesser trochanter except region 1 and 2.

**RESULTS** BMD values did not differ between the two groups at any time during the follow up. There were significant increases in BMD of regions 2 and 3 at both one and two years follow up and a trend towards increase in region 4 at two years follow up compared to preoperative values. At the visit 6 weeks after the operation a significant decline in BMD was seen in regions 1 and 4, but this decline did not persist at one and two years follow up.

**CONCLUSION** Bone mineral density adjacent to the re-surfacing shell reaches preoperative levels or higher already one year after the surgery. In certain areas there is even an increase in the BMD, which is in contrast to stemmed femoral implants. This indicates that resurfacing implants preserve the bone tissue in the femoral neck facilitating later revisions with a stemmed prosthesis. The finding could indicate revascularisation of areas below the cup. The changes in BMD are independent of the chosen implant.

# ASSESSMENT OF IN VIVO MECHANICAL MUSCLE FUNCTION IN PATIENTS WITH OSTEOARTHRITIS (OA) OF THE HIP; RELIABILITY

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**INTRODUCTION** Muscle function in patients with hip OA is not well-studied. We established a new setup of tests in order to monitor patients before and after surgery with total hip arthroplasty (THA). A test-retest protocol was designed to evaluate the reproducibility of single- and multi-joint strength and power using this novel setup.

**MATERIAL AND METHODS** Isokinetic contractions for both knee and hip muscles were performed. Reliability for isometric muscle contractions in vivo was recorded and evaluated by use of within subject variability (CVws), Spearman correlation and Limits of Agreement (LoA). Both explosive muscle force characteristics and maximal isometric force (MVC) were obtained for the affected (aff) and non-affected (n-aff) leg (only data MVC for affected side in this abstract). 20 patients, (age  $55.9 \pm 4.8$ ; height  $174 \pm 8$ ; BMI  $27.1 \pm 4.5$ ) with unilateral hip OA participated in this test-retest setup (8w and 10w respectively).

## RESULTS

**Table 1: Patient test – retest reliability (Maximal Isometric Muscle Torque) for aff-side**

AFF-leg	Test (8W)	Test (10W)	$\Delta$ mean (Nm•kg-1)	CV <sub>ws</sub>	Spearman $\pm$ SE	LoA
	Mean $\pm$ SD (Nm•kg <sup>-1</sup> )	Mean $\pm$ SD (Nm•kg <sup>-1</sup> )				
KneeEXT	1.32 $\pm$ 0.38	1.41 $\pm$ 0.35	-0.09 $\pm$ 0.16	-6.5 %	0.88 $\pm$ 0.05	-0.40 : 0.20
	0.63 $\pm$ 0.23	0.65 $\pm$ 0.17	-0.02 $\pm$ 0.10			
HADD	1.28 $\pm$ 0.32	1.34 $\pm$ 0.37	-0.07 $\pm$ 0.12	-5.1 %	0.93 $\pm$ 0.03	-0.29 : 0.16
	1.35 $\pm$ 0.28	1.47 $\pm$ 0.35	-0.11 $\pm$ 0.14			
HipABD	1.86 $\pm$ 0.44	2.07 $\pm$ 0.57	-0.20 $\pm$ 0.24	-9.9 %	0.82 $\pm$ 0.07	-0.67 : 0.26
	1.09 $\pm$ 0.31	1.23 $\pm$ 0.33	-0.15 $\pm$ 0.13			
HFLX	1.09 $\pm$ 0.31	1.23 $\pm$ 0.33	-0.15 $\pm$ 0.13	-12.8 %	0.82 $\pm$ 0.06	-0.40 : 0.11

Test-retest showed good CV's for all except hip flexion.

**CONCLUSIONS** Our novel setup of muscle tests showed overall good CV's, which is promising for further studies on the patient group.

## PERCUTANEOUS VERTEBROPLASTY – ECONOMIC ASPECTS

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**INTRODUCTION:** Percutaneous vertebroplasty (PVP) is a treatment of painful pathological vertebral fractures. The procedure has recently been compared to conservative treatment in a clinical randomised study at the Department of Orthopaedics, University Hospital of Odense. The aim of this paper is to estimate the costs at the two treatments to find the most cost-effective treatment for patients with acute osteoporotic vertebral fractures.

**MATERIAL AND METHODS:** Fifty patients with fractures less than 8 weeks old were included from January 2001 until January 2008 and randomised to either PVP or conservative treatment. The perspective of the economic analysis was societal, and economical parameters of interest were primarily resources for hospital treatment and secondly resources for primary care. In total 20 different cost elements were included, of which 9 was based on estimates for the resource use of each patient. The costs were made up at 3 months after discharge from hospital.

**RESULTS:** The mean costs per patients for hospital treatment were about 64.000 Danish kroner (DKR) in the conservative group and about 50.000 DKR in the PVP group ( $p=0.034$ ). The result is mainly caused by the fact that patients treated conservatively are hospitalized longer than patients treated with PVP. If costs in primary care are included, the mean cost of treatment of patients in the conservative group is 32.200 DKR higher than the costs of treatment of patients in the PVP group.

**CONCLUSION:** The cost per patient of PVP is lower than the costs of conservative treatment for treating acute osteoporotic vertebral fractures and this is mainly because the extra costs of surgery is more than outweighed by the value of the reduction in the length of hospitalization of the patients treated with PVP.

# **PERCUTANEOUS MULTILEVEL STABILIZATION; INITIAL RESULTS IN PATIENTS WITH SPINAL METASTASIS**

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**INTRODUCTION** The use of percutaneous techniques for instrumented spinal fusion procedures have gained increasing interest over the last decade, since the tissue damage is reduced compared to an open procedure. Patients undergoing stabilization because of spinal metastasis are especially prone to wound complications. The purpose of the present study was to assess the primary experiences with a percutaneous technique for spinal stabilization in this group of patients.

**MATERIAL AND METHODS** Seven patients were operated; six males and one female and all, but one patient, had a known primary malignant disease at the time of surgery. The median age was 61 years (29-72), and in all cases the indication for surgery was pain. In one patient the procedure included one level decompression. All patients were operated with the CD HORIZON® LONGITUDE™ System allowing a multi-level, percutaneous spinal fixation.

**RESULTS** The median surgical time was 2 hours and 50 minutes (2:45-3:00) with a blood loss of 300 ml (100-500). The median number of instrumented levels was five (5-8) including thoracic, thoraco-lumbar and lumbar instrumentations. No peri-operative complications occurred and all patients received postoperative radiation therapy. One patient developed wound infection with loosening of the cranial screws, resulting in penetration of the skin, requiring partial removal of the implant four months after the index operation. Subsequent healing of the skin occurred uneventful.

**CONCLUSION** Multi-level percutaneous stabilization of spinal metastasis is a promising technique. Further studies are needed to assess whether the technique reduces the number of wound complications.

# DURAL TEARS IN LUMBAR SURGICAL DECOMPRESSION

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**INTRODUCTION** Iatrogenic dural tear with cerebrospinal fluid leakage is a known complication of lumbar columnar surgery. In the literature the incidence is 1% - 16%.

**MATERIAL AND METHODS** The study was a retrospective, consecutive review of electronic patients records after spinal surgery at the Private Hospital Hamlet in a 10-month period September 1st 2007 to June 30th 2008. The data were collected after this period and consists of surgeon documented dural tears. At the time of operation the surgeon was not aware that there would be a subsequent registration. A total of 634 patients had lumbar neural decompressive surgery - 479 patients were treated for spinal stenosis and 155 for prolapsed disc.

**RESULTS** The incidence of dural tear was 3.9% (25 dural tears in 634 operations). The risk of a dural tear after secondary surgery was 7.9% versus 3.3% for primary ( $p = 0.02$ ) and mean age was 65.9 years for patients with dural tear compared to 58.1 years for patients without ( $p = 0.00$ ). The difference in the mean duration of the operation was significant being 72 minutes in the group suffering a dural tear compared to 56 minutes ( $p = 0.03$ ) and the former group had a longer hospitalization of 1.1 day ( $p = 0.00$ ).

**CONCLUSION** The incidence of an iatrogenic dural tear was 3.9 %. The incidence of dural tear was double in secondary surgery. The duration of surgery was extended by 16 min and the patients were hospitalized one day longer.



# ISOLATION OF MICRORNA FROM HUMAN LUMBAR INTERVERTEBRAL DISCS

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**INTRODUCTION** A number of recent studies have supported the theory of a genetic role in the development of disc degeneration and spinal deformities. In spite of identification of candidate genes like COL9A2, the complete understanding of the genetic role in disc degeneration has not been obtained. This could mean that a regulatory mechanism modifying genetic transcription exists in the human disc. microRNA is one of the regulatory members of the RNA-family. It is a single stranded RNA molecule consisting of 21 or 22 nucleotides. microRNA is non-protein coding and regulates translation through mRNA binding. Until now more than 800 human microRNA's have been identified, and to our knowledge no study have reported the presence of microRNA in human intervertebral discs.

**MATERIAL AND METHODS** Intervertebral discs were obtained from three patients undergoing anterior interbody fusion for degenerative disc disease of the lumbar spine. The disc material was immediately placed in an RNA stabilization reagent. Tissue material was homogenized and subsequent labeling of microRNA was done using a microRNA-probe slide. Hybridization was done overnight, followed by washing, scanning, dataanalysing and normalization.

**RESULTS** A limited total number of microRNA molecules was expressed in disc tissue from all patients. These included the well known mammalian microRNA's (hsa-let-7 and hsa-mir-15b). There was, however, a relatively high expression of three novel microRNA's not previously described.

**CONCLUSION** To our knowledge this is the first time the presence of microRNA has been demonstrated in human intervertebral discs. Furthermore, the microRNA's not previously described could be specific for intervertebral disc tissue.

# PERCUTANEOUS VERTEBROPLASTY AS A TREATMENT FOR PAINFUL OSTEOPOROTIC VERTEBRAL FRACTURES

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**INTRODUCTION:** Percutaneous vertebroplasty (PVP) is considered to be an efficient treatment for painful osteoporotic vertebral fractures. The long term clinical outcome of PVP compared to conservative treatment has not been evaluated in a randomised study yet. It is suggested that PVP should be reserved patients with persistent pain after conservative treatment. The aim of this study is to compare PVP to conservative treatment in acute fractures in a randomised study (RS), and to assess the pain relieving effect of PVP on chronic fractures in a clinical study (CS).

**MATERIAL AND METHODS:** RS: Fifty patients were included from January 2001 until January 2008. Patients with fractures less than 8 weeks old were included and randomised to either PVP or conservative treatment. CS: Forty-nine patients with fractures and persistent pain for at least 8 weeks of conservative treatment were included from April 2004 until February 2008. Both studies: Pain, physical and mental outcome were assessed by validated questionnaires and tests at inclusion, at 3, and at 12 months follow up.

**RESULTS:** RS: Pain score before and immediate after the operation was respectively 7.9 and 2.0 ( $p < 0.00$ ). There was no difference in pain at the follow ups and no difference in the other parameters as well with a few exceptions. CS: Pain score before and immediate after the operation was respectively 7.6 and 3.7 ( $p < 0.00$ ). Concerning both pain and the majority of tests and questionnaires there was a significant better outcome at the follow ups.

**CONCLUSION:** PVP is a good treatment for patient with chronic vertebral compression fractures if the fractures show oedema on a MRI or increased bone turn-over on a bone scan. Most patients with acute fractures will recover after 8-12 weeks of conservative treatment.

# COMPRESSION FRACTURES OF THE VERTEBRAL COLUMN ARE TOO SELDOM DIAGNOSED IN PATIENTS EVALUATED BY X-RAY OF THE THORAX. A RETROSPECTIVE REGISTER STUDY

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**INTRODUCTION** A common investigation evaluating medical problems is X-ray of the thorax. The description includes the status of columna vertebralis. Approximately 11% of all low energy fractures diagnosed by X-ray are fractures of the corpora of columna vertebralis (CFx). Not all CFx are diagnosed and it is estimated that 50% of CFx remains unknown. Some of these fractures are visible of the routine X-ray of the thorax but not all CFx are diagnosed when the radiologists are describing the X-ray. An English study showed in 2005 that one of six elderly patients with x-rays of thorax had CFx diagnosed by incidence. Only 60% of these CFx were informed to the clinician. 25% of the patients with diagnosed CFx were admitted to evaluation of osteoporosis. This study to investigate the diagnosing of CFx's on routine X-rays of the thorax.

**MATERIAL AND METHODS** Retrospective register-study. From January to March 2006, patients > 50 years admitted to the local dept. of radiology for routine X-ray of the thorax was included. The X-ray was re-evaluated by a non-specialist and a specialist in radiology only focusing on CFx. Comparison to the primary describing radiologist was made. The presence of compression fracture of the corpora was noted.

**RESULTS** 243 patients included. The non-specialist diagnosed 43 patients with a vertebral fracture. The specialist 36 fractures. 24 patients were diagnosed by both the non-specialist and the specialist. The primary describing radiologist diagnosed 7 of these fractures.

**DISCUSSION** The routine X-ray of the thorax caused by medical reasons is not described sufficiently when focusing on the vertebral bodies. More focus on this by specialists in radiology could help patients to be evaluated for osteoporosis to get the possibility to prevent further low-energy fractures in the future.

# **MANTIS PERCUTANEOUS MINIMAL INVASIVE PEDICULAR SCREW AND ROD INSERTION REDUCE OPERATIVE TIME AND BLOOD LOSS COMPARED TO STANDARD OPEN MIDLINE APPROACH IN DECOMPRESSION AND STABILIZATION OF SPINAL METASTASIS. A CASE-CONTROL STUDY**

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**INTRODUCTION** Minimal invasive techniques in lumbar spine surgery are reported in uncontrolled and retrospective series to achieve excellent clinical results with less pain, morbidity and disability. Here we report a direct comparison of standard open versus minimal invasive posterior lumbar fixation in decompression and stabilization of thoracolumbar metastasis.

**METHODS** Through July to December 2008 11 men and 7 women 61 (32-81) years old were included. The Mantis spinal system were used in 7 men and 2 women 61 (43-81) years old and Xia spinal system were used in 6 men and 3 women 55 (32-74) years old. The Tokuhashi score for the Mantis group was 6 (5-8) and in the XIA group 6 (5-9).

**RESULTS** Operative time was reduced from 150 (120-155) min to 105 (90-120) min ( $P = 0.0007$ ). Blood loss was reduced from 800 (400-1750) mL to 200 (50-650) mL ( $P = 0.002$ ). Hospital stay was reduced from 15 (4-20) days to 7 (2-18) days ( $P = 0.05$ ).

**CONCLUSION** The Mantis minimal invasive percutaneous technique for pedicular screw and rod insertion in decompression and stabilization of thoraco-lumbar metastasis reduce operative time and blood loss. The reduction in hospitalization did not reach statistical significance. Further studies are necessary to evaluate the reduction of the surgical trauma to the muscles and soft tissue, the efficacy and to evaluate the effect on disability.

# EN BLOC VERSUS INTRALESIONAL RESECTION OF PRIMARY EXTRADURAL TUMORS OF THE SPINE

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**INTRODUCTION:** The objective of the study was to investigate the surgical treatments, either en bloc or intralesional resection, on perioperative morbidity, reoperation rate, neurological recovery and survival.

**MATERIAL AND METHODS:** This study included 35 patients with primary extradural spine tumor, operated during 1992-2008, median age 35 (4 - 84) years, at the Spine Unit of Aarhus Hospital. For en bloc resection we use combined anterior and posterior approach to avoid transection of tumor except in very large tumors. The intralesional group received major intralesional dissection and tumor resection. The most frequent tumors were chondrosarcoma and osteoid osteoma/osteoblastoma.

**RESULTS:** We found no difference in morbidity and hospital stay between the groups. All patients with neurological deficit recovered and were mobilized within few days. The en bloc resection was more time consuming. The life expectancy was not only related to surgical technique but also to primary tumor classification. The selection of intralesional surgery resulted in higher reoperation rates, but since it was applied mostly to more benign tumors, lethality was not affected. Early death (<2 years) was seen in PNET, Ewings and low grade chondrosarcomas. The pre and post operative chemotherapy is essential for surgical control in sensitive tumors. Long term survival in highly malignant spine tumors was found only in few patients following en bloc resection.

**CONCLUSION:** It is mandatory that primary extradural spine tumors are referred early to a sarcoma centre for biopsy and tumor classification. The treatment of highly malignant spine tumors is not only surgical decision, but also combination of radiotherapy and chemotherapy. It is concluded that extralesional en bloc resection results in the longest disease free survival.

# **ALLOGENEIC BLOOD TRANSFUSION OR POSTOPERATIVE INFECTION DOES NOT INFLUENCE REVISION RATE OR MORTALITY AFTER PRIMARY SINGLE TOTAL HIP ARTHROPLASTY**

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**INTRODUCTION** Blood transfusion, postoperative infection or both may due to an inflammatory response influence revision of total hip arthroplasty or mortality after primary total hip arthroplasty. In order to address this hypothesis we decided to review the files of a group of patients who had a single primary hip arthroplasty.

**MATERIAL AND METHODS** At Hjørring Hospital from 1980 to 1990 777 hip arthroplasties were performed. A total of 592 patients received a single primary total hip arthroplasty due to osteoarthritis.

**RESULTS** A total of 492 patients received allogeneic blood transfusion. There were 69 patients with postoperative infection. By the end of 2007 81 revisions were performed and 437 patients were dead. Revision rates were 19/100 (19 %) for no blood transfusion, 41/295 (14 %) for 1-2 transfusions, 17/153 (11 %) for 3-4 transfusions and 4/44 (9 %) for > 4 transfusions and infection rates were respectively 16/100 (16 %), 32/295 (11 %), 21/153 (14 %) and 10/44 (23 %). Using Cox-regression the influence of allogeneic blood transfusion or postoperative infection on hip revision or patient survival did not reach statistical significance.

**CONCLUSION** An association between allogeneic blood transfusion or postoperative infection and hip revision or patient survival is not detected. This is in concordance with reviews of the literature including about 40 observational studies (1-2) but not in concordance with a study using data from the Danish Hip Arthroplasty Registry (3). Further studies are necessary to examine the risks and benefits of allogeneic blood transfusion in orthopaedic patients. 1. Vakankas EC. Vox Sanguis 2007; 92: 224-32. 2. Vakankas EC. Vox Sanguis 2007; 93: 196-207. 3. Pedersen AB et al. DOS Bulletin 2008; 37: 75.

# **RISK FACTORS FOR REVISION DUE TO DISLOCATION FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY: RESULTS FROM DANISH HIP ARTHROPLASTY REGISTRY**

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**INTRODUCTION:** The purpose of this study was to examine patient and surgery related risk factors for revision due to dislocation following primary total hip arthroplasty(THA).

**MATERIALS AND METHODS:** Population: 51 620 primary THAs from the DHR. We used Cox regression analysis on all our data and Poisson in our sub-analysis of femoral head size. Analysis period:1997-2005 and subdivided into two-year intervals.

**RESULTS:** We found no significant difference in risk for revision caused by dislocation for gender,type of articulation or year of surgery. Patients with a medium or high comorbidity (CCI) had a significantly increased risk for revision due to dislocation compared to patients with low CCI. Trauma and non-traumatic caput necrosis were associated with an increased risk for revision compared to osteoarthritis. The hybrid and uncemented fixation method were associated with an increased risk for revision, compared to the cemented. There was no significantly enhanced risk of revision due to dislocation with smaller or larger diameter femoral head size compared to that of 28 mm in our analysis using Cox regression.Using Poisson we found that the risk for revision is significantly reduced with an increased diameter. The lateral approach was associated with a decreased risk of revision in the overall period compared to the posterior.

**CONCLUSION:** Gender, articulation and year of surgery had no significant effect on the outcome. High CCI, the diagnoses; trauma, non-traumatic caput necrosis and “others”, the uncemented and hybrid fixation,posterior surgical approach and longer duration of surgery were associated with a significantly increased risk of revision due to dislocation. Our sub-analysis showed a significantly decreased risk for revision, with an increased femoral head diameter.

# FEMORAL FRACTURE AFTER UNCEMENTED TOTAL HIP REPLACEMENT

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**INTRODUCTION** Since 2000 all THR patients have been subjected to a continuous quality control. We report a possible increasing rate of postoperative fractures after minimal or no trauma.

**MATERIAL AND METHODS** Four to 6 weeks after the THR all patient files and radiographs are evaluated and demographic data and complications are registered. If a fracture occurred during the first postoperative weeks a further analysis of the case was performed. Surgery was performed according to the manufactures instructions, and full weight bearing was allowed.

**RESULTS** During the 9 years 3.295 primary total hip replacements were performed. In the period the use of uncemented THR increased from 41% to 99%. Totally 69 fractures in 2.408 uncemented THR's (2.9%) were registered. An increasing rate of fractures occurring without any previous trauma was found. These fractures occurred after a few days up to several weeks after surgery and were characterised by a vertical femoral fracture from the calcar to the medial femoral region 5 to 7 cm below the lesser trochanter. In most cases treatment was internal fixation with a trochanteric grip and cables and insertion of a new uncemented femoral component. No non-union has been registered.

**CONCLUSION** The increased use of uncemented femoral components implies a substantial risk of femoral fracture. The cause of these fractures is unknown, but can be due to a mismatch between the instruments and the prosthesis, to undiagnosed weakness of the bone, or to the vigorous mobilisation made possible by the effective treatment of postoperative pain.



# **WEAR AND OSTEOLYSIS IN UNCEMENTED ACETABULAR COMPONENTS WITH AND WITHOUT HOLES IN TOTAL HIP ARTROPLASTY**

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**INTRODUCTION** Uncemented components are the primary choice for primary total hip arthroplasty in younger patients. The significance of screw holes in the acetabular cup concerning wear, osteolysis and hip revision have not been sufficiently examined in previous studies. The purpose of this study is to examine the long-term significance of screw holes in the cup in total hip arthroplasty.

**MATERIAL AND METHODS** Two groups with (Ranawat, n=30) and without (Mallory-Head, n=33) screw holes in the acetabular cup have been matched on caput material and size, stemtype, liner material and locking mechanism. The patients have all been operated at Odense University Hospital from 1994 to 1998, with a follow up period from 10 years to 15 years. The majority of the patients had primary artrosis as the course for the total hip arthroplasty. Conventional radiographs have been digitalized to measure wear using computer software (ROMAN). Position and frequency of pelvic osteolysis have also been examined using digitalized radiographs. The patients were evaluated clinically using the Harris Hip Score.

**RESULTS** Wear rates in the two groups are 0.17 and 0.16 mm/year, respectively. The Ranawat group has the most patients with wear related revisions. The distribution of pelvic osteolysis shows that Mallory-Head patients are more disposed to osteolysis along the inferior rim of the cup, whereas there is no difference behind or above the cup. The inclination of the cups in the two groups is very similar, 48° and 49°, respectively.

**CONCLUSION** There is no significant difference in long-term wear in the two groups with and with out screw holes. There is a tendency that the Ranawat group has more wear related revisions.

# **THE PROGNOSIS OF TOTAL HIP ARTHROPLASTY (THA) IN PATIENTS YOUNGER THAT 50 YEARS OF AGE. RESULTS FROM THE NORDIC ARTHROPLASTY REGISTER ASSOCIATION (NARA) OF 13,307 THA'IES**

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**INTRODUCTION:** Revision rate after THA in the younger age groups is still unacceptable high and might up to 20% after 10 years (DHR). The aim of this investigation is to evaluate risk factors for later revision in patients younger than 50 years at surgery based on the NARA database.

**MATERIALS AND METHODS:** Primary THA from Denmark, Sweden, and Norway, 1995-2006, were included. A total of 6,744 females and 6,563 males were included. The diagnosis was idiopathic osteoarthritis (OA) in 46%, childhood disease in 26%, inflammatory arthritis (IA) in 13%, non-traumatic osteonecrosis in 9% and fracture in 6%. 48% were uncemented, 29% cemented, 15% hybrid, and 7% inverse hybrid. Cox multiple regression, with adjustment for age, gender, and diagnosis was used to calculate prosthesis survival with any revision as end-point.

**RESULTS:** The overall 10-year survival was 81%. IA had a 37% reduced risk of revision compared with OA, whereas there was no difference between other diagnoses. Overall, cemented had better survival compared with uncemented THA, whereas hybrid had a 35% increased risk compared with cemented, both differences most pronounced in males. Analysis of revision risk with 2 years after surgery showed the same trend whereas the risk from 2 years and further showed reduced risk in inverse hybrid, a trend for decreased revision in uncemented, but still an increased risk in hybrids compared with cemented THA.

**DISCUSSION AND CONCLUSION:** Choice of prosthetic concept for younger patients is still of debate. The present study did not give a clear answer, however overall cemented THA had lowest risk for revision. In addition, we found that IA patients had reduced revision risk.

# **THE IMPACT OF LOCAL INFILTRATION ANALGESIA ON LENGTH OF STAY, PAIN TREATMENT, MOBILIZATION, PONV AND SATISFACTION AFTER HIP REPLACEMENT. A CASE-CONTROL STUDY IN 100 PATIENTS**

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**INTRODUCTION:** Recent studies shows that local infiltration analgesia (LIA) improves outcome after total hip replacement (THA). No detailed information exists to its influence on length of stay (LOS) after surgery. We evaluated LOS, pain treatment, mobilization, postoperative nausea and vomiting (PONV) and satisfaction before and after implementing LIA in our department.

**MATERIAL AND METHODS:** Patients diagnosed with primary osteoarthritis of the hip scheduled for unilateral uncemented or hybrid THA were included. All cases were collected from a local database with prospective data on all patients undergoing THA. Total 100 consecutive patients who did not have LIA from September 1st 2006 were compared with 100 consecutive patients who received LIA from September 1st 2007. The groups were unmatched, no patients were excluded. The solution used for LIA consisted of 200 mg Ropivacain, 30 mg Ketorolac and 1 mg Adrenaline dissolved in 100 ml saline.

**RESULTS:** Patients in the two groups were similar regarding gender, age, body mass index (BMI) and ASA group. The patients who received LIA had reduced LOS, mean 3.8 days compared to 5.1 days ( $p < 0.001$ ). Moreover, patients treated were more satisfied ( $p < 0.05$ ) and were more frequently mobilized on day 1 and 3 after surgery. Also, patients treated with LIA had significantly reduced PONV on the day of surgery ( $p < 0.05$ ) as well as they consumed more nutrition ( $p < 0.001$ ) the day after the operation. There was only difference in pain-score on day 3 ( $p < 0.05$ ). There were no wound complications during the first 6 weeks after surgery.

**CONCLUSION:** This study documents that operative wound infiltration with multimodal drugs reduced LOS and a variety of important parameters after THA. We recommend all departments performing THA to implement LIA.

# SELF-ASSEMBLY OF CO-POLYMERIC MEMBRANES ON 3-D POROUS BIODEGRADABLE POLYMERS TO PROMOTE TISSUE-ENGINEERED BONE

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**INTRODUCTION:** Tissue engineering strategies that combine porous biomaterial scaffolds with cells capable of osteogenesis have shown promise as effective bone graft substitutes. However, a critical barrier to this approach is the limited transport of nutrients and metabolites within the construct interior. The aim of the study was to improve mass transport throughout 3-D constructs and modulate cell viability at the interior of the construct by self-assembly of co-polymeric membranes consisting of hyaluronan, methylated collagen and terpolymer (HEMA-MAA-MMA) on the porous biodegradable polymer scaffold.

**MATERIAL AND METHODS:** Polycaprolactone (PCL) scaffolds were plotted using rapid prototyping providing a uniform and ordered microarchitecture throughout a cylindrical scaffold with  $\text{Ø} = 10$  mm and  $h = 5$  mm. hMSCs-TERT were seeded into the PCL scaffolds and encapsulated by the co-polymeric membranes. Cell/scaffold constructs were cultured for up to 21 days.

**RESULTS:** The cell seeding efficiency of hMSCs-TERT in the PCL scaffold was improved significantly (t-test,  $p < 0.05$ ) by self-assembly co-polymeric membranes within the scaffolds. Confocal microscopy showed an increasing level of cell death within the uncoated PCL scaffolds. Toluidine blue and Hoechst staining showed a highly increased cellular penetration depth ( $> 2$  mm) and a more homogeneous cellular distribution in the coated scaffolds. The results of DNA quantification, alkaline phosphatase (ALP) activity and calcium amount are included in the study.

**CONCLUSIONS:** The present in vitro study provides evidence for the effectiveness of copolymeric membranes on improving cellular seeding efficiency, increasing cellular penetration depth and improving cellular distribution in 3D scaffolds.

# THE EFFECT OF GOLD PARTICLES IN SHEEP ALLOGRAFT

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**INTRODUCTION** The use of allograft in arthroplasty causes a foreign body immune response. We hypothesized that allograft containing gold particles would reduce fibrous tissue production by suppressing inflammation and give rise to increased biocompatibility, better osseointegration and a following improved implant fixation.

**MATERIAL AND METHODS** 10 mature sheep were used in the study. Spherical gold particles sized 45 – 63 k $\mu$ m were used. We inserted cylindrical plasma sprayed porous titanium implants (L 10 mm/ $\varnothing$  6 mm) with endcaps and top screws ( $\varnothing$  11 mm), leaving a 2.5 mm circumferential defect around each implant. Each sheep received two implants in proximal humerus surrounded by impacted allograft +/- gold particles (129 mg) Biomechanical push-out tests and histomorphometrical analysis were performed 12 weeks later.

**RESULTS** Biomechanical results: Max Shear Strength (MPa) gold/control = 1.27(0.94;1.71) p=0.098 Max Shear Stiffness (MPa/mm) gold/control = 1.05(0.68;1.61) p=0.803 Total Energy Absorption (kJ/m<sup>2</sup>) gold/control = 1.47(0.85;2.53) p=0.134 Histomorphometrical analysis: New bone formation increased in the gold-group with 16 % in both inner (0-500 K  $\mu$ m) and outer zone (500-2500 K  $\mu$ m) p=0.241 and p=0.326, respectively. The amount of bone graft was reduced in gold group with 25% in inner zone p=0.056 and 12% in outer zone p=0.451.

**CONCLUSION** We failed to demonstrate any statistical significant improvement in early mechanical strength. The power of the study may have been insufficient, and it was further reduced with the loss of three out of ten included animals. However the consistent (but statistically non-significant) trend that the gold particles improve biomechanical strength and stability, new bone formation and graft remodeling is noticeable and warrants further experiments.

# STRONTIUM DOPED HYDROXYAPATITE AS BONE GRAFT EXTENDER APPEARS TO IMPROVE IMPLANT FIXATION

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**INTRODUCTION:** Strontium is thought to both stimulate osteoblastic differentiation and inhibit bone resorption, and to have the same good biocompatibility and osteoconductive properties as HA. We hypothesized that SrHA bone graft extender would improve the fixation implant, compared to HA bone graft extender.

**MATERIALS AND METHODS:** A paired study in 10 dogs. Two cylindrical, porous-coated 6 x 10 mm Ti implants surrounded by a 2.5 mm gap in the proximal humeri, where the gap was impaction grafted with: Allograft (50% of volumen) + HA (50%) versus Allograft (50%) + SrHA (50%) Six percent of the calcium ions in the hydroxyapatite were substituted by strontium ions in the SrHA group. Implant fixation was evaluated blindly by biomechanical push-out test after 4 weeks observation time.

**RESULTS:** Strength, [MPa] Energy [kJ/m<sup>2</sup>] Stiffness [MPa/mm] HA 1.20 (0.98-3.00) 157 (113-413) 7.98 (7.36-18.1) SrHA 1.74 (1.26-3.35) 350 (193-588) 9.47 (5.91-15.3) p=0.678 p=0.086 p=0.441 As the data was non-parametric distributed, Friedman's test and Wilcoxon-signed Rank test was used.

**DISCUSSION AND CONCLUSION:** Strontium doped HA granules as bone graft extender shows a tendency to improve implant fixation. In a recent clinical study of Strontium ranelate used for systemic treatment of osteoporosis, an insignificant positive effect of strontium in terms of increased bone mass was found. Our study was designed to detect a 30% increase in mechanical fixation, but suffered one exclusion and non-parametric data distribution. It may have been underpowered to detect more subtle effects of Strontium. No deleterious effect of the strontium was observed.

# IRON OXIDE-LABELING OF CHONDROCYTES FOR IN VIVO DETECTION BY MAGNETIC RESONANCE IMAGING (MRI)

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**INTRODUCTION** Therapies based on in vitro expanded primary cells are more frequently used for tissue regeneration. In vivo tracking of implanted cells using non-invasive modalities such as MRI could prove that the cells stay at the site of implantation. The aim of this study was to label human chondrocytes with very small iron oxide (VSOP) particles for subsequent MRI tracking in vitro.

**MATERIAL AND METHODS** Chondrocytes were isolated from biopsies and incubated in growth medium with either 0, 25, 50 or 100 µg/ml VSOP for 90 minutes at 37°C, 5% CO<sub>2</sub>. Verification of VSOP uptake was performed by Prussian blue staining and the impact of VSOP-labeling on cell proliferation was investigated by cell count after 24, 48 and 72 hours of culture. Furthermore, VSOP-labeled (50 µg/ml) chondrocytes from three patients were embedded in alginate beads in with a concentration of 5.0x10<sup>6</sup> cells/mL. The beads and a negative control of an empty alginate bead were placed in growth medium and were scanned with 1.5T MRI using a 5 cm diameter coil on day 0, 1, 2, 5, 9 and 14. T1 and T2 mapping was performed for quantification of intracellular iron-content.

**RESULTS** Successful VSOP-labeling of human chondrocytes was verified by histology using Prussian blue staining. The proliferation of cells was unaffected by VSOP-labeling. MRI quantification measurements are pending.

**CONCLUSION** VSOP-labeling of chondrocytes was successfully achieved, enabling in vivo detection of cells after implantation.

# COMPOSITE SCAFFOLDS FOR TISSUE ENGINEERING

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**INTRODUCTION** Tissue engineering is an interdisciplinary field applying cells, biochemicals, and biomaterials in a combined manner to provide properties of a material that aid tissue restoration when implanted. Ultimately, stem cells are seeded into the material, proliferation and differentiation of the cells are realised, and finally they self-organize into new tissue. Thereby restoring the native functions of the replaced tissue. Material selection for such scaffold materials remains a key factor in the development of clinical relevant methods and the design constraints are principally related to the type of defect to repair and the cell phenotype to promote. We applied Chitosan which is shown to promote wound-healing and possess bacteriostatic effects as a scaffold and functionalised it by incorporating nanoparticles. Nanoparticle delivery from scaffold to cells can provide a controlled drug release systems with improved tissue regeneration. To understand nanoparticle release mechanisms from a scaffold, the morphology of the composite is investigated using high resolution X-Ray tomography.

**MATERIAL AND METHODS** PLGA particles were made by a modified emulsion and solvent evaporation method. A chitosan solution was prepared and PLGA particles were added to the solution. The final solution was aliquoted in glass vials and lyophilized to produce an open porous composite 3D scaffold.

**RESULTS** Numerical analysis of nano CT data provide a description of the morphology and reveals particle distributions and clustering within the scaffold.

**CONCLUSION** The distribution of particulates through the scaffold indicates a two-step release profile, controlled by the particle depths. This material design can be explored to engineer smart scaffold having timed release of two independent drugs.



# **AUTOLOGOUS STEM CELL THERAPY MAINTAINS VERTEBRAL BLOOD FLOW AND CONTRAST DIFFUSION THROUGH THE ENDPLATE IN EXPERIMENTAL IDD**

*Michael Bendtsen, Hans Stødkilde Jørgensen, Cody Bünger*  
Ortopædisk Forsknings Laboratorium, Århus Sygehus

**INTRODUCTION** Intervertebral disc degeneration (IDD) is a common cause of chronic low back pain (CLBP). IDD is a chronic progressive process with changes in annulus, nucleus pulposus and adjacent endplates. The intervertebral disc a nearly avascular and disc cells relies on diffusion of nutrients and waste products through the vertebral endplate.

**MATERIAL AND METHODS** 15 skeletally mature Göttingen minipigs were used. IDD was induced surgically in 4 levels (L2/3 to L5/6). Levels were randomized to treatment with 2 different hydrogels, hydrogel and autologous stem cell, or degenerative control. This was done 12 weeks post-operatively. Observation time 12 weeks post treatment. MRI was performed before induction of IDD, before treatment and after 6 and 12 weeks post treatment. T1- and T2- sagittal, T2 mapping, DCE-MRI and T1 post contrast imaging for 45 min was used. Discs were graded histologically.

**RESULTS** 3 pigs were excluded due to spondylo-discitis (S. Epidermidis contamination of hydrogel samples). Green quantum dot labelled cells were found in all transplanted cells. No difference was found in discs before treatment. Hydrogel and stem cell treated discs had higher vertebral perfusion parameters compared to degenerative controls (rBF (ml/min/100g):  $86.930 \pm 8.730$ ,  $72.443 \pm 5.873$ ,  $p < 0.05$ ). No difference between stem cell, hydrogel or normal controls. Similarly there was a faster inflow of gadolinium contrast to stem cell treated discs compared to degenerative controls ( $p > 0.05$ ). Histology showed lower degree of degeneration of cell and hydrogel compared to hydrogel and degenerative controls (normal controls (8)

**CONCLUSION** Stem cell and hydrogel augmentation maintain blood flow and diffusion through endplates and halts progression of IDD better than hydrogel augmentation compared to degenerative controls.

# **-CAN YOU TREAT PSEUDARTHROSIS AND DELAYED FRACTURE HEALING WITH HYPERBARIC OXYGEN?**

*M S Dolva, EC Jansen*

Trykammerenheden, anæstesi- og operationsklinikken,  
HovedOrtoCenteret, Rigshospitalet

**INTRODUCTION** Hyperbaric oxygen (HBO) is standard treatment for a whole range of conditions, amongst them air-embolisms, CO-poisoning, necrotizing infections, injuries caused by radiotherapy, threatened skin-grafts and non-healing wounds of the skin. Among HBO's many clinical effects, are enhanced perfusion of ischemic tissues, enhanced activation of leukocytes and fibroblasts, enhanced angiogenesis and mobilization of stem-cells. We wanted to see if HBO could be used as a treatment for pseudarthrosis and delayed fracture healing.

**MATERIAL AND METHODS** This paper is based on the literature concerning HBO used in the treatment of fractures and three patient case-reports. The three patients all had fractures for which they been treated for long periods without achieving satisfactory fracture healing. In late 2007 and early 2008 they all received HBO-treatment at Rigshospitalet in Copenhagen.

**RESULTS** The literature on the subject is scarce, but suggests that there is a beneficial effect of HBO treatment in fracture healing. The ways of measuring the effect of the treatment vary a lot, and the different studies are therefore difficult to compare. After receiving HBO-treatment, there was a clear improvement of the healing in two of the patients included, judged by X-rays and CAT-scans.

**CONCLUSION** Judging by the theory, literature and case-controls, it seems likely that HBO has a beneficial effect on fracture healing. To further clarify the effect, we need large, randomized controlled trials performed on humans. In the mean time, the authors think that HBO should be offered certain groups of patients with fractures that show delayed healing.

# **INTRAMEDULLARY NAILING (C-NAIL) OF ACUTE MIDTSHAFT CLAVICLE FRACTURES. REVIEW OF 10 FRACTURES**

*Laimonas Bendikas, Torben Bæk Hansen*

Department of orthopaedics, Hospital Unit West, Holstebro, Denmark

**INTRODUCTION** Several methods have been used to treat acute midtshaft clavicle fractures. One of them is intramedullary nailing with a titanium nail (C-nail). We have reviewed the results of this treatment in our trauma clinic in a period september '07 - november'08.

**MATERIAL AND METHODS** We did a follow up study of ten patients aged 22.7 years (13-44). There were 2 women and 8 men with unilateral acute closed midtshaft clavicle fractures. Osteosynthesis with 2-3,5 mm titanium nail was performed at an average of 5 days (3-14 days) after the trauma. One or two minimal incisions were made for nail insertion and closed reduction was intended. For postoperative immobilisation/comfort we advocated to use a simple sling for 7-14 days. Radiological control was performed at day one postoperatively, 2 weeks and 6 weeks after surgery.

**RESULTS** In seven out of ten patients open reduction had to be used. All fractures healed without further surgery apart from removal of the C-nail in eight patients. No superficial/deep infections or vascular injury was reported. We were able to evaluate the function and clinical results at an average of 6-12 months after the operation using the Constant-Murley score. The average score amounted 97,9 points (85-100). All patients had a full range of motion. One patient suffered from anterior chest wall pain because of damage to the supraclavicular nerves.

**CONCLUSION** In this study intramedullary nailing has been a safe procedure treating acute midtshaft clavicle fractures especially A&B-Type (according to Comprehensive Classification of Fractures). However some types of pitfalls are notable to discuss.

## HEMICAP-KNEEOPERATIONS - WHAT IS THAT??

*Jens Ole Laursen*

Orthopedic Department, County Hospital of South Jutland, Soenderborg

**INTRODUCTION:** In 2003 a new type of knee-hemiprosthesis was introduced in USA and Europe. In 2006 when it was introduced to the Danish market.

**MATERIAL AND METHODS:** There was set up a protocol for the operations: and controlled by x-rays postop., at 6,12 weeks and 1 and 2 years including clinically controls with assessing of KSS. All patients were registered in the Danish Knee Society register. VAS – score was registered preoperatively and at follow-ups including KSS, complications and revisions.

**RESULTS:** In 2007 2 men and 4 women were operated and in 2008 seven and 11 respectively, with mean age men: 50 years (40-62); women 57 years( 40 – 80). 14 performed in spinal anesthesia and 10 in GA. Operating time (knife time) were average 45 minutes (35–80 minutes) including arthroscopy and the hemicap-operation. 19 of the patients were still at work—but had been out of work for an average of 4 months. 4 women and one man were pensionists. All the workers were at work again in average 6 months (2–12 months). The hospital stay were average 3 days(2–5 days). There were seen no pre-or postoperative complications and no deep infections. One patient had the hemicap revised to a TKA 6 months later (too progressive arthritis in the medial camber of the knee. Four patients had a re-arthroscopy. BMI was registered for all the patients. Average 29(21–35)—and will later be related to complications and reoperations! KSS knee- and functional score were preoperatively at 56(30-60) and 45(30-70)respectively. And at controls (>12 weeks) at 80 (50-95) and 76 (30-90). VAS-score were preoperatively at 7 (6-8) and at control (>12 weeks) at 3(1-7). Painkillers were reduced from (1,2,3) to (1) or less (1=paracetamol, 2= NSAID, 3=opioid).

# THE EFFECT OF ETCHED SURFACE TOPOGRAPHY MODIFICATION ON MECHANICAL FIXATION OF POROUS COCRMO IMPLANTS

*Ulla M. Stahlschmidt, Joergen Baas, Thomas Jakobsen, Merianne T. Vestermark, Stig S. Jakobsen, Joanie Bechtold, Kjeld Soballe*  
Ortopaedkirurgisk Forskning, afdeling E, Aarhus Sygehus

**INTRODUCTION** Metal-on-metal hip bearings made of CoCrMo alloy possess excellent wear properties and are a tempting choice for young and active patients. To increase surface biocompatibility of porous CoCrMo implants, the surface can be further roughened on the micrometer scale with wet-etching, which will be evaluated mechanically and histologically.

**MATERIAL AND METHODS** In 10 dogs 40 implants were inserted in a paired study of 6 x 10 mm porous-coated CoCrMo implants (DePuy) were inserted into the medial and lateral femoral epicondyles surrounded by a 0.75 mm gap. Each pair consisted of an implant with acid modified surface (PC WE) and a control implant (PC). After 4 weeks observation time the bone-implant specimens were prepared for biomechanical push-out test and histological sections.

**RESULTS** The acid etch-treated implants had better biomechanical fixation than the non-treated implants in all three mechanical parameters, but this was not statistically significant. The histomorphometric analysis showed no difference in ongrowth of bone and fibrous tissue between the two groups, but a significant more ingrowth of new bone around the wet-etched CoCr implants.

**CONCLUSION** We were unable to conclusively demonstrate any effect of the applied microtexture technology in this experiment. Augmenting the surface biocompatibility of CoCrMo implants intended for uncemented implant fixation is important for matching this aspect of materials properties of e.g. Ti. The acid etch-treated implants had more bone ongrowth on the outer surface of the porosity ( $p=0.139$ ) and more bone ingrowth ( $p=0.047$ ). More fibrous tissue was also found on the treated implants; however not statistically significant.

# HEAT SENSITIVE NANO CARRIERS: INTRACELLULAR DELIVERY OF siRNA IN A MOUSE TUMOR MODEL

*Claus Tvedesøe, Esben Larsen, Ken Howard, San Hein,  
Michael Horsman, Jørgen Kjems, Cody Bünger*

Department of Orthopaedics and Department of Experimental  
Oncology at Aarhus University Hospital. Drug delivery section at  
Department of physics, University of Aarhus, Denmark.

**INTRODUCTION** Specific knockdown of genes in tumor cells can be achieved by short inhibitory RNA (siRNA). This holds great perspective within cancer treatment as siRNA can be tailored to the individual tumor type and reduce the need for systemic chemotherapy. In order to deliver siRNA to a tumor in vivo, a vehicle which is specialized for in vivo administration and passive tumor targeting is needed. Our aim is to, non-invasively, use heat activated nano carriers to achieve a local and intracellular deposition of siRNA within tumor. In this study we evaluated the intracellular siRNA delivery capacity of the heat sensitive PEI-NIPA nano-polymer and the effect of mild hyperthermia on delivery.

**MATERIAL AND METHODS** Heat sensitive nanoparticles of PEI-PNIPA were developed and used as carrier for fluorescent labeled mismatch siRNA. CDF1 mice with CH3 mammary implanted sc. in left foot on the dorsal side was used in the study. Inclusion criterion was tumor size 350-400 mm<sup>3</sup>. 21 mice were randomized into seven groups: 1. Controls, 2. Saline injection, 3. Heating alone, 4-5. PEI-NIPA with siRNA +/- heating, 6-7. Chitosan +/- heat (a non heat-sensitive nanoparticle). After intratumoral injection of the solution, the heat-receiving groups were placed in plexiglas containers and constrained in special holders, allowing their left feet to be submerged in a heated water bath for one hour (mild hyperthermia 42 ± 0.5°C). Afterwards mice were killed and tumors studied by confocal microscopy.

**RESULTS** Tumors treated with heat activated PEI-NIPA shows intracellular uptake of siRNA. We were not able to determine whether heating had a significant effect.

**CONCLUSION** The PEI-NIPA nano-carrier has the capacity to deliver siRNA into tumor cells in vivo in the CH3 tumor model.

# RETROSPECTIVE STUDY ON THE PREVALENCE OF CLINICAL THROMBOEMBOLIC EVENTS AFTER HIP FRACTURE

*Rune Tønnesen, Lars N. Jørgensen,  
Henrik L. Jørgensen og Jes B. Lauritzen*  
Kirurgisk afdeling K, Bispebjerg Hospital

**INTRODUCTION:** Fractures of the femur bone or fractures of the col-  
lum femoris are associated with a high rate of postoperative mortality.  
Aim of this study: To determine the prevalence of clinical thromboem-  
bolic events in patients with hip fractures occurring up to one year post-  
operatively. The thromboembolic events may be on the venous side of the  
circulation as deep venous thrombosis or pulmonary embolism, or it may  
be on the arterial side occurring as stroke, from ischemia or hemorrha-  
ge. To assess the mortality of patients with hip fractures occurring up to  
one year postoperatively.

**MATERIALS AND METHODS:** Medical and demographic data were  
extracted from patient charts of 537 patients. All patients had been  
hospitalised and all had received surgical treatment for hip fracture.  
Odds ratios (O.R.) and confidence intervals (CI) were used to estimate  
frequency of the events in question in the study population and to com-  
pare those to the same events occurring in the population as a whole.

**RESULTS:** One year after surgical treatment of hip fracture 12/537  
(2,2%) had clinical thromboembolic complications. 160/537 (29,8%) of  
the patients with hip fracture died within one year from date of surgery.  
Stroke occurred once 1/537 (0,2%) amongst the patients with hip fra-  
cture. Odds O.R. was significant lower compared to the population as a  
whole 0,1 (95% CI 0,01 - 0,8).

**CONCLUSIONS:** The observed frequencies of clinical thromboembo-  
lic events in the study population should influence future decision  
making strategies in regards to duration and type of administered throm-  
bosis prophylaxis, to patients with hip fracture. Before that the study  
should be carried out as originally planed and a prospective study could  
become relevant.

# **BENEFITS OF THE “MERETE HIPREST®” FOR AVOIDANCE OF RE-DISLOCATION OF HEMIARTHROPLASTIES OF THE HIP**

*Shabir A. Rashidi, Abida S. Petersen*  
Department of Orthopaedics, SVS Esbjerg

**INTRODUCTION:** Patients with a dislocated hemiarthroplasty (HA) after femoral neck fractures have a high risk of re-dislocation. We have introduced a semi-rigid hip bandage (Merete HipRest®) (MH) in an attempt to reduce this risk in early dislocation cases.

**MATERIAL AND METHODS:** During the years 2001 to 2008 378 patients older than 75 years with a dislocated femoral neck fracture were treated with a bipolar Scancup and a cemented or uncemented Biometric stem. All dislocations happened less than four weeks postoperatively. In seven cases the dislocations were related to a fall, one to convulsions and in twenty-two cases the cause could not be disclosed.

**RESULTS:** Thirty hips dislocated postoperatively (7,9%). Two had an open reduction immediately leaving 28 HA for this study. All hips were mobilized without restrictions after reduction. The early group (N=14) were not bandaged. All had a redislocation within three weeks and were converted to a total hip arthroplasty (THA). In the late group (N=14) all patients had a MH applied just after reduction and used it for three months. In this group only 2 re-dislocations were observed.

**CONCLUSION:** Older patients who need a HA have often several complicated conditions which increases the risk of reoperation. A non operative method to stabilize a HA postoperatively is thus desirable. This is a preliminary report of stabilising an early postoperatively dislocating HA with a semi-rigid orthosis. Even though the number of patients are small and unselected we can recommend the MH as an easily applied and relatively comfortable orthosis in order to reduce the re-dislocation rate.



# HIGH-VOLUME INFILTRATION ANALGESIA IN TOTAL HIP ARTHROPLASTY - A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

*Otte Kristian S, Husted Henrik, Andersen Lasse Ø,  
Kristensen Billy B, Gaarn-Larsen L and Kehlet Henrik*

Department of Orthopedic Surgery, Department of Anesthesiology,  
Hvidovre University Hospital, Copenhagen, Denmark and  
Section of Surgical Pathophysiology, Rigshospitalet

**INTRODUCTION:** High-volume infiltration analgesia (LIA) has been shown to be effective in pain treatment after hip and knee arthroplasty though having variable effect. To assess the efficacy of the technique developed by D. Kerr & L. Kohan\* we conducted a randomized, double blind, placebo-controlled trial in bilateral total hip arthroplasty (BTHA).

**MATERIALS AND METHODS:** In 11 patients undergoing BTHA, saline (one hip) or high-volume (170 ml) ropivacaine 0.2% with epinephrine (contra-lateral hip) was administered intraoperatively along with supplemental postoperative injections via an intraarticular catheter. The local treatment was given in combination with oral analgesics in form of celecoxib, acetaminophen and gabapentin for a week. Pain was assessed for 48 hours in a fast-track setting.

**RESULTS:** During the observation period for 48 hours there was no difference in pain from the hips infiltrated with ropivacaine or placebo and also no difference in pain between the hips after re-injection of ropivacaine or saline. Only 2 patients scored over 5 on a VAS-scale during the study period and 2 patients did not score over 3. Mean vs. median hospital stay was 3,7 vs. 4 days (2-7).

**CONCLUSION:** In contrast to other reports we found no effect of LIA compared to saline in THA. This fact may have several explanations – different techniques, different amounts of local analgesics used, pronounced effect of the given oral analgesics in our set-up. Based on our results, we cannot recommend the use of LIA in THA for pain relief if a multimodal opioid-sparing oral pain regimen is used. \* D R Kerr and L Kohan: Local infiltration analgesia: a technique for the control of acute postoperative pain following hip and knee surgery: A case study of 325 patients. Acta Orthop 2008; 79: 174-183.

# COMPUTER AIDED PERCUTANEOUS VERTEBROPLASTY AND KYPHOPLASTY USING EFILM WORKSTATION SOFTWARE

*Yu Wang MD , Cody Bunger prof. DMsc*  
Orthopedic department,Aarhus University Hospital

**OBJECTIVE:** To evaluate the feasibility and efficacy of using Efilm software in percutaneous vertebroplasty and kyphoplasty.

**METHODS:** The study group included 20 patients. Preoperative CT or MRI was required. The DICOM files were imported into Efilm software. Before operation an ideal needle trajectory was drawn in the interface of the software, and the skin entry point, depth and angle of the needle could be determined. The positions of the virtual needle tips were recorded. During the operations, the skin entry points could be located with vernier caliper, and the needles were placed according to the predetermined parameters with Accuangle. The positions of the real needle tips were calculated with Efilm software through fluoroscopy, which were compared with the corresponding data of preoperation, the difference was calculated. The accuracy was graded as follows: <5 mm, excellent; 5 mm to 10 mm, good ; >10mm, poor.

**RESULT:**The difference between the intraoperative distance between the needle tip and the midline of the vertebral body and that of preoperation was  $3\pm 1$ mm (range, 0 to 6 mm). The difference between the intraoperative distance between the needle tip and the anterior wall of the vertebral body and that of preoperation was  $4\pm 1$ mm (range, 0 to 8 mm). 15 patients were rated as excellent,5 patients were rated as good.

**CONCLUSION:** Efilm workstation software can provide us with accurate parameters such as ideal entry point, depth and angle of needles preoperatively, under the guide of which the needle can be placed as it was planned.

# MULTIMEDIA VIDEOCONFERENCING SYSTEM IN AN ORTHOPEDIC DEPARTMENT

*Jens Ole Laursen*

Orthopedic Department,  
County Hospital of South Jutland, Soenderborg

**INTRODUCTION:** Orthopedic Department, County Hospital South Jutland is spread over 2 main Departments. One in Aabenraa (acute) and one in Soenderborg (pure elective). All young doctors is placed in the acute center I Aabenraa and only specialist is running the elective Department (hand surgery and hip- and knee primaries and revisions). To connect the 2 departments and their doctors and promote education 2 Smartboards (88”) was set up in both Aabenraa and Soenderborg, and videos connected to both. The operating theater’s in Soenderborg (laminated air flow was from the beginning sat up with videocameras, which now via the Internet was connected to the Smartboards.

**MATERIAL AND METHODS:** 2 iBoards 88”, 2 Sony VPL projectors, 2 Logitech Sphere Webcameras, 2 loudspeakers – price: 51.000 dKkr. 2 IBM computers – price 16.000 dKkr.

**RESULTS:** Via Skype the morningconferences this way connects the two Departments, patients can be discussed, and X – rays seen at both places and action been taken in a better and more collective way. Education of younger doctors in the fields of handsurgery and hip-and knee replacements can take place via the web.

**CONCLUSION:** Smartboards is to day normal standard at many schools – we hope this way to connect the digital world to our Orthopedic Department, making the Internet, videos and conferences a natural part of our Department and as a natural tool in educating younger upcoming orthopedics.

## **FAST TRACK WITHOUT AFFECTING PATIENT SATISFACTION**

*Susanne Jung Høvsgaard, Kirsten Specht, Jane Schwartz Leonhardt.*  
Ortopædkirurgisk Afdeling, Vejle Sygehus

**INTRODUCTION** In 2002 Vejle Hospital implemented Fast Track for patients having total hip arthroplasty (THA). The numbers of THA operations have increased from 202 in 2002 to 431 in 2007. The length of stay (LOS) has decreased from 11 days in 2001 to 5 days in 2007. In spite of this development there has been no release of extra hospital beds. The aim of Fast Track is to rehabilitate the patient as fast as possible considering high quality and patient satisfaction and nurses have an important role in achieving this.

**MATERIAL AND METHODS** The patient satisfaction has been monitored and registered in a local database since 2005. Between January 2007 and October 2007 349 patients had THA and 48 % filled in the Patient Satisfaction Form. Mean age 66.6 (28-91) years. Women: 48 % and Men: 52%. A numerical rating scale (NRS) 0-10 was used for assessment of satisfaction.

**RESULTS** The mean patient satisfaction was: Preoperative information day 9.4 (4-10). Information leaflet 9.4 (5-10). Nurse interventions 9.7. (6-10) Contact to the doctor 9.6 (0-10). Physiotherapist treatment 9.6 (2-10). Pain treatment 9.4 (0-10). Ward facilities 9.5 (2-10). Patient contact person 8.7 (0-10). LOS 9.7 (6-10). Overall satisfaction 9.6 (5-10).

**CONCLUSION** With the Fast Track programme it is possible to achieve a very high patient satisfaction. Considering the future development of Fast Track it is of great importance to continue to monitor the patient satisfaction.

# ANALYSIS OF FEMORAL NECK AND INTERTROCHNA- TERIC WITH THE FINITE ELEMENT METHOD

*Peter Tengberg, Christian Wong, Peter Mikkelsen,  
Jens-Erik Varmarken and Peter Gebuhr*

Ortopædkirurgisk afdeling, Hvidovre hospital, Ortopædkirurgisk afde-  
ling, Glostrup sygehus, Ortopædkirurgisk afdeling, Næstved sygehus

**INTRODUCTION** Femoral neck and intertrochanteric fractures have a high incidence and there is still need for thorough biomechanical analysis of fracture mechanisms for fall prevention. To evaluate this, we chose finite element analysis as a mean to simulate femoral neck and intertrochanteric fractures. We conducted a detailed fracture analysis with the finite element method using various impact loads in a 3D model of the proximal femur.

**MATERIAL AND METHODS** We used the image data from the National Library of Health Visible human project. Using the axial CT scans of the male dataset, we converted this to a stereolithographic (STL) image of the skeleton using Landmarker<sup>TM</sup> software. A 3D surface model of the upper femur was constructed from this model, using Solidworks<sup>TM</sup> software. The finite element model consisted of a trabecular core surrounded by a cortical shell which we tested using various loads, employing Cosmos<sup>TM</sup> software.

**RESULTS** We have successfully simulated intertrochanteric and femoral neck fractures after different fall loads. The simulations included direct impact and rotational force. The results were identical to the known fracture mechanisms in these two types of common fractures.

**CONCLUSION** We have shown that finite element analysis is useful for simulating fracture mechanisms with various loads and different directions of impact. In the study, we only used one bonemodel with one definition of cortical and trabecular bone properties. Future studies could include simulation of detailed bone properties, muscles and different loads. It would also be possible to simulate different types of osteosynthesis for the different types of fractures.

# **ANALYSIS WITH THE FINITE ELEMENT METHOD OF THE ACETABULAR CUP IN THA FOR SUB-OPTIMAL POSITIONS**

*Christian Wong, Jens-Erik Varmarken,  
Arne Borgwardt and Peter Gebuhr*

Ortopædkirurgisk afdeling, Hvidovre hospital,  
Ortopædkirurgisk afdeling, Næstved sygehus og  
Ortopædkirurgisk afdeling, Frederiksberg hospital

**INTRODUCTION** Cup positioning in THA is crucial for risk of long—term wear. We conducted a FE analysis to the Ring-loc acetabular cup—TM to examine the mechanical consequences of optimal and sub-optimal positioning of the acetabular cup.

**MATERIAL AND METHODS** Using the Solidworks<sup>TM</sup> and Cosmos<sup>TM</sup> software a finite element 3D model of the acetabular cup was generated. The model consisted of volumetric tetrahedral elements. Material properties of highly cross-linked and standard polyethylene (PE) were applied. Load of stance of an 80 kg. person was applied to an anteverted, retroverted, steep, normal and flat positioned cup.

**RESULTS** The results of Von Mises stress (VMS) were compared for the various suboptimal cup positions to a normal positioned cup. The maximal Von Mises stress for a steep cup was 3 times higher and the minimal stress was 60 % times higher. For the other suboptimal positions and for highly cross-linked PE compared to normal PE, there were no marked differences in VMS.

**CONCLUSION** It is hereby confirmed, that a sub-optimal positioned cup is a key factor for wear, and especially a steep cup gives a localized stress-risers at stance, hence localized wear. Highly cross-linked PE did not provide better stress protection.

**Forårsmøde i Dansk  
Selskab for Håndkirurgi**

**Arrangeret af Dansk Håndterapiforening**

Torsdag 30. april 2009 kl. 9:00 - 12:00

**CRPS og håndpatienten**

09:00-09:05 Velkomst

09:05-09:50 Underarms immobilisering - en human model for komplekst regionalt smertesyndrom. Global autonom dysfunktion hos patienter med komplekst regionalt smertesyndrom.

Astrid Juhl Terkelsen, post doc.M.D.Ph.D., Dansk Smerteforsknings Center, Århus

09:50-09:55 Spørgsmål

09:55-10:10 Kaffe

10:10-10:55 CRPS-diagnostiske kriterier og behandling.

Anders Schou Olesen, ledende overlæge, Tværfagligt Smertecenter, Region Nordjylland

10:55-11:00 Spørgsmål

11:00-11:30 Ergoterapeutisk behandling af CRPS.

Ergoterapeut Helle Puggård, Aalborg Sygehus.

11:30-11:35 Spørgsmål

11:35-11:50 Transkutan Elektrisk Nerve Stimulation til CRPS

Thomas Peter Enggaard, læge, anæstesiaafdelingen, Odense.

11:50-12:00 Spørgsmål og afslutning.

Alle er velkomne.

*pbv, Pernille Leicht*

# **Dansk Ortopædisk Traumeselskab**

**holder møde for alle interesserede i forbindelse med DOS møde på  
Hotel H.C. Andersen i Odense**

**Den 30. april kl. 10 – 12 med følgende program:**

1. Meddelelser fra bestyrelsen
2. Foredrag om tibia-marvsømning (indikationer, kirurgiske tips and tricks, postoperativt forløb, infektion, delayed union, non-union etc.) ved Søren Kold, Michael Brix og Klaus Kjær Petersen
3. Forslag til indhold på hjemmesiden, der er under revision.

*På bestyrelsens vegne  
Annette Sylvest*





DANSK SELSKAB FOR ARTROSKOPISK  
KIRUGI OG SPORTSTRAUMATOLOGI

## ***Forårsmøde og Generalforsamling***

**Radisson SAS Hotel H.C. Andersen,  
Claus Bergs Gade 7, 5000 Odense C.**

**S.A.K.S afholder forårsmøde og Generalforsamling  
torsdag d. 30.04.2009 i forbindelse med DOS forårsmøde i Odense.**

### **Forårsmøde:**

- 09.15 Kaffe ved indgangen
- 09.30 - 10.00 Kliniske Databaser. Hofte- og Korsbånds-database v.  
Bent Lund og Martin Lind
- 10.00 - 11.00 SAKS og ny DRG-gruppering indenfor ortopædkirurgi-  
en v. projektleder Jens Lind Knudsen, DRG-enheden,  
Sundhedsstyrelsen.

### **Generalforsamling – dagsorden ifølge vedtægter:**

11.00 – 12.30

- a) Velkomst og valg af dirigent.
- b) Fremlæggelse og godkendelse af formandens beretning 2008/2009.
- c) Fremlæggelse og godkendelse af revideret regnskab.
- d) Vedtagelse af kontingent.
- f) Valg af bestyrelsesmedlemmer.
- g) Valg af revisor.
- h) Indkomne forslag.
- i) Eventuelt.

(SAKS byder på sandwich ved afslutning/under Generalforsamling)



## **Ordinær generalforsamling Dansk Selskab for Hofte- og Knæalloplastik Kirurgi**

**Torsdag den 30. april 2009 kl. 11:30-12:00  
(i umiddelbar forlængelse af symposiet)  
Radisson SAS H.C. Andersen Hotel, Odense**

**Dagsorden skal indeholde følgende punkter:**

1. Valg af dirigent
2. Godkendelse af referat fra forrige generalforsamling
3. Formandens beretning
4. Fremlæggelse af regnskab og budget til godkendelse
5. Behandling af indkomne forslag
6. Fastsættelse af kontingent
7. Valg af bestyrelse ved valgperiodens udløb
8. Valg af revisor
9. Eventuelt.

Indkomne forslag skal være bestyrelsen i hænde senest 2 uger før generalforsamlingen.

***Søren Overgaard  
formand DSHK***



## ***Nordic Shoulder and Elbow Conference 2009***

**4th Combined meeting of  
The Danish and Swedish Societies of Shoulder and Elbow Surgery**

**Sted:** Marienlyst Hotel & Casino, Conference Center, Helsingør.

**Indhold:** Detaljeret program kan findes på [www.skulderalbue.dk](http://www.skulderalbue.dk)

Onsdag d. 13. maj: Velkomst og socialt arrangement

Torsdag d. 14. maj: Albuefrakturer; behandling og komplikationer

Fredag d. 15. maj: Komplikationer til rotator cuff kirurgi og behandlingen af disse.

**”Therapist Speciality Day”:** torsdag vil der være et separat program for fysioterapeuter og ergoterapeuter med temaer indenfor rehabilitering af skulder og albuepatienter.

**Målgruppe:** Skulder og albuekirurger samt interesserede traumatologer og yngre læger. Desuden særskilt program for fysioterapeuter og ergoterapeuter.

Der vil være deltagelse fra Danmark, Sverige og Norge.

**Undervisere:** Internationalt fakultet.

**Deltagerafgift:** Før 31. marts: Læger 1600 kr., terapeuter 800 kr. Efter 31. marts læger 2000 kr. Terapeuter 1000 kr. Kongres middag inkluderet.

**Tilmelding:** Foretages ved registrerings formular på DSSAK’s hjemmeside [www.skulderalbue.dk](http://www.skulderalbue.dk)

Reduceret afgift ved registrering før 31. marts 2009.

**Kongresledelse:** Dansk Selskab for Skulder og Albue Kirurgi og Skulder og albuesektionen på Herlev Hospital.

**For yderligere information kontakt:** Anne Kathrine Belling Sørensen, Skulder og albuesektionen, Ortopædkirurgisk afd. T, Herlev Hospital, E-mail: [ankaso01@heh.regionh.dk](mailto:ankaso01@heh.regionh.dk)



DANSK SELSKAB FOR ARTROSKOPISK  
KIRUGI OG SPORTSTRAUMATOLOGI

## **Dansk Selskab for Artroskopisk Kirurgi og Sportstraumatologi**

**Afholder:**

### **11. Basiskursus i artroskopisk kirurgi**

**Tid:** Tirsdag d. 26. maj – torsdag d. 28. maj 2009.

**Sted:** Panum Institutet, København.

**Indhold:** 3 dage med teori, undersøgelsesteknik og praktiske øvelser på kadavere med artroskopi og dissektion. Der er afsat 3 dage med blandet teori og praktiske øvelser

**Målgruppe:** Yngre læger som sigter på en speciallægeanerkendelse i ortopædkirurgi. Der kan maksimalt optages 2 kursister pr. artroskopisk søjle. Tildeling af pladser foregår efter princippet ”først til mølle”.

**Undervisere:** Danske speciallæger med stor erfaring i artroskopisk kirurgi.

**Deltagerafgift:** For medlemmer af SAKS: 1.800 kr. For ikke medlemmer af SAKS: 2.200 kr.

**Tilmelding:** Foretages on-line på SAKS’ hjemmeside, [www.saks.nu](http://www.saks.nu). Tilmelding gælder fra betalingsdato, og sidste frist er 1. maj.

**Kursusledelse:** Overlæge Torsten Warming

**For yderligere information kontakt:** Torsten Warming, ort.kir.afd. M, Bispebjerg Hospital, e-mail: [warming@dadlnet.dk](mailto:warming@dadlnet.dk)



International Symposium on Critical Bleeding  
Copenhagen, August 24th - 25th 2009

## **Kære kollega**

Kritisk blødning er en alvorlig komplikation ved traume og større kirurgiske indgreb, Sundhedsstyrelsen estimerer at cirka 1.000 patienter årlig dør grundet kritisk blødning i Danmark. Inden for de sidste 5 år er der sket betydelige forandringer i den transfusionsmedicinske og farmakologiske behandling af patienter med kritiske blødninger, samt i monitoreringen af det hæmostatiske system hos disse patienter. På denne baggrund vil jeg gerne invitere Jer til:

1st International Symposium on Critical Bleeding, ISCB 2009 der afholdes på Moltkes Palæ i København den 24-25 august, 2009.

Et flertal internationalt førende eksperter inden for traumatologi, anæstesiologi og intensiv terapi, kirurgi og transfusionsmedicin har indvilliget at holde foredrag ved symposiet. Endvidere vil der være interaktive sessioner, hvor interessante cases bliver præsenteret for ekspertpanelet og symposiedeltagere til fælles diskussion af behandlingsstrategier.

For mere information, inklusive program, se venligst: [www.iscb2009.dk](http://www.iscb2009.dk)

*Med venlig hilsen*  
*Pär I. Johansson, overlæge*  
*Region Hovedstadens Blodbank*  
*Rigshospitalet*  
*København*

# ***Kursus i rygkirurgi***

**17. – 18. september 2009**

- Målgruppe** Speciallæger og læger i hoveduddannelse til ortopædkirurgi og neurokirurgi.  
Max 20 deltagere.
- Indhold** Teoretisk og praktisk undervisning i operativ teknik, fordelt på forelæsninger, diskussioner og anatomiske dissektioner på frisk kadavermateriale.  
Kurset tilrettelægges individuelt med operationer af forskellig sværhedsgrad, således at læger på forskelligt uddannelsesniveau erfaring vil få størst muligt udbytte af kurset.  
Undervisningen foregår på dansk og engelsk
- Undervisere** Professor Benny Dahl  
Overlæge Martin Gehrchen  
Overlæge Adam Hede  
Kursusleder Michael Mølmer  
Samt internationale forelæsere
- Sted** Panum Institut, København

Tilmelding samt mere information på [www.meducator.dk](http://www.meducator.dk)

*Celebrating our 10th Congress!*



## EFORT 2009 - Vienna, Austria 3-6 June 2009

New features: Experts meet Experts Sessions (ExMEx)  
Comprehensive Orthopaedic Review Course (CRC)

Deadline for pre-registration:  
10 May 2009



### Congress Highlights

- Hip: New devices – fashion or advance?
- Knee: What's going on?
- Foot/Ankle: Mobility and function
- Spine: Modern trends successful?
- Shoulder/Elbow: Quality first
- Hand/Wrist: Today's solutions
- Trauma: Fracture healing and function
- Sports: The main problems
- Paediatrics: New approaches
- Cartilage defects: Repairing the disaster
- Infection and inflammation: Drugs alone?
- Bone tumors: Solution options
- Technical equipment: Where with navigation?
- Osteoporosis: Growing burden
- Basic science: What's in the pipeline?
- Pain control: Empowering the patient
- Biomaterials: What's new?

Science, Education, Culture

In 2009 the European Orthopaedic Community meets in Vienna

# ***NOF Instructional Course/Master Class Foot & Ankle in Iceland***

**Dear NOF member,**

One of the goals of NOF is to organise in the *uneven years* an instructional course on a specialised topic. Together with one of the leading NOF experts in this field, Jon Karlsson, we will organise in Reykjavik on September 10 and 11, a **Master class/ NOF instructional course on Foot and Ankle**. This course can be considered as an update in the field. You are invited to participate.

During this instructional Course various controversial ankle and hindfoot topics are highlighted and discussed. The course includes live surgery and case discussions for which the participants will be encouraged to bring their own cases.

For more information please visit: [www.ankleplatform.com](http://www.ankleplatform.com)

Registration principle is: first come first serve. We will only allow a limited number of participants in order to have maximum interaction.

**Hope to see you in Reykjavik!**

*Kind regards,*

*Prof. Dr. C. Niek van Dijk,  
NOF president*