

# Dansk Selskab for Skulder- og Albue Kirurgi

## Program for DSSAK Årsmøde

18. - 19. april 2024

### Herlev og Gentofte Hospital



Herlev og Gentofte Hospital  
Gentofte Hospitalsvej 10A + 10B  
2900 Hellerup

**Husk:** 3-timers parkering indtil kl. 16:00

# DSSAK Annual Meeting 2024

## PROGRAM

<b>Thursday, April 18th</b>		
9-45-10.00	<i>Registration, coffee and light breakfast</i>	
10.00-10:15	Welcome	<i>Formand &amp; Gentofte</i>
	<b>Rotator cuff</b>	<i>Chairman Tim Houbo</i>
10:15-11:30	Anatomy and biology (20 min)	<i>Lars Henrik Frich</i>
	Step by step MR evaluation of the Rotator cuff (15 min)	<i>Akram Delfi, Gentofte</i>
	Primary treatment of rotator cuff tears: Conservative versus operative treatment (30 min)	<i>Anne Kathrine Belling Sørensen</i>
11.30-11:45	<b>Short break</b>	
	<b>Dilemmas in rotator cuff surgery</b>	
11:45-12:30	Single vs double row (10 min)	<i>Mikael Gerner Jacobsen</i>
	Arthroscopic versus open repair (10 min)	<i>Andreas Qvist</i>
	Biceps tendon in rotator cuff surgery (10 min)	<i>Jamal Bech Bouknaitir</i>
	Acromioplasty and ac-resection in cuff surgery (10min)	<i>Jens Gramkov</i>
12:30-13:30	<b>Lunch in the exhibition</b>	
		<i>Chairman Theis Thillemann</i>
13:30-14:25	Superior capsular reconstruction (45 min)	<i>Clara Azevedo</i>
	Discussion (10 min).	
14.25-15:15	Ph D presentation Stem versus stemless shoulder arthroplasty	<i>Zaid Issa</i>
	Discussion (10 min)	
15.15-15.45	<b>Coffee and exhibition</b>	
15.45-16:45	For abstracts see appendix	<i>Chairman Thomas Falstie-Jensen</i>
15.45-15.53	Familial risk of rotator cuff disease: A prospective cohort study of Danish twins	<i>Lars Henrik Frich</i>
15.54-16.02	Total elbow arthroplasty or hemiarthroplasty for acute distal humeral fractures: A comparative study of 366 consecutive patients.	<i>Andreas Falkenberg Nielsen</i>
16.03-16.11	Præliminære resultater af pectoralis minor release hos patienter med Pectoralis Minor Syndrom.	<i>Klaus Bak</i>

# DSSAK Annual Meeting 2024 PROGRAM

16.12.-16.20	Lower Risk Of Revision Due To Infection After Shoulder Arthroplasty Using Cefuroxime As Prophylactic Antibiotic Compared With Dicloxacillin	<i>Ileana Cristina Oprea</i>
16.21-16.29	Anatomic total shoulder arthroplasty using hybrid glenoid fixation. Two to ten years follow-up of 256 cases with primary glenohumeral osteoarthritis.	<i>Adriano Axel Ceccotti</i>
16.30-16.38	High-load strengthening exercise is beneficial and positively impacts emotions in patients with hypermobile shoulders	<i>Behnam Liaghat</i>
16.39-16.47	Outcome following reverse shoulder arthroplasty for acute proximal humeral fractures with different humeral inclination implants versus non-surgical treatment	<i>Klaus Hanisch</i>
16:50-17:30	DSSAK General assembly	
19.00	<b>Dinner at Comwell Copenhagen Portside</b>	??

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## PROGRAM

Friday, April 19th		
	<b>AC-joint</b>	<i>Chairman Ali Al-Hamdani</i>
08.30 – 09:15	Anatomy and biomechanics (15 min)	<i>Esben Sejr</i>
	Painful AC-joint: (25 min) Diagnostic approach Conservative and surgical treatment	<i>Jørgen Friis</i>
09.15-10.15	<b>Acute AC-joint dislocations</b>  Non-operative vs operative treatment Surgical options Graft? Direct repair? Artificial ligament? Treatment of failed repair  (45 min + 10 min discussion)	<i>Knut Beitzel</i>
10.15-10.45	<b>Coffee and exhibition</b>	
10.45-11.45	<b>Chronic AC-joint dislocations:</b>  Natural course of AC-dislocations and indications for surgery  Surgical techniques: Anatomical reconstruction vs Weaver-Dunn  (45 min + 10 min discussion)	<i>Klaus Bak</i>
11.45 – 12.05	Conservative treatment of AC-dislocations (20 min)	<i>Dorte Ryberg</i>
12.10-12.30	Traumatic posterior SC-joint dislocation (20 min)	<i>Theis Thillemann</i>
12.30 – 13:15	<b>Lunch in the exhibition</b>	
13:15 – 14:15	<b>SC-joint Management of instability</b> (20 min+10 min discussion)	<i>Tim Houboe</i>
	<b>Diagnostic approach and management of SC-joint arthritis.</b> (20 min+10 min discussion)	<i>Tim Houboe</i>
	Goodbye!	

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# DSSAK Annual Meeting 2024

## ABSTRACTS

### **Familial risk of rotator cuff disease:**

#### **A prospective cohort study of Danish twins**

**Authors:** Andreas Kristian Pedersen <sup>1</sup>, Jacob von Bornemann Hjelmberg <sup>2</sup>, Christian Backer Mogensen <sup>1</sup>, Lars Henrik Frich <sup>1,3</sup>

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<sup>2</sup> Dept. of Epidemiology, Biostatistics and Biodemography, Institute of Public Health, University of Southern Denmark

<sup>3</sup> Department of Orthopedics, Hospital Sønderjylland, Denmark

**Introduction:** Rotator cuff disease is a widespread musculoskeletal pathology ranging from tendinopathy to full-thickness tear. The effect of the disease can result in disability and severe pain for the patient.

The etiology behind the disease is multifaceted and resulting from an interplay between intrinsic and extrinsic factors. Studies on familial predisposition suggest that genetic plays a role in the pathogenesis of rotator cuff disease. Family members of patients with rotator cuff disease may have a significantly higher risk of rotator cuff tears than the general population. Genetic predisposition may play a role also in clinical presentation and progression of rotator cuff tears. A population-based study of family factors behind rotator cuff disease based on treatment diagnosis and long follow up is there for needed.

**Aim:** The aim is to study genetic and environmental determinants of rotator cuff diagnosis.

**Methods:** We included all Danish twin pairs born from 1910–1980 and identified them using the Danish twin registry. The primary outcome was rotator cuff tear and based on the ICD-10 DS460, DS467, DM751 and ICD8 code 90500. To assess familial risk, time-to-event analysis for bivariate twin data was applied taking censoring and competing risk of death into account

**Results::** This population based study consist of 16749 (24.6 %) monozygotic (MZ) and 51247 (75.4 %) dizygotic twins (DZ). The lifetime familial risk of a rotator cuff diagnosis in a MZ twin, if diagnosed in a co-twin was 10% (95%CI [3.0-16%]). For DZ twins the familial risk of rotator cuff disease was significantly lower at 6.0% (95%CI [3.0-9.0%]). The lifetime risk of rotator cuff disease for the dizygotic twin was 4.3% (95%CI [4.3-4.8%]). Biometric analyses showed a lifetime heritability of rotator cuff risk at 7.48% (95%CI [-6.8-21.8%]) and the influence of shared environmental factors was 2.74% (95%CI [-11.7%, 17.3%]). Increased genetic influence during 50-70 years of age were indicated

**Conclusion:** This, largest ever family study show that moderate genetic influence governs the risk of rotator cuff tear while substantial environmental influences are present that could potentially be targeted in prevention strategies.

**Acknowledgements:** The authors are thankful to the Danish Twin registry for hosting and managing the data and giving valuable insight to how the analysis could be conducted

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## ABSTRACTS

### **Total elbow arthroplasty or hemiarthroplasty for acute distal humeral fractures: A comparative study of 366 consecutive patients.**

**Authors:** Andreas Falkenberg Nielsen, Ali Al-Hamdani, Jeppe Vejlgard Rasmussen, Theis Muncholm Thillemann, Bo Sanderhoff Olsen

**Introduction:** Elbow arthroplasty is an established treatment of distal humeral fractures not amenable to internal fixation. TEA is the most common modality, but it is still unclear which option produces the best results. We hypothesize that EHA leads to a higher revision rate than TEA, due to ulnar erosion.

**Aim:** The primary aim of this study was to evaluate and compare revision rates after total elbow arthroplasty (TEA) and elbow hemiarthroplasty (EHA) in the treatment of acute distal humeral fracture. Secondary aims were to describe reasons and risk factors for revision.

**Method:** We identified all elbow arthroplasties in patients with distal humeral fractures from all centers nationwide in the period of January 1, 2008 until December 1, 2021. Data was collected retrospectively and audited on the level of individual patients to ensure completeness of data. Kaplan-Meier analyses were conducted to estimate the cumulative implant survival for TEA and EHA. To evaluate risk factors for revision, hazard ratios (HR) were calculated using the Cox-proportional hazard model with mutual adjustment for age, sex, time to surgery, and implant type (TEA or EHA).

**Results:** 225 primary TEA and 141 primary EHA procedures were included. All TEAs were semi-constrained (136 Coonrad-Morrey [Zimmer], 4 Latitude [Tornier], 37 Nexel [Zimmer], and 48 Discovery [Lima]). All EHAs were of the Latitude Elbow System [Tornier]. The 5- and 10-year revision rates were 8.6% (95% confidence interval [CI] 4.4%, 12.8%) and 20.5% (95% CI 9.2%, 31.9%) for TEA, and 9.3% (95% CI 3.0%, 15.6%), and 18.7% (95% CI 4.8%, 32.7%) for EHA.

21 TEAs and 11 EHAs were revised. The most common cause for revision of TEA was aseptic loosening (n=11, 52.4%), where loosening of the humeral component was the cause in 10 cases. For EHA, the most common cause of revision was ulnar erosion (n=5, 45.5%), and it was possible to preserve the humeral component in 3 cases. After adjustment, the HR for male patients was 3.24 (95% CI 1.37, 7.66). The HR for EHA was 0.77 (95% CI 0.36, 1.65).

**Conclusion:** Revision rates of TEA and EHA were comparable and relatively high after 10 years, with increased risk of revision for males. Although the size of the presented data is small, EHA does not seem to produce inferior results compared to TEA. EHA could possibly bridge the gap between internal fixation and TEA, but results on patient related outcomes are necessary for further evaluation.

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## ABSTRACTS

### Præliminære resultater af pectoralis minor release hos patienter med Pectoralis Minor Syndrom.

**Authors:** Klaus Bak, Anders KJørup

**Introduction:.** Pectoralis minor (PM) syndrom er en sjælden tilstand med ofte intense smerter, nedsat aktiv bevægelighed og paræstesier i armen forårsaget af kompression af den distale del af plexus brachialis ved dennes passage under pectoralis minor senen medalt for dennes insertion i processus coracoideus. Generne kan være invaliderende og tilstanden svær at diagnosticere. Vi beskriver de præliminære resultater af kirurgisk release hos 14 patienter.

**Aim:** At rapportere præliminære resultater af pectoralis minor release og gennemgå kirurgisk teknik.

**Method:** Siden 2018 er der foretaget 14 operationer for pectoralis minor syndrom. Der var 12 kvinder og 2 mænd medianalder 34 (22-44) år. Halvdelen havde tidligere gennemgået anden operation uden effekt. Symptomvarighed var median 42 måneder (12-120). Operationsindikation var langvarige smerter i skulderen med udstråling til arm og hånd, nedsat bevægelighed, ømhed på pec minor, positiv Upper Limb Tension Test og minimum 12 måneders manglende effekt af ikke-operativ behandling.

**Results:** Ni patienter (5 excellent og 4 good) oplevede markant symptombedring indenfor de første fire uger efter operationen. Ingen af disse fik recidiv. Af de øvrige 5 (4 fair og 1 poor) var der kun beskeden effekt, og 1 oplevede forværring og fik efterfølgende diagnosticeret Kronisk Regionalt Smertesyndrom. To patienter fik efterfølgende adhæsiv kapsulitis. Der var ingen neurologiske komplikationer.

**Conclusion:** Endoskopisk release af pectoralis minor senen ved pectoralis minor syndrom er overvejende gode. Patientgruppen er kompleks med ofte flere samtidige skulderpatologier.

#### References:

1. Sanders RJ, Annest SJ. Thoracic outlet and pectoralis minor syndromes. Semin Vasc Surg. 2014; 27(2): 86-117.:
2. Upton ARM. The double crush in nerve-entrapment syndromes. Lancet. 1973;2:359-362.
3. Sanders RJ, Rao NM. The forgotten pectoralis minor syndrome: 100 operations for pectoralis minor syndrome alone or accompanied by neurogenic thoracic outlet syndrome. Ann Vasc Surg. 2010;24(6):701-708.
4. Machanic BI, Sanders RJ. Medial Antebrachial Cutaneous Nerve Measurements to Diagnose Neurogenic Thoracic Outlet Syndrome. Ann Vasc Surg. 2008;22(2):248-254.
5. Servasier L, Jeudy J, Raimbeau G, Bigorre N. Arthroscopic release of the pectoralis minor tendon as an adjunct to acromioplasty in the treatment of subacromial syndrome associated with scapular dyskinesia. Orthop Traumatol Surg Research 2022 Apr;108(2):103211.



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## ABSTRACTS

### **Lower Risk Of Revision Due To Infection After Shoulder Arthroplasty Using Cefuroxime As Prophylactic Antibiotic Compared With Dicloxacillin**

Forfattere: Ileana Cristina Oprea, Daniel Mozart Bergmann Hansen, Jeppe Vejlgård Rasmussen, Steen Lund Jensen

**Introduction:** Infection is a common cause for revision in shoulder arthroplasties, leading to adverse outcomes, and serious consequences to the patients including poor outcome compared to the uncomplicated arthroplasties. In Denmark, mainly three prophylactic regimens are utilized: cefuroxime, penicillin in combination with dicloxacillin, and dicloxacillin alone. Given the prevalence of *Cutibacterium acnes* in infected cases and their resistance to penicillinase-resistant penicillin, our hypothesis was that cefuroxime or penicillin in combination with dicloxacillin would exhibit a lower risk of revision due to infection compared with dicloxacillin alone.

#### **Aim:**

This study aimed to assess the risk of revision due to infection following shoulder arthroplasty, comparing the effectiveness of three commonly used prophylactic antibiotic regimens using data reported to the Danish Shoulder Arthroplasty Registry.

#### **Method:**

The study included all arthroplasties reported to the Danish Shoulder Arthroplasty Registry from 2016 to 2022, excluding cases where none of the three prophylactic regimens were administered. The primary outcome was revision due to infection, and cumulative survival was analyzed using the log-rank test. Cox regression analysis considered dicloxacillin as the reference when calculating hazard ratios, incorporating covariates such as duration of antibiotic administration, age, gender, indication for arthroplasty, previous surgery, type of arthroplasty, duration of surgery, and year of surgery (early-late in study period).

**Results:** 8097 arthroplasties were included. Of these, 361 were excluded, leaving 7736 cases for analysis. 4590 received cefuroxime, 1238 penicillin in combination with dicloxacillin, and 1908 dicloxacillin. The number of revisions due to infection was 32 (0.7%), 11 (0.9%), and 28 (1.5%) respectively. The three groups were demographically identical.

The estimated cumulative 5-year revision rate was: 0.9% (CI: 0.5%-1.3%) for cefuroxime, 1.2% (CI: 0.4%-2.0%) for penicillin combined with dicloxacillin, and 1.8% (CI: 1.0%-2.6%) for dicloxacillin alone ( $p=0.036$ )

Multivariate Cox regression showed that the use of cefuroxime significantly reduced the risk of revision for infection compared with dicloxacillin; hazard ratio 0.41 (95% CI: 0.24-0.70).

Although the hazard ratio for penicillin in combination with dicloxacillin was 0.59 (95% CI: 0.28-1.28, the risk was not significantly lower than for dicloxacillin.

#### **Conclusion::**

Based on our findings, we recommend cefuroxime as the preferred prophylactic antibiotic, over dicloxacillin for shoulder arthroplasty, while acknowledging the inconclusive evidence for or against penicillin in combination with dicloxacillin due to a smaller cohort.

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## ABSTRACTS

### **Anatomic total shoulder arthroplasty using hybrid glenoid fixation.**

#### **Two to ten years follow-up of 256 cases with primary glenohumeral osteoarthritis.**

**Forfattere:** Adriano Axel Ceccotti, MD<sup>1</sup>, Mikkel Tøttrup, MD PhD<sup>2</sup>, Anica Mørch, MD<sup>1</sup>, Hans-Christen Husum, MD<sup>1</sup>, Steen L Jensen, MD PhD<sup>1</sup> <sup>1</sup>Department of Orthopedic Surgery and Orthopedic Surgery Research Unit, Aalborg University Hospital, Aalborg, Denmark <sup>2</sup>Aarhus University Hospital, Orthopedic department, Aarhus, Denmark

#### **Introduction:**

Anatomic total shoulder arthroplasty (aTSA) is the recommended surgical treatment for severe glenohumeral osteoarthritis providing good pain relief and function. Aseptic loosening of the glenoid component, however, is a major cause for revision. Hybrid components have been introduced combining traditional cemented fixation with porous titanium bone ingrowth to improve fixation.

#### **Aim:**

The purpose of this study is to report our 10-year experience including clinical outcomes and implant survival using hybrid glenoid fixation in aTSA.

#### **Method:**

We reviewed all patients who were operated for primary osteoarthritis during the period 2011-19 leaving a minimum of 2 years follow-up. Severity of the osteoarthritis was graded using Samilson-Prieto score, while glenoid morphology was graded using the modified Walch classification. Clinical outcomes included WOOS index, EQ-5D-5L and Constant-Murley Score (CMS). Postoperative radiographs were analyzed for radiolucent lines. Patient records were studied for complications including revisions. Supplementary data for revision and outcome were obtained from the Danish Shoulder Arthroplasty Registry. Kaplan-Meier estimates for implant survival were calculated.

**Results:** A total of 256 arthroplasties in 224 patients were included (mean age: 69 years  $\pm$  9 years, 149 females). 81% of cases were graded radiographically as severe osteoarthritis according to Samilson-Prieto. Walch type B1 was most common followed by B2 (29% and 28% respectively). Mean follow-up time was 49 months (range 24 - 127). The response rate for patient reported outcomes was 91%. The median WOOS index was 94% (81%-99%), the median EQ-5D-5L was 0.87 (0.69-0.95), and the mean CMS was 75 (SD 17.7). 13 cases (6%) had a WOOS index below 50%. 8.2% had complications related to surgery. A radiolucent line had developed around the central post in six cases, and at the bone-cement interface in three cases at follow-up. Six cases had been revised (2.3%); two due to aseptic loosening of the glenoid. The 10-year survival estimate was 95.6 % (95% CI: 87.9% - 98.5%).

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## ABSTRACTS

### **High-load strengthening exercise is beneficial and positively impacts emotions in patients with hypermobile shoulders**

**Forfattere:** Behnam Liaghat, PhD, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark, Daniel Alexander Faber, MSc, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark. Emil Oliver Christensen, MSc, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark. Søren T. Skou, Professor, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; Department of Physiotherapy and Occupational Therapy, Næstved-Slagelse-Ringsted Hospitals, Slagelse, Denmark. Jens Sondergaard, Professor, Department of Public Health, University of Southern Denmark, Odense, Denmark. Karen Søgaard, Professor, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; Department of Clinical Research, University of Southern Denmark, Odense, Denmark. Birgit Juul-Kristensen, Associate Professor Emeritus, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark. Carsten Bogh Juhl, Professor, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; Department of Physiotherapy and Occupational Therapy, Copenhagen University Hospital, Herlev and Gentofte, Denmark

**Introduction:** Shoulder symptoms are common in patients with hypermobility spectrum disorders (HSD), but evidence for treatment is sparse.

**Aim:** To investigate the long-term effectiveness of high-load versus low-load strengthening exercise on self-reported function in patients with HSD and shoulder symptoms.

**Method:** A secondary analysis of a superiority, parallel-group, randomised trial (balanced block randomisation 1:1, electronic concealment) including adult patients (n=100) from primary care with HSD and shoulder pain and/or instability  $\geq 3$  months. Patients received 16 weeks of shoulder exercises (three sessions/week): HEAVY (n=50, full-range, high-load, supervised twice/week) or LIGHT (n=50, neutral/mid-range, low-load, supervised three times in total). The 1-year between-group difference in change in self-reported function was measured using the Western Ontario Shoulder Instability Index (WOSI, scale 0–2100, 0=best). Secondary outcomes were self-reported measures including changes in shoulder-related symptoms, function, emotions and lifestyle, quality of life, patient-perceived effect, treatment utility and adverse events. A blinded analyst conducted the analyses using linear mixed model repeated measurements analysis.

**Results:** One-year data were available in 86 out of 100 participants (79% women, mean age 37.8 years) (LIGHT 84%, HEAVY 88%). The mean WOSI score between-group difference favoured HEAVY (–92.9, 95% CI –257.4 to 71.5,  $p=0.268$ ) but was not statistically significant. The secondary outcomes were mostly inconclusive, but patients in HEAVY had larger improvement in the WOSI-emotions subdomain (–36.3; 95% CI –65.4 to –7.3,  $p=0.014$ ). Patient-perceived effect favoured HEAVY anchored in WOSI-emotions (55% vs 31%,  $p=0.027$ ) and WOSI-lifestyle (50% vs 29%,  $p=0.042$ ).

**Conclusion:** High-load shoulder strengthening exercise was not superior to low-load strengthening exercise in improving self-reported function at 1 year. High-load strengthening exercise may be more effective in improving patient emotions about shoulder pain and function, but more robust data are needed to support these findings.

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## ABSTRACTS

**Outcome following reverse shoulder arthroplasty for acute proximal humerus fractures in patients 60 years of age and older with different humerus inclination implants versus non-surgical treatment: a prospective randomized controlled trial, single blinded.**

**Author:** Klaus Hanisch

**Introduction:** The optimal treatment of proximal humeral fracture (PHF) Neer type III, IV AO B&C is controversial. Recently reverse shoulder arthroplasty (RSA) has gained expanding popularity in treating PHF. Compared with osteosynthesis or hemiarthroplasty outcomes were superior. The importance of tuberosity healing for good functional outcomes has lead to development of different implants and fixation techniques. The original RSA design by Grammont with 155° inclination of the humeral stem was made for cuffarthroplasty. In contrast, humeral implants with 135° enables more anatomical refixation of the tuberosities.

**Aim:** The aim of this study is to compare outcomes of two different designed RSA stems versus non-operative treatment of PHF Neer type III or IV / AO B&C.

**Method:** PHF treated either non-operative versus RSA. Subgroups for RSA differs in inclination of the humeral stem 135° versus 155°. Patients 60 to 90 years of age with PHF allocates and block randomized in this trial. Half will be treated non-operative, the other half will be treated surgically (Group B & C). All follow a standardized rehabilitation program.

The primary outcome is Western Ontario Osteoarthritis of the Shoulder Index (WOOS), Minimal Clinical Important Difference assumed to be 12.3 points . Secondary outcomes include Constant Murley and Subjective shoulder Volume. Radiographs will be valuated to state union/displacement in Group A and tuberosity healing or resorbtion in the group B & C.

Participants form non-surgical group, who be treated operatively at a delayed time point (cross-overs) and complications will be noticed.

**Results:** The non-operative group A, with thirty patients had a median WOOS score at one year of 55, the RSA 155° 78 (Group B ten patients), RSA 135° 80 (Group C twelve patient). Constant-Murley was similar with 38;45;49. Subjective shoulder volume Group A,B,C 47;65;82.

Tuberositas healing-rate were high in RSA, severe displacement of the tuberosity found in 30 % in group A.

One infection occurred in group C, four cross-overs were operated delayed.

**Conclusion:** For proximal humeral fractures Neer type III or IV / AO B&C in patients aged above 60 years reverse shoulder arthroplasty showed superior clinical relevant outcomes compared with non-operative treatment. Anatomical neck/shaft inclination 135° was superior to 155°.