NEW SURGICAL METHOD OF INTERPOSITION ARTHROPLASTY OF THE ELBOW

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Aims:
The interposition arthroplasty using dura mater has been applied by us as an alternative method to implantation of the prosthesis since 1997. This new surgical method was developed on the basis of ulnoumeral arthroplasty according to Kashiwagi to aspire to preserve the integrity of the joint. We used for interposition instead of lyophilized dura mater the Tutoplast® dura graft, which is treated with osmotic solvent and in this way differs from the lyophilised graft, as its tensile and pulling strength is greater, since it preserves its collagen structure and its three-dimensional fibrin structure.

Material and methods:
The dura mater interposition was applied with 23 patients in 24 cases (one bilateral), from May 1997 up to July 2000, in 17 occasions on the dominant side. The average age of the patients was 52.2 years (24-75 years). The basic diagnosis was rheumatoid arthritis in 83.3 percent, juvenile chronic arthritis in 8.3 percent and post-traumatic osteoarthritis in 8.3 percent. All the patients appeared at the follow up examination and the average duration of the follow-up was 26.6 months (from 8 to 45 months). The clinical evaluation was based on the Mayo performance score.

Results:
Praeoperatively 71 percent of the twenty four patients had severe pain, while none of them had it at the follow up examination, 50 percent of patients were painless, 29.2 percent had moderate and 21 percent of them had mild pain. The average decrease of point of Mayo performance score for pain was 5.8 points, the difference is significant (p< 0.001).

Increase of range of movement is also remarkable. Praeoperatively only 4.2 percent of the twenty four patients had an arc of 100 degrees or more, at the follow up examination this proportion improved to 66.7 percent. Mean value of the increase was 28.5 degrees, the difference is significant (p< 0.001)

Range of motion of supination and pronation improved significantly (p< 0.001).

Sixty seven percent of our patients were stable praoperatively, this value decreased to 50 percent at the follow up. Grossly instability was observed 21 percent praoperatively and 33 percent at follow up examination. Mean decrease of stability was 4.2 degrees, the difference is significant (p< 0.026). We have to notice at the same time that five of the eight grossly unstable patients had the same measurement of instability praoperatively too, two had moderate instability and only one of them was stable before operation.

The quality of life – as far as the basic vital functions are concerned- improved with 91.6 percent. It is very important to notice at the evaluation of Mayo performance score that 95.8 percent of patients failed to the group with poor classification before operation, but this value decreased to 12.5 percent at the follow up, moreover 50 percent of patients had excellent and 72.9 percent had excellent or good classification. Mean increase of Mayo performance score evaluated to 53.2 points, the difference is significant (p< 0.001).

Conclusion:
One of the most serious complication of interposition arthroplasties is the absorption of the bone structures. Hence we mainly observed the radiological signs of this and employed the evaluation method of Ljung et al. reported by them in 1996. We observed the measurement of absorption of the trochlea with anteroposterior radiographs and the thinning of the olecranon with lateral radiographs. Ljung el al performed 35 joint preserver interposition arthroplasties with collegene membrane and observed 8 millimeters bone loss of humeral and 5 millimeters bone loss of ulnar part of the elbows. In our patient's material the absorption of the trochlea occurred in 33.3 percent, in 5 occasions it was partial, and in 1 case in full degree. The rate of the partial absorption was 2.2 mm on average. Thinning of the olecranon happened in 12.5 percent, its average degree was 1.6 mm. Consequently the value of the partial absorption is smaller in the case of trochlea and of the ulna too, like it was reported by Ljung et al.

On the basis of the short-term clinical and radiological results the interposition using dura mater as an alternative way to the implant arthroplasty, may be applied with good results.
Expression of Thrombospondin-1 and its receptor CD36 in human articular cartilage

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Objective
Thrombospondin-1 (TSP-1) a trimeric high-molecular weight glycoprotein is a multifunctional extracellular matrix protein. TSP-1 is involved in cell-matrix interactions of a various tissues. TSP-1 can bind to cells via different TSP-1 domains, its main receptors are CD 36 and CD51 (αvβ3-integrin). Northern and western analysis showed the expression of TSP-1 in human cartilage, but its cellular source as well as the presence of its receptors CD36 and CD51 in normal and osteoarthritic cartilage are totally unknown.

Materials
We investigated 7 normal and 23 osteoarthritic cartilage samples on the expression patterns of TSP-1, CD36 and CD51, by immunohistochemistry and in situ hybridization.

Results
In normal cartilage we found TSP-1 to be present in the middle and upper deep zone. Predominantly chondrocytes of the middle zone showed RNA-expression. Also, its receptor CD36 was found mainly in the chondrocytes of the superficial and middle zone. In moderate osteoarthritic cartilage we found an increased number of TSP-1 expressing chondrocytes, as well as an increased pericellular immunostaining quite near to the surface. However, a small number of CD36 positive cells were observed across the whole OA cartilage. In severe osteoarthritic cartilage were observed a strong decrease in TSP-1 synthesizing chondrocytes by in situ hybridization as well as a strong reduction in the immunohistochemically matrix staining. In contrast to the decrease in TSP-1 we observed in 5 out of 8 these samples an overall enhanced number in CD 36 stained chondrocytes. Further, osteophytes with strong TSP-1 expression showed a large number of CD36 positive cells. However, CD51 positive chondrocytes could not be detected.

Conclusion
TSP-1 and its receptor are expressed in normal and osteoarthritic cartilage. The source of TSP-1 in normal cartilage are the middle zone chondrocytes, which also express the CD36-receptor. In early osteoarthritic cartilage an increase of TSP-1 was observed, whereas in later osteoarthritic cartilage TSP-1-synthesis is strongly decreased. It can be hypothesized that the strong enhanced number of CD36-stained chondrocytes in severe OA cartilage is a sign of chondrocytes frustrate efforts to contact the ECM, by binding to TSP-1.

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Interposition Shoulder Arthroplasty in JCA (case report)

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A 18-year-old woman patient suffering from JCA was operated on non-dominant left shoulder joint destruction. The dysplasia of the affected side was clearly recognisable on the X-ray before the operation as compared to the other side. The smallest of the prothesis types (De Puy Global, Biomet Modular) couldn’t be implanted. So we have used another method.
We have achived good results for years by using Tutoplast® Dura mater (Tutogen Medical GmbH) in operating interposition elbow arthroplasty of RA patients. This was the basic idea in this case to apply shoulders joint interposition arthroplasty. There have been previous publications on other interposition techniques.

Operations technique:
Traditionally we approached the shoulder in deltopectoral sulcus. After the subscapular muscle tenotomy subtotal synovectomy happened, later pannus and osteophyts were removed from the humeral head. Then the surface of the head was refreshed, then arround the anatomic neck titanium screws ( ORFI-II® anchor, Technomed) were placed and Tutoplast placed on the head was anchored to them.
There are no shoulders pains 4 years after the operations, no radiological progression can be experienced. The range of motion is under the measured value of the RA group of patient having shoulder prothesis. Despice of this fact the patient is able to look after herself and do the daily routine. The patient is fully satisfied with the operation.

Conclusion:
Although important conclusion can’t be drawn from one case but sometimes it gives a good alternative solution in the area of prosthetics in shoulder dysplasy of different origins.

Keywords: JCA, shoulder, arthroplasty, anchor, dura mater

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Introduction
Shoulder function in the rheumatoid patient is often restricted by pain and the decrease of range of motion, muscle strength and coordination. The aim of treatment in particular joint replacement is to improve one or more of these factors to enhance shoulder function. It is unknown how much range of motion of the shoulder and the glenohumeral joint is actually needed after shoulder replacement for a reasonable function.

Methods
The shoulder function of 114 rheumatoid patients (28 male and 86 female) with a shoulder replacement was pre- and post-operatively scored at regular intervals with the Constant scale and the HSS scoring system. These scoring systems measure the ROM and daily functioning. Activities of daily living used were: dress, comb hair, wash opposite axilla and use toilet and these items were scored numerically (5=normal, 0=impossible). These items were correlated with the active ROM of the shoulder and the passive ROM of the glenohumeral joint. The passive ROM of the glenohumeral joint included the ab/adduction movement in the frontal plane, the rotation in resting position and the exorotation in 90° anteflexion. 54 Patients had a hemi-arthroplasty and 60 patients had a total shoulder prosthesis. The average follow-up was 5 years.

Results
The average active ROM measured at follow-up was: flexion 81°±36; abduction 70°±27; exorotation 21°±23. The average passive glenohumeral motion was: exorotation in 90° flexion 42°±33; ab/adduction 51°±21; rotation 61°±30. The average functional score of the activities of daily living measured were: comb hair 2.8±1.9; toilet use 3.9±1.6 and wash opposite axilla 4±1.5. There was a significant relationship between flexion/rotation and the functional task comb hair. The other activities of daily living were not significantly related with ROM of the shoulder. The minimal range of motion for optimal functioning of the shoulder was calculated.

Discussion
Exorotation of the 90° flexed shoulder appears to be the most important parameter for an optimal functioning after shoulder prosthesis.

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The incidence of loosening of a cemented glenoid component in total shoulder arthroplasty, detected by means of radiolucent lines or positional shift of the component on true antero-posterior radiographs, has been reported to be between 0% to 44%. These numbers depend on the criteria used for loosening and on the length of follow-up. Radiolucent lines are however difficult to detect and to interpret, because of the mobility of the shoulder girdle and the obliquity of the glenoid, which hinder standardisation of radiographs. After review of radiolucencies around cemented glenoid components with a mean follow-up of 5.3 years in 48 patients we found progressive changes to be present predominantly at the inferior pole of the component. This may hold a clue for the mechanism behind loosening of this implant. Since loosening is generally defined as a complete radiolucent line around the glenoid component and is difficult to assess as a result of the oblique orientation of the glenoid, an underestimation of the loosening rate using radiological data was suspected. Therefore a pilot study using Roentgen Stereophotogrammetric Analysis (RSA) was performed. In five patients an additional analysis of glenoid component loosening using digital Roentgen Stereophotogrammetric Analysis (RSA) was performed. The relative motion of the glenoid component with respect to the scapula was assessed and the length of this translation vector was used to represent migration. Loosening was defined as a migration of the component, exceeding the pessimistic estimate of the accuracy of RSA 0.3 mm for this study. After three years of follow-up, three out of five glenoid components had loosened (1.2 – 5.5 mm migration). In only one patient with a gross loosened glenoid, the radiological signs were consistent with the RSA findings. It was concluded that when traditional radiographs are used for assessment of early loosening, the loosening rate is underestimated. We recommend that RSA be used for this.

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ADVANTAGES IN CEMENTLESS, NON-CONSTRAINED MCP-ARTHROPLASTY IN PATIENTS WITH RA USING THE NEW DESIGN OF HM-PROSTHESIS.

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Introduction:
For reconstructive surgery of the deteriorated rheumatoid MCP-joints silastic implants are used in general. Though realignment and stability after silastic joint replacement is achieved many disadvantages as reduced ROM, fractures and osteolysis are known. The first study of the cementless, non-constrained MCP-arthroplasty with HM-prosthesis showed a high rate of subluxation and synovitis. Therefore the design of the HM-prosthesis was changed with a PE-head to avoid wear and an increase of the diameter of the phalangeal base of 30% to get more stability.

In prospective study we replaced 20 MCP joints in RA with this new designed prosthesis.

Material and Methods:
short-time results after a mean Fu-period of 6 month (2-12 month) are now reported. In all cases a total replacement was performed. Clinical and radiographic re-examination could performed in all cases.

Results:
In all cases we found an osteo-integration, no infection was seen. A luxation or subluxation as we have seen in the old design was not seen in any new designed prosthesis. In all cases pain-reduction was reported. The range of motion improved in all cases (flexion/extension 70/5/0).

Conclusion:
The results after changing the design of the HM-prosthesis show an improvement of stability and show no wear, luxation or subluxation. The improvement of mobility and pain-reduction is still seen as published in our studies before. This first results have to be verified by longer FU-periods a higher number of patients.
The S.T.A.R. – total ankle prosthesis –
Indications, contraindications, complications
( a follow-up in 44 patients)

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Introduction:
In 1994 Kofoed and Stürup already confirmed that within a follow-up of 10 years total ankle arthroplasty demonstrated a significant clinical improvement for the patients. In recent studies a 12 – year survival rate even of 84% was described (Kofoed, 1995).

Methods:
In a retrospective study we evaluated the short – and midterm results in 44 patients with unconstrained total ankle arthroplasty and cementless fixation. These ankle replacements were performed between 8/1997 and 12/2000. A critical assessment concerning the indications and contraindications of this arthroplasty was performed due to the fact, that this surgical technique is not yet mentioned as a routinely performed surgical procedure of the ankle. The advantages in comparison to the open or arthroscopically assisted arthrodesis of the ankle were described.
As initial diagnosis rheumatoid arthritis (n:16), posttraumatic osteoarthritis (n:10) or idiopathic osteoarthritis of the ankle (n:18) was mentioned. The patients age varied from 24 to 78 years; the 24 years old patient suffered from a posttraumatic osteoarthritis, in the 78 years old patient contralateral total ankle arthroplasty was performed 13 years ago.

Results:
There was a delay in superficial wound healing in 11 cases, in 4 cases soft tissue revision and once plastic surgery had to be performed. One female patient with RA had a postoperative deep infection after preoperative radiosynoviorthesis of the ankle.
Additionally osteosynthesistical reconstruction of the fibula (n:2) and the talus (n:1) was necessary. One patient underwent revisional surgery due to progressive wear and fracture of the polyethylene inlay. Furthermore three patients suffered from continuing instability, that one had a secondary open arthodesis and two a syndesmoplasty combined with revision of the PE inlay.
The radiological examination offered migration and progressed radiolucency lines especially near to the tibial part of the prosthesis in three cases.
Nevertheless more than 80% of the patients were satisfied or very satisfied with their ankle arthroplasty, only 4 patients now would have denied the surgical procedure. As main improvements reduction of pain and increased mobility (ROM: > 40°) were mentioned.

Conclusions:
The success of total ankle arthroplasty may depend on exact technique, correct hindfoot alignment and sufficient capsuloligamentous stability of the ankle. So this surgical procedure may provide a high rate of functional improvement for the patients and may prevent the probably necessary arthrodesis.
Die Solar Bipolar Hemi-Schulterprothese (Stryker/Howmedica) zur Versorgung der massiven rheumatischen Destruktion (Larsen IV/V)

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Einleitung:
Aufgrund der Tatsache, dass die Schulteraffektion bei RA meist schleichend beginnt und die Bewegungseinschränkung lange durch Ellenbogen- und Handgelenk kompensiert werden, führt zur einer meist verspäteten Fokussierung dieses Gelenkes. Somit werden trotz der hohen Schulterbeteiligung bei RA (sonographisch bis zu 96%) oft erst Spästadien dem Rheumaorthopäden vorgestellt.

Methode:
In den späten Stadien (Larsen IV/V) liegt neben der ausgeprägten und schmerzhaften Bursitis subacromialis/ subdeltoida schon massive knöcherne Destruktionen und vor allem fast auch immer (bis zu 90%) ausgeprägte Rotatorenmanschettendefekte vor. Dies führt zu den bekannten Problemen mit der Cranialisierung und Medialisierung des Schulterdrehpunktes. Langezeit bildeten die Massenruptur der Rotatorenmanschette sowie die spezifische ossäre Beschaffenheit des Glenoids bei RA eine Kontraindikation zur endoprothetischen Versorgung.

Prothesendesign:
Aufgrund dieser pathologischen Voraussetzungen suchten wir eine Schulter-Hemiprothese mit modolarem Vario-duokopfsystem zur Versorgung der rheumatischen Schulterdestruktion. Die Solar Bipolar Hemi-Schulterprothese (Stryker/Howmedica) bietet einen variablen Innenkopf (3 Längen) mit 22 mm Durchmesser sowie 4 Bipolarköpfe (äußere Schale) von 40 bis 55 mm Durchmesser.

Ergebnisse/Schlußfolgerung:


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Increased risk for dislocation after primary total hip arthroplasty in inflammatory arthritis

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Introduction
Dislocation after primary total hip arthroplasty (THA) is a devastating and frequent postoperative complication. Many risk factors for dislocation have been identified, however, thus far there has been no consensus whether inflammatory arthritis is a risk factor for dislocation or not. We carried out a prospective study assessing the prevalence of dislocation within 2 years after primary total hip arthroplasty for osteoarthritis and inflammatory arthritis.

Patients and Methods
Between 1996 and 1999 312 patients (342 hips) with either a primary or a posttraumatic osteoarthritis (OA group) and 59 patients (69 hips) with rheumatoid arthritis or other forms of inflammatory arthritis (IA group) were operated. One single type of prosthesis was implanted (EPF-PLUS® cup and SL-PLUS® stem) using an anterior approach. All dislocations in the two years following surgery were recorded. Both diagnostic groups were compared for known risk factors such as old age, female gender, prior hip surgery, and experience of the surgeon. Radiographs were examined for avulsion fractures of the tip of the trochanter and signs of loosening. The abduction and anteverision angles of the acetabular component were measured. Statistical analysis was performed with the Chi-square test and Student’s t-test.

Results
The dislocation rate for inflammatory arthritis patients was significantly greater than that in patients with osteoarthritis: 10.1% (7 hips) in the IA group, 2.9% (10 hips) in the OA group (p = 0.006). There were no other differences in risk factors favouring dislocation in the IA group, such as old age, female gender, prior hip surgery, experience of the surgeon, trochanteric fractures or malposition of the prosthetic components. All dislocations in the IA group were posterior and occurred without any kind of trauma. In contrast, nearly half of the dislocations in the OA group were anterior and two were of traumatic origin.

Discussion
Taking into account the fact that there are no differences in known risk factors for dislocation between our two groups and no differences in complication rate, except for dislocation, we can say that inflammatory arthritis has to be considered an independent risk-factor for dislocation after primary total hip arthroplasty. It may be that inferior quality of the (pseudo) capsule and the muscles stabilising the hip joint due to inflammatory arthritis leads to inadequate soft tissue tension. Another factor can be the concomitant impairments in rheumatoid patients, such as impairments of the upper extremity, ipsilateral knee or contralateral hip, leading to hyperflexion in the operated hip causing a posterior dislocation without trauma.

Keywords: dislocation, total hip arthroplasty, inflammatory arthritis.

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VALGUS TKA. RESULTS OF 255 LCS MOBILE-BEARING TKA WITH 5 TO 15 YEAR FOLLOW-UP

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Introduction:
Correction of fixed valgus is a challenge in primary TKA. Achieving patello-femoral and femoral-tibial stability requires superficial/deep lateral side releases if non-constrained prostheses are utilized. The medial approach has disadvantages with more reported complications. The direct lateral approach, with/without tubercle osteotomy, is an approach option utilized in two reporting centers.

Methods:
255 valgus TKAs with 5- to 15-year follow-up were reviewed. Demographics included 91% females, 15% rheumatoid, mean age 69. Prostheses utilized were LCS mobile-bearing (meniscal PCL-retaining/rotating PCL-sacrificing). Patella was non-resurfaced in 90%; cementless fixation in 86%. The direct lateral approach with similar lengthening techniques was used with tubercle osteotomy in one center and osteo-periosteal joint exposure in another.

Results:
Good/excellent 91%, modified HSS score improvement 57 to 85. Deformity (12) improved <8 to 12 points (>-15o valgus to <5o valgus). ROM improved from mean 110/97o to 1/110o latest. Technical/prosthetic-related complications included: 7 bearing failures (5 meniscal, 2 rotating platform), 2 aseptic loosening techniques (tibial), 1 patella ligament rupture and 2 screw loosenings in the osteotomy group, 1 patella re-dislocation in a 75-year-old female with dislocation since age 15 (non-osteotomy group), 2 infections, and 1 re-operation for arthrofibrosis.

Discussion/Conclusion:
Valgus TKA using LCS moveable bearings implanted via a direct lateral approach are highly successful regarding stability and patella tracking. Failures correlate with inadequate/de-stabilizing releases and meniscal PCL-retaining prostheses. Rotating bearings allow for better stability and self-adjustment of common mal-rotation variables. The lateral approach allows for direct (step-wise) lengthening releases, improved patellar tracking, and precise gap balancing.

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ARTHROFIBROSIS IN TKA. IS THERE A CORRELATION WITH FEMORAL COMPONENT MAL-ROTATION?

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Background:
The purpose of this study was to determine whether internal mal-rotation of the femoral component is associated with arthrofibrosis in TKA. Multiple etiological factors have been suggested, but specific causes have not been identified. We hypothesized arthrofibrosis may be triggered by a combination of non-physiological kinematics (femoral component internal rotation) and a tight medial compartment.

Methods:
From a consecutive cohort of 3058 mobile bearing TKA forty-four (1.4%) cases were diagnosed as having arthrofibrosis, of which thirty-eight (86%) cases could be recruited. Thirty-eight patients with a well functioning TKA served as matched controls. Evaluation included CT investigation to determine femoral component rotation with reference to the transepicondylar axis (TEA).

Results:
Femoral components in the AF group were significantly (p<0.00001) internally mal-rotated by a mean of 4.7 degrees ranging from ten degrees internal rotation (IR) to one degree external rotation (ER). Mean femoral rotational in the control group was parallel (0.3 degrees IR) to the TEA (six degrees IR to four degrees ER). Arthrofibrosis was not associated with age, gender, body-mass-index, or preoperative diagnosis.

Conclusions:
There is a highly significant association between arthrofibrosis in TKA and internal mal-rotation of the femoral component. On the base of these results it was hypothesized that non-physiological kinematics in TKA with mal-aligned femoral components influence and/or trigger arthrofibrosis in TKA.

Clinical Relevance:
In TKA with arthrofibrosis, we now consider femoral CT evaluation with the view to surgically rebalancing the flexion gap and realigning the femoral component, when internal mal-rotation is confirmed.

*This study has been cleared by the Ethical Committee, University of Zurich, Switzerland.

Address for correspondence:
High migration rate of two threaded acetabular cups

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Survivorship analysis was performed on 479 Link V-Type cementless threaded acetabular cups on 310 cases with inflammatory arthritis, 138 cases with osteoarthritis and 31 cases with dysplastic hip. The average follow-up was 8.6 ± 3.2 years. The same analysis was performed on a modified cup with a smaller primary coil (type "Bad Bramstedt"). This analysis had a mean follow-up period of 4.5 ± 0.7 years in 110 cases, including 49 with inflammatory arthritis, 49 with osteoarthritis and 12 with dysplastic hip. In a second approach 264 Link V-cups with a mean follow-up period of 8.2 ± 2.7 years and 59 modified cups with a mean follow-up period of 4.6 ± 0.7 years were radiologically examined for radiolucent lines according to Delee and Charnley and cup migration with regard to the method of Nunn et al. The cumulative survival rate for the former Link V-Type acetabular cup was 94.5% after 5 years, 88.1% after 10 years and 71.2% after 15 years. The "Bad Bramstedt" cup showed a 5 year survivorship rate of 97.9%. Migration greater than 3 mm or tilting of the cup greater than 5 degrees was seen in 73% of the former type and in 39% of the modified cup. Radiolucent lines greater than 2 mm and detectable in two zones appeared in 6.4% of the former Link V-Type and in 1.7% of the "Bad Bramstedt" cup design. Significant influence on cup migration was found in primary implant positioning and time elapsed. Due to the high rates of migration of the two implant designs and the frequent late aseptic loosening of the former Link V-Type acetabular component these two types of threaded cups were abandoned in favor of cementless press-fit cups.
Ergebnisse einer multizentrischen Anwendungsbeobachtung zur Wirkung von Rimexololon bei Patienten mit rheumatoide Arthritis oder aktivierter Arthrose

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Einleitung
Rimexololon® (Wirkstoff: Rimexololon) ist ein nichtfluoriertes Glukokortikoid, das eine starke Lipophilie sowie eine hohe Bindungssaffinität zum Glukokortikoidrezeptor besitzt. Rimexololon wird bei Patienten mit aktivierter Arthrose (OA) und rheumatoide Arthritis (RA) intraartikulär eingesetzt. Das Ziel der durchgeführten prospektiven Untersuchung war es, die positiven Ergebnisse der Pilotuntersuchung (n=145 Patienten mit OA und RA) im Rahmen einer multizentrischen Anwendungsbeobachtung im klinischen Alltag an einem repräsentativen Patientenkollektiv zu überprüfen.

Material und Methoden
Es wurden 546 Patienten mit OA (73 %) oder RA (27 %) mit einer entzündlichen Beteiligung des Kniegelenks in die Untersuchung eingeschlossen. 40 mg Rimexololon (gelöst in 1 ml Wasser) wurde in das betroffene Kniegelenk injiziert. Weitere Untersuchungen erfolgten nach 4, 8 und 12 Wochen. Bei Bedarf konnte nach 4 oder 8 Wochen eine weitere Injektion verabreicht werden. Die Beobachtungsduer betrug insgesamt 3 Monate. Die klinischen Parameter (Schmerz, Schwellung) wurden täglich in einem Patiententagebuch anhand eines Scores von 0-3 Punkten dokumentiert.

Ergebnisse
Es zeigte sich für beide Patientengruppen (OA und RA) eine deutliche Verbesserung der Symptomatik nach der Injektion, die über den gesamten Verlauf der Untersuchung erhalten blieb. Die Responderate betrug nach 12 Wochen über 85 %. Lokale Nebenwirkungen kamen nur sehr selten und systemische Wirkungen fast gar nicht vor (<1 % bezogen auf die Gesamtzahl der Injektionen).

Diskussion
Rimexololon bestätigte auch in der 2. AWB bei einer repräsentativen Patientengruppe nach intraartikulärer Gabe in das Kniegelenk eine langanhaltende klinische Wirksamkeit, bei einer gleichzeitig sehr geringen Nebenwirkungsrate.

Keywords
Intraartikuläre Injektionen – Glukokortikoide - Rimexololon

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Total Elbow Arthroplasty in Rheumatoid Arthritis
(An 16-year Experience)

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We evaluated the clinical results of Total Elbow Arthroplasties (TEA) that had been performed from February 1986 through December 2001 in 95 patients. We used non-constrained, surface-arthroplasty prostheses (DOH type, MRCH type and Yamamoto elbow). The duration of follow up averaged 8 years (range 1 year to 13 years). 95 patients had rheumatoid arthritis. There were 85 women and 10 men. Their mean age at surgery was 56 years. The results of TEA were evaluated according to range of motion, degree of pain, radiographical findings, patient's assessment and complications.

Post-operative arc of motion of the elbow (flexion, pronation and supination) improved from pre-operative arc of motion. 84% of elbows were pain-free. At the average 8 year follow-up, 80% of patients had satisfactory results clinically. The roentgenograms showed a radiolucent line adjacent to 32% of humeral and 15% of ulnar components. We experienced post-operative complications such as ulnar nerve palsies, radial nerve palsies, infections and dislocations.
Mittelfristige Ergebnisse der GSB-Ellenbogenendoprothese

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Einleitung

Material und Methode

Ergebnisse
Das Operationsergebnis schätzten 89% der Patienten mit gut oder sehr gut ein. Neben der Verbesserung der Extension/Flexion (41 Grad) und Supination/Pronation (43 Grad) war es vor allem die hervorragende Schmerzreduction, welche für die Prothese spricht. Die Röntgenkontrollen zeigten keine aseptischen Lockerungen, in 2 Fällen bestehen geringe Resorptionssäume um den Humeruschaft. Zu den postoperativen Komplikationen Zählen 2 Entkopplungen, eine Olekranonfraktur und eine Fraktur im Bereich der Humeruskondylen, welche zur erneuten Operation führten.

Schlussfolgerung
Vor allem die Schmerzreduction, gefolgt von der Bewegungsverbesserung kommen in der großen Patientenzufriedenheit zum Ausdruck. Durch die Ellenbogenprothese konnte nicht nur eine Verbesserung der Selbstversorgung erzielt werden, sie gestattet dem Rheumapatienten auch wieder eine höhere Lebensaktivität. Bei gezielter und sorgfältiger Indikationsstellung vermag sie die bessere Alternative zur Resektions-Interpositionsarthroplastik zu sein.

Keywords Rheumatoidarthritis, Ellenbogengelenk, Endoprothese
Blutmanagement nach einzeitiger beidseitiger Knieprothesenimplantation

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Zusammenfassung:
Die Kombination einer präoperativen Eigenblutspende von 2 Einheiten autologen Bluts mit der intra- und postoperativen Verwendung eines Cell Savers wird für die einzeitige Implantation von beidseitigen Knieprothesen empfohlen.

Fragestellung:

Methode:
Das Blutmanagement von 461 Patienten, denen während einer Operation in beide Kniegelenke eine Knieprothese implantiert wurde, wurde retrospektiv evaluiert. Von allen Patienten wurde sowohl der präoperative Hämakrit wie auch die Hämatobinwerte in den ersten 7 Tagen nach der Operation, die Anzahl an autologen und allogenen Bluttransfusionen, der 4 Stundenblutverlust und der gesamte Blutverlust dokumentiert.

Ergebnis:
Durchschnittlich erhielten Patienten 2.1 Einheit Eigenblut und 0.9 Einheiten Fremdblut. 76% aller Patienten, die präoperativ eine Einheit Eigenblut gespendet hatten, erhielten Fremdblut, verglichen zu 51% aller Patienten, die 2 Einheiten Eigenblut gespendet hatten. 29% aller Patienten die 3 Einheiten Eigenblut gespendet hatten und 27% aller Patienten die präoperativ 4 Einheiten Eigenblut gespendet hatten. Während Patienten, die 3 Einheiten Eigenblut spendeten signifikant weniger Fremdblut brauchten als Patienten die weniger Blut spendeten, bestand zwischen Patienten die 3 oder 4 Einheiten Eigenblut gespendet hatten kein signifikanter Unterschied. 98% aller Patienten, die kein Blut gespendet hatten brauchten Fremdblut. Wenn die präoperative Gabe von 2 Einheiten Eigenblut mit der intra- und postoperativen Anwendung eines Cell Saver kombiniert werden würde, könnte der Fremdblutbedarf auf 8% gesenkt werden, jedoch müßten 53% des Eigenblutes ungenutzt verworfen werden. Orientiert sich die Anwendung des Cell Savers am präoperativen Hämakrit (≤40%) oder an den postoperativen Hämoglobinwerten (≤11 mg/dl), so läßt sich der Bedarf an Fremdblut auf 17 beziehungsweise 13% senken. Der Prozentsatz an ungenutzten Eigenblut würde jeweils auf 39% beziehungsweise 33% gesenkt werden. Durch die Zusätzliche Gabe von Erythropoetin für Patienten, deren präoperative Hämoglobinwerte unter 13mg/dl fallen, in Kombination mit einem Cell Saver in ausgewählten Patienten (postoperativer Hämoglobinwert ≤11 mg/dl) könnte der Bedarf an Fremdblut auf 6% gesenkt werden. In einem solchen Protokoll müßten 70% der Patienten Erythropoetin einnehmen.

Keywords:
Einzeitige, Beidseitige Knieendoprothetik, Blut Management

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Mechanical loading effects gene expression of type II collagen and aggrecan in cartilage/bone explants

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Introduction
Mechanical loading has been hypothesized to play an important role in the development, remodeling and in diseases of many skeletal tissues, including cartilage. In order to study the metabolic response of cartilage to physical forces, in vitro systems have often been used because of the precise control with which mechanical loads can be applied. We developed a new mechanical loading system, in which we were able to load the intact femoral condyle in order to preserve the native cartilage/subchondral bone structure. This system represents a more ‘in vivo’ situation than cartilage explants or chondrocyte cell culture systems.

Our approach focused on changes in mRNA expression of type II collagen, type VI collagen, and aggrecan in loaded versus adjacent unloaded cartilage in order to analyse the early response of chondrocytes to well-defined mechanical stresses.

Methods
Femoral condyles were obtained from two-year-old cows. The integrity of the cartilage surface was controlled by staining with safranin O. The femoral condyles were compressed in an Instron 8501 material testing machine. Cyclic compression pressure was applied for 2000 cycles in a sinusoidal waveform of 0.5 Hz-frequency with a peak stress of 0.2 to 12.5 MPa. Following loading, full depth cartilage sections were cut out and one half immediately frozen in liquid nitrogen for RNA isolation and the other half soaked in 4% paraformaldehyde for paraffin embedding. As control, the adjacent unloaded cartilage was collected and treated in the same way. Total RNA was isolated and changes in mRNA expression were quantitated by competitive quantitative PCR, using an internal standard of a C-terminal truncated version of the corresponding genes. The PCR-reactions were separated by agarose gel electrophoresis and amplified fragments quantified using video-densitometry analysis. The results were expressed as the ratio of mRNA from loaded to unloaded cartilage

Results
Cyclic compression with peak stresses of 12.5, 6.3, 2.5 and 0.6 MPa lead to a two-fold decrease in the mRNA expression of type II collagen and aggrecan and a three-fold decrease of type VI collagen, in consideration of the intra-assay variability of about 30%. Compression with peak stresses of 0.3 and 0.2 MPa lead to a three-fold increase of the mRNA expression of type II collagen, a four-fold increase of aggrecan and a slight decrease of type VI collagen.

Low compression strength leads to an increase of the mRNA expression of the major components of cartilage, type II collagen and aggrecan, whereas high loading leads to a decrease of the mRNA expression.

Conclusion
The results show that our system can be used to analyze early responses of chondrocytes to well-defined mechanical stresses in an intact cartilage/bone-system and therefore will enable us to investigate the role of physiological and non-physiological high loading on the induction of cartilage degradation and regeneration in joint trauma and osteoarthritis. Since the cartilage/bone samples are incubated in medium during the experiment, this system will also offer us the opportunity to investigate additives to the medium as potential pharmacological therapeutics in osteoarthritis.

Keywords
chondrocyte, gene expression, mechanical loading, mechanical stress, mechanotransduction

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Matrilin-3 in human articular cartilage
- Increased expression in osteoarthritis -

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Introduction
Matrilin-3 is a member of the recently described matrilin family of extracellular matrix proteins containing von Willebrand factor A-like domains. The matrilin-3 subunit can form homo-tetramers as well as hetero-oligomers together with subunits of matrilin-1 (cartilage matrix protein). It has a restricted tissue distribution and is strongly expressed in growing skeletal tissues. Detailed information on expression and distribution of extracellular matrix proteins is important to understand cartilage function in health and in disease like osteoarthritis.

Methods
Matrilin-3 expression was analysed on decalcified normal cartilage/bone sections (N = 5) and decalcified cartilage/bone sections with minor (N= 10), moderate (N = 10), and severe osteoarthritis lesions (N = 10). Osteoarthritic changes were classified histomorphologically, using the grading system of Mankin. Matrilin-3 expression was investigated by immunohistochemistry, in situ hybridization, Western blot analysis, and quantitative PCR. For immunohistochemistry, a polyclonal antibody against matrilin-3 was used. For Western blot analysis, cartilage extracts were obtained from normal and osteoarthritic samples, partially purified, and separated in SDS polyacrylamide gels electrophoreses. After blotting onto nitrocellulose, matrilin-3 was visualized by incubation with the polyclonal anti-matrilin-3 antibody and chemiluminescence detection. Matrilin-3 -mRNA expression was determined by in situ hybridization using a digoxigenin-labeled anti-sense probe.

Results
Our results indicate that matrilin-3 is a mandatory component of mature articular cartilage with its expression being restricted to chondrocytes from the tangential zone and the upper middle cartilage zone. Osteoarthritic cartilage samples with only moderate morphological osteoarthritic destructions have elevated levels of matrilin-3 mRNA. In parallel, we found an increased deposition of matrilin-3 protein in the cartilage matrix. Matrilin-3 staining was diffusely distributed in the cartilage matrix, with no cellular staining being detectable. In cartilage samples with minor osteoarthritic lesions, matrilin-3 deposition was restricted to the middle zone and to the upper deep zone. A strong correlation was found between enhanced matrilin-3 gene and protein expression and the extent of tissue damage. Sections with severe osteoarthritic destruction showed the highest amount of matrilin-3 mRNA, strong signals in in situ hybridization, and prominent protein deposition in the middle and deep cartilage zone.

Conclusion
We conclude that matrilin-3 is an integral component of human articular cartilage matrix and that the enhanced expression of matrilin-3 in osteoarthritis may be a cellular response to the modified microenvironment in the disease.

Keywords
chondrocyte differentiation, gene expression, matrilin-3, osteoarthritis

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