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Exarticulation of the knee with a musculocutaneous gastrocnemius flap for malignant bone tumors situated in the proximal tibia

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In malignant bone tumors of the proximal tibia a thigh amputation is indicated if an extremity-salvaging operation is impossible. An exarticulation procedure in the knee is frequently not feasible because of tumor spread ventrally in the lower leg. Moreover, preparing a long ventral flap is precluded by the biopsy scar. In that case, a long dorsal flap is indicated, entailing the risk of cutaneous necrosis and infection. If MRI shows that the gastrocnemius muscle is tumor-free, this muscle may be used for a long dorsal musculocutaneous flap that can cover the knee stump, even in complete absence of a ventral flap. The authors used this technique in six patients. A vascularized musculocutaneous gastrocnemius flap provides better cover of the condyles than the standard exarticulation; this is of major importance in patients of this type who as a rule receive chemotherapy and consequently run a pronounced risk of impaired wound healing. The stump is as capable of weight-bearing as that after the standard knee exarticulation.

The cemented Stanmore total hip prosthesis—results after 15–16 years

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Of an original group of 135 patients (146 prostheses) in whom a primary Stanmore Total Hip Prosthesis had been implanted in the years 1975 and 1976, 44 surviving patients were evaluated after an average of 15 years. Four patients (4 prostheses) had meanwhile been revised because of aseptic loosening of the acetabular component. All remaining 40 patients (42 prostheses) were examined clinically and radiographically. Mean age at the time of the follow-up was 80 (63–92) years.

All patients were still satisfied with the effect of the joint replacement. No or only little pain was present in 36 patients (37 prostheses). Four patients (5 prostheses) complained of pain; in three of them there were radiographic indications of loosening of the prosthesis.

In spite of a decrease of the activities of daily living compared with follow-up examination after 9-10 years, these functions were still adequate for age. The mobility of the hip joint was very poor in one patient and fair to good in the others. In all patients the legs were adequately capable of weight-bearing.

Radiographically, a certain change of position of the femoral and/or acetabular components could be observed in three prostheses. Erosion of the acetabular component was observed in 10 prostheses, in contrast to the findings at follow-up after 9–10 years. An increase of radiolucencies in the acetabular cement-bone interface was present in 8 of the 24 prostheses that had been fixed with radiocontrasting cement; this phenomenon was not observed in the femur, with the exception of one patient who displayed all the radiographic signs of a loose prosthesis.

Since 1975, 9 of the original 146 prostheses had been revised. Aseptic loosening of the femoral component so far has not been observed after the first 10 years. Using the survivorship analysis, the cumulative percentage of survival of the Stanmore prosthesis after 15–16 years was found to be 89%.

It can be concluded that the results of the cemented Stanmore total hip prosthesis are on a par with those of the best ones in the literature.

Meniscus transplantation

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In a patient with disabling monocompartmental gonarthrosis after meniscectomy, not eligible for corrective osteotomy or arthroplasty of the knee, meniscus transplantation may constitute a good alternative.

Between May 1989 and January 1992, 18 cryopreserved non-HLA-matched meniscus transplantations were performed. In May 1992 there were 15 patients with follow-up periods ranging from 1 to 3 years. These included 10 males and five females. Mean age was 42 (30–53) years; on average transplantation was carried out 14 (3–32) years after total meniscectomy. The lateral meniscus was transplanted in 10 cases, the medial one in four cases and in one case, the lateral and medial menisci were transplanted simultaneously. The allograft was preserved in 15% glycerol. Subsequently, the meniscus was frozen in two steps to –80 °C. In the operation theater the transplant was thawed in 9% NaCl at room temperature. The meniscus was sutured in after arthrotomy under direct visual control.

The clinical results, judged by the Lysholm and Tegner score, were satisfactory. No immunological reactions were observed at blood testing. Post-transplantation arthroscopy was done 10 times, in eight patients. Enzyme-histochemical tests showed a high mitochondrial dehydrogenase activity. In the course of time a recovery phase was observed. It is concluded that the meniscal chondrocytes survive the cryopreservation; the fate of the meniscal cartilage is still unclear.

The position of transpedicular screws after a dorsal lumbar internal fixation

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The number of dorsal lumbar internal fixations has increased substantially in the last decade. Injury to the neural structures due to incorrectly positioned transpedicular screws is one of the main complications. In order to gain an impression of the frequency of this complication, 30 patients were examined by CT after a dorsal lumbar transpedicular fixation (number of screws 131). Also, in 4 human lumbar spine preparations a dorsal internal fixation was carried out under fluoroscopic control (number of screws 42), followed by CT and dissection of the screw canal.

In the patient group it was found that 40% of all screws penetrated the cortex of the vertebral body. Particularly relevant to the neurogenic structures was a medial penetration of the pedicle. 29% of all screws showed such penetration. In the clinical study it was found that penetration by more than 6 mm was correlated with a high risk of neural structure damage. Two patients indeed displayed such damage. The in-vitro study revealed a macroscopical penetration of the medial pedicular wall of 25%. This was in agreement with the CT findings in this group.

It is concluded that the technique of the transpedicular fixation puts high demands on the surgeon.

Experiences with the Wagner prosthesis

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Since 1989, a long-stemmed Wagner prosthesis was implanted in 14 patients. This prosthesis was used in cases in which it was expected that introduction of the femoral stem of a total hip prosthesis might cause problems.

The causes were: 1) fractures of the proximal femur, 2) replacement of a total hip prosthesis with substantial bone loss in the proximal femur, 3) an abnormal shape of the proximal femur.

If the Wagner prosthesis is to be used, preoperative planning is of great importance, even to the experienced surgeon. The prosthesis has a long straight stem, which of course does not follow the femoral curvature and accordingly can only be implanted if the proximal femur is fractured or sawn open. The prosthesis was originally designed as a socalled exchange prosthesis. To facilitate the removal of the cement, the proximal femur is sawn open from lateral 'like a bread roll'. The original prosthesis with cement is removed, the fitting prosthesis is reintroduced and the fragments of the proximal femur are draped round the stem again, using wire cerclages or thick vicryl sutures.

Consolidation of the repaired fracture occurred in all 14 patients operated to date. In addition, pronounced neoformation of bone was seen with remodelling of the medullary cavity.

In one patient, dislocation of the prosthesis occurred due to a technical failure resulting from non-optimal preoperative planning. After 1.5 years the prosthesis was removed and replaced by an uncemented prosthesis. The proximal femur was remodelled in such a way that this was possible without any problem. A biopsy was taken from the osseous tissue. At histological examination, well-mineralized vital bone tissue was found.

Conclusion: The Wagner prosthesis proved to be usable in a limited number of cases. It is questionnable to what extent this socalled Wagner procedure is to be preferred to implantation of homologous bone for reconstruction of the proximal femur.

Fractures of the anterior pillar of the acetabulum

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The objective of this study was to determine the long-term outcome in anterior pillar fractures.

Twenty patients were available for the retrospective study. In all cases there was >5 mm dislocation. The primary treatment in all cases consisted in longitudinal and lateral skeletal traction. If good repositioning of the femoral head under the

remnant of the weight-bearing dome (WBD) was possible, the conservative treatment was continued (18 patients). In case of inadequate repositioning, open repositioning and osteosynthesis were performed, using an ilio-inguinal approach.

Results: Mean duration of follow-up was 8 (3–19) years. In none of the fractures could anatomical repositioning be achieved by traction. Ten patients had a residual dislocation between 2 and 10 mm; eight patients had a residual dislocation >10 mm.

In spite of this residual dislocation, results were good or excellent in 15 of the 18 patients. The patients operated on had excellent results. Of the three patients with poor results, one patient developed avascular necrosis; in all three cases the WBD was involved in the fracture.

Conclusion: Anterior pillar fractures have a relatively favorable prognosis after conservative treatment. If the fracture engages the WBD, surgical treatment is to be preferred.

First results of the New Yersey low contact stress total ankle prosthesis

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In the Slotervaart Hospital of Amsterdam, the New Yersey LCS (Low Contact Stress) total ankle prosthesis is being used since September 1988 as an alternative to ankle arthrodesis. The prosthesis is congruent, unconstrained and multiaxial due to inclusion of a freely moving polyethylene bearing; it is intended for use without cement. Between 1988 and 1991, 14 non-cemented total ankle prostheses were implanted in 12 patients (10 women and two men). Diagnoses were rheumatoid arthritis in 10 patients, juvenile chronic arthritis in one patient and primary osteoarthrosis in one patient. Mean age at operation was 57 (26–77)years. At follow-up after an average of 2.5 (3.5–1.5) years the ankle score showed improvement from an average of 35 points before operation to 78 points postoperatively (total 100). Radiography showed stable fixation of all tibial and talar components. Complications occurred in four ankles (one wound edge necrosis with poor arterial circulation, one deep infection treated with lavage and antibiotics and two subluxations of the bearing to lateral due to a varus position of the ankle, in one of which reoperation was performed. This patient had a preoperative varus position of 18°. Because of pain around the medial malleolus due to impingement of the talar component, part of the medial malleolus was removed in one case.

Conclusion: The LCS total ankle prosthesis gives good short-term clinical and radiographic results. Pre-existing abnormalities of position have to be taken into account.

McShane open anterior acromioplasty in impingement syndrome

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For the last few years, McShane's technique was used in the surgical treatment of the chronic impingement syndrome of the shoulder. Notwithstanding the substantial increase of the use of the arthroscope in this condition, an easily applicable, deltoid-sparing open acromioplasty would appear to deserve a place in shoulder surgery. For this reason, we started a retrospective study to answer the question whether the overall results of this technique are equivalent to those of Neer's method and of arthroscopical subacromial decompression (ASD).

The overall results were:

- excellent/good 72%
- only fair 17%
- poor 10%

Mean duration of operation: 30 minutes; mean duration of hospitalization 3 days. A few times, the operation was carried out in day care.

Conclusion:

- McShane open anterior acromioplasty is easy to perform and deltoid-sparing (= immediate exercise stability);
- manual assessment of the degree of impingement and of the effect of the operation is adequately possible;
- assessment and treatment of cuff pathology is adequately possible;
- the technique is safe and entails few per- and postoperative complications;
- results of the McShane open anterior acromioplasty are comparable with those of Neer's method and of ASD;
- the method can be performed in day care.

Patellofemoral symptoms after anterior cruciate ligament reconstructions with a patellar tendon autograft

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In 20 patients an arthroscopic anterior cruciate ligament reconstruction was performed using a bone-tendon-bone autograft of the middle third of the patellar tendon. Intensive exercise therapy was started immediately after the operation. A retrospective study of the effects of this operation on the extension apparatus of the knee was carried out 31 months on average after the operation. The pivot shift was eliminated in all cases, but 12 patients reported a greater or less degree of patellofemoral pain. Three patients had an extension deficit ranging from 5° to 10°. In eight patients roentgenology revealed a calcification at the bottom of the patella with a mean length of 6 mm, ranging from 3 to 16(!) mm. In other words, the patella in

these patients had grown longer. The position of the patella in relation to the tibia was determined with the Linclau index. The patellar position was lowered in 45% and raised in 20% of the cases.

Conclusion: An anterior cruciate ligament insufficiency can be treated adequately with a patellar tendon autograft. However, after an anterior cruciate ligament reconstruction patellofemoral pain symptoms occur frequently. No explanation of this phenomenon has been found. No correlation could be demonstrated between pain on the one hand and limitation of extension, patellar position or calcification in the patellar tendon on the other.

Aneurysmal bone cyst of the spine

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An aneurysmal bone cyst (ABC) is a markedly expansive and destructive lesion of bone. In the spinal column it frequently affects the spinal cord and the static situation. Thirty-seven ABCs of the spinal column from the files of the Bone Tumors Committee were analysed and reassessed histologically.

The spontaneous course of an ABC is difficult to predict; it varies from spontaneous involution reported in the literature to highly destructive growth.

Of 30 patients follow-up data are available covering a period longer than one year (mean 77 months). In eight of these cases the surgical treatment had definitely not been radical. Of these patients four were cured and four suffered renewed growth. No distinguishing factor between these two groups can be identified. An ABC appears to be a highly dynamic lesion in a labile equilibrium. Disturbing this equilibrium by operation (open biopsy or non-radical curettage) may suffice to bring about involution.

It is recommended that ABCs of the spinal column should be treated primarily with curettage, as complete as possible without taking much risk, and subsequently to follow up the patient carefully. Progression may then be treated rapidly. The authors have been unable to identify any clinical radiological or histological prognostic factors that might be useful in choosing the method of treatment.

Surgical treatment of children with congenital dysplasia of the hip between 10 and 18 years

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In 73 patients ranging in age from 10 to 18 years, 70 hips were operated on between 1980 and 1987. The indication was previously treated or untreated congenital hip dysplasia with or without dislocation. Prior to operation all patients complained of pain in the hip region. After the operation 70 patients were free of pain. The good preoperative mobility of the hip was preserved in all cases. Mean follow-up period was 7 years.

At preoperative analysis, increased antetorsion in the proximal femur was found to be present in 25 hips. The acetabular dysplasia present in 56 hips was corrected as well. Five hips were treated with a Colonna procedure which in all patients led to a well-centered hip joint. Given a spherical femoral head and acetabulum, triple osteotomy of the pelvis provides the best correction; it eliminated the preoperative pain in all cases. If there is osteoarthrosis and the sphericity of the femoral head is not preserved, in acetabular deficiency a shelf-arthroplasty is the best solution. After-treatment on an outpatient basis, if possible, is to be recommended.

Golfer's elbow

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Golfer's elbow or medial epicondylitis is a pain syndrome caused by degenerative lesions in the origin of the forearm flexors on the medial side of the forearm. In some of the cases symptoms due to ulnar neuritis are present as well. The authors made a retrospective study of the results of 52 primary surgical procedures in 48 patients. In addition, the prognostic value of a number of preoperative variables was determined.

Forty-six patients with 49 operations (95%) were re-examined in our outpatient department, with a mean duration of follow-up of 38 months (6–67 months). A questionnaire was used for subjective evaluation of the result. For the objective evaluation list, attention was paid to the presence of pain during palmar flexion against resistance. The grip strength of the hand was measured by means of the Jamar Grip Strength Meter. The subjective results of treatment were scored as excellent (completely free of symptoms) in 24 operations, as good (symptoms improved, satisfied) in 4 operations, as fair (symptoms improved, not satisfied) in 5 operations and as poor (symptoms unchanged or increased, recurrence, reoperation) in 16 operations. In other words, the final results were excellent, good or fair in 67% of all cases. Preoperative ulnar neuritis symptoms and female sex both proved to be correlated with statistically significantly poorer final result (<0.05).

The results of surgical treatment of medial epicondylitis as recorded in our study appear on the whole to be poorer than those of the treatment of lateral epicondylitis. Possibly more attention should be paid to diagnosis and adequate treatment of coexistent ulnar neuritis symptoms, in order to improve these results.

Measurement of the intrapatellar pressure and patellar phlebography in the patellofemoral pain syndrome

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This randomized study concerned the possible relationship in patients with the patellofemoral pain syndrome between the intrapatellar pressure, the venous drainage of the patella and the arthroscopic findings.

In 73 patients, 48 men and 25 women, with a mean age of 26 years (16–43 years) under standardized general anesthesia without tourniquet, the intrapatellar pressure was measured and a patellar phlebogram was made. Subsequently, arthroscopy was performed.

Sixty-five of the 73 patients (89%) had an increased pressure. Of the phlebograms made, 9 were useless because of extraosseous injection. Of the remaining 66 phlebograms, 39 (61%) showed impaired drainage.

At arthroscopy, with Outerbridge grading, grade 0 was seen 12 times, grade 1 37 times, grade 2, 8 times, grade 3, 5 times and grade 4, 5 times. Six times no arthroscopy was performed.

No statistically significant relations could be demonstrated between the intrapatellar pressure, the venous drainage of the patella and the arthroscopic findings expressed in degrees of chondromalacia according to Outerbridge.

The cemented total knee prosthesis

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The long-term results (up to 10 years' follow-up) are presented of 204 cemented total knee prostheses. The total population consisted of 123 seropositive and 26 seronegative rheumatoid arthritis and 55 primary osteoarthrosis knees. The knee prostheses were evaluated clinically using the 'Hospital for Special Surgery knee rating' (Insall). After 10 years' follow-up, all osteoarthrosis patients and 83% of the seropositive rheumatoid arthritis patients were classified in the HSS scoring category as 'excellent' and 'good'.

Flexion amounted to more than 90° in 90% of all knees during the follow-up period. The pricipal limitations in the patients' functioning were the general condition and articular lesions in the lower extremities.

Radiolucency round the tibial component was present at the last follow-up in 64% of the cases. Long-term complications are: loosening 3.9%, patellar fractures 3.9% and supracondylar fractures 1.5%.

Surgical treatment of chronic radial head dislocations in children

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Since 1985 the authors have subjected seven children with a chronic radial head dislocation to surgery using the technique of Fowles as modified by Lloyd-Roberts which consists of an open reduction followed by an annular ligament reconstruction using a strip of triceps tendon. The patients age ranged from 4 to 9 years and the interval between injury and operation from 4 weeks to 16 months. There were five ventral and two ventrolateral dislocations. Minimal follow-up was 13 months. One girl who had to be operated without tourniquet because of sickle-cell anaemia developed a synostosis. In the other four patients with ventral luxations, good results were achieved. In the two patients with ventrolateral luxations with over 20° of varus angulation of the ulna, a subluxation developed. The varus angulation of the ulna was not decreased during the follow-up.

It is concluded that this technique gives good results in ventral dislocations and should, in case of ventrolateral dislocation, be combined with a correction osteotomy of the ulna.

Treatment of hip fractures in the Netherlands (Rotterdam) and Sweden (Sundsvall and Lund)

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As a part of a prospective multicenter study of hip fractures, in 1989–1990 patients were registered in Rotterdam (n=510, spread over eight departments in six hospitals), Sundsvall (n=295) and Lund (n=312). A number of factors such as mean age, sex distribution, dwelling situation, etc. showed marked similarities, as did the distribution of the fracture types. However, the methods of treatment differed substantially. Of all medial femoral neck fractures in Rotterdam (n=232) two-thirds were treated by hemiarthroplasty (HA), whereas in Sundsvall (n=135) and in Lund (n=149), osteosynthesis (OS) was applied almost exclusively. The mean (median) hospitalization amounted in Rotterdam to 25 (21) days for the OS

group and to 32 (20) days for the HA group, in Sundsvall to 16 (12) days and in Lund to 17 (10) days. Discharge with return to the original dwelling situation was possible in Rotterdam in 60% of the OS group and in 65% of the HA group, in Sundsvall in 83% and in Lund in 66%. The ADL and walking capacities showed no major differences. The mortality after 1 (4) month(s) in Rotterdam was 0 (3)% in the OS group and 7 (22)% in the HA group, in Sundsvall 2 (16)%.

Trochanteric fractures were treated in Rotterdam (n=146) and in Lund (n=78) with a dynamic hip screw and at the time in Sundsvall (n=117) with Ender nails. The mean (median) duration of hospitalization in this group was 39 (29) days in Rotterdam, 24 (15) days in Sundsvall and 19 (11) days in Lund. Discharge with return to the original dwelling situation was possible in 47% in Rotterdam, in 68% in Sundsvall and in 45% in Lund. The ADL and walking capacities did not differ much in this group, either. The mortality after 1 (4) month(s) was 4 (16)% in Rotterdam, 9 (20)% in Sundsvall.

Conclusions:

1. This study once more illustrates clearly that the final functional result depends on more factors than just the surgical method.
2. Hemiarthroplasty for medial femoral neck fracture offers no functional short-term benefit and entails a high mortality.
3. Local extramural facilities are desirable to reduce duration of hospitalization and consequently the costs of treatment.

Total elbow arthroplasty according to Cavendish

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In the department of orthopedics of the Daniel den Hoed Clinic patients with disabling elbow destruction are being treated since 1985 with the Cavendish total elbow prosthesis. Between 1985 and 1989, 16 of these prostheses were implanted in 13 patients with rheumatoid arthritis. Mean follow-up is 15 months.

Results: The improvement of elbow function achieved: The flexion/extension range improved from an average of 82° to 100°, the rotation range improved from an average of 114° to 127°.

Radiological results: Subluxation was seen in five prostheses. Lysis of the prosthesis was seen in four prostheses, with distinct migration of one humeral component. In one prosthesis, a radio-ulnar synostosis was observed. In 15 elbows, relief of pain was adequate. In one case, reoperation was necessary because of an osseous impingement.

Conclusion: Although the Cavendish total elbow arthroplasty gives excellent clinical results, roentgenological complications occur frequently.