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PITFALLS IN ENDOPROSTHETIC SURGERY

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Heinola

Orthopaedic surgeons have been interested in replacing joints since 1890, when three tuberculous knee joints were replaced using a hinge prosthesis made of ivory. All failed because of rejection. In the 1920's metallurgists succeeded in producing several durable alloys. It was believed that the problem was solved. However, loosening of the prosthesis due to infection (in spite of strict asepsis) or metal sensitivity has occurred much too often. Toxic metal ions spread into the circulation from the prosthesis. Their toxicity has been demonstrated by macrophage cultures; pure titanium seems to be the least toxic. Ceramic prostheses made of the purest aluminium oxide are non-toxic but unfortunately are brittle. It is now generally agreed that a metal-to-plastic system releases less metal particles than a metal-to-metal system. Hinge joints are often biomechanically unsatisfactory and should be used only as a last resort. In the hand, metal hinge prostheses fail because of stiffening. Also the St. George type of prosthesis has a tendency to stiffen after a couple of years. Our experiences of the Calnan-Nicolle prosthesis are disappointing, with many fractures or perforations of the cortex. Hagert has demonstrated breakage, dislocation and cortical perforation of the silicone prostheses.

RESULTS OF REVISION OPERATIONS FOLLOWING LOOSENED AND INFECTED TOTAL HIP PROSTHESES

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Forty-two revisions were carried out; reapplication was performed in 34 cases and a removal of the prosthesis in 8 cases. Reapplication is indicated in patients with loosening due to trauma and in cases with malpositioning of parts of the prosthesis. There were poor results after reapplication of infected and/or dislocated hips. Palacos with gentamycin was not used in this series.

SPONDYLITIS IN CHILDREN

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Twenty-two patients treated for spondylitis during the period 1961–1975 were divided into three groups: tuberculosis – 3 cases; patients treated with antituberculous drugs without verified tuberculosis – 8 cases; and nonspecific spondylitis – 11 cases. The analysis was focused on the last mentioned group.

The clinical picture in nonspecific spondylitis was clear, and a suspicion of an intervertebral disc space process was often confirmed before the occurrence of any radiological changes, which appeared about 4–6 weeks after the onset of symptoms.

An operative biopsy was performed in 8 cases and showed a subacute inflammation. The bacterial culture was positive in one case (*staph. aureus*). All patients were treated with bed rest and antibiotics for 6–27 weeks (average 12 weeks). All patients were clinically normal at the follow-up (average 14 months). Radiologically only one was normal, but no interbody fusion was observed.

The last case of tuberculous spondylitis in this series was in 1965. No spinal affections have been observed in sporadic Calmette (BCG) tuberculosis. Since 1968 routine exploration has eliminated the need for antituberculous treatment and has shown that the process is a disc space inflammation of in most cases unknown etiology, with a tendency to rapid healing and a good prognosis.

SPINAL NERVE BLOCK: A DIAGNOSTIC TEST IN SCIATICA

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The cause of sciatica can be investigated by blocking the spinal nerves of the lumbosacral plexus at their intervertebral foramina. Selective identification of these nerves is accomplished by the injection of 1 ml of 1 per cent lidocain (Xylocain®) and the use of an image intensifier.

If the lidocain injection eliminates the sciatica, the surgeon can feel confident of the existence of true nerve-root compression in deciding on an exploration. In a series of 19 patients the correlation between the localization of the compression and the level indicated by the test was confirmed during surgery.

VASCULAR LESIONS IN RECONSTRUCTIVE HAND SURGERY MATERIAL

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Reference is made to 48 patients with arterial injuries in the upper extremities, and to 19 patients with various arterial, venous and arteriovenous diseases. In the former group, 53 arterial reconstructions with vein grafts were performed. At the follow-up ½–4 years later the brachial artery was open in 6/7, the radial artery in 9/14 and the ulnar artery in only 5/32 cases. The patients in the series of vascular diseases were given various types of surgical treatment. The results were satisfactory in all cases. In spite of the not very satisfactory results in the former group it was concluded that in selected patients, and with increasing skill and experience, even distal arterial lesions could be considered for reconstruction.

ULTRASONIC DOPPLER FLOWMETER IN THE DIAGNOSIS OF VASCULAR LESIONS OF THE UPPER EXTREMITY

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The Doppler ultrasonic flowmeter represents a practical, relatively inexpensive, noninvasive method for the transcutaneous evaluation of peripheral arterial or venous flow pre-, intra- and post-operatively in hand surgery patients.

It is stressed that a particularly good knowledge of the vascular anatomy and haemodynamics of the hand is necessary for reliable interpretation of the Doppler sounds.

It appears that the use of the ultrasonic flowmeter diminishes the need for angiography.

MODIFICATION OF KRUKENBERG'S KINEPLASTIC OPERATION

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Little attention has been paid lately to the kineplastic operation of amputation stumps. Krukenberg's procedure, the forcipisation of forearm amputation stumps, introduced in 1917, has nevertheless survived. The authors have modified the operation. The skin of the forearm is split with a U-shaped incision. All muscles are preserved. The interdigital commissure is covered with two triangular flaps. The remaining skin defect is left on the dorsum of the radial branch and covered with a free split-skin graft. The skin graft is not used to cover the contact surface. In the Orthopaedic Hospital of the Invalid Foundation in Helsinki nine forearms of seven patients were operated on with this method during the period 1969–1973.

Jyväskylä, Finland, 14 May 1976

AO-OSTEOSYNTHESIS IN THE TREATMENT OF FRACTURES OF THE FEMORAL NECK

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In Finland, the incidence of fracture of the femoral neck is 40 cases per 100,000 a year. The injury accounts for one fourth of all fractures treated operatively.

In the Central Hospital of Central Finland, osteosynthesis has been performed using the AO technique. Thompson's endoprosthesis has been used with some patients over 70 years old with subcapital fractures. Immediate weight-bearing has been permitted as the postoperative treatment. A follow-up examination has been performed after 1, 3 and 6 months.

In 1972–74, 190 patients were treated. AO-osteosynthesis was applied to 151 patients and Thompson's endoprosthesis to 39 patients. The average age was 71 and the average length of treatment in hospital was 22 days. There were 71 fractures of the femoral neck and 80 trochanteric fractures. The mortality among the 151 patients after 2 weeks was 3.3 per cent, after one month 6.6 per cent and after 6 months 15.9 per cent. We consider the low mortality to be due to immediate postoperative weight-bearing and to the careful pre and postoperative treatment. 100 patients, i.e., 78.7 per cent, attended the follow-up examinations. Six months after the opera-

tion, the nailing results were poor in 16 per cent.

PUTTI-PLATT OPERATION IN THE TREATMENT OF RECURRENT ANTERIOR DISLOCATION OF THE GLENOHUMERAL JOINT

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The Putti-Platt operation has not been widely used in the Scandinavian countries (Stolt-Nielsen and T. Johnson, *T. Norske Laegeforen.* 1974, **94**, 1383).

Since 1972 we have used only the Putti-Platt operation (Osmond-Clarke I, *Bone Jt Surg.*, 1948, **30**-B, 19) for recurrent dislocations of the glenohumeral joint. This report is a preliminary analysis of the first 30 patients who were followed for one year after their operations. The series comprised 20 men and 10 women with an average age at the time of the operation of 33 years (range 18 to 60). The interval between the operation and return to work was 53 days on average. Postoperative immobilization was effected by a Velpeau bandage for three weeks. Outward rotation was allowed six weeks after the operation.

The patients' subjective views regarding the final results as indicated at the follow-up examination were good in 17 cases (objectively in 20), fair in 12 cases (objectively in 9) and poor in one case (objectively in 1). The patient in question had recurrent subluxations after the operation.

ACROMIOCLAVICULAR DISLOCATION

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The large number of methods for handling the total dislocation of the acromioclavicular joint (gr III) shows how unsatisfactory results can be. In the Central Hospital of Central Finland we have used an AO-cortical screw from the acromion to the clavicula for stabilisation. Coracoclavicular and acromioclavicular ligaments are sutured. The screw is removed 4–6 weeks after the operation and the mobilisation is started.

Between 1972 and 1975 19 patients were operated on and followed for at least 6 months. Special attention was paid to pain, reduced strength and limitation of mobility. The results were excellent or good in 74 per cent, satisfactory in 11 per cent and poor in 15 per cent of the cases. Redislocation occurred twice. Redislocation and the appearance of ligament calcification in x-ray had no influence on the result. On the other hand, the increased age of the patients and the delayed removal of the screw impaired the results. The results are comparable to other results published. The merits of screw fixation are technical facility and good stability. The results from an early operation were better than those of the six lateral resections of the clavicula made for inveterated dislocation during the same period. For patients over 40 years of age, conservative treatment can be recommended for gr III injuries.