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Luque's spinal instrumentation in the operative treatment of scoliosis

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Two comparable series, each of 14 patients with idiopathic scoliosis, were treated by operation: one series with the aid of Harrington instrumentation and the other with Luque's spinal instrumentation. All patients were briefly treated by Cottrell traction before the operation. Preoperative traction X-rays were made. Spinal monitoring was performed during the operation. The Harrington group was immobilized in a plaster cast for 4–6 months postoperatively, whereas the Luque group received no postoperative external stabilization. Some of the Luque patients had opted in favour of this technique because they knew that no postoperative immobilization in a plaster case would then be required.

Comparison of the two groups showed no difference in mean operation time, nor in mean correction. There was a significant difference in the duration of postoperative analgesic medication with opiates: 5.3 days in the Luque group and 7.4 days in the Harrington group. The postoperative stay in hospital also differed significantly: 7.2 (4–10) days in the Luque group and 12.2 (9–15) days in the Harrington group.

The high potential risk of the Luque technique dictates some prudence as to its use in patients with idiopathic scoliosis. This technique should be considered only for patients who would experience great difficulties with postoperative immobilization in a plaster cast. In fact, its more evident indications are in scolioses with neuromuscular changes.

Arthroscopic meniscectomy

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Fifty-four arthroscopic meniscectomies were performed in 53 patients. The indication was a bucket-handle lesion in 23, a flap rupture in 21, a transverse rupture in five and a horizontal rupture in five cases. The operations were performed under general or epidural anaesthesia and all patients were discharged on the first postoperative day. An additional mini-arthrotomy was required in 4 per cent of the cases, and a formal arthrotomy in 7 per cent.

One patient developed thrombosis of a sural vein; in one patient a large detached meniscal fragment remained *in situ* (asymptomatic); one patient developed deep venous thrombosis, and one subsequently required open re-meniscectomy. In one case a microlancet broke off and the fragment could not be retrieved but caused no symptoms. Resumption of work was possible after an average of 3.5 weeks, and resumption of athletic activities after an average of 5 weeks.

The follow-up results (after 4–36 months) were excellent in 39, good in 11, and moderate in four patients. The moderate results were caused either by anterior cruciate ligament insufficiency or by rheumatoid arthritis.

Arthroscopic meniscectomy is a technically difficult procedure in which a television camera and extensive instrumentation are of great importance. After a fairly brief follow-up, the results were good or excellent in 92 per cent of cases; work and athletic activities could be resumed much earlier than after conventional meniscectomy, and the period in hospital was minimized. the patients expressed great satisfaction with the rapid functional recovery.

Bilateral hip and knee arthroplasty in patients with class IV rheumatoid arthritis

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Between October 1979 and March 1981, bilateral hip and knee arthroplasties were performed in six patients with rheumatoid arthritis (RA) who had been bedridden for an average of 1.4 years. The patients were four men and two women, average age 43.5 years, with an average RA history of 13 years. In all cases the hip operation was performed first, the interval between the two operations averaging 3 weeks. Efforts were made to ensure early ambulation. The mean follow-up period was 3.5 years. Functional results were assessed by the Harris hip and knee rating score. This averaged 5 points before operation, 82 (out of 100) after the hip operation, and 47 (out of 55) after the knee operation. Hip and knee flexion averaged 90°. Two patients showed residual flexion contractures of the hips. One knee showed a 10° flexion contracture. All joints were stable and painless.

In two cases ambulation posed difficulties due to painful ankles and shoulders; two shoulder hemiarthroplasties have meanwhile been performed in one of these cases, and two ankle arthrodeses in the other. Five patients are able to walk without support. Routine X-rays have revealed no indications of detachment or late infection. Complications during treatment in four patients have not affected the ultimate outcome. The patients are satisfied with the subjective results. The two youngest patients have resumed school attendance, and another patient works as a librarian. The three oldest patients function in day-to-day activities without any complaint.

The aim of surgical treatment in patients with multiple joint destruction, especially of the hips and knees, is not only alleviation of pain and correction of deformities but also improvement of function in day-to-day activities. Despite considerable risks of peroperative and postoperative complications, the aim of treatment was fully achieved in this small series of patients.

Partial acromionectomy in impingement syndrome of the shoulder

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The impingement syndrome of the shoulder results from mechanical damage to the subacromial soft tissues due to recurrent compression between the humeral head and the acromion. Operation is indicated for patients with long-standing symptoms who respond insufficiently to conservative therapy. Neer regards completely intact shoulder function as a prerequisite for this operation. Preoperative function was limited in some 75 per cent of patients in the series considered.

Technique: sabre-cut incision; detachment of the deltoid muscle from the lateral and anterior rim of the acromion; severance of the coraco-acromial ligament; resection of the entire antero-lateral edge of the acromion with the osteotome, leaving the acromio-clavicular joint intact. Suture of ruptures of the rotator cuff, if any, and removal of calcium deposits, if any. Re-insertion of the deltoid muscle.

Abduction traction is applied for 1–2 weeks after the operation. Exercise therapy follows.

Of 27 patients thus treated between 1977 and 1982, 22 were available for follow-up (male:female ratio 4:3; dominant shoulder involved in 65 per cent). The mean duration of preoperative symptoms was 43 months and the mean follow-up period was 49 months. *Results:* 15 patients were satisfied: absence of pain and unimpaired function in nine; six patients had no pain but function was impaired; four patients were moderately satisfied: some pain but intact function in two; no pain but no improvement of preoperative functional impairment in two; three patients were dissatisfied, probably because of other pathological changes. Of 16 patients with preoperative impairment of shoulder function, eight were restored to normal function. Of the remaining nine, five showed functional improvement and three had remained unchanged.

CT-scanning of thoraco-lumbar fractures

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Between January and December 1983, 12 thoraco-lumbar vertebral fractures were treated by operation. The patients were five women and seven men, mean age 24 (range 21–30) years. Most fractures were located at the thoraco-lumbar junction, as reported in the literature. In all cases the lesion was assessed by X-rays in two directions and subsequent CT-scans (Siemens Somaton DR3). In one case a CT-myelogram was obtained because the normal CT-scan did not permit adequate assessment of the lesion. In all cases the stability of the vertebral fractures could be adequately assessed by CT-scanning. On the basis of the data thus obtained, Zielke in-

strumentation was used in eight patients and Harrington instrumentation in four.

CT-scanning of vertebral fractures has the following advantages:

- Minimal inconvenience to the patient.
- Rapid procedure.
- Permits adequate assessment of the integrity of the spinal canal.
- Bone fragments of minimal dimensions can be traced.
- Spinal cord swelling can be differentiated from extradural compression (bone fragments and/or soft tissues).
- Postoperative CT-scanning permits adequate assessment of decompression of the spinal canal.

Porous hydroxylapatite as bone substitute in the subchondral layer

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Experiments were performed on rabbits to establish how porous hydroxylapatite behaves in the subchondral layer, and efforts were made to express bone growth and degradation of the implanted material in quantitative terms. For this purpose a hollow mill with a diameter of 4 mm was used to cut a defect in the femoral condyle, down to a level immediately below the cartilage. This defect was filled with hydroxylapatite granulate. There were three groups of five animals each. Each group included a control animal with a defect which had not been filled. The animals were sacrificed after 4, 8 and 12 weeks, respectively; the femoral condyle was decalcified and paraffin sections were cut for haematoxylin-eosin (HE) staining. After 4 weeks, bone growth was observed throughout the implant. The subchondral layer adhered firmly to the newly formed bone without evidence of a fibrous layer or inflammatory cells.

Quantitative measurements were performed using the integration methods described by Wibel in 1976. Specimens were studied per group and a so-called hit number between 1100 and 1200 was found. This method showed that 27 per cent of the surface was covered with bone after 4 weeks, 33 per cent after 8 weeks, and 40 per cent after 12 weeks. The volume percentage of ceramics decreased from 33 to 23 volume per cent between 4 weeks and 12 weeks.

The findings warrant the conclusion that porous calcium phosphate ceramics permit bone growth and may positively influence necrosis of the femoral head without the loss of subchondral bone tissue usually observed in the recovery phase after osteonecrosis, according to such authors as Kensora and Glimcher. Moreover, there were indications of biodegradation which could be expressed in quantitative terms.

Total absence of segmentation of the anterior vertebral column, leading to severe cervicothoracic kyphosis, and its treatment; report of a case

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Whereas partial defects of segmentation of the spine and their vicious effects on its shape are familiar to the orthopaedic surgeon, a total absence of segmentation of the anterior vertebral column has not been reported previously.

A girl is presented in whom this aberration was found in conjunction with other congenital anomalies of hands and hips. The spinal defect gave rise to an increasing cervicothoracic kyphosis, interfering with the function of sight in the horizontal direction while standing, and ultimately with the opening of the mouth.

At the age of 14 years, a one-stage operative correction was performed; by fracture-osteotomy of the anterior spinal column at the cervicothoracic junction, as described by Simmonds (1977), the position of the head could be improved, without damaging the spinal cord or nerve roots.

This paper was accompanied by a demonstration of the operative technique on 16 mm film, duration 15 min.

Simmonds, E. H. (1977) Kyphotic deformity of the spine in ankylosing spondylitis. *Clin. Orthop.* **128**, 65–77.

Recurrent dislocation of the shoulder. A comparison between staple and bone peg

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Between 1965 and 1975, some 80 servicemen were operated for recurrent dislocation of the shoulder at The Military Hospital. For follow-up, data were available of 20 operations according to Du Toit and 24 according to Eden-Hybbinette.

The causes were: sports 30%, fall 30%, direct

trauma 10%, traffic motorcycle 5%, military training one patient, accident 10%, and fighting 5%.

The first reduction was always with some kind of anasthesia, except in two patients.

Complications after operation: one infection: staple removed, one wound dehiscence, and staples removed, two.

Follow-up showed one reluxation on duty (staple), and restriction of function (exorotation) in 9 staple and 19 bone peg. The personal appraisal was: staple – strength and function good, some feeling of instability; bone peg – sure but limitation of exorotation and loss of strength.

There were no specific differences between staple and bone peg in the rate of success. The choice between methods should be made according the demands of the patient and not according to the preference of the doctor.

Juvenile idiopathic scoliosis: factors affecting prognosis and the results of treatment in the Wilmington brace

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Sixty-three patients with juvenile idiopathic scoliosis who had completed treatment with the Wilmington brace have been studied. Fifty patients (Group I) had curves which were satisfactorily controlled in the brace; 13 patients (Group II) had significant curve progression (average 27.2°) in spite of bracing. Factors evaluated were age at onset, curve flexibility, initial curve magnitude, vertebral rotation, curve pattern, initial RVAD (Mehta's angle), and compliance with brace wear. Most juvenile idiopathic curves responded well to brace treatment; however, thoracic and double-major curves in younger patients or in those with initially high RVAD values experienced a significantly higher risk of failure of treatment.

Experiences with the method of operative treatment of scoliosis as designed by Pouliquen

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From October 1981 to September 1982, five scoliotic patients were treated by the two stage-method as designed by Pouliquen: anterior correction of lateral deflection and rotation by application of plate and screws to the vertebral column, followed by posterior Harrington instrumentation. In four of the patients the scoliosis was of neurodevelopmental origin (two meningomyelocele, one poliomyelitis, one with spastic-atrophic Foerster syndrome); in one patient the scoliosis was of idiopathic nature. The age varied from 12 to 27 (mean 19) years. In two, a double major curve existed; in two others correction of a concomitant deep lordosis was indicated. The preoperative curves ranged from 40 to 87 (mean 63) degrees; all could be reduced by traction to less than 50 degrees.

During the first operation, all curves could be corrected to a Cobb angle of less than 20 (range 0–20, mean 9) degrees.

After application of a plaster cast or plaster shells, mobilisation was started 2 weeks after the second intervention.

In one patient, in whom the second operation was postponed, loosening of some screws and slight loss of correction occurred, which complication could be overcome by Harrington instrumentation.

In our opinion this method is simple and effective, and is especially indicated in cases of neurodevelopmental scoliosis of moderate gravity, in which further deterioration has to be prevented.