

## PROCEEDINGS OF THE NORWEGIAN ORTHOPAEDIC ASSOCIATION

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### A DISCUSSION OF THE MECHANICS OF CURVE DEVELOPMENT IN IDIOPATHIC SCOLIOSIS

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Variables affecting the mechanics of curve development in idiopathic scoliosis were dis-

cussed. The simple analogy of a slender, elastic rod loaded in axial compression was used. Axial forces were assumed to consist of both muscular and gravitational components. Particular emphasis was placed on the concept of structural stability. Modifications of the simple analogy to account for some of the anatomical and physiological properties of the spine *in vivo* were also discussed.

*Oslo, October 22nd-23rd, 1976 (Annual Meeting)*

### SPONTANEOUS OSTEONECROSIS OF THE KNEE

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Spontaneous osteonecrosis of the medial femoral condyle, in the absence of known disposing factors, chiefly affects persons aged 60 years and over.

There is a sudden onset of pain. Radiographic changes develop 4-5 months later. These consist of flattening of the condyle, a subchondral radiolucent line with a sclerotic halo, and a necrotic bone plate in the defect. The changes are located on the weightbearing surface of the condyle.

Before the development of radiographic changes the diagnosis can be confirmed by radionuclide scintimetry. Small lesions with high focal scintimetric activity have the best prognosis as regards the development of osteoarthritis. High tibial wedge osteotomy with valgisation or prosthetic replacement surgery may be necessary.

Three cases with typical symptoms and findings were demonstrated.

### THE CHANGED PATTERN OF BONE AND JOINT TUBERCULOSIS IN NORWAY

*Bernhard Paus*

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The reduced incidence and the change in the affected age groups in bone and joint tuberculosis in Western countries are well known. In addition there are other but less conspicuous changes: multiple lesions and involvement of the spine and sacro-iliac joint are now more seldom, while trochanteric involvement occurs more frequently. In spinal cases the lesion is more often localized to the dorsal region than before. All these changes may be due to the change in age distribution of the patients.

### MECHANICAL PROPERTIES OF CORTICAL BONE

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Tension tests were performed on human cortical bone from the femoral diaphysis, removed during routine autopsy of 10 individuals, aged 15 to 85.

Four different strain rates were used which gave fracture after 5 minutes at the slowest velocity, and at  $1/10$  of a second at the fastest. With increasing strain rate, ultimate stress increased, but no difference was found in ultimate

strain. There was no difference between the age groups above and below 60 years as regards average ultimate stress. Ultimate strain decreased significantly with increasing age. This indicates that cortical bone in young individuals tolerates greater deformation before fracture than bone in older persons.

#### LARSEN'S SYNDROME

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Larsen's syndrome includes facial abnormalities, laryngotracheomalacia and multiple dislocations. One case, a female, is reported. She had a depressed nose-bridge and widely spaced eyes, a dislocated right knee, bilateral pes equinovagus and pectus excavatum. Radiographs showed an additional ossification centre of the calcaneus. Laryngoscopy showed laryngomalacia.

Mors subita supervened at 9 months of age, in a state thought to be a cyanotic attack. Autopsy revealed a marked laryngo-tracheomalacia with soft flappy epiglottis and a tendency to tracheal collapse.

TREATMENT OF PERTROCHANTERIC FRACTURES WITH KÜNTSCHER'S CONDYLOTROCHANTERIC INTRAMEDULLARY NAIL AND McLAUGHLIN'S PLATE AND NAIL  
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A retrospective comparative study of 107 patients treated with McLaughlin's plate and nail, and 104 with Küntscher's intramedullary nail, for pertrochanteric fractures, is reported. Mean hospital stay was 34.1 and 20.5 days, respectively ( $P < 0.001$ ); the mortality within 3 weeks after operation 8.4 and 7.7 per cent. The mean duration of the anaesthesia was 111 and 81 minutes, respectively ( $P < 0.001$ ); the mean operating time 67 and 38 minutes ( $P < 0.001$ ). Patients treated with McLaughlin's method needed significantly more blood transfusions than those who had Küntscher's nail. Consolidation of the fracture occurred within 8 weeks in 68.6 and 87 per cent ( $P < 0.01$ ) of the patients, respectively, whereas healing periods exceeded 12 weeks in 20 and 2.9 per cent, respectively. Penetration of the nail through the head/neck of the femur occurred most often in the patients with intramedullary nailing. Complications which severely affected the patients during the healing period, or influenced the final result occurred in 22.5 and 16.7 per cent, respectively. Pain and stiffness of the hip sel-

dom occurred in patients with Küntscher's nail, and there were less problems mobilizing the patients after this operation. There were considerable complaints regarding the knee in 11 patients in this group; all recovering after removal of the nail.

It is concluded that Küntscher's method is superior to the plate and nail method in pertrochanteric fractures. The former procedure is simple, provides stable fixation and fast healing.

#### TORSION DEFORMITIES FOLLOWING TRACTION TREATMENT OF FEMORAL FRACTURES IN CHILDREN

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The torsion of both femurs was investigated in 55 patients who had been treated 5 to 13 years earlier at the age of 1 to 16 years for femoral shaft fractures. By comparing the anteversion angle of the contralateral hips, determined by the Rippstein method, torsion deformities exceeding  $10^\circ$  were found in the fractured femur of 10 patients. The maximal deformity was  $+27^\circ$ . Deformities appeared more frequently in patients treated with adhesive overhead traction of the fractured leg, than in patients treated with wire traction with the limb placed on an oblique frame. There was no correlation between age at the time of injury, and torsion deformities, and no correlation between the length of the observation period and torsion deformities.

#### ON THE MECHANICS OF CURVE DEVELOPMENT IN IDIOPATHIC SCOLIOSIS

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Simplified theoretical models of the spine were discussed with particular reference to variables affecting its structural stability in idiopathic scoliosis. These included the geometry, material properties, rate of growth and external loading of the adolescent vertebral column.

#### TOTAL HIP ARTHROPLASTY IN PREVIOUSLY INFECTED HIPS

*Hans K. Dahl*  
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*Material:* Twelve cases of previously infected hips were operated, eight in one stage, four in two stages, with insertion of a new Charnley-Müller prosthesis, fixed with Palamos-Garamycin® cement.

Seven cases had a total hip arthroplasty, three cases a cup arthroplasty, and two cases a nailed fracture of the neck of the femur.

*Staphylococcus aureus* was cultured in six hips, and in four active infection was present. In six hips a definite clinical infection was, or had been present, but bacteriological examination was negative.

Postoperatively, immediate weightbearing was allowed, and systemic antibiotic medication was continued for 2 months.

*Results:* One patient died, 2 weeks after the

second stage, of severe haemorrhage from stress ulcer, and severe heart infarction.

In 11 cases primary healing occurred, and there was no recurrence of infection during the observation time (3 months to 2 years). All patients had a pain-free hip, and good stability.

*Conclusion:* It seems advisable to replace an infected hip prosthesis, and an infected fracture of the neck of the femur, with a new prosthesis fixed by Palamos-Garamycin® cement, and combine this with prolonged antibiotic medication postoperatively.

*Oslo, November 20th, 1976*

#### CONGENITAL ELEVATION OF THE SCAPULA

*Rolf Duus*

Vestfold Central Hospital  
Tønsberg

One case operated according to J. W. Woodward with a good result is reported.

#### CONGENITAL RADIAL CLUB HAND

*Rolf Duus*

Vestfold Central Hospital  
Tønsberg

A preliminary report is given of a case, showing no anomaly of the radius, which was treated conservatively for the first year.

#### MONTEGGIA FRACTURES IN CHILDREN

*Tor Leif Flørenes*

Vestfold Central Hospital  
Tønsberg

Three cases are reported. It is asserted that the Monteggia fracture occurs more frequently

in children than is commonly supposed. The surgeon's responsibility to discover the dislocated head of the radius is stressed, because this is often missed by the radiologist.

#### GALEAZZI FRACTURES

*Einar Wollebæk*

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Tønsberg

This is an isolated overlapping fracture involving the distal two-thirds of the radius with an associated disruption of the distal radio-ulnar joint. Four cases treated with osteosynthesis are reported.

*Oslo, December 18th, 1976*

#### DOG BITE

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Out of eleven patients admitted for severe dog bites, five were less than 10 years old. Six were wounded in the face, one in the face and hand, and four in the upper extremities only. Nine were admitted without delay. Two instances of infection were observed in seven patients who had their wounds revised and sutured; out of two only sutured, one became infected. Two were admitted late with infected wounds. Of the five patients with wound in-

fection, three were diabetics, and in one case no antibiotics had been administered. In two instances late complications occurred. Partial facial nerve palsy persisted in one case, and osteomyelitis necessitated amputation of a finger in the other.

#### BELOW-KNEE AMPUTATION FOR ISCHAEMIC VASCULAR DISEASE

*Arve Sæbø & Gunnar Follerås*

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Nordbyhagen

In the period 1971 to 1975, 127 patients were treated with major amputations of the leg for

ischaemic gangrene, 58 above- and 69 below-knee. The trend has been towards below-knee amputations. In 1971 above-knee amputations amounted to 82 per cent; in 1975 this figure was 18 per cent.

The age was between 60 and 90 years; 32 were diabetics. "The sagittal flap technique" was used in 59 patients; in 10 the conventional long posterior, short anterior flap technique. Post-operative mortality was 9 per cent, and necrosis and infection occurred in 37 per cent. Re-amputation at higher levels was necessary in 6 per cent of the diabetics, and in 37 per cent of those with simple atherosclerosis.

In 36 patients rehabilitation with prosthesis was considered possible, but only 23 were able to use their prosthesis with benefit.

At present below-knee amputation is used as a standard procedure, except in patients where the gangrene extends to a high level on the lower leg.

#### SLIPPING RIB SYNDROME

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This syndrome is due to displacement of the anterior end of the anterior cartilages of the eighth, ninth or tenth ribs because of loosening of their fibrous attachments.

Attacks of painful sensations localized to the

costal arch, always preceded by a movement involving the muscles of this region, are the usual complaints. The symptoms are often misinterpreted and thought to be caused by a hernia, since the deformity which develops is reducible.

Three female patients with symptoms lasting from 1 to 5 years were operated with resection of the rib cartilage. All were improved.

#### ONE HUNDRED ASIF-PLATED FRACTURES OF THE FEMORAL SHAFT

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One hundred femoral shaft fractures, 29 comminuted and 12 open, were treated with the lateral ASIF plate.

Road traffic accidents caused the fracture in 68 patients of whom 28 were car occupants and 26 motorcycle riders. Serious accompanying injuries were frequent, mainly head injuries and various fractures. Three had rupture of the femoral artery.

Two elderly patients died from cardiopulmonary diseases. Osteomyelitis developed in two; non-union in two healed after re-operation. Fat embolism was not seen in 17 patients who were operated upon a few hours after admission, but occurred in 5 patients primarily treated with skeletal traction for 1 week.