Acta orthop. scand. *53*, 499–505, 1982

PROCEEDINGS OF THE NORWEGIAN ORTHOPAEDIC ASSOCIATION

EDITOR: ARNT JAKOBSEN

Oslo, September 13th, 1980

SURGICAL TREATMENT OF TOTAL MUSCLE AVULSIONS

PAUL LEREIM

Sophies Minde Orthopaedic Hospital, Oslo

If a diagnosis of a total avulsion of a muscle, or the belly of a muscle, is made at the time of injury, surgical intervention should be the treatment of choice.

If the diagnosis is made at a late stage, the entire function of the muscle must be evaluated. If the muscle force is significantly reduced, mobilisation of the retracted muscle, or muscle belly is worth a try. However, it will be difficult to stretch the muscle for fixation to its original attachment.

SURGICAL TREATMENT OF LATERAL HUMERAL EPICONDYLITIS

BJØRN ØDEGAARD

Martina Hansens Hospital, Sandvika

Thirty-two patients (35 elbows) with lateral humeral epicondylitis, who did not respond to conservative measures, were treated with resection of the lateral epicondyle (19 elbows), or by the Bosworth procedure (16 elbows). The average duration of preoperative symptoms was 20 months. In 25 elbows macroscopic evidence of tears was found.

At the follow-up examination (3 months to 9 years) the results were rated as very good in 75 per cent of the patients. Six per cent of the patients did not return to their former work because of persisting pain.

Oslo, November 22nd, 1980

JUXTAARTICULAR BONE CYSTS

ELIN BARTH & ROLF HAGEN

Martina Hansens Hospital, Sandvika

Published in Acta Orthopaedica Scandinavica *53*, 215–217.

EXPERIENCES FROM THE ORTHOPAEDIC UNIVERSITY HOSPITAL IN MÜNSTER

HELGE LILLEBY

Martina Hansens Hospital, Sandvika

The author presented a review of his experience at the Orthopaedic University-Hospital of Münster (W. Germany) where he worked for 5 years.

Some details were given about operative treatment of scoliosis with the Zielke instrumentation. The method of treating congenital hip dislocation was described, as well as the use of the Schølner instrumentation in reposition of spondylolisthesis.

MICRORUPTURE OF THE PATELLAR TENDON AS A FEASIBLE OCCURRENCE IN "JUMPER'S KNEE"

ASBJØRN MYKKELBOST

Martina Hansens Hospital, Sandvika

In some cases of "jumper's knee" activity related pain appears at the medioapical insertion of the patellar ligament. This area has few if any elastic fibres and impaired vascularization and is thus predisposed to microrupture. The pathological findings are organized granulation tissue with few characteristics.

Between 1971 and 1980, 20 patients were treated surgically in this hospital for microrupture of the patellar tendon. Simple excisions of the cicatrices in the ligament or longitudinal incisions in the ligament to restore the vascularization, or a combination of both were performed.

Seventeen patients were followed up. Simple excisions provided the best results.

0001-6470/82/030499-07 $02.50/0

Oslo, January 24th, 1981

PERIPHERAL NERVE REPAIR

OLAV REIKERÅS

Kronprinsesse Märthas Institute, Oslo

The microsurgical suture technique for nerve repair has been adapted after experimental practice on rats. The repair is done without tension, otherwise transplantation using the sural nerve is performed. Each fascicula is sutured with one or two stitches using 8 to 11–0 nylon in the perineurium, and the epineurium is resected for a few millimetres around the suture site to avoid scar tissue which will interfere with the regeneration of the nerve fasciculae.

According to our clinical experiences so far, the results seem to be superior to the epineural suture technique.

Oslo, April 25th, 1981

SYNOVIAL CHONDROMATOSIS

TOR FINN DENSTAD

County Hospital, Hamar

In synovial chondromatosis a direct and extensive metaplasia takes place in the subsynovial cells which are transformed into chondrocytes and subsequently into cartilage and sometimes bone. The cause is unknown.

One case affecting the knee joint is reported.

SPINAL STENOSIS

TOR FINN DENSTAD

County Hospital, Hamar

In a series of 21 patients operated upon because of backache and sciatic pain, 11 patients had disc protrusion, eight patients spinal stenosis and two patients a combination of both lesions. The mean age of the patients with disc protrusion was 39.4 years, and of the patients with spinal stenosis 54.6 years.

After a short follow-up time the results were satisfactory.

THE GROUP OF INFH (ISCHAEMIC NECROSIS OF THE FEMORAL HEAD). REPORT OF A PROBABLE CASE

TERJE NORD

County Hospital in Hedmark, Elverum

A 59-year-old man with bilateral hip joint pain and roentgenologically observed multiple cysts of the femoral heads for 15 years was classified as probably suffering from INFH (ischaemic necrosis of the femoral head).

Because of increasing, incapacitating pain in both hips over the previous year, the patient, in accordance with Hungerford's concept of increased intraosseous pressure as the cause of pain, was treated with core decompression in both hips, and transplantation of cancellous bone. The result after a short period of observation is excellent; the patient is free of pain.

Bergen, May 28th – 30th, 1981

CLOSED VERSUS OPERATIVE PRIMARY TREATMENT OF CONGENITAL CLUBFOOT

EINAR SUDMANN, JOHN K. HALD & BJØRN SKANDFER

Regional Hospital, Tromsø

Eighty consecutive babies with 118 congenital clubfeet were divided into three groups according to the primary treatment received. Forty-eight patients with 71 clubfeet received primary closed treatment for about 1 month (retrospective group, A). Fifteen patients were also mainly treated conservatively, but for about 4 months (prospective group, B). The third group consisted of 17 patients of whom 15 were operated upon, 13 during the neonatal period without any previous treatment (prospective group, C).

The number of relapses of the hindfoot deformity in the first year of life was significantly lower in group C (8 per cent) compared with group B (59 per cent) and group A (84 per cent) had the greatest number of relapses.

The results indicate that the Achilles and tibialis posterior tendons, and their corresponding muscles, are the main dynamic features that need to be dealt with when treating the hindfoot deformity in congenital clubfoot.

INHIBITION OF PARTIAL CLOSURE OF THE EPIPHYSEAL PLATE BY INDOMETHACIN IN RABBITS

OTTO SCHNELL HUSBY & EINAR SUDMANN

Regional Hospital (Hagavik Department), Bergen

The inhibiting effect of indomethacin (2 mg/kg/day) on recurrent partial closure of the epiphyseal plate was tested in rabbits. An epiphysiodesis was performed laterally in the distal left femoral epiphyseal plate in 19 adolescent rabbits. This produced a valgus deformity in 14 of them. The epiphysiodesis was then removed operatively, and the rabbits were treated with either indomethacin or vehicle for 21 days postoperatively. Indomethacin plasma levels were about 180 ng/ml. The valgus deformity decreased in indomethacin treated rabbits, whereas it increased in the controls (P = 0.008).

ANTEVERSION OF THE HIP

OLAV REIKERÅS

Kronprinsesse Märthas Institute, Oslo

Increased anteversion of the femoral neck is a factor associated with congenital dislocation of the hip, and may be the only dysplastic finding. With inward rotation of the lower limb the hip is kept in place, while in outward rotation the head may subluxate laterally and forwards. In this context acetabular anteversion is also of importance. The relationship between anteversion of the femoral neck and the acetabulum can be determined by computed tomography. A knowledge of this relationship is crucial in the evaluation of candidates with femoral anteversion for derotational osteotomy.

HOSPITALIZED INJURIES

OLAV REIKERÅS & ASTOR REIGSTAD

Ullevål Hospital

In a prospective study of patients admitted to Ullevål Hospital because of injuries during the weeks 42 to 47 in 1977, 1978 and 1979, data regarding aetiological, clinical and sociological factors were analyzed. The frequency of accidents among men was higher than in women. The age groups around 20 years, and those above 65 years, had the highest incidence of injuries. About 60 per cent of the accidents were caused by a fall at home or in the streets. Fractures and concussion of the brain accounted for about 80 per cent of the injuries. In 90 per cent of the cases, fracture or wound treatment or only observation was needed.

NAIL-PATELLA-ELBOW SYNDROME

JOHN HALD

Martina Hansens Hospital, Sandvika

A 18-year-old man from a healthy family presenting absent thumb-nails and deficient nails on the 2nd fingers, high-riding small patellas and contracture of the elbow joints with subluxation of small radial heads was reported. Radiological examination of the pelvis revealed symmetrical iliac horns. The patient had few complaints and lived a normal life for his age. He was referred for genetic advice.

WHAT IS THE NORMAL RANGE OF MOTION IN HIP AND KNEE JOINTS?

ASBJØRN ROAAS

Martina Hansens Hospital, Sandvika

The ranges of motion in 210 hips and 180 knees in healthy male subjects 30 to 40 years old were reported. Significant differences were found between the measurements obtained and previously referenced studies. The differences can be due to the measurement procedure, difficulties in measurement technique, the patient material and interindividual variations. There was no statistically significant difference between the motions of the right and left side. It is therefore suggested that the healthy limb can be used for comparison with the affected side in the presence of disease or a lesion.

PLICA MEDIO-PATELLARIS: A DIFFERENTIAL DIAGNOSIS OF KNEE JOINT PAIN

HELGE LILLEBY

Martina Hansens Hospital, Sandvika

Plica medio-patellaris, medial shelf or Iino's band is an inconstant and harmless parapatellar synovial fold on the medial side of the knee. Hypertrophy and stiffness may sometimes follow trauma and/or synovitis. Gliding over the anteromedial femoral condyle, and between the femoral condyle and the patella during knee movements, the plica then causes chondromalacia of these areas.

Medial knee pain, pseudolocking and snapping are common complaints, accompanied by palpation pain at the anteromedial femoral condyle. The diagnosis is established by arthroscopy.

Eleven cases were reported. In eight cases the plica was removed and other intraarticular pathology treated. With an average observation time of 5 months, two patients were symptom-free and the remaining patients improved.

REFRACTURE AFTER FEMORAL OSTEOTOMY

TERJE TERJESEN

Regional Hospital, Trondheim

In a series of 78 children with increased femoral anteversion treated with femoral rotational osteotomy, fracture of the femur occurred in four patients (5.1 per cent). In two patients the fracture was through the most distal screw hole in the bone, and occurred before the plate was removed. In the remaining two patients the fracture occurred through the previous osteotomy a few weeks after the plate was removed 1 year postoperatively.

It is concluded that the patients should not participate in vigorous activities and sports until about 3 months after the plate is removed. The correct time for plate removal is open to discussion.

DEMONSTRATION OF AN ADJUSTABLE HIP ABDUCTION SPLINT

PER EDVARDSEN

Regional Hospital, Trondheim

A splint made of fibre glass which can be adjusted to fit various sizes of children has been developed. The splint has a fixed flexion but an adjustable rotation of the hips, and four different splints will meet the size requirements of children from 0–4 years of age. The PGR material is radiolucent, light-weight and sufficiently strong for the splint to be used repeatedly. The splint has proved effective in conservative and operative treatment of upper thigh and hip disorders.

The manufacturer is Arm & Hip Splints A/S, P.O. Box 1613 – Nardosletta, 7001 Trondheim.

EFFECT OF INTRADISCAL COLLAGENASE INJECTION ON THE FLEXIBILITY OF THE SPINE

L. B. ENGESÆTER, D. SPENCER, J. MILLER & A. SCHULTZ

University of Illinois, Chicago, USA

The lower four lumbar intervertebral discs of five adult mongrel dogs were injected with collagenase (1000–3000 C.U./disc) under direct vision during laparotomy. The animals were sacrificed 2 weeks after injection. No complications were noticed. Age and size matched dogs were sacrificed providing control discs.

A significant increase in flexibility of the injected discs compared to the controls was found in all loading configurations tested, the difference being two- to three-fold. On transverse and sagittal sectioning of the disc specimens, the annulus fibrosus seemed to be unaffected except along the needle tract and at the inner margin. The nucleus pulposus, however, consisted of a haemorrhagic coagulum, the central bony vertebral endplates were destroyed and a central crater formed by erosion was seen in the cancellous bone of each vertebral body.

The exact mechanism of the increased flexibility is unknown, but one possibility could be that the enzymatic digestion of the nucleus and the adjoining vertebral endplates depressurizes the disc and alters its mechanical properties. This explanation is supported by the finding that the flexibility of uninjected control discs was doubled by drilling a 5 mm hole in the centre of the vertebral body through the endplates depressurizing the nucleus.

OPERATIVE TREATMENT OF PERSISTENT ROTATOR CUFF SYNDROME OF THE SHOULDER

ANDERS MØLSTER & OLE D. LUNDE

Regional Hospital (Hagavik Department), Bergen

Follow-up examination of 18 patients (20 shoulders) with typical rotator cuff syndrome treated with partial excision of the acromion (median observation time 5 years) gave the following results: Excellent in 13 shoulders, good in five and fair results in two shoulders.

In a group of 10 patients (12 shoulders), treated with simple removal of calcium deposits, follow-up examination with the same observation time gave four excellent shoulders, two good and six poor. Four shoulders with poor results were reoperated on with partial excision of the acromion giving two excellent, one good and one fair result.

It is concluded that patients with longstanding rotator cuff syndrome may benefit from operative treatment, partial excision of the acromion giving better results than simple removal of calcium deposits.

ANATOMICAL STUDIES OF LATERAL LIGAMENT STABILIZATION OF THE KNEE

ANDERS MØLSTER

Regional Hospital (Hagavik Department), Bergen

Losees "sling and reef" technique for stabilization in anterolateral knee instability was studied in knee preparations. The main technique using a tunnel through the lateral femoral condyle allows a proximal attachment of the "new ligament" in front of the insertions of the lateral collateral ligament and the popliteus tendon. With this attachment the ligament is elongated more than 30 mm in maximal flexion of the knee, even with the lowest possible location of the insertion and with outward rotation of the tibia.

When the fascial slip is passed under the proximal part of the lateral collateral ligament, as suggested for certain cases by Losee, maximal flexion of the knee gives only about 10 mm elongation, and when the slip is sutured to the collateral ligament, elasticity of the tissues allows full flexion of the knee without loosening of, or undue tension in, the sutures. This version of "the sling and reef" operation is therefore recommended.

PROSTHESIS OF THE FIRST METATARSOPHALANGEAL JOINT APPLIED IN A CLAYTON PROCEDURE FOR TREATMENT OF RHEUMATOID ARTHRITIS

HELGE RØNNINGEN

Oslo Sanitetsforening Rheumatism Hopsital, Oslo

Fourteen feet in nine patients received a silicone

(Swanson, double-stemmed) prosthesis in the first metatarsophalangeal joint. – In 20 feet in 11 patients the Clayton procedure included a temporary fixation of the great toe by an axial steel wire. At 24 months (prosthesis) and 36 months (wire) postoperatively the groups were similar as regards valgus deformity and flexion power of the great toe. The prosthesis tended to produce a longer toe than did the simple resection. Ankylosis had occurred in six toes that had been fixed with wire. All patients could wear normal shoes, though most of them after careful selection or minor modifications.

BACTERIAL ARTHRITIS. A CLINICAL MATERIAL

ELIN BARTH & ROLF HAGEN

Martina Hansens Hospital, Sandvika

A series of 28 patients with bacterial arthritis were reported. Fourteen hip joints and 10 knee joints were affected, and *staphylococcus aureus* was cultivated in 83 per cent of the cases. Eight patients presented a primary infectious focus, while five patients revealed predisposing factors such as rheumatoid arthritis or a disease requiring cortisone therapy.

Antibiotic therapy was given orally and was continued for 2–4 weeks after the sedimentation rate had normalized. Arthrotomy and irrigation were only performed in one knee joint and two shoulder joints.

After a mean observation time of 7 years, 13 patients are completely restored while 11 have minor sequelae not requiring surgical treatment. In 2 patients an arthrodesis of the knee joint and in one a total hip prosthesis have been performed; one patient has a spontaneous ankylosis of the hip joint.

It is concluded that early peroral administration of antibiotics provides an adequate treatment of bacterial arthritis. Furthermore, any primary focus should also be treated.

OPERATIVE PRINCIPLES IN SOFT TISSUE SARCOMAS

A. ALHO, O. STRAY & T. S. RAUGSTAD

Regional Hospital, Bergen

To evaluate the adequacy of the diagnosis and treatment of soft tissue sarcomas, 17 cases treated in several hospitals between 1977–1980 were studied.

Eleven tumours were removed without a preoperative diagnostic check-up. In four cases of low-grade malignant tumours the removal was considered adequate. Three out of seven inadequately removed tumours recurred requiring a secondary radical removal. An adequate preoperative check-up was performed in six cases.

It is concluded that the diagnosis and treatment of soft tissue sarcomas should be centralized to facilitate the teamwork of the surgeon, the radiologist and the oncologist and to concentrate the experience in the treatment of these relatively rare tumours.

CAN ACETABULAR PROTRUSION FOLLOWING HEMIARTHROPLASTY BE PREDICTED?

ODD SØREIDE, ROLV SKJÆRVEN & ANTTI ALHO

Regional Hospital and University of Bergen, Bergen

In a study of 214 patients where a frequency of protrusion of 26 per cent was found, two factors, follow-up time and previous hip operation, which could be significantly associated with the development of protrusion, were identified. Based on the age of the patients and the mentioned factors, and using logistic regression techniques the following frequencies of protrusion can be expected (Table).

Age	Follow-up time	Previous hip operation	Frequency of protrusion (%)
75 years or less	<12 months	No	4.8
		Yes	10.4
	>12 months	No	28.9
		Yes	48.0
Above 75 years	<12 months	No	8.0
		Yes	16.5
	>12 months	No	40.9
		Yes	61.0

The relative importance of changing the levels of the explanatory variables has been studied estimating odds ratios. Old patients are 1.7 times more likely to develop protrusion than younger patients, patients previously operated on are 2.3 times more likely to develop protrusion than those not operated on previously, and patients with a follow-up time exceeding 12 months are 7.9 times more likely to develop protrusion than patients with a shorter follow-up time.

TOTAL HIP REPLACEMENT IN NORWAY 1980

T. S. RAUGSTAD, A. ALHO & T. STRAND

Regional Hospital, Bergen

Total hip replacements (THR) performed in Norway in 1980 were a primary intervention in 2435 instances, and a reoperation in 257 instances.

Waiting for THR at the end of 1980 were 3760 patients. Approximately 30 per cent of the patients had

bilateral disabling coxarthrosis, which means that 4890 hips are on the waiting list for THR. With unchanged operation rate, it will take 2.0 years to operate on all these hips.

Early wound infections were noted in 44 cases (1.6 per cent). Among these were 11 (0.4 per cent) deep and 33 (1.2 per cent) superficial infections. In departments doing less than 10 THR a year, the rate of early infections was 7.0 per cent.

TECHNICAL AND OPERATIVE FACTORS IN LOOSENING OF CHRISTIANSEN AND LOW FRICTION ARTHROPLASTIES

A. Alho, O. Søreide & A. J. Bjersand

Regional Hospital, Bergen

Forty-eight Christiansen total hips (CHR) and 20 Charnley low friction arthroplasties (LFA) were followed up for 12 to 68 months postoperatively (median 31 months). The following factors were associated with loosening (in per cent).

Group	Stem migration		Varus position	Clearance zone	
	Axial	Distal	of stem	Stem	Cup
CHR	16	15	47	63	42
LFA	4	0	22	30	22
P	n.s.	n.s.	<0.001	<0.02	n.s.

Significant differences between the good clinical results in the two groups were found concerning the patient's own opinion (CHR 58 per cent and LFA 77 per cent; $P < 0.10$), and walking ability (CHR 36 per cent and LFA 67 per cent; $P < 0.05$). In the CHR group two reoperations were performed for loosening of the stem (one for infection), two for loosening of the cup and three for dislocation. In the LFA group, one trochanter major was reattached and two hips operated on for dislocation. It was not possible to compare the technical and biomechanical properties of the two prostheses directly. However, differences in the design of the stems may lead to differences in the position of the stem in the femur as well as the coating with cement.

EFFECT OF ANTI-INFLAMMATORY DRUGS ON BONE METABOLISM IN RATS

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Institute for Surgical Research, Rikshospitalet, Oslo

The influence of acetylsalicylic acid and naproxen on the mechanical properties of bone in young rats has been studied. The administered doses gave serum concentrations of the anti-inflammatory drugs comparable with the therapeutic levels in man. The intact femora were subjected to diaphyseal torsional tests and epiphyseal and metaphyseal bending tests. After 9 days of medication the rats treated with acetylsalicylic acid had significantly increased torsional strength of the femoral diaphysis and increased bending strength of the distal epiphyseal plate compared to the controls. After 18 days of medication, however, the metaphyseal and epiphyseal bending strengths were significantly reduced compared to controls. Naproxen did not influence these mechanical parameters significantly.

REOPERATIONS IN PATIENTS TREATED WITH MÜLLER TOTAL HIP REPLACEMENT

Astor Reigstad

Kronprinsesse Märthas Institute, Oslo

In a series of 761 Müller total hip replacements performed between June 1969 and May 1980, 38 reoperations were analyzed.

After 1 year 0.5 per cent of the hips had been reoperated on, and after 5 and 10 years the percentage was 4.8 and 14.1, respectively. The incidence of reoperations was higher in males than in females. Deep infections caused four reoperations, dislocation one, perforation of the femoral shaft and/or insufficient cement filling three, and trauma resulting in pelvic fracture one reoperation. The remaining 29 patients had "idiopathic" loosenings. Loosening of the stem was most common. Femoral components implanted in a varus position and stems with long necks were most often reoperated.

REDUCTION OF SEVERE SPONDYLOLISTHESIS

Sverre Skeie

Central Hospital in Rogaland (Sandnes Department), Sandnes

Two patients, a 13-year-old female and a 15-year-old male with severe spondylolisthesis and significant low back pain were treated by a method described in the preliminary report of I. M. McPhee & J. P. O'Brien. The method consists of a three-stage procedure that includes posterior mobilization with alar-transverse fusion, halo-femoral traction with the patient in some extension, and finally anterior interbody fusion of the lumbosacral joint.

Ideal reduction was achieved in both patients who both had an uncomplicated postoperative course with a good result. It is emphasized that reduction in bed with the patient fully conscious under daily neurological evaluation is one of the essential advantages of the method.

RELIEF OF PATELLO-FEMORAL PAIN BY ANTERIOR DISPLACEMENT OF THE TIBIAL TUBERCLE

K. Svartveit, H. Lilleby & A. Roaas

Martina Hansens Hospital, Sandvika

Eighteen knees in 15 patients, four men and 11 women, average age 33 years, with patello-femoral pain were operated upon by anterior displacement of the tibial tubercle. According to Maquet, Ficat, and other authors, this procedure can relieve pain by reducing the contact stress between the femoral condyles and the patella. The tibial tubercle is displaced half an inch anteriorly, and the length of the longitudinal osteotomy should be no less than 4 inches.

One-half to 4 years postoperatively 15 knees were pain-free or improved, one knee was unchanged and two knees were worse than before the operation.

It is concluded that this procedure is a suitable method for treating pain in patients with chondromalacia of the patella.

FRACTURES OF THE NECK OF THE FEMUR TREATED WITH A HIP COMPRESSION SCREW

Erling Gjengedal, Jørgen Jørgensen & Albert Paus

Aker Hospital, Oslo

A series of 153 dislocated fractures of the neck of the femur treated with a hip compression screw were reported.

Re-dislocations which required additional operative procedures including total hip replacements occurred in 7 cases (4.7 per cent). Non-unions were found in 8 cases (5.3 per cent). At follow-up examination 2 to 6 years after the operation of the remaining 138 cases, necrosis of the femoral head was found in 14 cases (10 per cent). The total failure rate was thus 20 per cent in this series.

THE ALVIK MODIFICATION OF THE EDEN/HYBINETTE OPERATION FOR RECURRENT DISLOCATION OF THE SHOULDER

Per J. Lerud & Norvald Langeland

Sophies Minde Orthopaedic Hospital, Oslo

In the late forties, Alvik modified the operation for recurrent dislocation of the shoulder, previously described by Eden & Hybinette, by wedging the bone transplant into a chiselled slot in the anterior part of the neck of the scapula. The transplant is thus placed so that it is more parallel to the joint cavity than in the original method, and the anterior part of the joint cavity will be slightly elevated. The Alvik method is supposed to interfere less with the joint function than the original method. In addition the anterior part of the joint capsule is duplicated, and the subscapularis tendon is shortened 1 to 1½ cm.

Thirty-five shoulders operated on between 1971 and 1980 by the Alvik modification were evaluated (median observation time 69 months). The results were: 26 excellent (74 per cent), seven good (20 per cent) and two fair (6 per cent). One patient had one dislocation after the operation and one had several subluxations. There were no signs of osteoarthritis in any of the joints at the follow-up examination.

OSTEOGENESIS IMPERFECTA

Norvald Langeland

Sophies Minde Orthopaedic Hospital, Oslo

In Norway (population: approximately 4 million) 200 patients suffer from osteogenesis imperfecta. Ten to 15 per cent of the patients (median age 10 years) suffer from the congenital form and have sustained a median number of 40 fractures.

The median age of the patients with the late form was 27 years, and the median number of fractures in this group was 7.

Thirty-eight patients with osteogenesis imperfecta have been treated in this hospital in the period 1971 to 1980. Of these, 11 were operated on using the Soefield procedure with eight good results. Eight patients were operated on using other methods; of these five were improved.

In 10 of the 19 patients operated on, refractures, recurrence of the deformity or perforation of the nail occurred.

ANNUAL NUMBERS AND GEOGRAPHICAL VARIATIONS OF FRACTURES OF THE PROXIMAL FEMUR IN NORWAY

Ulf Slungaard & Jan Falch

Aker Hospital, Oslo

A standard questionnaire was sent to all hospitals in Norway treating femoral neck fractures, asking for the number of femoral neck fractures treated in 1979. All hospitals replied, and a total of 5941 fractures were reported. The population of Norway in 1979 was 4,079,000.

The number of fractures in each county corrected for age and sex differences in the population showed great variations. Oslo had the highest incidence (annual incidence per 1000 females and males respectively: ≧ 50 years 7.7/3.0, ≧ 80 years 29.6/15.7). Sogn & Fjordane and Finnmark counties had the lowest incidence with less than half the total incidence of Oslo.