PROCEEDINGS OF THE NORDISK ORTOPEDISK FÖRENING'S 25TH ASSEMBLY IN HÄRNÖSAND JUNE 1950

The annual meeting of the Scandinavian Orthopedic Association was held at Härnösand, Sweden, June 1950, under the presidency of N. Lindström, Härnösand.

PSEUDARTHROSIS COLLI FEMORIS

by *Agerholm-Christensen* (Copenhagen)

The various methods used for the treatment of pseudarthrosis colli femoris or un-united fracture of the neck of femur were briefly reviewed.

1. Osteotomy, using a nail or a bone-graft or both.
2. "Reconstructive surgery", with or without the use of arthroplastic material.
3. Osteotomy.
4. Arthrodesis.

The published results of the larger series of cases were reviewed.

At the Orthopaedic Hospital, Copenhagen, the standard treatment has for many years been osteotomy—either, as in the majority of cases, intertrochanteric, or, in a few cases, cervico-axial.

61 cases were reviewed. Three main points were emphasised.

1. Osteotomy is a simple method. The patients stood it well. There was no death in relation to the operation in this series.
2. The best results obtained were stable, painless hips with 80° flexion, a few degrees of other movements and shortening of less than 3 cm.
3. When there is a marked necrosis of the head, union is unlikely; out of 14 only 3 united and all 3 had severe osteoarthritis.

DISCUSSION:

H. Støren: Agerholm-Christensen has mentioned the method of treatment used by me, which I demonstrated at the meeting of the Danish Orthopaedic Association at Aarhus in 1948.

I wish to emphasize the most important point of my method, i.e. that it is through a canal passing through the trochanter that the connective tissue and cartilage in the pseudarthrotic space are excised and removed, and that then this space is filled with spongy bone substance. The canal is led further into the head of the joint and filled with a spongy block from the iliac crest. Then an intertrochanteric cuneiform osteotomy is performed, to obtain the correct collum angle and direction for the compression of the fragments of the pseudarthrosis.

Of course the method is confined to those cases in which the vitality and mobility of the femoral head in the acetabulum have been preserved.

I have now employed it in 6 cases—and in all cases the results have been very good.

Demonstration by roentgenograms.

Jakobsson, Bentzon, Wadstein, Hirsch, Agerholm-Christensen.

CARTILAGINOUS CUP-ARTHROPLASTY OF THE HIP

by *C. Hirsch* (Stockholm)

The author reports two cases of pseudarthroses in the neck of the femur where Moore's cartilaginous cup-arthroplasty was performed. In conjunction with the operation specimens were taken for histological examination. It was found that the cartilage was vital, the spongy bone of the femur head was dead. The author thinks for this reason that the cartilage of the femur head was living on the synovial fluid. If that were really the case, conditions for cartilaginous plasty in the joints ought to be favourable.

A SURVEY OF THE LATE RESULTS IN THE TREATMENT OF FRACTURA COLLI FEMORIS MEDIALIS A.M. WHITMAN-LÖFBERG

by *Inge Lindquist* (Malmö)

The principles of the Whitman-Löfberg treatment are well known. Its most important point is that as a rule the attempt should be made to reduce a joint to a good anatomic position. This is regarded as achieved by reduction with inward rotation, extension and abduction. Finally immobilisation with plaster bandage is characteristic of the treatment. The method was used at the surgical clinic in Malmö up to 1946 when Otto Löfberg gave up his appointment as head of the clinic. A post-examination of 88 cases treated at this clinic, 1936-1946, comprising a careful clinical and roentgenological investigation gave the following results.

Of 285 cases of medial collum fracture, treated with plaster immobilisation with or without previous reduction, 48 died in hospital. This gives a mortality of 16.8 %. Up to June 1950, 88 surviving patients with an observation period of at least 4 years were subjected to clinical and roentgenological examination. Of these 88 patients 56 obtained union, 25 did not have union, while 7 showed "partial pseudarthrosis". This last means that the cases concerned here have incomplete synosteosis with only a few thin bridges of bone connecting the fragments. If it is admitted that these cases nevertheless show a form of bony union between the fragments, the incidence of union in the series becomes 71.6 % and that of pseudarthrosis formation 28.4 %. Amongst the 56 cases of union, however, a group is included consisting of 12 fractures which in the roentgen pictures showed either no dislocation at all or very slight valgus malposition. In these 12 cases of fracture, to 7 of which the clinical diagnosis "impaction" could be ascribed, no manipulative reduction but only plaster immobilisation was carried out.

All 12 fractures have united. If these 12 fractures, in which the conditions for union are specially favourable according to present experiences, are excluded, 51 collum fractures in the series examined have united and 25 have not united which gives an incidence of 67.1 % for union and 32.9 % for pseudarthrosis.

The incidence of such changes in the caput which may result from either

aseptic necrosis or arthrosis deformans gave the figure 38 % for union as against 72 % for pseudarthrosis cases. Clinically the latter revealed an especially unsatisfactory condition and a marked difference existed on comparison with the usual position of the united collum fractures. Of the 25 pseudarthrosis cases in this series 10 had been given orthopedic treatment. In 3 cases subtrochanteric osteotomy had been performed, in 3 cases hip-joint resection, and in 3 cases osteosynthesis with metal peg and also bone grafting either contemporaneously or later. Finally in one case redressement treatment by means of traction and plaster fixation was given. All these patients who had been treated at the orthopedical clinic in Malmö improved considerably.

DISCUSSION:

S. von Rosen: A film demonstration is given of a patient with double-sided medial collum fracture. On the one side the nail slipped and caput necrosis occurred; this resulted in pseudarthrosis which was dealt with secondarily by subtrochanteric osteotomy. Osteosynthesis was performed with nailing on the other side; good union resulted. A good functional result was achieved.

Friberg.

ARTHROPLASTY AND ARTHRODESIS IN ARTHROSIS DEFORMANS COXAE. A POST-INVESTIGATION

by *Nils Lindström* (Härnösand)

In all, 58 cases were operated upon; one of these was double-sided, so that 59 hip joints were post-examined. These had been given operative treatment over the last 10-year period in the Orthopedic Clinic of the Institute for Cripples at Härnösand. My material consists of 56 pure arthrosis deformans cases and 3 with secondary changes following arthritis, similar to those in the arthrosis deformans cases.

Arthroplasty was performed in 16 cases, one of which was double-sided. In 2 cases plastic surgery was employed with interpolation of the fascia lata. The remaining operations were carried out according to the Smith-Peterson method. The average age was 41 years (31-57) and post-examination occurred on an average of 2 years and 6 months after operation. Good mobility was secured in 15 cases, but limping and pain persisted to a large extent.

Nailing, according to the Watson-Jones procedure, was used in 11 cases. Average age was 54 years (43-69). Post-examination took place, on average, 3 years and 7 months after operation. Complications such as fracture, slipping and breaking of the nail were encountered. Primary bone ankylosis appeared in 4 cases, and in 2 more cases, after a second operation. In a further 3 cases there was clinical ankylosis and no pain. The best results were reached in cases in which mobility was almost non-existent before operation.

Complete intra-articular arthrodesis was performed in 12 cases. Two deaths occurred in connection with the operation, one through pneumonia and one through a lung embolus. Average age was 42 years (17-53) and post-examination was carried out, on an average, 6 years and 3 months after operation. One patient did not re-appear. 7 of the 9 examined have bony ankylosis but one of these was operated upon twice, the second time a.m. Watson-Jones.

Partial intra-and juxta-articular arthrodesis with a bone graft from the os.

ilium was carried out on 3 women aged 54, 55, and 64 years. One was a case of primary clinical ankylosis but with secondary fracture of the collum, the other two cases did not obtain ankylosis, and therefore all were operated upon again, a.m. Watson-Jones. At the post-examination 2 years after operation, all were ankylotic and free of pain.

A 50 year-old woman underwent a partial intra-articular arthrodesis operation and also nailing according to Watson-Jones. The case was not a success technically and the final result was a painful fibrous ankylosis.

In order to improve the results of the arthrodesis and to lessen the risk of shock, partial intra- and juxta-articular arthrodesis with an iliac graft and nailing according to Watson-Jones has been performed since 1947. In addition to the operation the patients received intravenous injections of dextran, and also intravenous drops in the first few days after operation. There was no blood transfusion except in 2 cases where no definite clinical ankylosis existed after 6 weeks, at which time the other patients were allowed to get up. The operation was performed in 16 cases with an average age of 46 years (15-55), and the post-examination took place, on an average, 1 year and 10 months after the operation. No complications have appeared, but one patient died later of cancer. 14 of the 15 examined have bony ankylosis. One has full clinical ankylosis but reports pain.

The investigation shows that the arthroplasty operations have given satisfactory mobility to a large degree, but pain has persisted in about half of the cases and most have insufficient function and must use sticks. The operation is not suitable, therefore, for manual workers, and its main indication ought to be double-sided deteriorations. In the writer's opinion, slight changes in the other hip ought not to be regarded as contra-indications for arthrodesis and the fact that those double-sided cases in which arthrodesis was carried out on the one hip have full working ability gives support to this opinion. The writer considers, therefore, that arthrodesis should be suggested in all cases of arthrosis deformans coxae, where no special contra-indications exist; and he points to the good results and the short period of hospital care which is needed with the method used in recent years at the hospital.

(A detailed treatment of the subject is to be published later in Acta Orthopedica Scand.)

ARTHROPLASTY OR CAPSULECTOMY?

by *Helge Sjövall* (Örebro)

Arthroplasty or capsulectomy?—The question is of course much too crudely formulated,—a real antithesis between these two therapeutical procedures does not exist. But when I have had to select operative measures in cases of arthrosis deformans coxae, the antithesis has nevertheless sometimes actually arisen. *Arthrodesis of the hip joint* is the radical operation, but a stiff hip-joint is not always acceptable. All operations which aim at preserving mobility in the operated hip, are subject to considerable uncertainty, as far as the post-operative degree of freedom from pain and of mobility is concerned. Above all else, arthroplasty demands something which is most essential for an orthopedic department with limited resources i.e. a long period of rest in bed and long specialised after-treatment. Even in cases where the condition has otherwise indicated operation in order to preserve mobility, these factors have many times been prohibitive for me. In my search for measures requiring less hospital care and after *rejecting*

the various kinds of nerve exeresis, total capsulectomy has been the sole method of surgical intervention which I have adopted; another suitable procedure may possibly be the so-called akrylplasty.

In his dissertation for his Med. Dr., Gade reported 12 cases of capsulectomy which showed excellent results both with regard to freedom from pain and to post-operative mobility. I present here my own corresponding experiences of total capsule extirpation; this was the only operative procedure used in the treatment of arthrosis deformans coxae and the account is based on my first 10 consecutive cases, of which the first was operated upon in October 1948, and the last, on 15/8 1949. Examinations took place regularly, the last one of all on 18-23/4 1950, i.e. 17-18 months after operation. It is therefore not so much a question of post-investigation as of appraisal of the primary result of the capsulectomy procedure.

Gade considered that capsule extirpation should be reserved for early cases where cartilage changes were as yet insignificant and he warned against operation in cases of subluxation or with tendencies to subluxation. In order to gain increased experience of the procedure, I deliberately carried my operative indications much further, from the beginning. I regard this as justified, because extirpation does not prevent later arthrodesis, if operation upon the soft part does not give the desired results. I have performed the capsulectomy upon painful deformans hip joints, of whatever appearance, in which there were strong grounds for attempting operation to preserve mobility, but in which no suitable conditions for a regular arthroplasty existed beforehand.

I shall not go into detail of the technique itself,—it is well-known to us all. In the series reported here, the extirpation has occurred in every case via the Smith-Petersen incision. Apart from the actual removal of the capsule I have in some cases also cleansed the femoral head of osteophytes and have in one case carried out a regular acetabuloplasty, but I hardly think that these additions have had any significance for the result of the operation.

After the operation the patients were put directly to bed, with only a cushion under the leg, so that the hip was flexed at an angle of 30°. The very day after operation the patients are encouraged to carry out active movements and passive exercises of the hip joint, chiefly flexion movements, are performed during every round. After one week the physiotherapists began to move the leg, after 2 weeks the patients were allowed to use a wheel-chair and after 3 weeks, to use crutches. The average time of rest in bed was 44 days. With one exception, no serious primary complications have been encountered,—nor have I observed any luxation tendency in the operated hips.

My material comprises 7 men and 3 women. Their average age is 63 years—considerably higher than in Gade's material. The duration of the symptoms has varied between 1½-20 years and in every case the changes have been clinically and roentgenologically advanced, with almost ankylotic hips in ugly malposition in seven out of ten cases.

I shall not tire you by going through the series in detail, but refer you to the table. I have had one death—a 65 year old man whose heart failed in spite of normal EKG and other tests. He died on the 3rd day. In one case we obtained complete osseous ankylosis owing to bone formation corresponding in position to the old capsule.

Primary experience of these 10 cases of my own seems to be good on the whole and quite on parity with what is obtained by a complete arthroplasty. Of course the operative procedure is still exacting for these older patients and the death in

the series may be attributed to this. As far as the main indication is concerned —freedom from pain—the results have been 100 % good and in 6 out of 9 cases post-operative mobility has also been remarkably good. Since the after-treatment is simple, the bed-period short, I consider myself justified in continuing with this method according to the same indications as before. We shall then gradually see how the results turn out over a long period.

DISCUSSION:

Orell: Capsulectomy of the hip joint has been performed in about 10 cases at St. Görans Hospital. The results must be considered as variable. Patients became primarily free from pain as a rule, but there was gradual recurrence in many cases. If radically performed, the operation is technically exacting and involves risk of post-operative dislocation, should the acetabulum be shallow. Rotation traction counteracts this complication.

Sjövall: When I first adopted this procedure I was completely lacking in personal experience of it and the information to be obtained from medical literature, was but scanty, as stated.

This series of mine would be better designated, "experimental surgery" therefore. Of course, I do not at all mean that the total extirpation of the capsule should in any way exclude regular arthroplasty but my experiences so far seem to justify my regarding the former operation as a valuable complement to the latter. I think this procedure has especial value amongst elderly people, who above all should be able to sit well without pain. In contrast to Prof. Langenskiöld, I believe that the risk of neurological disturbances of the joints is slight. To sum up—an elderly patient, at the end of his working life or already at a pensionable age, having pain and deformity in an arthrosis deformans hip which has no great pretension to mobility or to endurance, presents a case for the total extirpation of the capsule (Fig. 1).

Hirsch, Severin, Stören, Friberg.

THE VALUE OF INTRAPELVIC RESECTION OF THE OBTURATOR NERVE IN ARTHROSIS DEFORMANS COXAE

by *Torsten Wadstein* (Hörby)

This operation, which was first carried out in this country by Camitz, does not seem to have been very widely adopted. The writer gives an account of the operation's theoretical grounds, technique, earlier results and personal results. The writer carried out the operation in 16 cases of arthrosis deformans coxae. It was possible to make a post-examination of 8 of these: 5 cases had no pain, or were very improved, 2 cases improved slightly, and in one case there was no improvement. The writer summarises as follows:

Obturator neurotomy, either intra- or extra-pelvic, is not dangerous for the patient, is easy to perform, and can be executed double-sided, if necessary. Even if the results seem to vary widely, in the writer's opinion the operation should be used in suitable cases, namely, in those suffering intense pain owing to genuine arthrosis deformans coxae with or without adduction contracture.
(The paper will be published in more detail in Acta Orthop.)

No.	Sex ♂	Sex ♀	Age	Symptoms	I. f. m.	Days in hospit.	Observation	Results: Pains	Results: Faulty Position	Results: I. f. m.	Results: Works	Results: Standard	
1	1		62	6-7 yrs	Ankylosis	43	18 m	○	○	68 %	Since 1/7 49	Excellent	3 times in hospital
2	1		62	5 yrs	41 %	67	15 m	○	○	82 %	No	Excellent	
3	1		65	1-2 yrs	Ankylosis	70	15 m	○	Yes	○ %	Part Time	Good	
4	1		63	8-10 yrs	»	—	—	—	—	—	—	—	Dead in hospital
5		1	71	5 yrs	»	51	12 m	○	Yes	18 %	No	Good	
6	1		50	2 yrs	35 %	30	12 m	○	○	55 %	Since 3/10	Excellent	
7		1	62	20 yrs	Ankylosis	30	12 m	○	○	48 %	Since Oct	Excellent	
8	1		63	2-3 yrs	»	37	12 m	○	○	18 %	» »	Excellent	
9	1		73	2-3 yrs	»	34	9 m	○	Yes	33 %	No	Excellent	
10		1	63	4 yrs	24 %	50	9 m	○	○	75 %	Yes	Excellent	
			63		10 %	46				44 %			

Fig. 1.

DISCUSSION:

F. Langenskiöld: As a rule, the adductor muscles of the leg are innervated in two ways—by the n. obturatorius and femoralis. In a minority of cases the innervation occurs only through the obturator, and if one cuts the obturator trunk the result will be a complete insufficiency of adductor muscles. It should be a safer procedure to cut the forward branch first and if this has no effect, to continue with the severing of the trunk.

In my experience, total denervation of the hip joints through radicotomy may lead to a clinical picture identical with neuropathic arthropathy, and such as one sees in tabes dorsalis. Advanced age and other contra-indications for more serious operations may nevertheless be considered as indications for partial denervation.

K. E. Kallio: I would merely like to say that the case which resembled Charcot's joint and which Langenskiöld mentioned, was not resultant upon an obturator resection but upon an alcoholisation of the nerve trunk, performed at another hospital.

Friberg: The writer of the paper declared that some good results, obtained from resection of the nerve root, were published by Sjöqvist among others. The latter has reported later, however, that his results have not maintained the same standard. Our experiences are the same, even though they are limited. At our clinic at follow-up examinations about 4 years ago Doctor Karlén was able to verify that even if the pain disappeared after operation, as a rule it returned 6-12 months later; this seems as if the pain discovered new paths. In this connection it deserves to be pointed out that, where in some cases another lumbar root than the 4th was excised by mistake, the amelioration of the pain was equivalent to that in the remaining cases. We have abandoned the root resection.

Capsulectomy of the hip joint has not been used by us, but in recent years we have made very extensive attempts to denervate the joint through obturator resection (intra-pelvic), and through division of the posterior nerve branches (from n. ischiadicus). It seems as if the results are mainly the same as with the root resection but the effects are somewhat more enduring.

Such a post-operative condition corresponding to tabetic arthropathy, which Prof. Langenskiöld feared, has not been observed up to the present. I have also heard these misgivings from others and thus, partly in consideration of the above and partly since the alleviation of pain is only temporary, our obturator resections have been performed exclusively "on bad surgical risks".

Sjövall, Bentzon, Hirsch, Stören, Agerholm-Christensen, Alvik.

LATE RESULTS OF TRAUMATIC DISLOCATION OF THE HIP

by *B. Paus* (Oslo)

59 out of 70 hipjoints which had sustained traumatic *non-central* dislocation, were followed-up clinically and roentgenologically 3-28 years and on an average 15 years after the injury. In 7 more cases information was received only in respect to the subjective condition. The treatment had been reduction in flexion of the hip. The aftertreatment had as a rule been limited to bed rest lasting from some few days up to 2-3 weeks.

If the patients in the follow-up were divided into 2 groups: 1) those with

symptoms and 2) those without or almost without, it was found that about 10 % had subjective, about 10 % objective and about 25 % roentgenological symptoms. 16 out of 59 (27 %) had subjective, objective and/or roentgenological symptoms.

Aseptic necrosis of the head of femur was seen in only 1 patient. Complicating fracture of the acetabular edge increased the risk of roentgenological changes. This risk also increased with ages over 40. For patients aged over 20 the prognosis was perhaps less favourable than for those under 20. Otherwise, it could not be found that any prognostic significance could be assigned either to the length of the observation time, the age or sex of the patient, the type of dislocation, the presence of complicating fracture of the acetabular edge or to the time of reduction (in my material never more than 10 days after the injury).

There seems to be no reason for changing over from the short period of after-treatment here adopted to a more prolonged treatment with non-weightbearing during several months.

4 out of 6 hipjoints with *central* traumatic dislocation were followed-up clinically and roentgenologically 6-27 years and on an average 17 years after the injury. All the patients had severe symptoms, subjective, objective and roentgenological The usual treatment with traction is therefore not satisfactory. The question arises as to whether or not better results may be obtained by operative reduction.

(The article will be published in complete form in A.O.S.)

DISCUSSION:

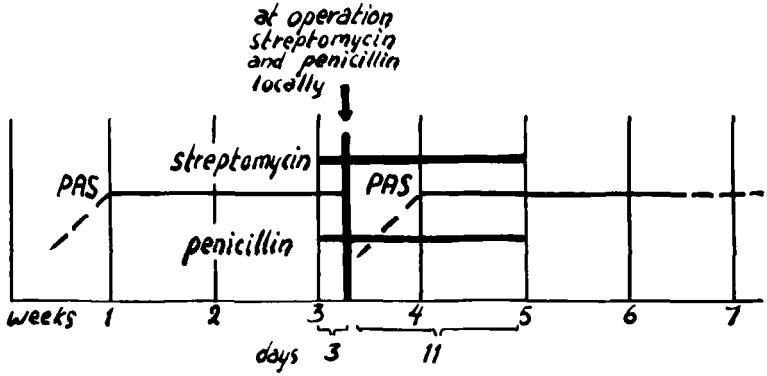
H. Sjövall:

CHEMOTHERAPY AND SURGICAL TREATMENT OF BONE AND JOINT TUBERCULOSIS

by *Svante Orell* (Stockholm)

The employment of chemotherapy has apparently shown in the treatment of 60 cases at the orthopedic department of St. Görans Hospital that the disease can be approached surgically, in accordance with a special dosage scheme, at an earlier stage than previously. The orthopedic methods of treatment and stabilization operations are employed as hitherto. If an original focus is surgically accessible, it should be eliminated. The risk of operative measures spreading and activating tuberculosis would seem to be slight with the application of chemotherapy, if the dosage is administered for such short periods as 14 days in order to render the risk of resistance and complication, due to toxicity, little or none. Consequently, (1) when the primary bone focus perforating the joint has been eliminated (e.g. acetabular foci), union takes place with normal joint mobility, and the primary synovial tuberculosis after synovectomy and eventual excision of secondary bone foci, heals with good and serviceable mobility. This particularly refers to elbow tuberculosis. In trochanteritis bone foci are excised and abscesses radically emptied. Bone foci can sometimes be radically operated on in spondylitis by means of costotransversectomy and evacuation of the abscesses. (2) Should the original focus be inaccessible, fistulas and abscesses are surgically removed, whereupon the general reactionary power of the body to the disease mobilizes, and the original foci are thus more easily enabled to heal. (3) If the original foci are surgically inaccessible, and no larger abscesses exist, orthopedic methods and stabilization operations are employed during the patient's stay at the sanatorium, with eventual

chemotherapy, as in the treatment of urogenital tuberculosis. Exclusive internal therapy must be gradually tested. The employment of chemotherapy has generally been accompanied by primary healing of the operation wound and improvement of the patient's condition.
(This paper will be published in extenso in Acta Orthoped. Scand.)



Dosage scheme for PAS and streptomycin-penicillin treatment. The treatment commences and terminates with PAS per os in daily dosages of 14 gr. One gr. streptomycin daily, in 2 doses, and 500,000 units penicillin in 2 doses or 300,000 units penicillin-procain in 1 dose daily are administered for 14 days, beginning 3 days prior to the operation. The PAS dosage must be frequently reduced or completely omitted during the operation. Contingent upon the size of the wound, 1-3 gr. streptomycin + 200,000-600,000 units penicillin in substance are moreover applied locally in the wound. More recently, and in isolated cases we have employed Conteben simultaneously with PAS as basic medicament.

COMBINED SURGICAL AND CHEMOTHERAPEUTICAL TREATMENT OF ABSCESSES IN ORTHOPEDIC TUBERCULOSIS. EARLY RESULTS

by *Per Östman* (Stockholm)

During recent years the tuberculosis mortality rate in Sweden has fallen considerably. The reasons for this are undoubtedly numerous, the use of specific chemotherapy may be one. A brief review is given of the difficulties in judging the results of PAS-streptomycin-penicillin-treatment combined with evacuation of the tuberculous foci (new method described by S. Orell). The 14 spondylitis cases are described by Dr. Hirsch, and the 10 trochanteritis cases are described by Dr. Lindahl. Dr. Östman analyzes the first 27 cases of other skeletal localization of tuberculous abscesses and draining sinuses, especially with reference to primary healing of the skin. 16 cases had abscesses, and 11 cases draining sinuses. Only one in each group did not heal. The observation time is from 2 to 14 months, average 6 months 10 days. Chemotherapy alone has little effect, it seems that combined treatment with operation is the fundamental factor.

The disadvantages are small, and no streptomycin complications were observed with these small doses. Drug costs are relatively small. 3 months PAS-medication and streptomycin-penicillin treatment combined with the operation cost together, in June 1950, 220 Swedish Crowns.

EXPERIENCES IN OPERATIVE TREATMENT OF ABSCESSES IN ORTHOPEDICAL TUBERCULOSIS. EARLY RESULTS

by *C. Hirsch* (Stockholm)

Paravertebral tuberculous abscesses have been opened and removed in 14 cases, 9 lumbar and 5 thoracical, by surgical interventions. Preoperatively the patients received half a gram of streptomycin twice a day, 15 g PAS and 500,000 units of penicillin for 2 or 3 days. At the operation 1-2 g streptomycin and 500,000 units penicillin were placed in powder form locally in the abscess. Postoperatively the patients were given streptomycin for 14 days and at the same time PAS and penicillin. Then the treatment continued with PAS for several months. The results were good as regards general condition, temperature, sedimentation rate and mostly the former abscess could no longer be seen in the x-ray photographs.

TUBERCULOSIS OF THE GREAT TROCHANTER WITH SPECIAL REFERENCE TO THE TREATMENT BY CHEMOTHERAPEUTICS

by *Olov Lindahl* (Stockholm)

The author gives an account of 35 cases of tuberculosis of the great trochanter. These cases represent 2.6 % of all cases of orthopedical tuberculosis treated at the St. Göran's Hospital during the years 1940-1950. The diagnosis was determined solely by patho-anatomical investigation in 17 cases, through positive guinea-pig tests in 5 cases, by both positive guinea-pig tests and patho-anatomical investigation in 5 cases and from the clinical and roentgenological signs in the remaining 8 cases. With reference to the treatment the material was divided into 4 groups. 11 cases were treated conservatively with rest in bed or plaster, if necessary in combination with punctures, incisions or curettage, 12 cases underwent radical operation with removal of the tuberculous focus, 10 cases were treated with combined operation + chemotherapy and 2 cases were treated solely with chemotherapy. By comparison of the results in the different groups it was clear that the combined treatment with chemotherapy + operation gave the best results. The present principles of treatment are: on acceptance into the hospital para-aminosalicylic acid is given in a daily dose of 14 g. After some weeks the operation is carried out. The pathologically changed tissue is hereby removed, but the outer part of the abscess membrane and the harder bone surrounding the focus—the body's reaction zone—is spared. 1-2 g. streptomycin and ½-1 mill. I.E. penicillin are laid in locally. A plaster over the affected hip is applied. From 3 days before and 2-3 weeks after the operation the patients are also given general treatment with 1 g. streptomycin and ½ mill. I.E. penicillin per day. Plaster is retained for 6 weeks after which the patients are usually allowed to get up. Para-aminosalicylic acid medication is continued up to 3 months after the operation.
(To be published in detail later in this journal.)

FROM NOF's PROCEEDINGS: EXPERIENCES OF STREPTOMYCIN TREATMENT IN THE ORTHOPEDIC HOSPITAL OF THE INVALID FOUNDATION's REHABILITATION CENTRE

by *L. O. Nyberg* (Helsingfors)

This is an account of 62 cases of orthopedic disease, chiefly tbc of the bone, which have received streptomycin and otherwise been treated conservatively.

48 % of the cases showed good improvement, 30 % only some improvement, 14 % did not at all improve and in 8 % the treatment was still in progress. In some Proteus infections the results were excellent. The speaker considers that a lesser daily dose (0.5 gr) over a larger period is to be preferred to a larger one over a rather short period, and also recommends an active operative therapy in bone tuberculosis.
(The paper is to be published in complete form in Acta Orthopaedica Scandinavica.)

DISCUSSION:

J. Hald: In Martina Hansens Hospital we have systematically used streptomycin since April 1949. From this time the state has given us gratis all the streptomycin we have required.

We have 120 streptomycin-treated patients who have progressed so far in their treatment that we can make use of the results as a preliminary report.

The indications were as follows: Streptomycin was given in cases of fistula, as a rule combined with excision of the fistula and scraping out of the abscess. In cases of threatening fistula we excised the affected portion of the skin and scraped out the underlying abscess, or made an incision in the sound part and scraped out the abscess under the defective part of the skin.

Streptomycin was used in all operations in which we operated directly on tuberculous tissue, and similarly in all joint resections and all intra-articular arthrodesis operations.

In some cases streptomycin was used prophylactically in extra-focal operations, this refers specially to spinal fusions.

Without operative treatment the medicament was used especially when we found TB in the urine, but could not prove with certainty the existence of destructive foci in the kidneys. The medicament was used in cases suffering from kidney disease which could not be operated on, combined with bone disease, and on patients on whom nefrectomy had been earlier performed.

Streptomycin was used in some cases of acute new spreading, pleurisy, pericarditis and synovial tuberculosis. Our tuberculous meningitis cases were moved into a medical department for special treatment.

The dosage was usually 1 gram streptomycin a day divided into ½ gm. doses given from 30 to 60 days. Exceptionally isolated cases received larger doses. At operation 1 gm. was injected into the wound, dissolved in some ml. water. Children were given 0.20-0.25 gm. twice a day.

In synovial tuberculosis 1 gm. was given intra-articularly twice a week dissolved in 5-10 ml. water. At the same time 1 gm. was given intra-muscularly for 60 days.

Material: The main localisations of the 120 streptomycin-treated patients were as follows:

Vertebra	44	Ankles-feet	5
Ilio-sacral joint	10	Shoulders subdeltoid bursitis	7
Hips	22	Hygroma, wrists	4
Trochanter	8	Thorax abscess caries costae	6
Symphyses	2	Glandule tb. of skin	3
Knee joints	6	Multiple spreading	3

It was earlier pointed out—and I would like to stress this again—how difficult it is to prove that a medicament heals bone and joint tuberculosis. In this disease

we see spontaneous remissions in the course of the disease, and sometimes completely inexplicable spontaneous healing. Operative treatment without the use of chemotherapeutics has also given good results in the past. Personally I have never been an enthusiast for purely extra-articular operations. I have attacked the tuberculous focus to the farthest possible extent, and have finished the operation with primary bone transplantation. I shall continue on these active surgical lines. Owing to our short observation period there is no point in making out tables to compare results with, and results without streptomycin treatment. I shall briefly sum up our conclusions after going through the clinical observations and x-ray photographs of our 120 patients.

Streptomycin has undoubtedly a favourable effect on the fistulas, especially when these are surgically treated. In a number of cases we have changed an open tuberculosis into a closed one. In some abscess cases the medicament has completely played us false, nor can we explain this.

In operations on tuberculous tissue the streptomycin has prevented tuberculous infection in the wound. In some cases an abscess or fistula has nevertheless appeared a little later than otherwise in the course of the disease.

The new medicaments have had a good effect on complications related to urogenital tuberculosis.

The medicaments do not seem capable of hindering new spreading. We have several patients who were earlier given very much streptomycin in sanatoriums, but in turn they have had bone metastases. These have developed just as usual. We also have patients who were streptomycin-treated for bone metastases, but some months later fresh spreading occurred.

We have not found that the healing of the closed tuberculous bone condition takes place quicker, or in another way than before. The x-ray photograph series of patients who have had large doses of streptomycin have been specially studied in this connection.

Relying upon the new preparations we have operated earlier than before in some cases, i.e. we have consciously attempted to reduce the time factor. Here the results are so encouraging that we shall continue with this procedure. In particular, I believe that we can now use more active methods in our treatment of children. If we can actively intervene and check the destructive process in children before the epiphyses are completely destroyed, I shall join others in using the strongest superlatives in the language about the preparations.

Hitherto we have mainly used only streptomycin but shall go over to the combined treatment PAS-streptomycin in the hope that it will hinder or reduce the development of resistant bacilli. We have hitherto observed 3 streptomycin-resistant strains after relatively small doses.

In other respects we shall on the whole follow the indications we have used up to now, but we shall omit the prophylactic doses in extra-focal operations. We have not observed any marked value in these.

We have only made use of a solution of PAS as an injection for certain abscesses. The pus has become thinner, easier to aspirate, and this use of the medicament should continue to be tested.

Briefly recapitulated our policy is as follows:

The newer chemotherapeutics—streptomycin and PAS—have not completely altered our lines of treatment in bone and joint tuberculosis. The preparations should not be used in all cases without discrimination. They should only be given to patients under hospital observation. Most favourable was the effect on

fistula formations, and here the results are such that even old chronic cases of fistulisation should be given a chance with streptomycin treatment.

The preparations give greater assurance of primary healing in operations on tuberculous tissue.

We are justified in continuing to test the value of operative treatment in the first phase of the disease in suitable cases both amongst children and amongst adults.

The preparations do not seem to have any special influence on tuberculous bone repair, and do not hinder the development of new spreading.

After the address an x-ray film was shown of a 4 years old boy operated on for an active focus in the collum femoris, and also photographs of a small 6 years old girl, operated on for fistulous symphysis tuberculosis. Both showed very good results most probably owing to streptomycin.

F. Langenskiöld: Except in the treatment of fistulas—and Nyberg has already given an account of our experiences with this—the most striking feature of streptomycin treatment has been the much better healing process we have obtained in knee-joint resections. However, along with these new advances we should not forget, at the same time, the value of the general hygienic dietetic treatment.

In Hirsch's address I missed an account of the indication for operative treatment of paravertebral abscesses. The mere existence of one, without any sign of pressure upon the spinal cord or of threatening fistula formation, can hardly be an adequate indication, since with conservative treatment there is a very good prognosis for these abscesses.

Sophus von Rosen: I have under my care a 46 yr. old woman with acute tbc spondylitis who showed an astonishingly quick and good reaction to combined PAS-streptomycin treatment.

During the course of 2 months difficulty was encountered with a type of lumbago showing normal x-ray photographs.

In the third month after being taken ill she had a high temperature: 38-40°C, of a septic character, and her general condition was affected. Penicillin and aureomycin had no effect. Renewed x-ray examination revealed destruction on a lumbar vertebra and a psoas abscess. Test puncture of the abscess resulted in a clear diagnosis. Microscopical examination of the pus showed masses of acid-fast rods lying in groups typical of tbc bacilli.

PAS lg. × 4 and streptomycin ½g × 3 were given (three months after the patient was taken ill). After 2 weeks the temperature slowly fell and the general condition improved. After a further 4 weeks the temperature had become normal.

4 weeks after the beginning of the treatment, a puncture of the psoas abscess was performed to prevent dorsal penetration. Afterwards the punctures were repeated. The pus quickly changed in character and within 3 weeks became almost clear and serous. Roentgenologically the bone disease showed no progress at all, but instead signs of healing.

When the patient had received 30gm. streptomycin, this was omitted. The temperature began to rise 4 days later, but fell again after streptomycin was again administered. PAS treatment was continued the whole time. This reaction argues strongly in favour of a specific effect brought about by streptomycin, possibly in combination with PAS. Altogether, 48 gm. streptomycin and 508 gm. PAS have been given up to now. The general condition is now excellent.

The case will be followed and published in more detail.

S. Richter: PAS must not be underestimated in favour of streptomycin which has been the subject of much more discussion, especially in American literature. I had used PAS earlier, before streptomycin was to be obtained, with excellent results. The toxicity for PAS is much less than that for certain streptomycin preparations. During streptomycin treatment patients must be kept under careful observation.

This is not to say that we should not use both preparations.

Ivar Alvik: I believe that the origin of the frequent tendency of tuberculous trochanterites to recur lies in certain mechanical conditions and that these act in the following way:—to a greater or lesser degree, the inflammation always attacks the tractus ilio-tibialis which lies just above the trochanter region. The restoration which accompanies inflammation causes scar contraction which gives rise to shortening and tautness of the tractus. The same condition is found in "snapping hip" with secondary non-specific bursitis. Especially in walking, the too taut iliotibial band will cause constant traumatisation of the underlying tissue, resulting in irritation and renewal of the inflammation. Operative treatment should therefore consist of a resection of that part of the tractus which has contracted, and which lies in or near the inflammation area, in addition to the radical removal of the inflamed soft parts and the underlying bone.

Even if streptomycin and penicillin are used, I consider this should be the normal treatment.

S. Orell: The indications for operation in cases of paravertebral and psoasabscesses are:

I: When the abscess increases in size and treatment of the spondylitis is otherwise complete.

II. When the general condition is seriously affected by the abscess.

III. When a subcutaneous abscess exists, which is an obstacle to a stabilising operation.

According to present experience of abscess operations it would seem that excessive thickening of the abscess wall is rare, and when encountered is mainly situated adjacent to the orifice of the fistula. The preservation of the outer wall is an important principle of the treatment just now.

Olov Lindahl: In order to decide whether it is better, in operating upon tbc. trochanterites, to leave the outer abscess membrane, or to take it away radically, one can either deal with the question theoretically or investigate it by clinical experiments. As far as the theoretical approach is concerned, I do not fully agree with *Alvik*'s opinion that, after 6 weeks immobility in plaster, pressure of the fascia lata against the trochanter region would favour recurrence of the tuberculous infection. In contrast to this mechanical type of reasoning, I prefer a more biological theory which says that it is preferable to leave the body's reaction zone to resist the disease, provided that this zone presents no obstacle to the penetration of antibiotics. This is not the case with our combined treatment. The outer part of the abscess membrane is free from bacilli, as pathoanatomical investigations have shown.

Judging from the comparison of radically operated cases (12) with more conservatively operated cases in which local and general chemotherapy was employed

(10), our experiences show clearly that the latter procedure is the better. The favourable experiences in the material of Östman and Hirsch point to the same conclusion. Here the abscess membranes were left undisturbed in the same way, partly on purely technical grounds (i.e. the aorta and vena cava entered the abscess wall).

Hirsch.

DISCOIDS IN THE KNEE-JOINT

by *A. Karlén* (Stockholm)

The author describes 3 cases of discoids in the knee joint in young individuals. Arthrography makes it possible to elucidate the anatomic conditions. Operation is recommended in cases of longstanding trouble.

PSEUDOTUBERCULOSIS IN THE KNEE-JOINT

by *H. Stören* (Stavern)

A generation ago, the general opinion was that tuberculous gonitis could be diagnosed on the basis of clinical and roentgenological findings. Today we know that none of these is pathognomic of tuberculosis. We cannot even decide from the biopsy examination if a tuberculous synovitis is present or if it is a synovitis of another kind. In a bloodless field the small granules in the joint membrane which are seen in different varieties of chronic synovitis, become blue-white in colour and may resemble tubercles, but microscopically they are really small swollen villi of an initial villous synovitis.

Macroscopic tubercles do actually appear in the synovial membrane but not so often as is described; tuberculosis may be *suspected* from the case history, and the clinical and roentgen findings, but the *diagnosis* tuberculosis may only be justified when a positive bacillus finding is established.

A positive microscopic patho-anatomical finding is only of secondary importance, and this alone gives no certainty. The bacteriological examination may make a mistake in the negative direction.

The microscopic patho-anatomical diagnosis may make a mistake in both directions, this is to say, that non-tuberculous affections may give the same microscopic picture as the tuberculous.

Apart from lues, which has a special relationship, Boeck's sarcoid and foreign body reactions may give the same microscopic pictures as tuberculosis.

At the Pathological Congress in Uppsala in 1947 Dr. Olav Refvem read a paper upon patho-anatomical tissue reactions which resemble Boeck's sarcoid and tuberculosis and pointed out microscopic foreign bodies in these conditions which, he thought, were the origin of these reactions.

In 1937 Gardner proved in animal experiments that the injection of flint particles produced tissue reactions which microscopically resembled those of tuberculosis.

I shall give an account here of a case in which a foreign body in an encapsulated diverticular protrusion from the joint brought about chronic synovitis—which under the microscope appeared to be synovitis, spread over the whole synovial membrane. The patient also had general symptoms,—loss of weight,

sub-febrile temperature, with night sweat, lassitude, and general feeling of sickness, S.R. 115. All tuberculin tests were negative. Likewise all bacteriological tests. He was operated on earlier at another hospital for ruptura lig. cruc. and from the description of the operation one could conclude that silk had been deposited in the joint (in our opinion, this is completely condemnable). Arthrotomy revealed a 30 cm. long piece of rolled-up thread lying in a diverticulum. There was considerable swelling of the local inguinal glands. Under the microscope they showed nothing especially interesting. After operation the patient's general condition quickly improved and his knee recovered its former mobility but the capsule thickening slowly returned.

The first plastic surgery of the lig. cruc. did not succeed, as I have said. The patient returned in the summer therefore,—1 year later—to have a similar operation again. (This was performed here by means of the semitendinosus tendon, since the fascia lata of the tractus iliotibialis had already been made use of).

Macroscopical thickening, minute granulation and hyperaemia of the synovial membrane could still be observed.

Microscopically, the picture over the whole synovial membrane was that of chronic synovitis with infiltrations of lymphocytes and plasma cells, and also knots of giant and epithelioid cells.

Now, however, it did not possess such a great resemblance to tuberculosis as before. It resembled more the reaction to a foreign body. In some isolated giant cells, small foreign particles with light refraction were still found—which may perhaps explain the fact that these changes persisted for such a long time afterwards.

(Demonstration by microscopic photographs).

SUMMARY:

The speaker describes a case in which a foreign body, in the form of a silk thread in an encapsulated diverticulum from the knee-joint produces a diffuse synovitis. Under the microscope this appears to be of tuberculous character over the whole synovial membrane with typical tubercles and Langhan's cells.

After a year, chron. synovitis still existed with knots of epithelioid cells and giant cells. All bacteriological and tuberculin tests were negative.

Before the corpus delictum was removed, the general symptoms of the patient were severe and the S.R. was high. There was considerable swelling of the local inguinal glands, but this offered nothing of interest microscopically.

(To be published in detail in the Journal of Bone and Joint Surgery.)

DISCUSSION:

Orell.

THE SUB-STANDARD FILM AS AN AID TO INSTRUCTION IN BONE AND JOINT TUBERCULOSIS

by *J. Hald* (Oslo)

Apart from the war years when our university and colleges were closed, we have instructed medical students in bone and joint tuberculosis in Martina Hansens Hospital since 1938. Before the war instruction was voluntary. It has now become obligatory for the students in accordance with the new instruction scheme. The

instruction is given in the 5th term of the 2nd part of the studies, i.e. they have then to do about 1 to 1½ years more before they are completely finished with their final medical examinations. Usually the course consists of 2 double hours a week from 5-7 p.m., and everything is run through in 3 weeks.

In a special hospital with 120 beds patients are to be found as a rule with the most commonly occurring tuberculous bone and joint metastases, and these can be demonstrated for the students. It is more awkward to show examples of certain late results. Our patients come from all over the land, many travelling long distances so that they cannot be called in for examination and demonstration. To offset these circumstances we have tried during recent years to make use of the film as an aid. We have filmed patients both before and after operation, filmed them in later examinations, filmed their x-ray photographs, and thus afterwards we have gradually assembled a small connected roll of film.

We have also filmed certain aspects of the treatment which the students do not get time or opportunity to study. This refers especially to the systematic movement therapy for patients confined to bed. In addition some operation films were put together, not so much in order to show the operation technique as to show pathologic-anatomic changes. It is, however, especially with the filming of x-ray photographs that I believe we can positively lighten the work of instruction.

In many cases our patients are kept under treatment and observation for whole decades. We may have 20-30 x-ray photographs from the same patient with half a year between each. If all these are shown in a normal epidiascope, too much time is taken. Made into a film with 6-10 seconds exposure per photograph these portray the whole development in the course of some minutes. The date can be written in advance on the film in capital letters, and the film can be dubbed with some short informative captions, or some words may be said about the contents of the film before or during showing.

A film was shown of a hip-joint case radiologically observed from 1936-50. Apart from 30 x-ray photographs, pictures of the patient moving about before and after operative treatment, were included. Showing time was about 8 minutes.

PSEUDOARTHROSIS HUMERI

by *S. H. Nissen-Lie* (Oslo)

The healing of a fracture depends, to a considerable degree, on the treatment. The nature of the fracture has great importance, however. Long oblique fractures or splintered fractures as a rule heal with every treatment, transverse fractures may result in pseudoarthrosis.

Pseudoarthrosis is seen relatively often on the upper arm. The procedures for treatment of the upper arm fractures are described, and warning is given against extension treatment in transverse fractures. These fractures ought to be fixed in abduction plaster. Often operative fixation is necessary.

In fibrous pseudoarthrosis Z shaped resection with Cerclage will unite the bone quickly. In pseudoarthrosis with bone defects, intramedullary nailing with cancellous bone graft is the best method. In either event, the arm is kept in abduction plaster for 2-3 months.

Finally, 5 cases of humerus pseudoarthrosis are referred to, in which osseous healing occurred 2-3 months after operation.

DISCUSSION:

Monberg.

OPERATED CASES OF RECURRENT DISLOCATION OF THE SHOULDER IN THE INSTITUTE FOR CRIPPLES AT HÄRNÖSAND 1939-48

by *J. Falkenberg-Christensen* (Härnösand)

An account is given of the operative technique and results in 17 cases of recurrent dislocation of the shoulder. 8 cases were operated upon a.m. Hybbinette-Eden (H.E.). In 9 cases a tendon-capsuloplasty was performed (t.c.).

The H.E. operation was used in cases in which the labrum was found to be torn away forwards, in combination with lesion of the cavity rim, and also in cases in which the labrum was completely worn away forwards.

Technique:—Consists of an incision forwards, severing the subcapsularis tendon and of a wide opening up of the joint. A graft from the iliac crest is brought down subperiosteally with its lateral edge on a level with the rim of the cavity.

Operative findings: 5 cases with torn labrum forwards and small fractures of the cavity rim. In 1 case the labrum was completely worn away forwards. 2 cases were re-operated upon, after earlier H.E. operations elsewhere.

Compression fracture of the tub. maj. was established roentgenologically in all cases.

Results: Average observation period was 3 years, with no recurrence. Good functional result was obtained in 7 cases, but was unsatisfactory in 1 case, re-operated upon. Patient experienced pain and weakness. Limitation of outward rotation in 6 pat. amounted to 20°-40°, 2 had no limitation (subcapsularis plastics were not performed). T.c. plastics were used in cases in which the only lesion was the tearing away of the labrum forwards and also in cases in which the capsule was wrenched away from the labrum while the latter was partly or wholly preserved.

Technique: Consists of an incision similar to H.E. If the labrum is torn away, it is fastened by a continous catgut suture to the periosteum at the cavity rim after scarification of the latter. If the capsule is not attached to the labrum, the capsule and synovialis are stitched firmly to the latter with catgut.

Overlapping subcapsular sutures and plastics on the supraspinatus tendon were carried out in 7 cases. In 2 cases simple suturing of the capsule and subcapsular tendon was performed.

Operative findings: In 4 cases the capsule was not attached to the labrum, in 4 cases the labrum had no connection with the cavity. The capsule was torn away from the labrum with lesion of the latter in 1 case. Compression fracture of the tub. maj. was revealed roentgenologically in all cases.

Results: Average observation period was 5 years, with no recurrence. Good functional result was obtained in 8 cases, but was unsatisfactory in 1 case, re-operated on (earlier operation elsewhere a.m. H.E.). Patient had pain and weakness. In 3 pat. limitation of outward rotation was between 15°-45°, the others were not affected. Both methods of after-treatment were used; fixation on an abduction splint was carried out for 6 weeks, while after 4 weeks physical therapy treatment was commenced, average, 4 weeks.

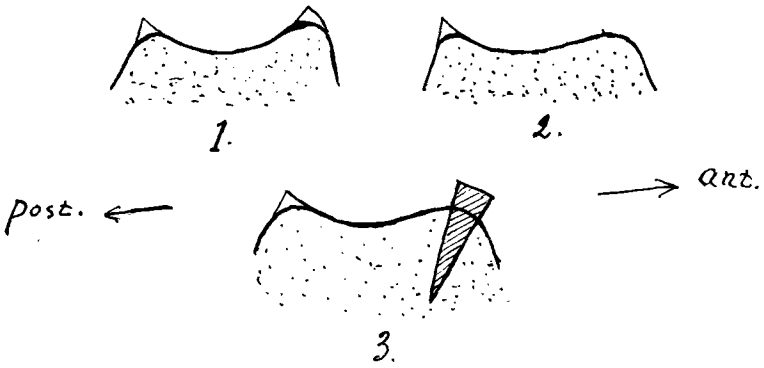
In the H.E. operation it is considered that the function of the graft consists in its support of the adhesion, and consequently this is brought down on a level with the cavity rim. In the cases suitable for t.c. plastics the lesion is of such a

nature that good chances of adhesion exist. In this operation the anatomic conditions are restored to the widest possible extent.

DISCUSSION:

Ivar Alvik: In most cases, lux. hum. hab. is due to pathological changes both in the joint capsule and in the joint cavity. The capsule changes consist of a defect proceeding medially forward, with a purse-like extension of the joint cavity on the anterior side of the collum scapulae. The changes in the joint cavity consist of the loosening of the limbus which occasionally is completely missing, and often, in addition to this, a levelling out forwards of the already shallow cavity. (See fig. 2,—fig. 1 shows normal joint cavity).

The operative treatment should therefore be directed both against the capsule and the cavity. The capsule is sutured medially forward, as far as possible, together with the surrounding soft parts, and is fastened to the posterior side of the musc. coraco-brachialis and to the short biceps head, or better to the anterior side of the collum scapulae. The joint cavity is reconstructed by bone plastics, chiefly a.m. Hybinette, as shown in Fig. 3. The bone wedge is taken from the iliac crest.



Friberg, Lindström.

CONTRAST EXAMINATION OF THE INTERVERTEBRAL DISCS OF THE LOWER LUMBAR SPINE

by *O. Perey* (Sundsvall)

In 1947 Lindblom published the procedure and results of contrast examination of the intervertebral discs of the lower lumbar spine. I have examined 35 patients, upon 14 of which I used the Antoni needle (double needle). None of these had any trouble at the examination. One patient, who died of an intercurrent disease 2 months after examination, showed no signs of necrosis at the autopsy and the injection canal was filled with connective tissue. On comparison with aeromyelography it is shown that it is possible to find a disc prolapse with this method, not visible on the myelography. The reverse occurred in one case. 20 of those examined were operated upon, and in every case except 3 the roentgen diagnosis agreed with the operative findings.

Puncturing of the discs is an extremely valuable, complementary examination to myelography. The pains which the patients report at the examination are of

great interest. Some get lumbago pains when the ligamentum long. post. is touched at a certain level, others have ischiatic pains upon injection of the disc. The former pains, produced via the sino-vertebral nerve, can be of great diagnostic value. The latter is due to the fact that the contrast medium fills out a disc hernia.
(The lecture is to be published in the Acta Orthop. Scand.)

DISCUSSION:

Friberg.