FROM THE ORTHOPÆDIC HOSPITAL, COPENHAGEN
(CHIEF PHYSICIAN: POUL GUILDAL)

TREATMENT OF ARTHRITIS DEFORMANS OF THE HIP BY RESECTION OF THE OBTURATOR NERVE

BY

N. BLIXENKRONE-MØLLER

Arthritis deformans of the hip (arthrosis coxæ) impairs the working capacity and makes life miserable for a great many elderly people; and as there is no satisfactory means by which these patients may be made free from symptoms—let alone be cured—it is only natural that any suggestion about a therapy that may relieve their condition will meet with the greatest interest. Among such relatively small operative measures suggested in recent years, mention is to be made of resection of the obturator nerve (*Camitz*, 1933) and drilling of the neck and head of the femur (*Duvernay*, 1932). The results obtained in this hospital by drilling have been reported by *Berntsen*. In the following an account will be given of our results from resection of the obturator nerve.

This operation is based on an appealing, apparently rational principle that has been set forth in detail by Camitz, so that here it needs be touched on but briefly. In 1924 *Page* had called attention to the frequent presence of adduction contracture in arthritis deformans of the hip. Camitz looks upon this contracture as an attempt of the organism to disburden the diseased hip: in walking with the limb adducted the weight of the body is not resting so long on that limb as normally. At first the limb is adducted only now and then; later a persistent adduction contracture develops, and there is pain in the steadily contracted muscles. Also flexion contracture, with the same pathogenesis, is a frequent phenomenon. Besides, in order to

steady the balance from side to side in walking the patient also rotates the limb somewhat outwards. In the course of time, therefore, the impairment of motion will involve in particular: abduction, extension, and inward rotation.

Camitz takes the pain in the spastically contracted adductors as the most important factor in the pains of the patient, which is often referred to the groin and the medial aspect of the thigh. There can be no doubt that also the morbid processes in the joint may cause some pain; but Camitz thinks this plays a minor, for one thing, because the intensity of the pain may differ greatly in two joints showing the same involvement roentgenographically. So the therapy has to be aimed at the adduction contracture. *Hass* attempted this by vigorous manipulations in anæsthesia (abduction, inward rotation and hyperextension) with plastering in overcorrection for three months. Camitz abolishes the adduction spasm simply by resection of the obturator nerve.

This operation may be performed in two ways, intrapelvic and extrapelvic:

1. In the pelvis the obturator nerve runs forward, towards the obturator canal, resting on the m. obturator internus, and it may be reached here through a suprapubic incision, pushing the peritoneum to a side.

2. At the anterior and of the obturator canal the nerve divides into two branches: a) an anterior branch running peripherally between the adductor brevis and the adductor longus, giving off branches to these muscles and to the gracilis, in some cases also to the pectineus; and b) a posterior branch which often pierces the upper margin of the obturator externus, and then runs peripherally between the adductor brevis and the adductor magnus, giving off branches to these muscles, besides a sensory branch to the hip-joint. At the exit of the obturator canal the nerve is covered by the pectineus, and here it can be resected after the muscle is divided or pulled to a side. It is advisable to divide the pectineus, as this muscle gets its nerve supply chiefly from the femoral nerve, only to a lesser degree from the obturator nerve. The dorsal part of the adductor

magnus is innervated from the sciatic nerve; hence contraction of this muscle is not excluded altogether by resection of the obturator nerve.

In the extrapelvic way *Camitz* in 1933 had operated 30 cases of arthritis deformans of the hip, and he states that in most of these cases he obtained diminution or cessation of the pain and improved abduction. He gives a more detailed account of 7 cases in which the result was particularly good, with an observation period of 10 years in the oldest case and from 1 to 2 years in most of the others. He attaches great importance to a subsequent physiotherapeutic treatment with light, massage, motions and baths—a treatment that preferably is to be repeated every year.

Mol (1935) has reported 5 cases on whom he performed intra pelvis resection of the obturator nerve. He makes the indication for the operation somewhat more limited than given by Camitz, and he employs it only when the chief complaint of the patient is pain in the adductor region, adductor spasm and reduced abduction. In connection with the operation he manipulates the hip under anæsthesia. He states he has obtained in every instance a marked diminution of the pain and increased abduction. Only in two of these cases were the patients reexamined, respectively 9 months and 1½ years after the operation; in the remaining three cases the result from the operation was estimated after the condition at the discharge from the hospital.

Kerssemakers (mentioned by *Mol*) has resected the anterior branch of the obturator nerve in 3 cases, also with good results.

Erik Jensen (1935) has performed the operation in 5 cases, with good effect, he states; he instituted physiotherapeutic treatment 10—14 days after the operation.

So, all told, the results have been rather encouraging. Still, it is to be mentioned that in several cases the result appears to have been judged from the condition of the patient at his discharge from the hospital. Thus, it cannot be excluded that the rest (confinement to bed for 2—3 weeks) and, in some instances, physiotherapy given the patient in the hospital may perhaps in several cases have constituted an essential cause of the improvement obtained.

We have made the indication for operative treatment somewhat more restricted than given by Camitz, for we have employed it only in cases where the character of the pain or limitation of abduction made it probable that the discomfort might be due to adductor contracture. The extrapelvic method was employed: A 12—14 cm. long, longitunal, incision is made over the pectineus, through the skin and fascia. In most of the cases the pectineus is divided across; in others it is pulled to a side with retractor. Beneath the pectineus the obturator nerve is encountered as it emerges from the obturator canal. The identity of the nerve is ascertained by electrical stimulation, and 2—3 cm. of the nerve is resected. The only after-treatment has been rest in bed for 2—4 weeks. No post-operative physiotherapeutic treatment was given. In two cases, wire-extension through the tuberosity of the tibia was employed for after-treatment.

The operation was performed on 16 patients, 9 of whom were suffering from arthritis deformans proper, while 7 were troubled with arthritis deformans-like processes in joints that were beforehand the site of another affection, most often static. The former group will be mentioned first.

1. *True Arthritis Deformans.*

This group comprises 2 men and 7 women, aged from 42 to 63 years, on an average with a very severe degree of arthritis. In these cases the operation was performed only on one side, as the symptoms were predominantly unilateral. The case histories will be given in brief abstract.

Case 1. (Reg. No. 4102/37.)

Female, aged 56, wife of labourer.

For the last 4 years, increasing pain in the left hip, deeply located, and on the anterior aspect. Now the pain is very severe and continual, being aggravated even by slight exertion. She often has to keep her bed for a couple of days on account of the pain. No complaint concerning the right hip.

Physical exam.: Pronounced limp of the left leg. Walking with increased lumbar lordosis. In the left hip there is 5° adduction contracture

and 15° flexion contracture. Adduction and abduction abolished; flexion 165°/100°. Movements painful. On attempt at abduction, the adductors tighten tensely. Other joints normal.

Roentgenography (Fig. 1). Left hip: Marked narrowing of the joint gap, lime atrophy and small cysts; only slight osteophyte formation. Right hip: No abnormality.

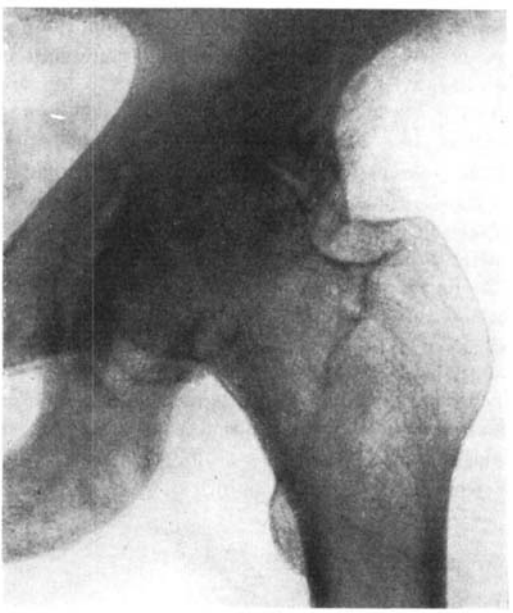

Fig. 1.

25/6—37: *Resection* of the left obturator nerve, without division of the pectineus. Post-operative course complicated by phlebitis, necessitating confinement to bed for 3 months after the operation.

Reexamination, 21/9—38: Considerable improvement as to the pain after the operation; now she feels only a little "grumbling" in the hip. On change in the weather or walking too much she has severe pain—just like before the operation—but the pain lasts only a short time, a few hours at the most.

She walks with two canes. 20° flexion contracture, 10° abduction contracture, and 10° outward rotation contracture in the left hip. Flexion 160°/120°; abduction-adduction 0°; rotation 5° in either direction. Moderate pain from the motions. Slightly increased lumbar lordosis. Right hip normal.

Conclusion: Excellent effect on the pain.

Case 2. (Reg. No. 2439/36.)

Female, aged 55, widow.

For the last 3 years, gradually increasing pain in the right hip. No effect from diathermy; transitory effect from massage. When walking, she has to use a cane. She is able to do her housework, but not to go out. She is greatly distressed by the pain. No complaint concerning the left hip.

Physical exam.: She walks poorly with the support of a cane. In the right hip there is 20° flexion contracture, 15° adduction contracture; only slight mobility, with audible crepitation. Left hip freely movable.

Roentgenography. Right hip: Joint gap almost completely obliterated; sclerosis of the bones at the joint; moderate mushroom-shaped deformity of the head of the femur. Rather pronounced coxa valga. Rather severe involvement of the left hip too.

2/5—36: *Resection* of the right obturator nerve, with division of the pectineus. Up after 8 days.

3/9—36: The patient states that the pain has subsided very much, and she thinks too that the hip now is more mobile. But she still has great difficulty in walking. Practically no change in the contractures and mobility of the hip.

19/9—38: In a letter from the patient, she says she still is almost free from pain in the hip, but the muscular power of the limb is nearly gone, so that she does not walk very well.

Conclusion: Good effect on the pain.

Case 3. (Reg. No. 4636/35.)

Female, aged 63, wife of shopkeeper.

About 7 years ago she had a fall from a chair, injuring her right trochanteric region. Since then, pain in the hip that lately has been getting worse, and now is very severe periodically. Further, the limb has been getting shorter gradually.

Physical exam.: She limps when she walks with the support of a cane. Right hip: 10° flexion contracture, 20° outward rotation contracture. From reflex action she keeps her right limb adducted 20°, but she is able to abduct it about 10° from this position. Flexion 170°/150°; rotation 0°. There is a functional shortening of 6 cm. of the right leg. Mobility in the left hip normal.

Roentgenography. Right hip: Features of severe arthritis deformans—joint gap almost obliterated; sclerosis of the bones at the joint; osteophyte formation; upward subluxation 3 cm. Left hip: Rather marked arthritic changes, but no subluxation.

The adduction of the right hip is taken as an indication for resection of the obturator nerve.

4/9—36: *Resection* of the right obturator nerve, after division of the pectineus. Up after 15 days.

Reexamination, 19/9—38: During the first year after the operation the pain was decreased considerably; during the last year there has been no pain at all.

She walks well with one cane, and is able to dress and undress quickly. There is complete ankylosis of the right hip in 10° flexion, 10° adduction and 60° outward rotation. Functional shortening of the right leg, 4 cm. Clinical signs of moderate arthritis deformans of the left hip, but no inconvenience from this.

Conclusion: Excellent effect on the pain; a contributory factor in this result is the gradual development of complete ankylosis of the joint.

Case 4. (Reg. No. 2499/36.)

Male, aged 48, married, labourer.

At the age of 20, he had a fall with a horse, and injured his right hip. Since then, he has had periodical attacks of pain in the hip and "sciatica" in the limb; he has several times been under physiotherapeutic treatment for this lesion. For the last 5 years he has been unable to work on account of the hip trouble. 4 months ago, inforation of the right hip was performed, whereafter the deep pain in the hip subsided somewhat. He still complains of severe pain in the anterior aspect of the hip, radiating down towards the knee, at rest as well as on walking.

Physical exam.: Right hip: 10° adduction contracture, 20° outward rotation contracture, mobility 10—15° in all directions. Under anæsthesia, however, the hip can be flexed to 140°. The circumference of the right thigh is 3 cm. less than that of the left; the circumference of the right calf is 1 cm. less than the left. Functional shortening of the right limb: 1½ cm. He walks with a cane but poorly, and limps markedly.

Roentgenography. Right hip: Very severe degree of arthritis deformans with almost complete obliteration of the joint gap; mushroom-shaped head of the femur; upward subluxation: 1½ cm.; marked sclerosis with cystic clearings; abundant osteophyte formation. Left hip: Normal findings.

21/8—36: *Resection* of the right obturator nerve, without division of the pectineus. Up after 18 days.

Reexamination, 18/1—38: During the first year after the operation his condition was better; the pain was decreased, and he could walk somewhat better. But in the last half year his condition has got worse again. Now the right hip stays in 10° adduction, 10° flexion and halfways outward rotated; from its position it may be flexed 10°; otherwise it is ankylosed. The discomfort is so severe that it is decided to perform arthrodesis.

Conclusion: Transitory effect from resection of the obturator nerve.

Case 5. (Reg. No. 8101/36.)

Female, aged 65, wife of colonel.

For the last 5 years, pain in the left hip, which has been getting worse in the last year. Pain present at rest as well as on walking.

Physical exam.: Some limp in walking with a cane. 10° flexion contracture, and 10° adduction contracture. Attempt at motions causes severe pain, and makes her fix the hip strongly.

Roentgenography. Left hip: Marked arthritis deformans, with narrowed joint gap, marginal exostoses, subchondral cysts, and slight subluxation of the head of the femur.

11/1—37: *Resection* of the left obturator nerve. Wire extension through the tuberosity of the tibia for 5 weeks. Up after 6 weeks.

April, 1937: No pain at rest, but still some plain on motion. 24/4—37: Inforation of the left hip.

27/5—37: No pain, neither on rest nor on motion.

October 1938: "Feeling fine", moving about a great deal on journeys abroad.

Conclusion: Decrease of pain after resection of the obturator nerve.

Case 6. (Reg. No. 7563/36.)

Male, aged 56, married, farmer.

For the last 15 years increasing pain in the left hip. Physical therapy and Roentgen treatment have been of no avail. He is now suffering from continual pain, especially when he has to move about after sitting still for a while; and he is unable to do any work. About 1 year ago, inforation of the hip was performed; this made the pain subside a little, but he is still disabled by his hip lesion. Occasionally a little pain in the right hip too.

Physical exam.: He walks with a pronounced limp, sinking downward on the left side. No contracture of the left hip. Flexion 180°/100°; rotation 0°; adduction 0°; on attempt at abduction, the adductors tighten tensely, and are tender; only slight abduction possible. Slight impairment of the mobility in the right hip.

Roentgenography: Arthritis deformans of both hips, especially the left, where the joint gap is only 1 mm. wide. Slight deformity of the head of the femur; small cysts in the head and acetabulum; moderate proliferation along the margin of the joint.

20/2—37: *Resection* of the left obturator nerve, after division of the pectineus. Up after 12 days.

Reexamination, 16/6—37: Condition further aggravated since the operation. The plain is severe and continual. Flexion further limited.

165°/155°. Now the adductors are flaccid, and there is 15° abduction contracture. Arthrodesis of the left hip-joint is advised.

Conclusion: No effect from resection of the obturator nerve.

Case 7. (Reg. No. 7455/37.)

Female, aged 57, wife of station-master.

For the last 4 years, increasing "rheumatic-like" pain in the right hip. Transitory relief obtained with diathermy, short-wave therapy and massage. About 1 year ago, inforation of the left hip, after which the pain subsided somewhat, although it still is severe. In addition, she limps, the hip feels stiff, and the right leg feels shorter than the left. No complaint concerning the left hip.

Physical exam.: She is somewhat overweighty. She limps on his right leg. Right hip: Flexion 180°/100°; 20° adduction contracture; adduction, abduction and rotation abolished. Marked tension of the adductors on the right side. Slight impairment of the mobility in the left hip.

Roentgenography: Arthritis deformans of the right hip, with marked narrowing of the joint gap, exostoses above, and slight subluxation of the head of the femur. Left hip: Moderate degree of arthritis deformans.

11/1—38: *Resection* of the right obturator nerve, after division of the pectineus. Up after 4 weeks.

Reexamination, 17/10—38: Only slight transitory improvement after the operation. Now her condition is worse than prior to the operation. There is 30° flexion contracture and 20° adduction contracture in the right hip. Only rocking motions possible, and they are painful.

Conclusion: No effect from resection of the obturator nerve.

Case 8. (Reg. No. 5643/37.)

Female, aged 51, single, provision dealer.

Lately she has had moderate pain in the anterior aspect of the right hip-joint, in particular on walking.

Physical exam.: Walking normal. Right hip: No contracture. Flexion 180°/70°; abduction 180°/150°; adduction 180°/170°; rotation halfways. On abduction of the right leg the adductors tighten and feel sore. Left hip: Normal findings.

Roentgenography. Right hip: Moderate arthritis deformans, with narrowing of the joint gap; sclerosis of the bones; slight flattening of the head of the femur; no osteophyte formation. Left hip normal.

26/8—37: *Resection* of the right obturator nerve. Up after 13 days.

Reexamination, 21/9—38: As early as a couple of weeks after she got

up the complaints were just the same as before. The pain has been increasing. Now she can walk only for a few minutes at a time, as this gives her very severe pain.

Mobility in the hip as before the operation. No tension or tenderness of the adductors. She is advised to submit to inforation or to X-ray treatment.

Conclusion: No effect from resection of the obturator nerve.

Case 9. (Reg. No. 1134/36.)

Female, aged 42, wife of labourer.

Past history of gonorrhoea and syphilis. For the last 4 years increasing pain in the right hip. Now the pain is very severe, annoying her at rest as well as on walking. The pain is referred to the anterior aspect of the joint and, in particular, the medial aspect of the thigh, often radiating down toward the knee. Often there is tenderness of the medial aspect of the thigh. Physical therapy has been of no avail. 4 months ago, inforation of the hip was performed, also without any favourable effect.

Physical exam.: Limp in the right hip; she walks with careful tripping. Right hip: Flexion, abduction and adduction practically normal; rotation about halways. No contracture. Left hip normal.

Roentgenography: Severe arthritis deformans of the right hip, with slight subluxation, narrowing of the joint gap, woolly contour of the bones toward the joint, and moderate osteophyte formation.

6/7—36: *Resection* of the right obturator nerve, without division of the pectineus. Up after 2 weeks.

Reexamination, 26/10—37: No improvement after the operation. The pain has been increasing since. Now slight complaints of the left hip have commenced to appear too. Right hip: Inward rotation 0°; outward rotation normal; flexion 180°/110; abduction 180°/145°; adduction 180°/160°; thus the mobility is not so good as before.

Arthrodesis of the right hip ad modum Albee is performed.

Conclusion: No effect from resection of the obturator nerve.

2. "*Secondary*" *Arthritis Deformans.*

In this group the operation was performed on 1 man and 6 women, bilateral in two cases. These patients were somewhat younger than the preceding, from 27 to 53 years old. In 6 of these patients the "arthritis" developed in joints with congenital dislocation, slipped epiphysis, Calvé-Perthe's disease or coxa

vara. In one patient (No. 16), a woman, aged 27, the morbid phenomena developed after a parturition; she is also markedly neurasthenic and inconvenienced by dyspareunia. The case histories will be given in brief abstract.

Case 10. (Reg. No. 711/37.)

Female, aged 28, single, shopgirl.

Suffering from bilateral congenital dislocation of the hip. She was wearing leather bandage till she was 15 years old. Since then, she has been getting along well, limping but little. About 1 year ago, post partum, a severe pain appeared in the left hip on walking, and it was aggravated by her rather hard job. Occasionally a slight pain in the right hip too.

Physical exam.: Gait waddling, with increased lordosis. Trendelenburg's sign on the right side ++, on the left +. Left hip: 10° flexion

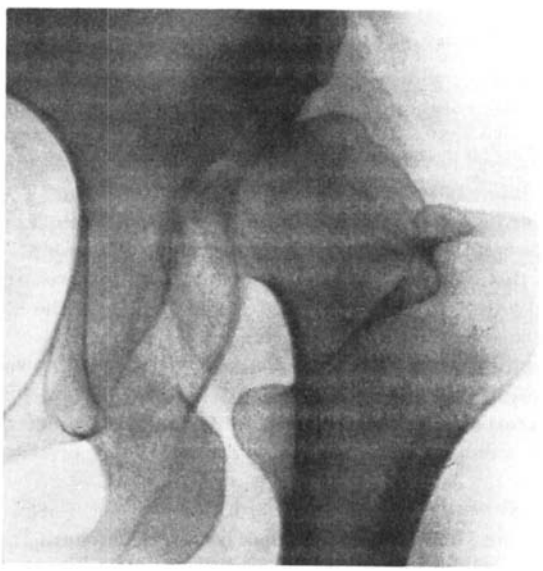

Fig. 2.

contracture; flexion 170°/110°; abduction 0°; adduction 180°/160°; rotation 0°. Right hip: 20° flexion contracture; flexion 160°/120°; abduction 0°; adduction 10°; outward rotation 10°; inward rotation 0°.

Roentgenography (Fig. 2). Left hip: Head of the femur flat, plump,

upward displaced 4 cm. Two thirds of the heaf articulates with the ileum, with a very narrow joint gap. Sclerosis of the bones, and small cysts in the head of the femur. Right hip: Head of the femur quite small; well fixed in a nearthrosis; upward displaced 4 cm.; narrow joint gap; sclerosis of the bones.

12/2—37: *Resection* of the obturator nerve on both sides, after division of the pectineus. Plaster, with the legs abducted, for 3 weeks. Up 4 weeks after the operation.

9/5—37: Considerable improvement after the operation; only large movements may yet give some pain. The adductors are flaccid, and she can abduct about 10° in both hips.

July 1938: In a letter she says that she is well satisfied with the operation; she can walk without any pain. She has turned to office work.

Conclusion: Good effect on the pain.

Case 11. (Reg. No. 4487/37.)

Female, aged 28, wife of wagonmaker.

Suffering from bilateral congenital dislocation of the hip. In childhood, treated two times with reposition. After this, feeling well until the last 2½ years, during which she has been troubled with plain and stiffness in the right hip, particularly on walking.

Physical exam.: Considerable limp of the right limb. Lordosis somewhat increased. Trendelenburg's sign negative. Right hip: 30° flexion contracture; flexion 150°/100°; 10° adduction contracture; the adductors are tightened and tense; rotation 0°; pain on flexion in the hip. Left hip: Moderate impairment of the mobility.

Roentgenography. Right hip: Dislocation with 4 cm. upward displacement and nearthrosis showing arthritic changes, narrow joint gap and marginal sclerosis; the head is lodged fairly well in the acetabulum. Left hip: Upward subluxation 1 cm., ⅓ width of the head outwards, some incongruity of the joint with moderate arthritis.

17/8—37: *Resection* of the right obturator nerve. Up after 11 days.

Reexamination, 28/6—38: There has been no change in the pain after the operation, but she thinks she can abduct the limb a little better. Pain has commenced to appear in the left hip too.

Adduction contracture subsided; abduction 180°/150°; adduction 0°; there is 45° outward rotation contracture; outward rotation 135°/110°. Severe pain on these motions. Mobility in the left hip unchanged. Inforation is performed on the right hip.

Conclusion: No effect from resection of the obturator nerve.

Case 12. (Reg. No. 7734/36.)

Female, aged 45, wife of teacher.

About 10 years ago, attack of sciatica on the left side. For the last 6 years impairment of the mobility and pain in the right hip, especially on walking. She walks with a cane; and she has difficulty in getting up from sitting posture. Moderate complaints of the same nature concerning the left hip.

Physical exam.: Moderate obesity. Right hip: No contracture; flexion 180°/100°; adduction and abduction ⅓; rotation 0°. Extreme motions painful. Left hip: Same mobility as in the right.

Roentgenography. Both hips: Subluxation 2—3 cm. upward, and ⅓ width of the head outward; marked coxa valga. Narrowing of the joint gap; sclerosis of the bones; small cysts in the head of the femur and acetabulum.

15/12—36: *Resection* of the right obturator nerve, after division of the pectineus. There is a very thick layer of subcutaneous adipose tissue. A small hole is nipped in the side of the femoral vein, which is sutured and covered with muscular tissue. Healing of the wound uncomplicated; sutures removed on 28/12, when a rather firm, pasty intumescence is felt beneath the ligament.

31/12: The patient dies with signs of pulmonary embolism.

Case 13. (Reg. No. 885/36.)

Male, aged 33, clerk.

At the age of 15 he was provided with orthopædic footwear, on account of a limp. About 2 years he was under hospital treatment—to no avail—with extension of the left leg because of limping and pain in the left hip, under the diagnosis: Epiphysiolysis cap. fem. sin. seq. As the pain in the left hip continued, and was so severe as to incapacitate him for work, inforation of the left hip was performed 3 months ago, without any definite mitigation of the pain. Only slight pain in the right hip.

Physical exam.: No contracture. Motions in the left hip: Flexion 180°/70°; rotation 0°; abduction only ¼, under which the adductors stand out as tense cords.

Roentgenography. Left hip: Incongruous joint; head of the femur flat, with a nut-sized cyst above; joint gap not narrowed; no exostoses. Right hip: Slight coxa vara, with some incongruity of the joint.

16/1—37: *Resection* of the left obturator nerve, after division of the pectineus. Up after 13 days.

Reexamination, 21/8—37: Improvement only of very brief duration. Now rather more pain than before. Mobility in the hip unchanged. After

this, resection of the head of the femur is performed, followed by activation of the glutæus medius.

Conclusion: No effect from resection of the obturator nerve.

Case 14. (Reg. No. 4681/35.)

Female, aged 41, housewife.

In childhood, at the age of 7 and 9 years, two attacks of "coxitis" of the right hip, treated at home with extension (undoubtedly Calvé-Perthe's disease). Later free from symptoms. For the last 2 years, increasing pain in the lateral aspect of the right hip, radiating down in the knee; besides, a sensation of stiffness of the hip-joint. Physiotherapy without effect. 2 years ago, inforation of the right hip was performed, giving some improvement of the pain and mobility for the following half year. After this, the same discomfort as before.

Physical exam.: Left leg lagging a little in walking. No contracture. Right hip: Flexion 180°/90°; abduction about halfways; rotation about halfways.

Roentgenography. Right hip: Head of the femur quite flat, subluxated ¼ width of the head outward and 1 cm. upward; sclerosis of the floor of the acetabulum; osteophyte formation above. Left hip normal.

17/8—37: *Resection* of the right obturator nerve. Up after 12 days.

Reexamination, 1/3—38: The pain and stiffness returned unchanged as soon as she got up. Mobility unchanged, only that the adduction is somewhat more impaired, 180°/170°. Trendelenburg's sign slightly positive on the right side.

March 1938: Osteoplastic operation ad modum Lance on the right hip.

Conclusion: No effect from resection of the obturator nerve.

Case 15. (Reg. No. 1969/36.)

Female, aged 53, single, housekeeper.

Through the last 22 years she has been troubled periodically with rheumatic-like pain in the right hip-joint. In the last half year the complaints have been getting worse. The pain appears at night or when she has walked too much; and it feels as if the limb has become shorter. It has been difficult for her to attend to her work. No complaint concerning other joints.

Physical exam.: Walking with considerable lumbar lordosis. Shortening of the right limb 2 cm. Right hip: 30° flexion contracture; flexion 150°/100°; 15° adduction contracture. Adduction, abduction and rotation 0°. Left hip: Considerable impairment of the mobility here too.

Roentgenography: Pronounced bilateral coxa vara with short atrophic neck. Right hip: No real head of the femur; joint gap quite narrow; osseous parts condensed; subluxation upward 2 cm. Left hip: Head of the femur fairly well preserved; marked narrowing of the joint gap.

25/4—36: *Resection* of the right obturator nerve, after division of the pectineus. Wire extension through the tuberosity of the tibia for 24 days. Up after 28 days.

Reexamination, 16/10—36: No improvement after the operation. Now she has more pain and walks worse than before the operation. X-ray treatment is advised.

9/5—38: She states that now, after X-ray treatment, she feels perfectly well. She walks better now than she has done for many years; and she is able to do all the work in the house.

Conclusion: No effect from resection of the obturator nerve.

Case 16. (Reg. No. 695/34.)

Female, aged 27, wife of cabinetmaker.

Since parturition 5 years ago, pain in the hips, with impairment of abduction, and dyspareunia. Neurasthenic habitus. Physical therapy and sedatives without effect. As, 1½ years ago, roentgenography showed slight arthritis deformans of the right hip, inforation was performed. This gave a decrease in the pain and improvement of the adduction for about a year; and then the complaints returned.

Physical exam.: She walks almost normally, limping only a little on the right leg. No contracture. Abduction in both hips limited to 160°; beyond this degree the adductors tighten and hurt, feeling tense. Other motions practically free.

Roentgenography. Right hip: Joint gap narrowed a little, slight flattening of the head; small exostoses along the margin of the head. Left hip normal.

As, in particular, it is the impaired and painful abduction that troubles the patient, resection of the obturator nerve is taken for indicated.

29/10—37: *Resection* of the obturator nerve on both sides, after division of the pectineus and, on the right side, of the adductor longus too. Up after 12 days.

Reexamination, 21/9—38: No improvement after the operation. She has pain in the groins when she has walked about 1 km., and pain in the adductors on parting the legs wide. Physiotherapy and baths have been ineffective.

The patient appears to be very nervous. Abduction in both hips limited to 160°, beyond which the posterior parts of the adductors tighten and hurt. Other motions almost free.

Conclusion: No effect from bilateral resection of the obturator nerve, although this operation would seem to have been indicated strongly. No doubt, an emotional factor plays a considerable rôle in her condition.

COMMENTS

Thus, among the 9 patients of the first group (true arthritis deformans) the operation had a very favourable effect on the pain in 3 cases with an observation period of from 1¼ to 2½ years, and gave a transitory relief from the pain in 2 cases (up to 1 year), while no effect was obtained in 4 cases. The mobility in the joint has not been improved distinctly by the operation. In 2 cases (Nos. 1 and 6), however, the adduction contracture was replaced by a slight abduction contracture; only in one of these cases (No. 1) was the pain mitigated too.

It is worth notice that all the 5 patients in whom there was improvement after the operation had presented adduction contractures, whereas of the 4 unaffected patients only one had had adduction contracture. There has been no relation between the degree of arthritis and the result of the operation; but, then, the arthritis was at any rate very severe in all the cases. The operative result has been independent of division or non-division of the pectineus.

Among the 7 patients of the second group ("secondary arthritis deformans") there has been a favourable effect on the pain only in 1 case (No. 10), with an observation period of 1½ years; on this patient, who presented a bilateral congenital dislocation of the hip the operation was performed on both sides, and resulted in freedom from pain and some improvement of the abduction. Still, as this patient after the operation turned to an easier occupation, the improvement cannot with certainty be ascribed to the operative measure. In the remaining 6 cases the operation had no effect on the pain. In Case 11 the abduction has become better after the operation, but the pain persists unchanged.

In one case (No. 12) post-operative phlebitis developed, and the patient died of pulmonary embolism.

In primary arthritis deformans, then, this operation may have a favourable effect on the pain in several cases—in the present material, in about half of the cases. As mentioned, it is particularly in cases associated with adduction contracture that the pain subsides after the operation; and this suggests to some extent that Camitz is right in his view of the pathogenesis of the pain in these patients. But the pain does not subside in all the cases where the adductors become flaccid, and where the abduction thus is increased (as illustrated very plainly by Case 6); and hence the pain cannot always be attributable to the cause assumed by Camitz.

No doubt the local morbid processes in the joint itself, in the capsule and the bony parts may give pain; and the sensory innervation of the joint is not put out of function altogether by resection of the obturator nerve, as also the femoral and the sciatic nerves send sensory branches to the joint. Changes in the static conditions of other muscles may also bring about some of the pain. The fact that the arthritis deformans has been very severe in all the cases here reported, with extensive changes in the joint, is undoubtedly in part the reason why the results here have been less favourable than those reported from other clinics. If the operation had been performed at an earlier stage of the disease, where the local changes in the joint were less pronounced, the results might have been better. The fact that only in few cases did the adduction contracture subside completely after the operation, suggests the advisability of a more rational after-treatment with extension of the limb in abduction.

In the group of "secondary" arthritis deformans the effect from the operation has been doubtful, most likely because in these cases the pain is due rather to static changes and myopathy involving other groups of muscles.

Both resection of the obturator nerve and inforation ad modum Duvernay (which gives relief from the pain in about half of the cases) imply the advantage of being relatively minor operations which elderly patients as a rule are able to stand well without any post-operative inconvenience.

According to the results here reported, it will be rational to

employ resection of the obturator nerve only in cases of primary arthritis deformans with adduction contracture.

As in several cases neither Duvernay' nor Camitz operation will answer the purpose, it is to be kept in mind that X-ray treatment may render several of these patients free from pain (cf. Case 14). Thus several measures can be offered the patients before it eventually will be necessary to consider more extensive operations as arthroplasty or arthrodesis.

SUMMARY

An account is given of the basis for resection of the obturator nerve (ad modum Camitz) in arthritis deformans of the hip.

The operation has been performed extrapelvically on 16 patients. No post-operative treatment was given besides rest in bed for a couple of weeks.

In 9 of the 16 cases the lesion was a true arthritis deformans. A marked and permanent palliation of the pain was obtained in 3 of these cases (observation period of 1¼—2½ years), a transitory or slight relief in 2 cases. The improvement took place especially in cases associated with adduction contracture.

In 7 cases the lesion consisted in arthritis deformans-like processes in joints already affected beforehand (congenital dislocation, Calvé-Perthes's disease, etc.). In only one of these cases was there a favourable effect from the operation.

No doubt the pain is due not only to the adductor spasm—as assumed by Camitz—but also to the local changes in the hip-joint and to static myopathy of other muscles.

The operation is indicated only in cases of true arthritis deformans with adduction contracture. Most likely an after-treatment with extension of the limb in abduction will prove serviceable.

RÉSUMÉ

Il est rendu compte de cas traités avec la résection du nerf obturateur (ad modum Camitz) dans l'arthrite déformante de la hanche.

L'opération a été pratiquée extrapelvicalement chez 16 malades. Aucun traitement post-opératoire n'a été donné, à part le repos au lit pendant une quinzaine de jours.

Dans 9 sur 16 cas la lésion avait le véritable caractère de l'arthrite déformante. On a obtenu une palliation marquée et durable des douleurs dans 3 de ces cas (période d'observation de 1¼ à 2½ ans) et une amélioration légère ou passagère dans 2 cas. Un soulagement a été constaté particulièrement dans les cas associés à une contracture d'adduction.

Dans 7 cas la lésion s'est manifestée sous forme de processus ressemblant à l'arthrite déformante dans des articulations déjà atteintes par une maladie (dislocation congénitale, maladie de Calvé-Perthes, etc.). L'opération eut un résultat favorable dans un seul de ces cas.

Il semble par ailleurs que les douleurs ne soient pas imputables seulement au spasme de l'adducteur — ainsi que l'affirme Camitz —, mais aussi aux modifications locales dans l'articulation de la hanche et à la myopathie statique d'autres muscles.

L'opération n'est indiquée que dans les cas de véritable arthrite déformante avec contracture d'adduction. Il est très vraisemblable qu'un traitement complémentaire avec extension du membre puisse avoir un heureux résultat.

ZUSAMMENFASSUNG

Es wird eine Bericht gegeben über die Ergebnisse der Resektion des Nervus obturatorius (ad modum Camitz) bei Arthritis deformans der Hüfte.

Die Operation wurde an 16 Patienten extrapelvikal ausgeführt. Ausser einer etwa 14tägigen Bettruhe wurde keine postoperative Behandlung gegeben.

In 9 von 16 Fällen war das Leiden eine echte Arthritis deformans. In 3 dieser Fälle wurde (bei einer Beobachtungszeit von 1¼—2½ Jahren) eine merkliche und dauernde Besserung des Leidens erzielt, eine vorübergehende geringere Linderung in 2 Fällen. Die Besserung zeigte sich besonders in den Fällen, die mit einer Adduktionskontraktur verbunden waren.

In 7 Fällen bestand das Leiden in arthritis-deformans-ähnlichen Prozessen in Gelenken, die schon im voraus angegriffen waren (kongenitale Dislokation, Calvé-Perthes'sche Krankheit usw.). Nur in einem dieser Fälle hatte die Operation eine günstige Wirkung.

Zweifellos ist der Schmerz nicht nur auf den Adduktor-Spasmus zurückzuführen, — wie Camitz annahm —, sondern auch auf die lokalen Veränderungen im Hüftgelenk und auf eine statische Myopathie anderer Muskeln.

Die Operation ist nur in Fällen von echter Arthritis deformans mit Adduktionskontraktur indiziert. Am meisten wird sich vielleicht noch eine Nachbehandlung mit Extension des Gliedes in Abduktionsstellung als zweckdienlich erweisen.

REFERENCES

Berntsen, Aage: Ugeskr. f. Læger. *101:* 656, 1939.
Camitz, H.: Acta orthopæd. Scand. *4:* 193, 1933.
Jensen, Erik: Ugeskr. f. Læger. *97:* 794, 1935.
Mol, W.: Nederl. Tijdschr. Geneesk. *79:* 850, 1935.