

DRILLING OF THE HIP JOINT

A Follow-up Study

By

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The method of drilling the neck and head of the femur to relieve pain in the osteoarthritic hip was introduced by Graber-Duvernay in 1930. This was a modification of Robertson-Lavalle's original method of treating tuberculous joints by drilling and inserting of bone-pegs. It had been tried by Aimes for the osteoarthritic hip. Graber-Duvernay thought insertion of bone-pegs unnecessary and resorted to drilling only, thereby achieving relief of pain in 60 per cent of the cases treated.

The method seems to have been widely adopted in France, Germany, and the Scandinavian countries. From Sweden it has been reported by Hybinette and Lidström, the latter claiming satisfactory results in 41 out of 43 cases. Henderson and Pollock treated 28 cases, 25 of whom were followed up for periods varying from 2 months to 3 years. Nine were improved (4 highly improved and 5 improved), 5 were unchanged, and the remainder had grown worse.

From Denmark Berntsen, in 1939, published his results from a follow-up study of 35 patients. Like Graber-Duvernay he found relief from pain in about 60 per cent (23 cases). The term "relief" here covers partial or complete relief from pain; the details of his report may be read from Fig. 1.

Opinions are somewhat divided as to the value of the operation. P. Mathieu considers the results uncertain, and in Sweden recent follow-up studies have given disappointing results (according to a personal communication from Professor Friberg).

The drilling is merely a palliative measure, no effect on the degenerative process in the joint being obtained thereby, and the nature of the pain-relieving effect is unknown. A revascularization is supposed to take place, and possibly a certain relief is obtained by draining the

Fig. 1.

Berntsen, 1939.

35 patients followed-up
23 relieved = 60 %

Follow-up period > 1 year

I: Followed 2 years or longer
22 patients
13 relieved = 56 %
9 recurrences, 7 within
6 months, 2 within 1 year
9 no relief

II: Followed 1 year < 2 years
13 patients
10 relieved = 76 %
1 recurrence within
6 months
2 no relief

13 relieved:
2 painless
11 slight pain

10 relieved:
2 painless
8 slight pain

cysts, which are as a rule a predominant feature of the X-ray picture. At the operation the contents of the cysts are often found to be under some tension.

In the Orthopædic Hospital, Copenhagen, the method has been used routinely for painful osteoarthritic hips, not only in cases where the general condition of the patient (advanced age, obesity) did not invite major operations, but also in a good many cases in which it was found desirable first to try the simpler procedure of drilling. If this failed, other measures, such as arthrodesis, sub-trochanteric osteotomy or resection, and—more recently—Smith Petersen's cup operation or alloplastic prosthesis (by the methods of Judet and Sven Kiær) were resorted to.

TECHNIQUE

The technique generally has been to apply a 7 mm drill, making one or two drill-holes; in a minority of cases a smaller drill, 3 mm calibre, was used to make multiple drill-holes fan-wise.

In about half the cases drilling was combined with resection of the external obturator nerve.

According to Blixencrone-Møller, who in 1942 published a small series of cases treated by resection of the obturator nerve only (Orthopædic Hospital, Copenhagen), this operation is justified only in cases of spasm or contracture of the adductor muscles, whereas no effect will be obtained if these symptoms are absent.

In our series, however, resection of the nerve was performed routinely, irrespective of the presence or absence of adductor spasm.

Kallio, in 1950, declares that the effect of resection of the obturator

nerve is questionable in many cases, mainly due to the weakening of the adductor muscles and the subsequent decrease in the stability of the joint.

AUTHOR'S MATERIAL

In previous publications, the follow-up period has been rather short, in Berntsen's series, over 2 years for only two-thirds of the material and in Lidström's, somewhat less.

The present work is a follow-up of Berntsen's series supplemented by all patients subjected to drilling in the years 1936–1944 from the Orthopædic Hospital, Copenhagen, Departments I and II.

A total of 103 out of 128 patients have answered a questionnaire, and an additional two questionnaires have been adequately answered by relatives of deceased patients, making a total of 105. Of the remaining 23, 11 have died and no information was obtainable, and 12 could not be traced.

A questionnaire is not a very satisfactory method of investigation. Nevertheless, it was considered sufficient in this series, the main purpose of which is to throw some light on the pain-relieving effect of the operation. Of course we get no information as to ankylosis of the hip, range of movement etc., of which the patient will as a rule be a poor observer; however, a fair number of the patients have been seen in the out-patient department of the hospital on various occasions (because of recurrence of pain in the hip, flat-feet, low-back pain, etc.) and as a rule little difference has been noted in the range of movement of the hip before and after operation.

In their replies a few patients directly complain of stiffness of the hip-joint, and for this reason two are dissatisfied with the result despite the absence of pain.

The shortest follow-up period in the present material is 6 years.

The series comprises 105 patients, but 110 hips are involved, since 5 underwent operation on the opposite hip also. Three of the latter have been performed during the past 3 years.

Sex ratio: 62 females, 43 males.

Average age at operation: females 53 years, males 52.3 years.

Forty-four patients (45 hips) are satisfied and 61 patients (65 hips) are dissatisfied.

Twenty-one patients are free from pain, but of them only 13 are satisfied, two complaining of stiffness of the hip and 6 having expected a better range of movement after the operation.

Of the remainder, 37 have less pain than before the operation. Twenty-eight of these patients had been free from pain for varying

periods of time—3 months to 12 years—after the operation. On recurring the pain was slighter than before the operation.

This makes a total of 58 patients who obtained relief from the operation, whereas 47 obtained no relief.

TYPE OF OPERATION

Group I: Drilling only.

A total of 53 patients, 32 females (33 hips) and 21 males (21 hips).

In this group 2 males and 1 female had the operation combined with paravertebral block of the lumbar sympathetic trunk and were permanently relieved of pain.

One female who had had an operation on both hips now reported that one side was painless and the other one improved. One female had had two operations on the same hip with only transitory effect.

One male had freedom from pain for 3½ years; on recurrence the pain was treated by resection of the obturator nerve with no effect. On recurrence of the pain one female later underwent resection of the obturator nerve with good effect.

Group II: Drilling + resection of the obturator nerve. A total of 52 patients, 30 females (33 hips) and 22 males (23 hips). One male and three females had operations on both sides, with good effect in 2 cases, no effect in 2. One female was later subjected to resection of the opposite obturator nerve with good effect.

X-RAY CHANGES

The hips were classified as follows by the X-ray appearances:

(1) Osteoarthritis of the hip without subluxation.

The head is usually deep in the acetabulum, with osteophytes and cyst-formation, and, generally, narrowing of the joints.

(2) Osteoarthritis of the hip with subluxation: Acetabulum rather shallow, only one-half of the head within the acetabulum, a varying degree of subluxation of the head upwards or outwards. In this variety too cysts and osteophytes are common.

(3) Congenital dislocation of the hip.

(4) Osteoarthritic hip subsequent to fracture of the femoral neck.

(5) Osteoarthritis subsequent to slipped epiphysis of the femoral head.

It may be seen from the figures that the results of the two methods of treatment are slightly better in the group of osteoarthritis with subluxation, 30 patients having obtained relief (11 painless, 19 slight

Fig. 2.

		I. Drilling	II. Drilling + resection of obtura- tor nerve	Total
Osteoarthritis of the hip (without subluxation) .	painless	3	2	5
	slight pain	8	9	17
	severe pain	9	14	23
		} 11	} 11	} 22
Osteoarthritis of the hip (without subluxation) .	painless	6	5	11
	slight pain	9	10	19
	severe pain	11	9	20
		} 15	} 15	} 30
Congenital dislocation of the hip	painless	2	1	3
	slight pain			
	severe pain			
Osteoarthritis	painless			
	slight pain			
	severe pain			
Sequelæ of fracture of femoral neck	painless		1	1
	slight pain		1	2
	severe pain	2		3
Sequelæ of slipped epi- physis of the femoral head	painless	2		2
	slight pain			
	severe pain	1		1

pain) and 21 being unchanged. In the group osteoarthritis without subluxation, 22 were relieved (5 painless, 17 slight pain) and 23 unchanged.

No apparent difference is to be seen in the results achieved in operative Groups I and II.

I: 30 relieved (13 painless, 17 slight pain) 23 unchanged

II: 28 „ (8 „ 28 „ „) 24 „

Since the results in Group II are no better than in Group I, the value of resection of the obturator nerve seems doubtful, at least when the operation is performed routinely, regardless of the presence or absence of spasm.

58 patients out of 105 were relieved = 55 per cent relieved of whom

21 are painless = 20 per cent

37 slight pain = 35 „ „

47 unchanged = 45 „ „

Of the 47 unchanged patients, 11 had had other operations on the hip, 10 arthrodesis or resection of the head of the femur, 1 Smith-Petersen's arthroplasty with hip-cup, most of them within a few

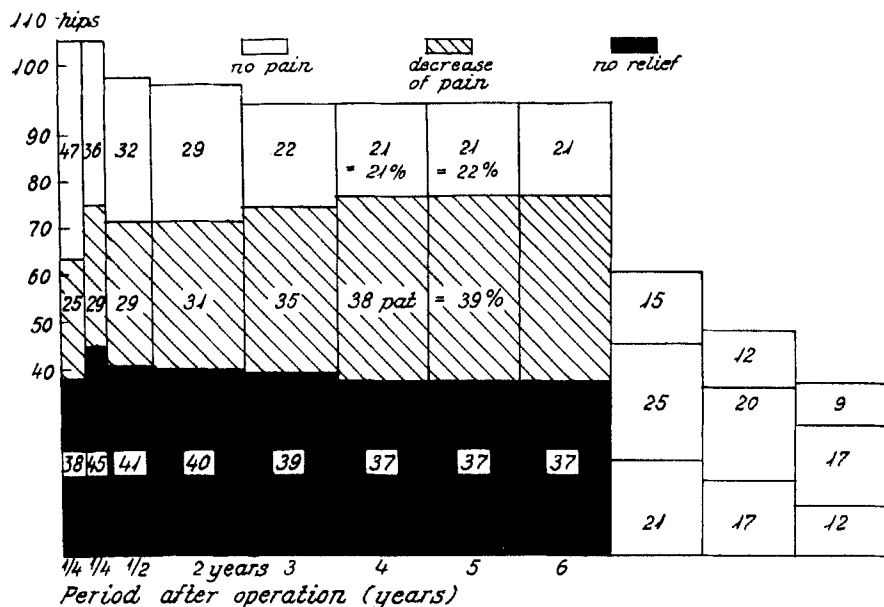


Fig. 3.

months of the first operation. Three patients have undergone drilling of the opposite hip within the past 3 years. The number of observed hips thus decreases from 110 to 96, as may be seen from Fig. 3.

An analysis of Fig. 3 shows the most satisfactory effect during the first 3 months following operation; during the first year, however, there are several recurrences. After two years of observation the results seem to stabilize themselves, showing painless hips in 21 per cent, decrease of pain in 39 per cent, and unsatisfactory results in approximately 40 per cent. If the result is not satisfactory at the end of one year, the patient should, therefore, be offered one of the other operations mentioned above, provided that he is a good surgical risk.

It will be noted that the majority of the patients have been followed-up for 6 years or more.

COMPLICATIONS

The drilling operation has had only a few untoward effects. In one case a fracture of the neck of the femur occurred on the 14th post-operative day, when the patient got out of bed. Nailing by Smith-Petersen's method was performed with satisfactory result, and the patient was free of pain for 10 years after which a slight relapse of pain was noted.

One case ended fatally 5 days after operation owing to a fat embolus, and in 10 cases minor pulmonary complications (infarcts) were observed.

The patients were generally kept in bed for 2-3 weeks after the operation, and in some cases traction was applied.

CONCLUSION

It may be stated that drilling of the neck and head of the femur is a useful palliative measure, especially if the patient is a poor surgical risk. Out of 105 patients 20 per cent obtained relief from pain, 35 per cent partial relief from pain, i.e. a total of 55 per cent were relieved as compared with 45 per cent unrelieved.

The operation is indicated for patients considered unfit for a more radical operation, such as arthrodesis, or arthroplasty with insertion of an alloplastic prosthesis (of the Sven Kiær or Judit design), or the Smith-Petersen cup operation.

SUMMARY

The author reports a follow-up study of 105 patients with arthritic hips, treated by drilling of neck and the head of the femur.

This type of operation proved to bring relief in 20 per cent, partial relief in 35 per cent, and no relief in 45 per cent. Accordingly, it is a useful palliative measure in poor surgical risks, unfit for more operation.

RESUME

L'auteur rend compte d'examens suivis de 105 malades de hanches arthritiques traités par perçage du col et de la tête du fémur.

Ce type d'opération semble apporter du soulagement dans 20 % des cas, un soulagement partiel dans 35 % et aucun dans 45 %. C'est en somme une mesure palliative utile comportant très peu de risques au point de vue chirurgical dans les cas qui ne se prêtent pas à une opération plus étendue.

ZUSAMMENFASSUNG

Der Verfasser berichtet über die Resultate der Nachuntersuchungen von 105 Patienten mit arthritischen Hüften, die mittels der Bohrung des Femur-Halses und Kopfes behandelt wurden.

Es erwies sich, dass diese Operationsmethode in 20 % die

Schmerzen zum Verschwinden brachte, in 35 % eine Erleichterung herbeigeführte und in 45 % keinerlei Besserung zur Folge hatte. Daher kann man sie als eine palliative Massnahme ansehen, die in Fällen erhöhten chirurgischen Risikos, ungeeignet für radikalere Eingriffe, verwendet werden kann.

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