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FUNCTIONAL CAPACITY AFTER HIP ARTHRODESIS

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The results obtained with arthroplasty having fallen short of expectations, and there has been a tendency in recent years to prefer hip arthrodesis. The various papers published on this operation appear to be concerned mainly with surgical methods and the frequency of bone healing, rather than with loss of function and its causes. In the present article an account is given of an analysis of the patient's functional capacity after the operation.

MATERIAL AND METHODS

The study took the form of a follow-up examination of 35 patients with a hip-joint arthrodesis. In connection with this examination radiographs were taken of 25 of the cases. The age and sex distributions were as follows:

	<40	40–49	50–59	60–69	>69	Total
Men	4	5	5	10	4	28
Women	1	1	1	2	2	7
Total	5	6	6	12	6	35

The follow-up included a detailed case history and a careful enquiry into the patient's ability to perform various routine operations of everyday life. A thorough clinical examination was also made, the details of which have been reported in a previous issue of this journal, together with the procedure for the X-ray examination (*Ahlbäck & Lindahl* (1)).

RESULTS

Radiographic healing.—In 4 of the 25 patients undergoing radiographic examination in connection with the follow-up there was pseudoarthrosis. Healing was incomplete also in one of the 10 others that had been radiographed at an earlier stage. Thus, non-union of the bone was found in altogether 5 of the 35 cases (14 per cent). All these

patients had pain in the affected hip when walking and when the joint was placed under load. The pain was moderate, however, and considerably less servere than it had been before the operation. Three out of 21 cases, or 14 per cent, with confirmed bony ankylosis of the hip felt pain in this region after effort; it was of moderate intensity and usually appeared after 10–30 minutes' walking. The ankylosis in these cases was true, with bone trabeculae bridging the former joint-space, but there were cyst-like formations in or near the joint that might account for the pain. None of the other cases had pain in the affected hip.

Subjective assessment.—All 35 patients expressed satisfaction with the operation and considered that it had been to their benefit. Even those with pseudoarthrosis and some mobility and pain were of the opinion that the discomfort had been greatly alleviated and that this far outweighed the restriction of mobility. Some of the patients considered that the hip might have been set in a better position, but most of them had had no experience of any other, and were therefore unable to express an opinion. One patient whose hip had been fixed in slight abduction and almost full extension incurred a fracture of the subtrochanteric region of the same femur in a motor accident. On healing, the hip assumed a neutral position frontally and a flexion angle of 40°. The patient stated that there had been an immense improvement and had much less discomfort in walking and sitting than before.

Walking capacity.—The ankylosis itself did not interfere with walking, but in many cases the distance was restricted by pain in the knees or the mobile hip, poor physical condition or corpulence. In a primarily aesthetic assessment of the walk 10 were classed as good, 10 as moderate and 15 as poor (29, 29 and 42 per cent, respectively). Six of the 35, or 17 per cent, used one cane and two patients required two—chiefly because of pain in the mobile hip or the knees. Walking in snow, especially if it was deep, was difficult or impossible for any of the patients, particularly when the hip was set at a small angle of flexion.

Sitting.—This was graded as good, moderate or poor, and here too the distribution was 29, 29 and 42 per cent, but there was no exact correspondence between the walking and sitting capacity in the individual cases. Nineteen of the 35, or 54 per cent, were able to sit on ordinary chairs without much trouble. Seventeen of the 35, or 49 per cent, found difficulty in using an ordinary toilet stool and 9 of them (26 per cent) were greatly inconvenienced in this respect. As a consequence they had to stand, have specially raised seats made, or have a grip fixed to wall. Several patients could not get up from an ordinary toilet stool; in one

case the patient had been obliged to remain seated in a public toilet for several hours. Twenty of the 35 patients, or 57 per cent, had difficulty in sitting in the cinema or theatre, which they therefore could not attend unless they could sit at the end of the row.

Bathing.—Twenty-six of the 35 could get into and out of a bath, whereas the others (26 per cent) had to rely to some extent on help.

Swimming.—Of the patients that had previously been able to swim 22 out of 27, or 81 per cent, were still able to do so. Most of them did the breast stroke but some could also do the crawl. Inability to swim after the operation was usually due to fear or lack of initiative.

Running.—Seventeen of the 35, or 49 per cent, were able to run, most of them only a short distance and not very fast. One of the patients could ski 30 km.

Driving.—Of the 20 patients that had been able to drive a car before the operation, 11 could still do so (55 per cent). Those that could not gave as their reason difficulty in sitting in the driver's seat and stiffness in the knees. A patient who had had his arthrodesis in his youth had been driving an ambulance for 30 years, and had even carried loaded stretchers up 5 flights of stairs.

Dressing.—The operation in dressing that caused these patients most trouble was putting on their shoes and stockings; the difficulty was about the same in both cases and was worse on the stiff side. Only 7 of the 35 (20 per cent) could tie their laces; the others had help or used shoes with the laces already tied or ones with elastic tightening. The situation was much the same for stockings. Most of the patients used a cane or some other aid. Putting trousers on could also be troublesome, and the patient usually relied on some device for pulling them up (a cane or special tongs). The other operations in dressing did not present appreciable difficulty.

Working capacity.—Seventeen out of the 35 patients had been able to continue with their occupation, which often involved quite heavy work (49 per cent). Eight had changed to a lighter job, 7 had retired prematurely on account of illness, but only 3 of these because of the hip operation. Three had given up work on reaching retiring age, and 2 of these considered that they were still capable of working; the third was prevented by another illness. Thus, only 3 out of the 35, or 9 per cent, were unable to work because of the arthrodesis.

Loaded leg (standing leg).—Twenty-six of the 35 subjects always used the mobile leg as the standing or resting leg. Three used both legs alternately and 6 used the stiff leg as the standing leg, in 4 cases ob-

viously because of pain on loading the mobile hip arising from osteo-arthritis. Only 2 of 31, or 6 per cent, used the stiff hip as the resting leg "from choice". The position of the hip in these cases did not differ in any way that could explain the choice of the standing leg.

Oedema of legs.—In 12 out of the 35 cases there was oedema in one or both legs after the operation (34 per cent). In 6 it was considerable and usually accompanied by aching and a feeling of heaviness (17 per cent). The swelling was undoubtedly due to postoperative thrombosis, and was usually bilateral. When it affected only one side it was usually that of the stiff leg.

Knee symptoms.—Deterioration of the knee-joint on the operated side, with pain and stiffness, had occurred in 15 out of 35 cases, and more severely in 5 (43 and 14 per cent, respectively). All could extend to 180°; 6 could not flex to more than 135°; a further 10 could flex more than this. Twenty-four out of the 35, or 69 per cent, could flex to 90° or more. The pain usually corresponded in intensity to the degree of the flexion defect.

Low back symptoms.—Twenty-one out of the 35 patients had no back pain (60 per cent). Fourteen had mild pain, 10 of them being uncertain whether it was associated with the stiff hip, since it had usually been felt before the operation. Only 4 stated that the back pain was linked with the operation (11 per cent). None of them found it severe. These 4 cases all had an abduction position of the hip, but it was moderate. Low back pain was usually accentuated by walking long distances.

Symptoms from the mobile hip.—Eight of the 35 patients had radiographic and/or clinical signs of osteo-arthritis in the mobile hip (23 per cent). This was accompanied by more or less pronounced pain and stiffness in this hip and these were the patients that had most trouble in their daily routine.

DISCUSSION

It is evident from the follow-up study that a patient with a hip arthrodesis in a suitable position who had no pain in the back or mobile hip and who had not had post-operative complications in the form of pain or stiffness in the knee, thrombosis or corpulence, could manage his daily routine without trouble. He could even perform heavy work, walk and sit as he wished, and indulge in sport within reasonable limits. Even the patients that were incapacitated in any of the above ways were satisfied with their arthrodesis, since in any case they had been relieved of their aches and pains in one part of the body.

Typical and common complications after hip arthrodesis are thrombosis, stiffness in the knee and increase in weight. Although complication cannot be avoided completely it should be possible with appropriate techniques to keep them within such bounds that they do not in themselves constitute a contraindication to the operation.

As regards the position of the hip, *Ahlbäck & Lindahl* (1) have expressed their views on the position that provides the best function. This position may be questioned, but then accurate methods should be used for measuring the position of the hip and for establishing the chosen position at the operation. It is obvious that the patient himself cannot be expected to form an opinion on which position is the best.

The presence of low back pain or stiffness in the back before the operation might be regarded as a contraindication for arthrodesis, but this must be judged from case to case. Persistence of back pain after an arthrodesis means that the walking is difficult and painful, but on the other hand the low incidence of such symptoms in the long run suggests that moderate back pain need not constitute a contraindication. Some authors (*Fox* (2)) consider that low back pain is in fact an indication for arthrodesis, since it will often be less severe after the operation. The stiffness, too, seems to decrease (*Ahlbäck & Lindahl* (1)). So long as we cannot solve the patients' hip problems in any other way–and the problem is a difficult one—low back pain, if not too severe, is not a contraindication for an arthrodesis.

As regards the mobile hip, osteo-arthritis, with pain also on this side, invariably causes the patient considerable trouble, and these cases are the most difficult ones to treat. Hence, if there is a conceivable alternative to arthrodesis it should be chosen. On the other hand, the alternatives in the case of bilateral osteo-arthritis are few and one must, of course, decide whether one's result with arthroplasty is preferable to an arthrodesis. In fact, the patients in the present series who had pain in the mobile hip were satisfied after an arthrodesis had been performed, since it meant that at least on one side a marked alleviation of the pain was obtained.

Even though a sound and mobile hip is, of course, preferable, an arthrodesis is an excellent operation if the position is ideal; no complications develop, and the back and mobile hip present no problem. Low back pain prejudices the results, and pain in the mobile hip constitutes a relative contraindication.

SUMMARY

The author followed up 35 patients who had undergone a hip arthrodesis operation. In 14 per cent there was no healing of the bone. Nonetheless, all were satisfied with the operation because it had resulted in alleviation of the pain at least on one side. The ability of the patient to manage routine operations in daily life and his fitness for work are dealt with. It is concluded that so long as complications such as pseudoarthrosis, knee pain and thrombosis can be avoided, a hip arthrodesis with an ideal position is an excellent operation in cases in which there is no trouble from the back or the mobile hip.

RESUME

L'auteur a réexaminé 35 malades ayant subi une opération d'arthrodèse de la hanche. Dans 14 pour cent des cas il n'y avait pas de soudure de l'os. Néanmoins tous les malades étaient satisfaits de l'opération parce qu'elle avait apporté un soulagement aux douleurs, tout au moins d'un côte. Cela était lié aussi à la capacité du malade de vaquer à des occupations routinières dans la vie de tous les jours et à son aptitude au travail. Il est conclu qu'aussi longtemps que l'on peut éviter des complications telles que la pseudarthrose, les douleurs du genou et la thrombose, l'arthrodèse de la hanche dans une position idéale est une excellente opération dans les cas où il n'y a pas de troubles dans le dos ou la hanche mobile.

ZUSAMMENFASSUNG

Der Verfasser hat 35 Patienten nachuntersucht, bei denen eine Arthrodese der Hüfte ausgeführt worden war. In 14 Prozent war keine knöcherne Heilung vorhanden. Dennoch waren alle mit der Operation zufrieden, da sie eine Erleichterung der Schmerzen wenigstens auf einer Seite zur Folge hatte. Die Fähigkeit des Patienten das tägliche Leben nach Routineoperationen zu meistern und seine Arbeitsfähigkeit werden erläutert. Man schliesst, dass eine Hüftarthrodese in idealer Stellung eine ausgezeichnete Operation in Fällen ist in denen keine Beschwerden von seiten des Rückens oder der bewegliche Hüfte bestehen, wenn Komplikationen wie Pseudarthrose, Knieschmerzen oder Thrombose vermieden werden können.

REFERENCES

1. *Ahlbäck, S.-O. & Lindhal, O.:* Acta orthop. scand. 34: 310–322, 1964.
2. *Fox, T.:* University of Illinois, Chicago, 1960. Personal communication.