

Comparison of the results of the Girdlestone pseudarthrosis with reimplantation of a total hip replacement

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Summary. A Girdlestone pseudarthrosis of the hip (resection arthroplasty) is nowadays mainly carried out for failed hip replacements. A decision may have to be made whether to reimplant a new hip prosthesis or to accept the result of a pseudarthrosis. We followed 2 groups of patients: 32 patients had a long standing pseudarthrosis; in the other group of 16 patients, a total hip replacement was reimplanted at an average of 3 years after a pseudarthrosis. The improvement in hip function after the reimplantation was marginal and the results were comparable to a good functioning pseudarthrosis. However, personal satisfaction and the activities of daily living were better in the reimplantation group, and their Harris hip score was 64 compared to 58 in those with a pseudarthrosis. The Girdlestone procedure still seems to be a reasonable salvage operation for some complications following hip surgery, but when there are the correct indications, reimplantation of a total hip prosthesis is recommended.

Résumé. Actuellement, l'arthroplastie par résection de la hanche (hanche de Girdlestone) est envisagée principalement dans le contexte d'échec d'interventions chirurgicales de la hanche. Après le traitement de la complication, le chirurgien se voit confronté à l'alternative de la réimplantation d'une prothèse totale ou de l'acceptation de la situation de Girdlestone. Nous avons suivi deux groupes de patients: l'un vivant avec une hanche de Girdlestone depuis longtemps (32 patients), l'autre dont la hanche de Girdlestone avait été remplacée par une prothèse totale au bout de trois ans en moyenne (16 patients). L'amélioration dans le fonctionnement de la hanche

suivant la réimplantation s'est avérée minime et les résultats apparaissaient comparables aux hanches de Girdlestone en bon fonctionnement. Toutefois, le niveau de satisfaction personnelle et de fonctionnement dans la vie quotidienne était plus élevé dans le groupe des réimplantations. Le Harris-hip-score du groupe ayant subi une nouvelle intervention chirurgicale s'élevait à 64, opposé au 58 du groupe Girdlestone. La méthode de Girdlestone resterait une intervention de sauvetage raisonnable en cas de chirurgie de la hanche compliquée. Néanmoins, si les indications y sont favorables, la réimplantation d'une prothèse totale de la hanche est à recommander.

Introduction

With the growing number of primary hip replacements, more revision operations must be performed and occasionally, as a result of uncontrollable sepsis, lack of bone stock or grossly damaged muscles, a patient may be left without a hip prosthesis. After a time for consolidation, the orthopaedic surgeon has to decide whether to reimplant a prosthesis, or to advise the patient to accept a pseudarthrosis. This leaves a similar result to the pseudarthrosis operation devised by G.R. Girdlestone for septic arthritis of the hip and described by him in 1943 [7].

The aim of our study was to investigate whether to advise the patient, after a period of walking on a pseudarthrosis, to undergo a revision to a replacement with all its advantages and possible complications, or to accept the pseudarthrosis.

29 infected THR

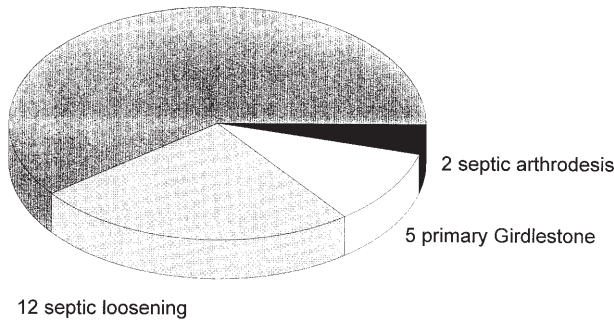


Fig. 1. The indications for performing the Girdlestone pseudarthrosis in 48 cases

Patients and methods

At the Orthopaedic Department in the University of Amsterdam, we performed 74 Girdlestone pseudarthrosis resections of the hip in 72 patients between 1980 and 1992. We were able to follow up 48 of these patients in 1994; 9 of the others could not be traced, 7 had died and 7 were restricted in their walking, mainly due to other medical conditions, and were therefore excluded.

The indication for operation was an infected hip replacement in 29 cases (60%), septic loosening of a hip replacement in 12 (25%), in 5 (10%) the pseudarthrosis procedure had been carried out for posttraumatic or primary septic conditions (including tuberculosis), and in 2 after an arthrodesis of the hip became septic (Fig. 1). A total hip replacement had already been carried out in 16 of the 48 patients at follow-up.

In 32 patients (6 men and 26 women) the Girdlestone pseudarthrosis had been present for 6.5 (±4) years. Their mean age was 75±15 years. The right hip was involved in 14 cases, and the left in 16. The other two patients had a pseudarthrosis on both sides.

In the remaining 16 patients (3 men and 13 women), a total hip reimplantation had been carried out after an average of 3 years (range 8 months to 4¼ years) from the pseudarthrosis. The mean age in this group was 73±13 years. In 9 cases the

right hip was involved in the other 7 the left. The mean follow up after reimplantation was 6 years.

At follow-up, the range of movement of the hip was estimated and a questionnaire completed. The Harris hip score for the individual patient was calculated based on these data.

Results

Both groups had a considerable leg length discrepancy, of 4±1.5 cm in the pseudarthrosis group and 2.5±1.5 cm in the reimplanted group. The Trendelenberg sign was positive in all the pseudarthroses, but was also positive in 63% of the reimplanted group. Nearly all the patients with a pseudarthrosis relied on a walking aid, with one exception who had a hip score of 85 points. Seven patients used a wheelchair. Other diseases contributed to the need for a walking aid in some cases.

Of the 16 patients with a hip replacement, 5 used 2 crutches, 2 used one crutch and 5 a walking stick. The other 4 patients were walking without an aid.

The range of movement was similar in both groups. Figure 2 shows the movement after a pseudarthrosis compared with the range before and after reimplantation. Movement was less good in hips which had had multiple operations.

The Harris hip score, where the range of movement only represents 5% of the total, was 64 (37–81) in the reimplantation group compared with 58 (31–85) with the Girdlestone pseudarthrosis. This was not statistically significant.

Discussion

Adequate relief of pain is usually achieved with a Girdlestone pseudarthrosis [2, 12] and any sepsis

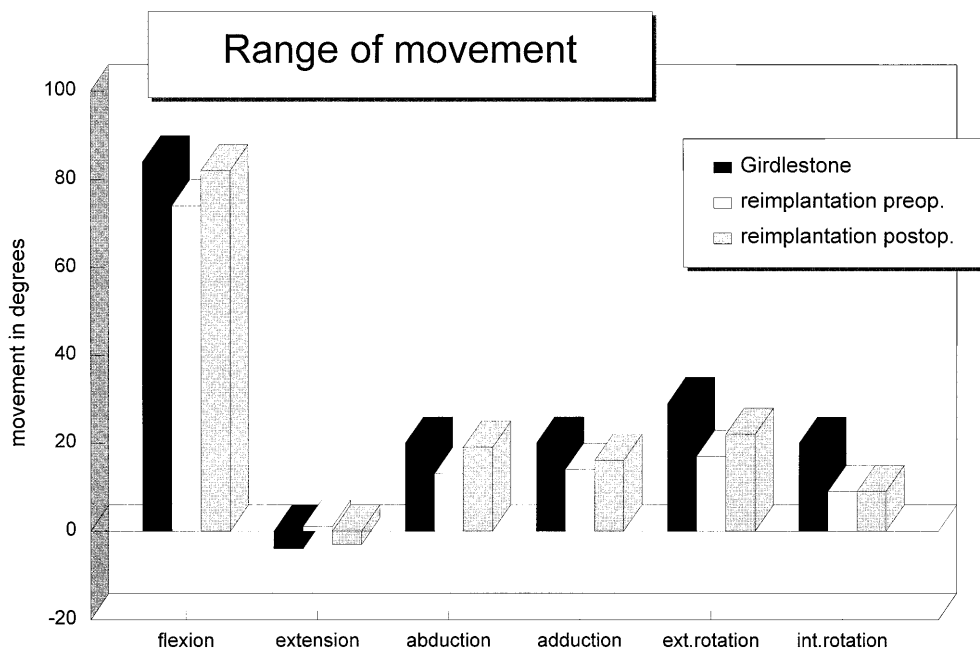


Fig. 2. Range of movement in patients with a pseudarthrosis, and in those before and after reimplantation of a hip prosthesis

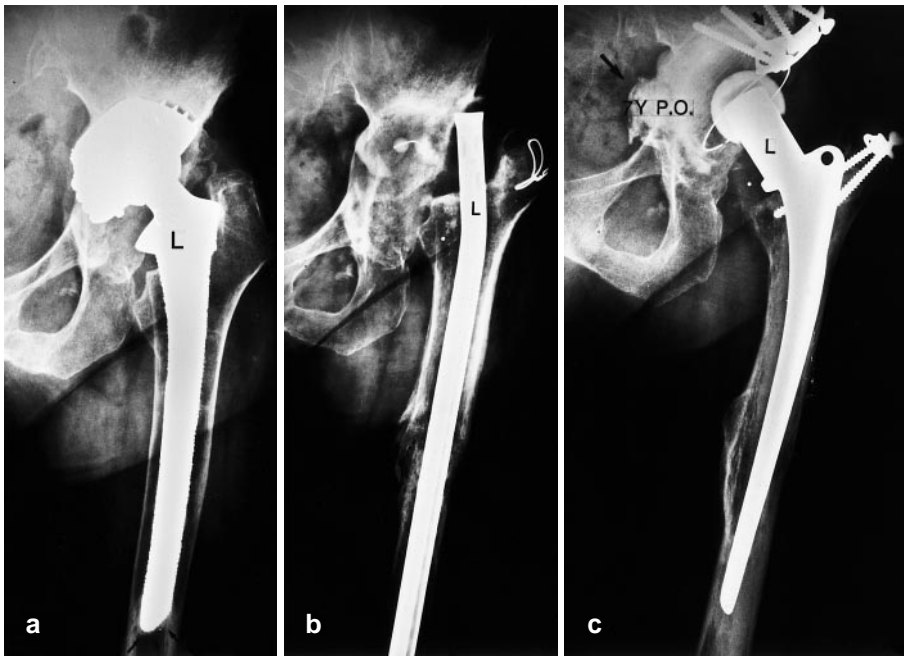


Fig. 3a–c. Radiographs of the hip of a woman, 46 years of age. A Wagner prosthesis was implanted, and revised one year later; after a further 2 years this was replaced by a Lord prosthesis. **a** The hip became infected after another 6 years and was treated by suction/irrigation. **b** 18 months later, the prosthesis was removed; a fracture of the femur occurred during the operation and was stabilized with an intramedullary nail. **c** A Weber prosthesis was implanted one year after the pseudarthrosis. The patient is now very satisfied, is free of pain with a good range of movement, and the Trendelenberg sign is negative

around a hip replacement is well controlled in most cases [6]. Although this procedure may be the only possible treatment, the results are far from ideal [5]. Most patients do not achieve more than a reasonable result, but really poor results are not common [10].

The functional results alone are not sufficient for judging this radical procedure, and the subjective outcome is important for the patient. The pseudarthrosis is likely to be painless, or only slightly painful, but the patient has to accept the inevitable shortening of the leg and instability of the hip, with consequent dependence on walking aids [2, 6, 12].

Better results can be expected in cases where more bone on the proximal femur can be preserved [12], but the amount of bone resected often cannot be at the level suggested by Girdlestone [7]. The line of osteotomy of the original replacement, or of the existing pseudarthrosis, determines the amount of femoral resection. Deficient bone stock is only partly responsible for the final result. Previous multiple operations using different approaches lead to severe muscle damage so that the replacement can only act as a spacer, like the interposed tissue in a Girdlestone pseudarthrosis. Unfortunately it is extremely difficult or even impossible to predict muscle strength following reimplantation, but if an early operation is carefully planned, an excellent result is possible (Fig. 3).

However, a spectacular improvement cannot be expected after reimplantation of a painless pseudarthrosis when there has been severe destruction of the soft tissues and poor active joint movement, but this group were mainly those who did not want a reimplantation, as they had often had several hip revisions.

The results of our two groups are not properly comparable because they are not randomised. Only the patients with poor function, and who were dissat-

isfied, were treated by reimplantation of a prosthesis. The remainder, who had better function and usually no pain, accepted their situation, and were pleased not to have a consider further revisions. They had already had an average of 2 to 3 previous operations on each hip, with a maximum of 7.

Reimplantation of a prosthesis into a long standing pseudarthrosis can be technically difficult and the patients should be carefully selected [3]. The indications are poor function and pain. The point is reached after about 3 years where no further progress can be expected [12]. One year is considered as the best interval for reimplantation after removal of previous septic prosthesis [4, 8, 9]. Occasionally, good results of one-stage revisions of septic total hip replacement are reported, but in certain infections, for example with pseudomonas organisms, at least a temporary pseudarthrosis should be accepted [8].

When making the decision to proceed with reimplantation, the possible results should be discussed with the patient who may be disappointed if he expects perfect hip function. Those who had a reimplantation in our series differed only marginally from those with a good pseudarthrosis, since shortening of the leg and a positive Trendelenberg gait were common after both operations, and only one-third managed to walk without an aid after reimplantation. The risk of a possible reinfection cannot be ignored [9], although none of our patients had a recurrence.

For relatively young and active patients, a pseudarthrosis is usually unacceptable as definitive solution [1], whereas in older patients who are restricted by other diseases, the hip becomes a secondary problem if it becomes less painful [7].

The pseudarthrosis remains a reasonable salvage operation for special problems [3], but reimplantation

of a total hip prosthesis can be recommended when the indications are correct.

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