

WAGNER RESURFACING HIP ARTHROPLASTY

Preliminary Results

HELENA GRUJIC, SVEN OLERUD & JULIUS SOREFF

Department of Orthopaedic Surgery, Karolinska Hospital, Stockholm, Sweden

Resurfacing arthroplasty according to Wagner was used in 40 hips (31 patients) with coxarthrosis or arthritis. The severe, disabling preoperative pain was eliminated in all patients. There was a considerable increase in range of movement, and the functional results were very good. Of the 24 patients previously in employment but disabled by their hip condition, 22 have returned to their former occupations. Complications occurred in only four cases.

Key words: arthroplasty; hip joint; joint prosthesis

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Total hip replacement has been a revolutionary development in the treatment of the osteoarthritic hip, giving pain relief and functional improvement. There has been some unwillingness, however, to use the method on young patients. The limited durability of the prosthesis has led to a reluctance to sacrifice the femoral neck and head. In the case of failure, replacement of the implants is difficult, sometimes impossible, which leaves the patient with a troublesome difference in leg length and, frequently, residual pain. This is why resurfacing arthroplasty (also called surface replacement or double-cup arthroplasty) is becoming a popular alternative for younger patients whose coxarthrosis/arthritis endangers not only their working capacity but also their capacity to walk independently. The advantages (physiological load transfer, elasticity of the acetabular cup, no intramedullary extension) and disadvantages (large socket anchorage and the thin wall of the socket) of the method as well as biomechanical and morphological aspects have been reported recently by Goldie et al. (1979).

The aim of this paper is to present the prelimi-

nary results and complications following resurfacing arthroplasty on 40 hips, 50 per cent of which had primary or secondary coxarthrosis and 50 per cent arthritis.

PATIENTS

Thirty-one patients, representing 40 operated hips, form the basis of this report. The operations were performed from March 1977 through October 1980. The clinical follow-up examination was made in March 1981. The follow-up period varied from 6 months to 4 years, average 26 months. The indications for resurfacing arthroplasty were severe spontaneous pain or pain on attempting to walk, so severe as to prevent all activity. The patients selected were those who were considered capable of returning to active life after operation. Patients with arthritis were not excluded. Many of these patients had multiple joint involvement. The age of the patients at the time of operation varied from 22 to 64 years, average 38 years. There were 16 women and 15 men. Nine patients were operated on bilaterally. The following conditions were present: Primary coxarthrosis 9; Secondary coxarthrosis 10; Rheumatoid arthritis 12; Spondylitis ankylopoietica (Mb Bechterew) 9.

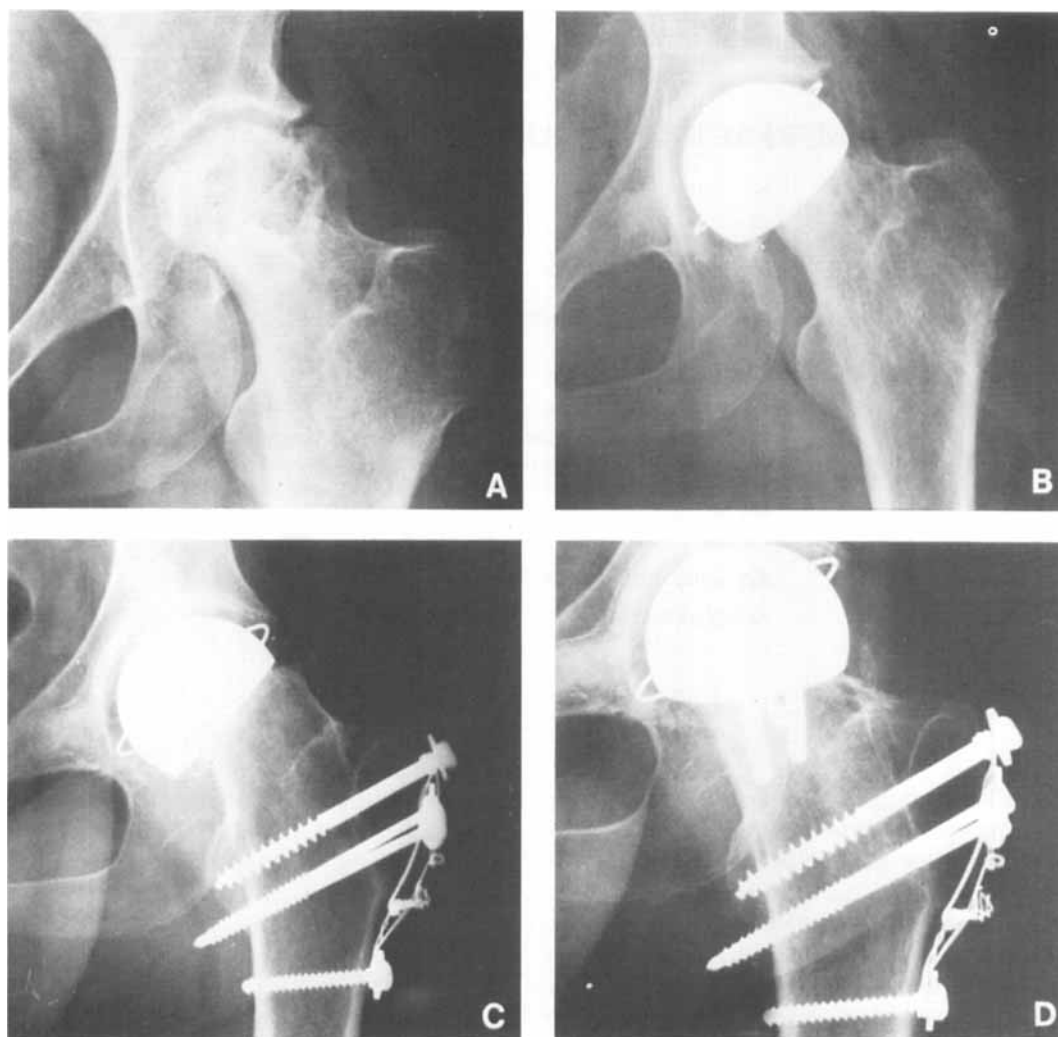


Figure 1. A) 30-year-old woman with posttraumatic necrosis of the femoral head; B) After resurfacing arthroplasty; C) Suspected femoral neck fracture after

transfer of the trochanter major; D) Two years after replacement of the femoral cup and fixation of the femoral neck fracture.

METHODS

Surgical technique

The operations were performed according to Wagner's original technique by two of the authors; the third author carried out the follow-up examinations. If adduction and/or flexion contractures were present, the resurfacing arthroplasty was combined with tenotomy. When necessary the surgical technique was adapted to individual anatomical variations, for instance a dysplastic acetabulum was reconstructed with surplus bone from the femoral head.

Postoperative management

The patients were mobilized on the first postoperative day and advised to use crutches or a cane for 3 months postoperatively. The follow-up included a clinical and radiological examination and E.S.R. at 3, 6, 18 and 24 months postoperatively and then once a year.

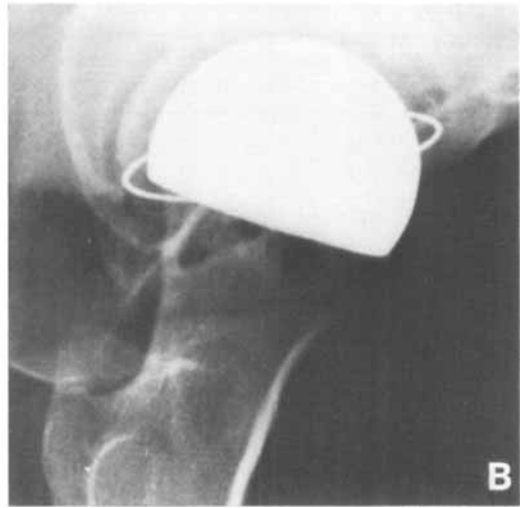


Figure 2. A) 25-year-old woman with hip dysplasia. Fracture through the acetabular cement 20 months after

resurfacing arthroplasty. B) after replacement of the acetabular cup.

RESULTS

Postoperative complications

No circulatory or neurological complications were encountered, and there were no infections during the follow-up period.

Reoperations

The following four patients (four hips) were reoperated on.

Patient A. A 45-year-old man with secondary coxarthrosis developed excessive ectopic bone, causing a reduced range of movement in the operated hip. At reoperation the excess ectopic bone was chiselled away. This increased the range of movement sufficiently to allow him to return to his former employment as a carpenter. This range of movement was unchanged 1 year after reoperation.

Patient B (Figure 1). A 30-year-old woman with post-traumatic necrosis of the femoral head had minimal pain postoperatively, but her limp was not corrected and the Trendelenburg test remained positive. Reoperation with caudal transfer of the trochanter major produced no improvement. Loosening of the femoral cup was therefore suspected in spite of a normal radiogram. A new operation was performed, this time with replacement of the femoral cup and fixation of the femoral neck fracture found at operation. Two years later she could walk without pain or a limp.

Patient C. A 25-year-old man with pelvospondylitis developed pain on weightbearing, without trauma, 6 weeks postoperatively. Six months later the radiogram showed a dislocated femoral neck fracture. The patient was reoperated on and conventional total hip replacement was performed. He now has no pain and has resumed his university studies. The other hip, also treated with Wagner's resurfacing arthroplasty, is functioning well.

Patient D. (Figure 2). A 25-year-old woman with post-dysplastic coxarthrosis returned to her job as an actress after operation, and had no pain and a normal range of movement for 20 months. After the onset of sudden pain without previous trauma the radiogram revealed a fracture through the cement around the acetabular cup. Reoperation, with replacement of the acetabular cup, gave good results.

Pain

Both preoperatively and postoperatively (at the time of follow-up) the patients were classified into six groups on the basis of presence and character of pain (Table 1). Preoperatively there was severe disabling pain, spontaneously or on attempting to walk, in 38 out of 40 hips. Only two patients could manage even limited activity. Postoperatively all patients were free from pain or experienced only tolerable pain even after heavy or prolonged physical exertion. Seven of the patients use a cane on long walks and three

Table 1. Preoperative and postoperative pain

Group	Preoperatively		Postoperatively	
	Hips	Patients	Hips	Patients
1-2	38	29		
3	2	2		
4			2	2
5			6	5
6			32	24

Group 1-2. Severe pain - occurring spontaneously or on attempting to walk - preventing all activity

Group 3. Tolerable pain, permitting limited activity

Group 4. Pain only after some activity, disappearing quickly with rest

Group 5. Slight or intermittent pain. Pain on starting to walk but diminishing with normal activity

Group 6. No pain.

Table 2. Preoperative and postoperative range of movement (sum of degrees of extension, flexion, abduction, adduction, and rotation)

Degrees	No. of hips	
	Preop.	Postop.
≤30	11	
-60	6	
-90	10	2
-120	3	
-150	7	2
-180	3	5
-210		12
-240		10
>240		9

patients use a cane or crutches because of pain in other joints.

Range of movement

The range of preoperative and postoperative movement, quantified as the sum of the degrees of extension, flexion, abduction, adduction and rotation, is presented in Table 2. The increase in range of movement produced by surgery varied between 20° and 280°, average 140°. Preoperatively 17 hips had a flexion contracture of up to 50°. Postoperatively, there was residual contracture in four hips, but in no case exceeding 20°.

There was no decrease in the range of movement during the follow-up period, nor did contractures reappear.

Postoperative working capacity

Twenty-two patients have returned to their former occupations. Two patients are not working because of arthritis in other joints. Two patients are on sick-leave because of their hip condition. Five patients were already pensioned before the operation because of disease or age.

Patients' subjective evaluation

All patients are still satisfied with the results. Some of them have spontaneously stated that they can sometimes forget that they have a prosthesis in the hip.

Radiology

The radiograms were examined with respect to the position of the arthroplasty components, the presence of a radiolucent zone between the acetabular cup and the bone, and ectopic bone formation. In six hips the femoral cup had a slight varus position instead of the valgus position aimed at. In our series, the position of the femoral cup had no relation to complications. In two hips there was a radiolucent zone exceeding 2 mm but less than 4 mm. Ectopic bone formation was seen in eight hips (six patients, of whom three had pelvospondylitis), but had caused symptoms in only one case.

DISCUSSION

Experiences of and recommendations concerning resurfacing arthroplasty are conflicting. Head (1981) reports a complication rate of 34 per cent in a series of 40 patients operated upon using the Wagner method and with an average follow-up period of 2.4 years. He recommends caution in choosing this method. On the basis of experiences with their own prosthesis, Furuya and collaborators (1978) also warn against using resurfacing arthroplasty. Several other authors, on the

other hand, draw more positive conclusions from their experiences with different resurfacing methods (Freeman 1978, Goldie et al. 1979, Tanaka 1978, Trentani & Vaccarino 1978, Wagner 1978). Freeman (1978), with a follow-up period of 5.5 years, reports results comparable to those following conventional total hip replacement.

Complications known to be associated with resurfacing arthroplasty occurred in four of our operated hips (10 per cent), but these complications were manageable. This complication rate cannot be considered unacceptably high. In one case, we were forced to perform reoperation with a conventional stem prosthesis. In the other three reoperated hips the femoral neck was preserved. The patients tolerated the reoperation well. The surgical difficulties considered to exist in patients with arthritic disease were not encountered in our series. Complications did not occur more frequently in our arthritic patients than in those with coxarthrosis. The varus or valgus position and the width of the radiolucent zone did not correlate with the occurrence of complications. The significance of these findings, however, cannot be evaluated at present. The improvement in range of movement as well as the effect of tenotomy was gratifying and was maintained during the

observation period. The short observation time in our series provides no basis for suggesting either wider or more restrictive indications for resurfacing arthroplasty. This question can be settled only after continued follow-up.

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Correspondence to: Helena Grujic, M.D., Dept. of Orthopaedic Surgery, Karolinska Hospital, S-104 01 Stockholm, Sweden.