



Total hip replacement in old tuberculosis

A report of 14 cases

Seppo Santavirta¹, Antti Eskola¹, Yrjö T. Konttinen², Kaj Tallroth¹ and S. T. Lindholm¹

We treated 14 patients with a cemented total hip replacement for old tuberculosis on an average 43 years after the onset of the coxitis. Nine patients were not given any antituberculous treatment, whereas in 5 patients treatment with antituberculous drugs was administered postoperatively for 6 to 12 months. The duration of postoperative follow-up was on an average 8 (5-10) years. Using the Mayo hip scoring system, 8 of the patients were classified as excellent or good, 3 as fair, and 3 as poor. The poor results were in 2 cases due to aseptic loosening of the prosthesis and infection in 1. None of the patients showed reactivation of the tuberculosis.

There are only few articles specifically dealing with total hip replacement for quiescent tuberculous arthritis of the hip joint, and the total number of patients followed up in the published series is less than 50 (Hardinge et al. 1979, Jupiter et al. 1981, Kim et al. 1986, Eskola et al. 1988). Many orthopedic surgeons are still reluctant to treat quiescent tuberculous coxitis with the total hip because there is a risk of reactivating the tuberculous infection (Johnson et al. 1979, McCullough 1977).

Since 1977, we have performed total hip replacement in patients with old tuberculous coxitis.

Patients and methods

In 1977-1983, at the Orthopedic Hospital of the Invalid Foundation, we treated 14 patients with a cemented total hip replacement for an old tuberculosis of the hip joint. The bone cement did not contain antibiotics. In each patient the diagnosis was well documented with cultures and long-term clinical and radiographic follow-up. At the time of the replacement all the patients had normal ESR levels.

There were 8 men and 6 women. Two of the patients had had a bilateral tuberculous coxitis.

One of them had a bilateral hip replacement. However, the other hip was only recently treated with a cementless prosthesis, and thus was omitted. The second patient with bilateral disease had one hip fused. The infection had usually made its debut during childhood; age at onset averaged 13 (2-24) years. The mean age of the patients at the time of operation was 56 (42-77) years. One of the patients had initially been treated with successful fusion, but suffered from low-back pain and pain in the ipsilateral knee. Two of the patients had initially been treated with a Schanz osteotomy. With the exception of the fused hip, the reason for the hip replacement was severe painful destruction of the joint (Figures 1 and 2). The average range of flexion preoperatively was 57° (0°-100°), 3 patients having reduced extension (10°-20°). Twelve patients had shortening of the leg on an average of 3 (1-7) cm, as assessed on erect posture radiographs.

Five of the patients received antituberculous treatment with daily doses of 600 mg of Rifampicin and 300 mg of isoniazid supplemented with pyridoxine, started during the operation and continued for 6 to 12 months. Thus, 9 patients were not given any antituberculous medication. All the patients received prophylactic antibiotic treatment of 2,000 mg flucloxacillin daily for 5 days, this being our routine in revision total hip arthroplasties, but in no case were antibiotics mixed with the cement. During the operation, samples for routine aerobic and anaerobic bacte-

Orthopedic Hospital of the Invalid Foundation¹ and Fourth Department of Medicine², University Central Hospital, Helsinki, Finland



Figure 1. Case 2. A 62-year-old man who had suffered a tuberculous coxitis in early childhood. Seven-centimeter shortening of the leg caused severe low back pain.

A. Preoperatively.

B. Immediate postoperatively. Leg length discrepancy is reduced by 2.5 cm.

C. Ten years postoperatively. There are no signs of prosthetic loosening.

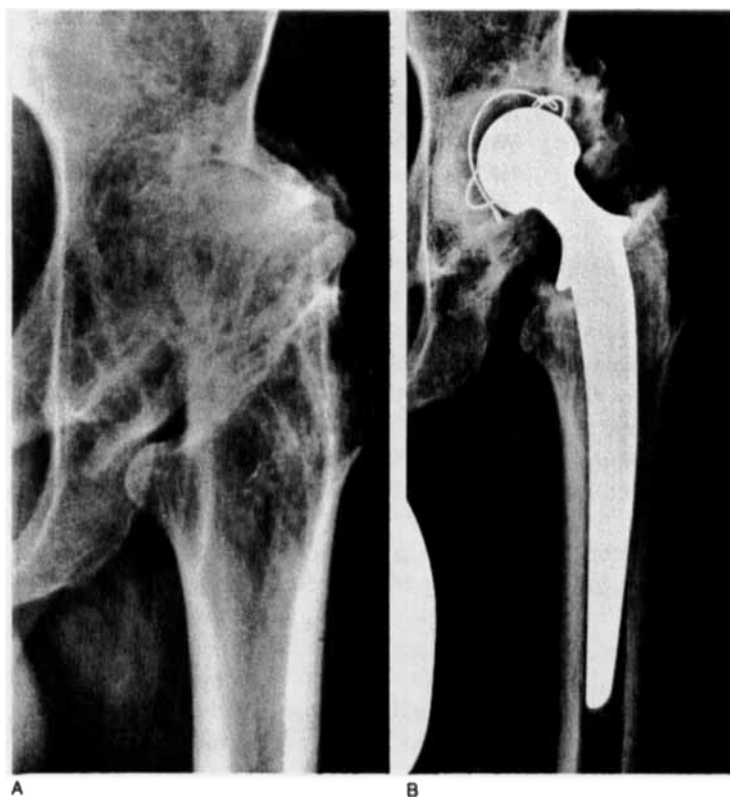


Figure 2. Case 3. A 47-year-old man had had tuberculous coxitis in early adolescence.

A. Preoperatively. The hip joint is ankylotic. Note the general osteoporosis around the hip and the supraacetabular cyst.

B. Five years postoperatively. The replaced hip has good function and the patient is without pain.

rial and tuberculosis cultures were obtained, and all of these samples proved negative.

All the prosthetic components were cemented, and the prosthesis used was in 9 cases Lubinus, in 4 Lagrange-Letournel, and in 1 Müller-Brunswik. The patients were encouraged to walk with crutches from the day after the operation, and full weight bearing without crutches was allowed after 3 months.

The duration of follow-up was on an average 8 (5-10) years.

Results

Two patients (Cases 1 and 14) had in the early postoperative phase a superficial wound infection, which was successfully treated with short-term systemic antibiotics. In 1 patient (Case 9), who had not been treated with antituberculous medication, deep infection caused by *S. aureus* was diagnosed 9 months postoperatively, and the prosthesis had to be removed. One year later, a new replacement was performed (Table 1). In 1 patient (Case 11) the hip became painful after 7 years, and radiographic examination confirmed a

Table 1. 14 patients treated with total hip replacement for old tuberculous coxitis and clinical findings on average 7.5 years postoperatively

A	B	C	D	E	F	G	H	I	J	K	L	M
1	5	49	M	L	10	70	4	40	18	16	87	
2	14	62	M	R	0	80	4.5	40	18	15	89	
3	10	47	M	L	0	80	2.5	40	20	18	93	
4	24	77	M	R	0	100	1	35	14	10	79	
5	3	45	M	R	0	90	6	35	14	10	79	
6	20	64	M	R	0	100	0	20	20	15	70	
7	20	57	M	L	0	65	0	40	20	18	98	
8	7	56	F	L	0	100	1	40	17	15	92	
9	2	42	F	L	0	90	7	35	17	8	60	^a
10	8	44	F	R	0	80	2	40	20	20	98	
11	18	50	M	R	0	120	1	40	30	20	100	
12	24	58	F	R	0	80	0	20	15	17	57	^b
13	15	71	F	R	0	85	0	40	20	20	97	
14	8	64	F	R	0	100	0	0	10	10	20	^c

A Patient number, B Age at onset of tbc coxitis, C Age at THR, D Sex, E Side, F Extension at follow-up (degrees), G Flexion at follow-up (degrees), H Shortening of the leg at follow-up (cm), I Pain at follow-up, J Function at follow-up, K Range of motion and muscle function at follow-up, L Total Mayo score at follow-up, M Complications: ^a revised due to deep infection, ^b acetabular component loose, ^c both components loose.

loosened acetabular component; in another patient (Case 14), both prosthetic components were



Figure 3. Case 13. Secondary arthrosis in a 71-year-old woman after tuberculous coxitis, which she had suffered in adolescence. A. Preoperatively. B. Six years postoperatively. The hip is functionally excellent.

found loosened after 8 years. Revision arthroplasty is planned for these 2 patients. Besides the above-named complications, there were no other ones recorded during the follow-up.

The mean clinical score for all 14 patients in the preoperative evaluation was 25 (4-63) points, and at the follow-up 66 (20-80) points. In the total Mayo score including radiographic data, the mean postoperative value was 80 (20-100) points (Table 1). Good or excellent results (80-100) were recorded in 8 patients (Figure 3), a fair result (70-79) in 3, while 3 (one infection and two loose prostheses) were rated as poor (less than 70).

At the follow-up the range of motion had increased in all the patients. Only 1 patient had a 10° extension deficit postoperatively. The preoperative shortening could usually be corrected, but 4 patients had a shortening of 2.5 cm or more at the follow-up. The preoperative atrophy of the quadriceps muscle remained unchanged in 5 patients.

None of the patient had an elevated ESR or CRP values at the follow-up.

Discussion

Tuberculous infection of the skeleton has a tendency to chronicity, and a total hip replacement has been thought to reactivate the infection (McCullough 1977, Johnson et al. 1979). However, a few recent reports suggest a relatively good outcome of such a procedure (Hardinge et al.

1979, Jupiter et al. 1981, Kim et al. 1986; Table 2). However, with the exception of the report by Kim et al. 1986, the follow-up times have been relatively short, and some reports also included patients who had been treated with replacement for a nontuberculous, old septic coxitis.

Hardinge et al. (1979) did not give antituberculous medication, and thus a replacement may be successful even without antituberculous prophylaxis. However, there is an increased risk of reactivation of focal tuberculosis (Johnson et al. 1979, Hecht et al. 1983, Delrieu et al. 1986). All the patients in our series who were given antituberculous drugs were able to complete their medication without side effects. The benefits of an antituberculous treatment apparently outweigh its possible side effects. At the moment, we recommend two antituberculous drugs for 3 weeks prior to the operation and subsequently for 6-9 months after the operation. This policy resembles the regime suggested by Kim et al. (1986).

One of the prerequisites for successful outcome is probably a long interval between onset and primary treatment of the tuberculous coxitis and the hip replacement. In all the reported series from industrialized nations, this interval has been, on an average, longer than 20 years. Jupiter et al. (1981) suggested a 1-year treatment preoperatively with one contemporary antituberculous drug for patients who had never previously received antituberculous medication, which may be a common situation worldwide.

Table 2. Comparison of reported series of total hip replacement for old tuberculosis of the hip joint

Authors	No of patients	Years after onset of tbc coxitis	Years follow-up (range)	Antituberculous prophylaxis	Type of prosthesis	No of revisions during follow-up	No of total failures (prosthesis removed)
Hardinge et al (1979)	21	> 20	2.7 (0.8-8)	none	Charnley	-	-
Jupiter et al (1981)	7	37	3.5 (all > 2)	all patients, 3 weeks prior operation	not named	-	-
Kim et al (1986)	20	> 20	9 (8-10)	6-9 months postoperatively	Charnley	4	1
Present series	14	43	7.5 (4.5-10)	9 patients none, 5 patients 6-12 months postop.	various cemented	1	-

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