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Review article

Total hip replacement in tuberculosis of hip: A systematic review

Anurag Tiwari[a,*], Yugal Karkhur[b], Lalit Maini[b]

[a] Department of Orthopaedics, All India Institute of Medical Sciences, Bhopal 452020, India
[b] Department of Orthopaedics, Maulana Azad Medical College, New Delhi 110002, India

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ABSTRACT

Total hip replacement (THR) in patients with tuberculous arthritis of the hip is controversial. The timing of surgery, type of prosthesis, reactivation of the disease, high complication rates and the long-term survival of the reconstruction are the major conc erns. There is little information regarding this concern in the literature. We conducted a systematic review of published studies on Total Hip Replacement in patients with Tuberculosis of the hip. A search of Pubmed and Google Scholar database articles published between January 2000 and July 2017 was performed. Thirteen articles were identified, comprising 226 patients. The mean follow-up was 5.48 years. Antituberculosis treatment was given for atleast 2 weeks pre-operatively and continued post-operatively for between six and 18 months after THR. Three patients had reactivation of infection. At the final follow-up, the mean Harris hip score was 89.98. Total Hip Replacement in tuberculosis of hip is safe and efficient way to save the joint function. The most important factors to achieve success include the accurate diagnosis, efficient pre- and postoperative anti-tuberculosis therapy, thorough debridement, two stage procedure for patients with sinus(es).

1. Introduction

Tuberculosis (TB) of the hip joint accounts for about 10–15% of all patients of osteoarticular TB[1,2] and is the second most common site of osteoarticular involvement after the spine.[3] It results in severe cartilage and bone destruction causing pain, deformity, shortening and instability, if early diagnosis and treatment was missed,[4] and its treatment can be confronted with great challenges.

The treatment of patients with advanced tuberculous arthritis of the hip is controversial. The surgical options are excision arthroplasty, arthrodesis and Total Hip Replacement (THR). Excision arthroplasty offers a painless and mobile hip at a cost of instability with shortening and an abnormal gait.[5,6] In addition, the conversion to THR after excision arthroplasty is complex and may be less satisfactory.[7] An arthrodesis offers a stable, painless and immobile joint with poor function, back pain and abnormal gait.[8] The operation is often complicated with non-union. Also, it is no longer popular in the Asia-Pacific region because of the customary need for squatting.[1]

THR provides a painless stable joint with a normal gait. However, timing of surgery, type of prosthesis, duration and regime of peri-operative antitubercular chemotherapy (ATT), reactivation of the disease, high complication rates and the long-term survival of the reconstruction remain major concerns with THR.

Some consider THR to be contraindicated because of risk of reactivation of infection[1] whereas others recommend a long interval between the treatment of the active infection and THA[9] which varied from 10 to 20 years.[10–12] The purpose of this study was to review the literature in order to assess the outcome of THR in patients with tuberculosis of hip.

2. Material and methods

A search of PubMed and Google Scholar database was performed with the key words, “arthroplasty; replacement; hip; tuberculosis”. We could trace about 77 papers on this subject. We included the articles which were published from January 2000 to July 2017 in which total hip arthroplasty was done for active or healed tuberculosis of the hip. Case reports; review articles and periprosthetic tuberculous infections and studies in which other joints involved were excluded from the study. Thirteen articles were selected for the review.

The selected articles were reviewed to extract the information of different studies on demographic data like number of patients, mean age, male: female ratio. The biochemical values- Erythrocyte Sedimentation Rate and C-Reactive Protein (ESR and CRP), duration

* Corresponding author at: A-210, Sagar Golden Palm, Katara Hills, Bhopal, 452020, India.
E-mail address: dranurag.tiwari@gmail.com (A. Tiwari).

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of antitubercular treatment (ATT), surgical management, outcome regarding post-operative ESR and CRP, duration and regime of post-operative ATT, Harris Hip Score and any complications including reactivation of tuberculosis were evaluated.

3. Results

The results were summarised in Table 1. There were total 226 patients included in these thirteen articles. Mean age at the time of total hip arthroplasty was 49.7 years. Twenty-four patients have associated pulmonary lesions and eight patients have sinus around the affected hip. Two out of thirteen studies have a total of 91 patients with healed tuberculosis of hip. Majority of patients received atleast 2 weeks of ATT preoperatively. All patients received first line drugs only. The drugs used pre-operatively were Isoniazid, Rifampicin, Pyrazinamide and Ethambutol (HRZE) in 123 patients; HRES (HRE + Streptomycin) in six patients; HR in 26 patients. Thirty-six patients received ATT in post-operative period only, status of ATT unknown in remaining 35 patients. 165 patients had uncemented, 41 patients had cemented and eight had hybrid prosthesis. It was not mentioned about the type of prosthesis used in the remaining 12 patients. In all the cases,

Table 1
Demographic variables and results of the different studies.

Study	n	Mean Age (yrs)	Type of disease	Preop ESR/ CRP	Sinus	ATT drugs used	Duration ATT (preop)	Prosthesis Used	Duration ATT (post op)	Follow Up (years)	Harris Hip Score (Preop/ Follow Up)	Complications	ESR/ CRPNormal by
Yoon et al.[13]	3	36.6	Active	92.6/4		HRZE	2weeks	Uncemented	1year	3.2	–/97		2.6
Yoon et al.[14]	7	46.4	Active			HRZE	Immediate	Uncemented	1 year	4.8	37/94.9		4/3
Netval et al.[15]	26	65	Healed			HR		Uncemented 6 Cemented 15 Hybrid 5	3–5 months			Nil	
Ozturkmen et al.[16]	9	43.4	Active	High/ High		HRZE	2 weeks	Uncemented	1 year	5.6	–/94.8	1 Heterotopic ossification	4/3
Sidhu et al.[17]	23	52	Active	69/10.8	0	HRZE	3 months	Cemented	18 months	4.7	38/91	1 dislocation reduced by CR 1 Heterotopic Ossification	12
Wang et al.[18]	6	33.8	Active	ESR 72.5	2	HRES	2 weeks	Uncemented 4 Cemented 2	1 year	4.08	26.8/94.2		6
Neogi et al.[19]	12	45	Active		1	HRZE	5 weeks	Uncemented 10 Hybrid 2	1 year	3.41	38/88	1 reactivation and superadded S aureus infection (non-compliant to ATT) Resection arthroplasty done	5.6
Wang et al.[20]	8	48	Active	High(4) Normal (4)		HRZE	2 weeks	Uncemented	6 months	3.83	35/91		7/3
Shen et al.[21]	14		Active			–	2 weeks	Uncemented	6months	4.08	36/87	1 reactivation 7 months later Resection arthroplasty done	
Bi et al.[22]	12	46.3	Active	62.4/ 33.6	1	–				3.4	36.83/88	1 reactivation 4 months later Cured after Revision	
Zeng et al.[23]	32	49.4	Active	High (11)		HRZE	2 weeks	Uncemented	1 year	4.1	42.2/85.4		3/4
Kumar et al.[24]	65	48	HEALED	Normal	0	HRZE	1week	Uncemented	6 months	8.3	27/91		
Li et al.[25]	9	50	Active		4	–	1st stage: 2 weeks	Uncemented 7 Cemented 1 Hybrid 1	1st stage: 3 months 2nd stage: 6–9 months	3.3	35/91.5	1 DVT treated by antithrombotics	3.3/1.6
Total (13)	226	49.7	91 patients healed	High in 7 studies Normal in 1 study	8 patients have sinus		2weeks to 1 year	UnCemented 165 Cemented 41 Hybrid 8 UnKnown 12	6 months–18months	5.48 Yrs	–/89.98	3 reactivation 2 Hetrotopic Ossification 1 dislocation 1 DVT	5.8/5.5

(ESR- Erythrocyte Sedimentation Rate; CRP- C Reactive Protein; ATT- Antitubercular therapy; H- Isoniazid; R- Rifampicin; Z- Pyrazinamide; E- Ethambutol; S- Streptomycin).

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