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## Original Research Article

# Is Functional outcome of Cementless Total Hip Replacement better than cemented one?

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**Abstract:** 31 patients who had 38 cemented (or) cementless hip prosthesis for non traumatic indications were followed retrospectively and prospectively for 5-13 yrs. A cemented prosthesis was used in men older than 60 yrs and women older than 55yrs and in younger patients in whom adequate initial fixation could not be obtained without cement. Uncemented implants were used in all other patients. The mean Harris hip score at latest follow up of both cemented and uncemented total hip replacement were 88 and 89 respectively. On analyzing the difference in pre op and latest Harris hip score for various nontraumatic indications, our study showed that the results were better in patients with avascular necrosia followed by Osteoarthritis and Rheumatoid arthritis. In our series of uncemented group we have 95% excellent/good results while in case of cemented group we have 82% excellent/good results. Uncemented and cemented total hip replacement give equally good results in non traumatic indications.
**Keywords:** Osteoarthritis, Rheumatoid arthritis, Avascular Necrosis, Harris hip score, Total hip replacement, Cemented, Cementless.

## INTRODUCTION:

Total hip Arthroplasty is an operation to restore motion and stability to a joint and function to the muscle, ligaments and other soft tissue structures that control the joint. Implanting an artificial head and socket to replace the degenerated head exerted such a profound social impact and enjoyed such a dramatic early success. Various immediate and long term complications may compromise this procedure, but it still remains the greatest boon available to orthopaedic patients, and has proved to be the greatest advancement in the field of orthopaedic surgery in the twenty first century. The optimal method of fixation for primary total hip replacements, particularly fixation with or without the use of cement is still controversial. Our aim is to analyse the Harris hip score in midterm follow up of cemented and cementless total hip arthroplasty done for non-traumatic indications.

## MATERIALS AND METHOD:

The study group comprised of thirty one patients with thirty eight hips. The youngest patient was 23years and the oldest 75years with a mean of 46 yrs. 24 patients underwent unilateral total hip replacement while 7 underwent bilateral total hip replacement. Of the 38 hips, 16 were cemented and 22 uncemented. We preferred the uncemented hip in males below 60yrs and females below 55yrs of age [1]. However the cemented hip was used in patients for whom economy was a constraint. The follow up was from 5years to13 years with a mean of 6yreas 6 month. The indications were rheumatoid arthritis in nine, ankylosing spondylitisin two, avascular necrosis in forteen and osteoarthritis in thirteen. The Posterior Approach was used in 19 cases and the Lateral Approach in 19 cases. The Approach was selected randomly. Informed consent was obtained from patients after discussion of the advantages and risk of each approach. We used the Harris hip score (Modified) for clinical evaluation [2]. All the patients were followed up at Immediate Postop, 6wks, 3mths, 6mths, 1 year and annually thereafter.

## RESULTS

Clinical evaluation was done pre operatively and posts operatively using Harris hip score which takes into account pain, function, deformity and range of movements.

### 1. Pain

The location of pain was recorded as in the groin, the buttocks, the lateral or trochanteric area, the anterior aspect of the thigh or diffuses. Preoperatively no hip had a Harris hip score of 44 or 40 points, 20 hips had a score of 30 points, 12 hips had a score of 20

points, 6 hips had 10 points and 0 hips a score of zero points. At the latest follow up visit, 32 hips had a score of 44 points; 2 hips had 40 points; 2 hips had 30 points; 2hips had 20 points; 0 hips had 10 points; 0 hips had 0 points.

**2. Limp**

Preoperatively 20 hips had a Harris hip score of 11 points; 13 hips had 8 points; 1 hip had 5 points; 4 hips had 0 points. At the latest follow up visit 34 hips had a score of 11 points; 2 hips had 8 points; 2 hips had 5 points; 0 hips had 0 points.

**3. Support (Walking aids)**

Preoperatively 27 hips had a Harris hip score of 11 points; 6 hips had 7 points; 2 hips had 5 points; 3 hips had 3 points; 0 hips had 2 points; 0 hips had 0 points. At the latest follow up visit 35 hips had 11 points; 0 hips had 7 points; 0 hips had 5 points; 3 hips had 3 points; 0 hips had 2 points; 0 hips had 0 points.

**4. Walking Distance**

Before the surgery 24 hips had 11 points; 6 hips had 8 points; 2 hips had 5 points; 8 hips had 2 points; 0 hips had 0 points. At the latest follow up 30 hips had 11 points; 4 hips had 8 points; 3 hips had 5 points; 1 hip had 2 points; 0 hips had 0 points.

**5. Stair Climbing**

Before the hip replacement 0 hips had 4 points; 20 hips had 2 points; 8hips had 1 point; 10 hips had 0 points. At the latest follow up 25 hips had 4 points; 10 hips had 2 points; 0 hips had one point; 3 hips had 0 points.

**6. Range of Motion**

Before the operation 0 hips had a Harris hip score of 5 points; 20hips had 4 points; 7 hips had 3 points; 11 hips had 2 points; 0 hips had 1 point. At the latest follow up 30 hips had 5 points; 6 hips had 4 points; 2 hips had points; 0 hips had 2 points; 0 hips had 1 point.

**7. Deformity**

Before the operation 6 hips had fixed flexion deformity, 3 hips had fixed adduction deformity while others hip had no deformities. Post operatively there were no deformities in any of the patients.

In our series we had 89% excellent / good results and 11% fair / poor results. The Uncemented thr's had 95% excellent/good results and 5% poor/fair results and in cemented thr's we had 82% and 18% results respectively. The mean pre and latest Harris hip score were 44 and 88 respectively. The mean Harris hip score in 1$^{st}$, 3rd and 5$^{th}$ yrs were 86, 87 and 87 respectively. The mean pre and latest Harris hip score in osteoarthritis was 49 and 92, in rheumatoid arthritis it was 35 and 74, in avascular necrosis it was 46 and 90 and in ankylosing spondylosis it was 46 and 89 respectively.

**DISCUSSION**

1. Pain: Pain in the thigh is generally associated with the use of uncemented femoral stems. In our study we had 6 patients (16%) which was comparable to Engh *et al.;* [3] 14%, Callaghan [4] *et al.;* 18%. All the 6 pts had uncemented hips done. In our patients the pain decreased with time and was pain free at 6 months post op .The variation may be due to differences in operating technique or in how the pain was interpreted and graded.

2. Limp: In our study 2 patients had a limp. Both the patients were Rheumatoid Arthritis pts operated through the lateral approach. Limp has been associated with the direct lateral approach described by Hardinge [5]. They believed that limp occurred less frequently when a posterior approach was used.

3. Support (walking aids): One patient who had bilateral hip involvement due to rheumatoid arthritis was using a walker post operatively. At the latest follow up the same patient and one more rheumatoid arthritis patient was using walker support.

4. Walking distance: Preoperatively none of the patients were able to walk for unlimited distance. At the latest follow up 25 patients were able to walk for unlimited distances, 3 patients were able to walk 6 blocks , 2 patients were able to walk 2 or 3 blocks and 1 patient who had severe rheumatoid was able to walk indoor only

5. Stair climbing: Preoperatively 22 patients were able to climb stairs using a railing, 2 patients used crutches and 7 patients were not able to climb stairs. Post operatively, at the latest follow up 20 patients were able to climb stairs without using a railing, 9 patients used a railing for support and 2 pts (rheumatoid) were not able to climb stairs.

6. Range of motion: Post operatively at the latest follow up all patients had good range of movements. No patients including rheumatoid pts had gross limitation of movements.

7. Limb length discrepancy: In our study 5 pts (13%) had a shortening of 1-1.5 cms. This is comparable to the series by Jasty M, Webster W and Harris W, who reported an incidence of 16% limb length inequality in a series of 85 total hip replacements, their criteria being a shortening of 1 cm [6]. Foot wear correction was given to the above patients.

The mean pre op and latest Harris hip score in our study were 44 and 88. This was comparable to the study by Wixson *et al.;* [7] whose mean pre and post op Harris hip score was 44 and 93 respectively and Siwach

*et al.;* [8] whose mean pre and post op harris hip score were 44 and 83.5. Mean pre op and latest Harris hip score in cemented hips was 40 and 85 which was comparable to that of Wixson *et al.;* 42 and 90 and cornel *et al.;* who had 36 and 88 respectively. Mean pre and post op harris hip score in uncemented hips was 48 and 89 which was comparable to that of Wixson *et al.;* who had 47 and 95 and Callagan et al who had 42 and 92respectively.Our mean 1st, 3rd, 5th yr harris hip scores of 86, 87 and 87 were comparable to that of C.Y.NG *et al.;* [9] and Goran *et al.;* [10] who both had 88, 89 and 89 respectively. The greatest change occurred between pre op assessment and review at 6 months. The patients had the potential to improve further until 18 months. Further the scores plateaued.Our study of unilateral vs bilateral thr was comparable with the study of Anders Wykman *et al.;* [11]. The Harris hip score in bilateral hips is inferior to that of unilateral hips. Although patients with bilateral disease gain considerable pain relief and improvement after the first thr, the optimal improvement is not seen until after the second replacement.

On analysing the difference in pre op and latest HHS for various indications, our study showed that there was a significant difference in patients with AVN followed by OA and RA. Our series of patient with OA have pre and latest HHS as 49 and 92. This is comparable to Ragab *et al.;* [12] whose series had 48 and 96. The HHS score in RA pts in our series was 35 and 74 which is comparable with Johnson *et al.;* scores of 41 and 78[13] .In our series we had one patient (2.6%) for whom bilateral thr and tkr was done for rheumatoid arthritis. Her HHS score of 20 and 68 were comparable with the results of Kenneth *et al.;* score of 25 and 75.The preferred method of arthroplasty in this case is to operate on the hips before the knees, and on the most diseased of each pair of joint. The relief of pain was the single factor that accounted for the increase in hip rating [13].

In our series of Cementless thr's we have 95% excellent/good results and 5% poor/fair results which can be compared with Wykman *et al.;* who has 89% excellent/good and 11% poor/fair results. In case of cemented thr's we had 82% and 18% results which can be compared with Wykman *et al* 89% excellent/good and 11% poor/fair results respectively[11]. In our series the poor results (4 hips) came in cases of rheumatoid arthritis. All the patients had involvement of other joints. 1 pt had bilateral thr and tkr done.

## CONCLUSION

Uncemented and cemented total hip replacement give equally good results in non traumatic indications. Although there are some limitations like small study group no radiological considerations our review showed no significant difference between cemented and Cementless group in terms of functional outcome. It is almost certain that better short and midterm clinical outcomes mainly improved pain score can be obtained from cemented fixation; this is still unclear for the long-term clinical and functional outcome.

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