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Short term evaluation of functional and radiological outcome of uncemented total hip replacement in elderly arthritic patients-20 case series

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Abstract

Background: Anatomical alignment of hip allows mobility in three planes. Any derangement in this alignment affects the functioning and daily living of a person, which is most commonly either due to trauma or degenerative conditions like osteoarthritis (OA). Till date the most effective treatment of severely damaged joints is replacement. Uncemented Total hip replacement (THR) is commonly indicated in young patients, but the usage of uncemented THR in elderly population is of debate in the recent past. Though THR is a remarkable surgical procedure, its effectiveness in providing mobility, stability and better quality of life is time tested. This made us to analyze retrospectively the short term evaluation of functional and radiological outcome of uncemented THR in elderly arthritic patients.

Materials & Methods: A retrospective cum prospective study conducted at our center (Maharajahs institute of medical sciences, nellimarla, vizianagaram, A.P) in 20 hips (20 patients) from sep 2103 to sep 2017 among patients who met the inclusion criteria were admitted, operated with uncemented THR after consent for the procedure has been taken and followed up for a period of 36-40 months. All the patients were evaluated functionally (Harris hip score, VAS (visual analogue pain scale)) and radiologically (Andrew Whaley & Daniel *et al.* criteria-acetabular cup loosening, Eng'h's criteria-femoral stem loosening)

Results: Mean age of study group-55 years, males are predominant in the study.18 out of 20 had good-excellent painless ROM.1 pt had posterior dislocation of prosthesis following trauma which was reduced immediately under GA, followed by supervised physiotherapy, following which patient had no complaints.1 patient had superficial skin infection, managed with iv antibiotics. No significant limb length discrepancies in the study.

Conclusion: Uncemented THR can be considered as better reproducible surgery in elderly arthritic patients.

Keywords: Uncemented THR, elderly patients

Introduction

Anatomical alignment of hip allows mobility in three planes ^[1]. Any derangement in this alignment is mostly either due to trauma or degenerative conditions like osteoarthritis (OA). OA is major cause of disability in both developed & developing countries. Prevalence of OA increases with age & its consequences significantly affecting the society ^[2]. Hence it was adopted as major focus by global initiative in the decade of bone & joint disease ^[2]. Till date the most effective treatment of severely damaged joints is replacement. Total hip replacements are cemented, uncemented& hybrid. Uncemented THR is commonly indicated in young patients with good bone stock, however the usage of Uncemented THR in elderly patients is of debate in the recent past.

Materials & Methods

This is a retrospective cum prospective study conducted at our center (Maharajahs institute of medical sciences, nellimarla, vizianagaram, A. P) among 20 hips (20 patients) from sep 2103 to Sep 2017 among patients who met the inclusion criteria were admitted, operated with uncemented THR after consent for the procedure has been taken and followed up for a period

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of 36-40 months. All the patients were evaluated functionally (Harris hip score [3], VAS [4] (Visual analogue pain scale) and radiologically (Andrew Whaley & Daniel [8] *et al.* criteria-acetabular cup loosening, Engh's criteria-femoral stem loosening)

Inclusion criteria

- Age >55 years
- Patients with X-ray showing well established arthritic changes, U/L Hip involvement & absence of relief of symptoms after at least 6 months of conservative Rx
- Gross reduction of ROM-Harris hip score <50
- Pain VAS >5
- Patients willing for surgery & life style changes post operatively

Exclusion criteria

- Young patients <55yrs
- Fracture cases
- Patients medically unfit for surgery
- Patients with clinically active foci of infection

Procedure

Patients after thorough examination, investigations, procedure consent taken & operated under SA + epidural analgesia with patient position-lateral position following standard posterior/southern moore's approach [5]



Results

Mean age group of this study-58 years, with males predominant in the study, male to female ratio 2:1

Age	Males	Females
55-65 yrs	8	4
>65 yrs	6	2
Total	14(70%)	6(30%)

Post-operatively management included IV fluids, IV antibiotics, NSAIDs

We allowed early mobilization

On day-1: standing without support & walking with support. Followed by supervised physiotherapy.

18 out of 20 had good-excellent painless ROM. 1 patient had posterior dislocation of prosthesis following trauma which

was reduced immediately under GA, followed by supervised physiotherapy, following which patient had no complaints. 1 patient had superficial skin infection, managed with IV antibiotics. No significant (>2cms) limb length discrepancies in the study. None of the patients had complications like DVT, pulmonary embolism, sciatic nerve injury.

Functional outcome

Mean latest follow up Harris hip score is 92 significantly better score when compared to mean pre-op score of 48. This is comparable to that of study of Wixon *et al.* [6] scores (95, 47 respectively), which indeed is comparable to Siwach *et al.* [7] study scores (83.5, 44). Mean latest post-op VAS score is 2 a significantly better compared mean pre-op score of 8.

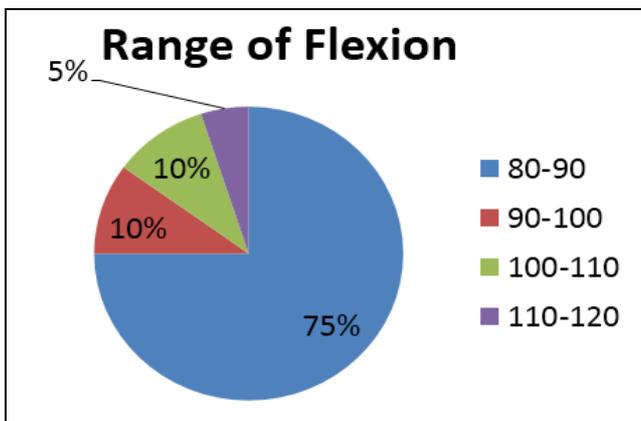
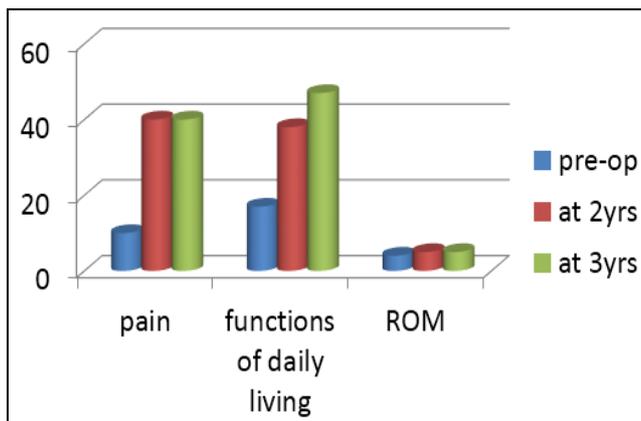


Case 1: Hip ROM



Case 2

Graphical representation of Harris hip score obtained in this study



Radiological outcome

Based on X-ray pelvis both hips-AP & involved hip lateral view

No cases had acetabular cup or femoral stem loosening (peri prosthetic osteolysis) in this study.

We followed

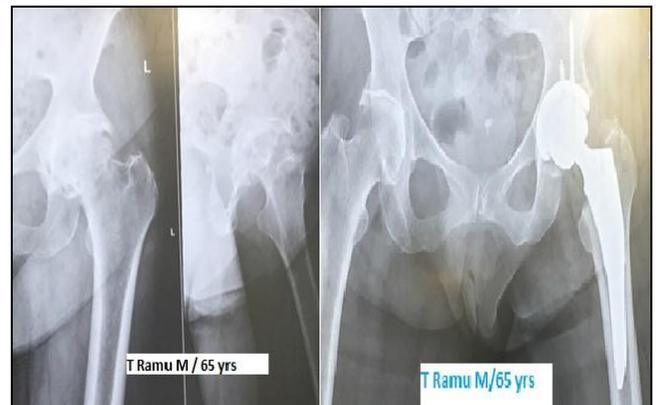
Andrew Whaley & Daniel [8] *et al.* criteria for acetabularcup loosening.

Eng's [9, 10] criteria for cemented stem loosening.

No cases were reported with heterotrophic ossification, no vertical subsidence.

Acetabular cup position- 17 had neutral cup, 3 had horizontal cup, none had a vertical cup in this study.

Femur stem position-16 had neutral, 3 valgus, 1 had varus position in this study. Most of the stems showed good bony ingrowth due to creeping substitution.



Pre-op X ray Follow up X-ray

Case 1: T Ramu M/65 yrs



Pre-op X ray Follow up X-rays at 3 yrs

Case 2: R srinu, M/56yrs



Pre-op x ray Follow up X-ray at 3yrs

Case 3: S Rama murthy M/ 60 yrs

Discussion

The improved survival of circumferentially coated uncemented cups and stems that allow bone to grow into or onto the prosthesis (Zicat *et al.* 1995, Kim *et al.* 1999, Della Valle *et al.* 2004, Sinha *et al.* 2004,) has supported their growing use, despite the higher costs (Agins *et al.* 1988, Barber and Healy 1993, Clark 1994, Mendenhall 2004). In 2003, an estimated two-thirds of all primary THRs were performed with uncemented fixation (Mendenhall 2004). European countries such as Sweden, which have adopted these newer uncemented technologies more cautiously had much lower revision rates (Malchau *et al.* 2002, Kurtz *et al.* 2005).

Kaplan-Meier survivorship analysis ^[11] at twenty years revealed significantly lower survival rates for cemented implants as compared with cementless implants. The cementless tapered stem had an extremely good survival rate of 99%.

Multiple studies with meta-analysis showed no significant difference in functional & radiological outcome in uncemented vs cemented THR ^[12-14]. The studies reviewed have shown that failure events in THR are rare, however a longterm follow-up is required to generate meaningful estimates of difference in survival probability.

Uncemented THR alleviates the avoidable complications due to cementing like bone cement implantation syndrome (hypoxia, cardiac arrest) and thermal necrosis of cancellous bone ^[15].

Conclusion

Uncemented THR can be considered as better reproducible surgery in elderly arthritic patients. Though uncemented THR is a well-adapted procedure in young, careful patient selection with adequate bone stock in elderly patients and good follow up instructions result in good to excellent success rate in Uncemented THR in elderly patients.

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