



PROSPECTIVE STUDY ON FUNCTIONAL OUTCOME OF UNCEMENTED TOTAL HIP ARTHROPLASTY

Orthopaedics

Dr. Akshay Yadav D

MS Ortho Postgraduate Junior Resident, Department of Orthopaedics, Sree Balaji Medical College and Hospital, BIHER, No.7, Works Road, New Colony, Chromepet, Chennai, Tamil Nadu, India

Dr. Mohd Ismail Irfan*

Assistant professor, Department of Orthopaedics, Sree Balaji Medical College and Hospital, BIHER, No.7, Works Road, New Colony, Chromepet, Chennai, Tamil Nadu, India *Corresponding Author

ABSTRACT

Hip pathologies have been on a steep rise for the past century as the general population is engaged in more physical and strenuous work. With the prolongation of life span comes attached degenerative pathologies and these are more evident in lower limb joints as they provide mobility in a bipedal human. With evolution of orthopaedic surgeries and implants the question arises as to what is better for the patient which is more durable functionally and has a better long term survival. In this prospective study we have analysed 15 patients between the age group of 45-70 years with mean age of 58.14 years. Patients were selected to the study who complained of chronic hip pain and diagnosed with hip pathology radiologically. THR was performed on these patients with standard posterior-lateral and lateral approach depending on the surgeons comfort. Uncemented implants were used in all the patients and the study showed excellent outcome in 86.66% when analysed by modified Harris Hip Score on a 6 month follow-up. This study was conducted to evaluate the functional outcome of uncemented THR in 45-70 year old patients.

KEYWORDS

INTRODUCTION:

Hip joint is the main axial weight bearing joint in a bipedal human. It provides greater stability with limited mobility when compared with its counter part i.e shoulder in upper limbs. In a normal gait cycle the head and neck of the femur undergo angulation and transmits ground reaction forces for mobility. Since hip joint has an important part to play in our routine activities any pathology affecting this joint will have to be compensated by various other mechanisms^{1,2}. In order to correct such pathologies which have eroded the joint on chronic duration THR has been a very cost effective modality of treatment. Since Sir John Charnley^{4,7} first introduced the world with total hip replacement the implant has under gone modifications and has evolved over time to last long and cause undue morbidity to the patients relying on it with restoration of the hip function³. The stability of the cemented THR is on the cement bone interface once PMMA is cured^{8,9}. However, in the case of cementless implant the primary stability is relied on the primary fit stability and long term stability on the microfractures during the implant insertion and bone ongrowth on to the implant^{10,11}.

MATERIALS AND METHODS:

The study is a prospective comparative study done between June 2017 to January 2019 in dept of orthopaedics in Sree Balaji Medical College and hospital, Chennai. A total of 15 patients were selected in our study. All patients were between the age groups of 45-70 years with the mean age group of 58.14 years.

Male:female=3:2. Patients in the age group between 45-70 years having indication for THR were included except those with neurovascular disorder, active infection and patients falling in Dorr type C were excluded from the study. Informed consent taken. All the surgeries were done either in posterior-lateral or lateral approach. Patients were encouraged to partial weight bear on post-operative day 2, full weight bearing by day 5. Regular follow-up of 2 weeks initially, then 2 months, final follow-up at 6 months was done and patients were evaluated using modified Harris Hip Score (HHS).

RESULTS:

Our study included patients between age of 45-70 years, mean age of 58.14 years. Male:female=3:2, 40% patients had left hip pathology and 60% patients had right hip pathology. 1 patient had associated medical co-morbidities. No previous history any surgeries in any of our patients. At every follow-up the patients were evaluated using modified HHS. The scores were significant at the end of 6 weeks and 3 months. No significant complications were encountered in our study. 1 patient had superficial wound infection which was managed with regular wound dressing and i.v antibiotics. This particular patient's wound did not cause any problems with hip mobility or any significant scores in modified HHS on follow-up. This study had follow-up of 6

months so a longer follow-up is essential for identifying complications such as peri-prosthetic fracture, aseptic loosening and osteolysis. To have a broader conclusion a longer follow-up and more studies are crucial.

DISCUSSION:

Since the introduction of THR by Sir John Charnley^{4,7} the implant has been modified and evolved to suit various needs of a patient to get his/her full function of their hip. The question still remains whether cemented or uncemented THR is better. Most of the patients at present are being treated with uncemented implants as they have proven to have better 10 year survival. Studies by Mäkelä *et al*¹² and Hailer *et al*¹³ have shown to last longer when compared to cemented THR. However, a metanalysis study by Morshed *et al*¹⁴ and a study published by Zimmerma *et al*¹⁵ did not show any significant survival and functionally outcome between cemented vs uncemented THR. A recent article published by Maggs and Wilson¹⁶ states that cemented THR has excellent outcomes. A study done by Divyanshu *et al*¹⁷ showed no significant difference between cemented and cementless group at 2 years' follow-up.

In our study we have encountered excellent results in 86.66% patients. With most of the population leaning towards better and healthier lifestyle engaging in physical activities and long term survival of the implant becomes the most important part before surgery.

CONCLUSION:

Uncemented THR have got better clinical and functional outcome and can be considered an implant of choice in patients who are young and want to be more physically engaged in everyday activities. Our study had follow-up of 6 months, therefore more studies for long follow-up is essential to truly determine pros and cons of each implant type. Though cemented implants are cheaper uncemented implants are better for active patients as revision is required.

REFERENCES:

- Bergmann G, Deuretzbacher G, Heller M, Graichen F, Rohlmann A, Strauss J, et al. Hip contact forces and gait patterns from routine activities. *J Biomech* 2001;34:859-71.
- Charles MN, Bourne RB, Davey JR, Greenwald AS, Morrey BF, Rorabeck CH. Soft-tissue balancing of the hip. *J Bone Joint Surg* 2004;86:1078-88.
- Coventry MB. The treatment of fracture-dislocation of the hip by total hip arthroplasty. *J Bone Joint Surg Am* 1974;56:1128-34.
- Charnley J. Arthroplasty of the hip. A new operation. *Lancet* 1961;1:1129-32.
- Charnley J. Biomechanics in orthopaedic surgery. *Biomech Relat Bio Eng Top* 1965. p. 99-110. [Doi: 10.1016/b978-1-4831-6701-5.50017-6].
- Charnley J. Cement-bone interface. *Low Friction Arthroplasty Hip* 1979;1979:25-40. [Doi: 10.1007/978-3-642-67013-8_5].
- Salvati EA, Wilson PD Jr., Jolley MN, Vakili F, Aglietti P, Brown GC, et al. A ten-year follow-up study of our first one hundred consecutive Charnley total hip replacements. *J Bone Joint Surg Am* 1981;63:753-67.
- Jasty M. Prosthetic Loosening in Total Hip Replacements. In: Bono J.V., McCarthy J.C.,

- Thornhill T.S., Bierbaum B.E., Turner R.H. (eds) Revision Total Hip Arthroplasty. Springer, New York 1999;3-10. [Doi: 10.1007/978-1-4612-1406-9_1].
9. Banaszkievicz PA. Improved Cementing Techniques and Femoral Component Loosening in Young Patients with Hip Arthroplasty: A 12-Year Radiographic Review. In: Banaszkievicz P., Kader D. (eds) Classic Papers in Orthopaedics. Springer, London. Class Pap Orthop 2013;31-4. [Doi: 10.1007/978-1-4471-5451-8_7].
 10. Morscher EW. Cementless total hip arthroplasty. Clin Orthop Relat Res 1983;76-91.
 11. Cheng SL, Davey JR, Inman RD, Binnington AG, Smith TJ. The effect of the medial collar in total hip arthroplasty with porous-coated components inserted without cement. An in vivo canine study. J Bone Joint Surg Am 1995;77:118-23.
 12. Hailer NP, Garellick G, Kärrholm J. Uncemented and cemented primary total hip arthroplasty in the Swedish Hip Arthroplasty Register. Acta Orthop 2010;81:34-41.
 13. Morshed S, Bozic KJ, Ries MD, Malchau H, Colford JM Jr. Comparison of cemented and uncemented fixation in total hip replacement: A meta-analysis. Acta Orthop 2007;78:315-26.
 14. Morshed S, Bozic KJ, Ries MD, Malchau H, Colford JM Jr. Comparison of cemented and uncemented fixation in total hip replacement: A meta-analysis. Acta Orthop 2007;78:315-26.
 15. Zimmerma S, Hawkes WG, Hudson JJ, Magaziner J, Hebel JR, Towheed T, et al. Outcomes of surgical management of total HIP replacement in patients aged 65 years and older: Cemented versus cementless femoral components and lateral or anterolateral versus posterior anatomical approach. J Orthop Res 2002;20:182-91.
 16. Maggs J, Wilson M. The relative merits of cemented and uncemented prostheses in total hip arthroplasty. Indian J Orthop 2017;51:377-85.
 17. Divyanshu Goyal, Mahesh Bansal, Ravindra Lamoria Comparative Study of Functional Outcome of Cemented and Uncemented Total Hip Replacement Journal of Orthopaedics, Traumatology and Rehabilitation 10.4103/jotr.jotr_10_18.