

## ORIGINAL RESEARCH

# Long Term Results of Uncemented Hemireplacement In Fracture Neck of Femur in Indian Context

Amit Nandan Mishra<sup>1</sup>, Sandhya Mishra<sup>2</sup>, Shakeel Ahmad Qidwai<sup>1</sup>

## ABSTRACT

**Introduction:** Being human gives us the unique ability to walk on two limbs. Hip joint is responsible for this ability; neck of femur is an essential component of this joint, which is at high risk of being fractured specially in elderly persons. Uncemented Hemiarthroplasty is most promising treatment modality in Indian context as per our study.

**Material and Method:** The present study comprised of 60 patients of age group 40-80 years in which 32 were males and 28 were females was conducted on patients who had undergone hemireplacement arthroplasty at the department of orthopaedics G.S.V.M Medical College, Kanpur & Era's Lucknow medical College, Lucknow. Evaluation by hip by Harris Score and scoring system devised by Dr. R.Nath, G.S.V.M Medical College, Kanpur was done.

**Results:** Majority of cases irrespective of sex belongs to 50-80 years of age of which most of them from 60-70 years of the life expectancy in our setup is usually below 70 years so data is clean cut show of the case predominance in this age group. It's clear that most of the patient having range of movement more than critical range which permits easy ambulation for daily routine.

**Conclusions:** In our study 60 patients treated b hemiarthroplasty by using A.M. prosthesis and followed up for a period ranging from two(2) month to eight & half (8.5) years. Maximum fracture neck femur were in 60-69 age group (53%) followed by 50-59 & 70-79 years (20%) each. In our study maximum excellent result were about 85%, with Harris Hip Score of 80% no poor result. Most of patients were of remote areas despite advise not to squat avoided by them and no any major complication was noted in our study.

**Keywords:** Prosthesis, efficacious, hemiarthroplasty, neck femur

**How to cite this article:** Amit Nandan Mishra, Sandhya Mishra, Shakeel Ahmad Qidwai. Long term results of uncemented hemireplacement in fracture neck of femur in indian context. International Journal of Contemporary Medical Research 2015;2(4):1076-1079

<sup>1</sup>Associate Professor, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, <sup>2</sup>Assistant Professor, Department of Community Medicine, Integral Institute of Medical and Research Sciences, Integral University, Lucknow, India.

**Corresponding author:** Dr sandhya Mishra, Assistant Professor, Department of Community Medicine, Integral Institute of Medical and Research Sciences, Integral University, Lucknow

**Source of Support:** Nil

**Conflict of Interest:** None

## INTRODUCTION

Being human gives us the unique ability to walk on two limbs. Hip joint is responsible for this ability; neck of femur is an essential component of this joint, which is at high risk of being fractured specially in elderly persons.<sup>1,2</sup> In developing country like India operation and prosthesis need to be cost effective and efficacious to improve quality of life in post op period. Uncemented Hemiarthroplasty is most promising treatment modality in Indian context as per our study. Hip fractures are developing as most common fractures in elderly persons in present era because of increasing life expectancy and increasing incidence of osteoporosis.<sup>3-5</sup>

Varies problem faced by an orthopaedic surgeon in the management of fracture neck femur in elderly are:

Frequent Nonunion because of compromised blood supply of the head of femur due to insult of injury and also during manipulation or surgery.

Osteoporosis bone in elderly limit the stability of internal fixation devices. Posterior cortex communication & unstable fracture limit the chances of union, shearing stress further leads to instability and chances of non-union. Synovial fluid washes off the attempts of formation of external callus. Because of the femoral neck has essentially no periosteal layer, all healing must be endosteal. Risks of anaesthesia and surgery in old debilitated patient.

Hence attempts at osteosynthesis fail resulting in repetitive surgeries so in our set up hemi replacement arthroplasty is done in which whole of the head and variable part of neck of femur is being replaced by a metallic made prosthetic implant. The comparative results compared with study of Macaulay W, Pagnotto MR, Iorio R, Mont MA, Saleh KJ. Displaced femoral neck fractures in the elderly: hemiarthroplasty versus total hip arthroplasty.<sup>6-9</sup> In our study comparative data analysis was done with study of R Pandit<sup>10</sup>

## MATERIAL AND METHODS

The present study comprised of 60 patients of age group 40-80 years in which 32 were males and 28 were females was conducted on patients who had undergone hemireplacement arthroplasty at the department of orthopaedics G.S.V.M Medical College, Kanpur & Era's Lucknow medical College, Lucknow. A detailed history of chief complaints, previous history of treatment, course of the disease, time of weight bearing, detailed examination and x-ray of pelvis with

both hips was taken in consideration. Evaluation by hip by Harris Score and scoring system devised by Dr. R.Nath, G.S.V.M Medical College, Kanpur was done.

## STATISTICAL ANALYSIS

SPSS version 21 was used to generate graphs. Descriptive statistics was used to generate results.

## RESULTS

Table-1 shows that majority of cases irrespective of sex belongs to 50-80 years of age of which most of them from 60-70 years of the life expectancy in our setup is usually below 70 years so data is clean cut show of the case predominance in this age group.

It's clear from Table-2 that most of patients who turned up for the regular follow up of uncemented type of hemi replacement arthroplasty were having good results after even maximum of 8 years of follow

Table-3 shows that patients treated by hemireplacement arthroplasty were having very less or negligible amount of limb length discrepancy. It shows that most of the patients treated by hemireplacement arthroplasty were freely walking patients and having better ambulatory function. It's clear that most of the patient having range of movement more than critical range which permits easy ambulation for daily routine.

From above study by radiological assessment (table-4) it's clear that most of the patients had good results both functionally as well as radiologically

It's clear from table-5 that main tool for functional assessment of hemireplacement arthroplasty which was mainly done by Harris Hip score ranges from excellent to good for patient.

Sex	Male	Female	%	
			Male	Female
	32	28	53.4%	46.6%
Side of Injury	Right	Left	Right	Left
	30	30	50%	50%
Age	No. of cases		%	
40-49	04		6.6%	
50-59	12		20%	
60-69	32		53.4%	
70-79	12		20%	
80-89	00		00%	

**Table-1:** Distribution of cases of unipolar prosthesis according to sex, side of injury, and age

Mode of Treatment	Number of cases	Treatment of follow up		Mean
		Retrospective	Prospective	
Unipolar (A.M. Prosthesis)	60	3-8 years	2-14 months	5.5 years 8 month

**Table-2:** Period of followup

Degree of Pain	No Pain	Mild pain	moderate pain	Severe pain
	40	15	05	00
Limb Length Discrepancy	None	<2 cm	2-3 cm	>3 cm
	40	15	05	00
Walking Ability after Prosthesis	Without aid	With single stick	With crutches	Not able to walk
	48	10	02	00
Range of movements hip (flexion)	>120*	110-120*	90*-100*	<90*
	12	08	40	00

**Table-3:** Degree of pain, limb length discrepancy after treatment by different hemireplacement arthroplasty

**DISCUSSION**

Moore & Bohima (1940) introduced first metallic replacement prosthesis in a patient after removal of giant cell tumor of proximal femoral head.<sup>1</sup>

In this detailed clinic-radiological study total 60 patients of fracture of neck of femur who were treated with Uncemented prosthesis were followed up in both prospective and retrospective manner for a time period of 2 month-8.5 years, to know minor to major problem which might arise immediately after surgery to a long ambulatory period. Patients who were pain free (66.6%) in immediate post op period remain pain free even after long follow up period of 8.5 years. Few patient complain gradually progressing pain while walking about 500 meters- Most important factor for pain is loosening of implant. Deep subclinical infection and acetabular erosion.

Verbene(1983) determined most frequent long term complication of HRA as Acetabular erosion with incidence of 25-30%. In our study we didn't get any case with complication of acetabular erosion. Majority of patients have range of movements at hip joint between 90\*- 100\* (66.6%), 110\*-120\* (13.3%), and >120\* about 20% which was > enough for functional ambulation of patient.<sup>2</sup>

Majority of patient walked without aid (80%), while some used stick (16.6%) mainly due to apprehension. Majorities of patients treated with Austein-Moore prosthesis had no limb length discrepancy (66.6%), and <2 cm discrepancy (25%). Lewis Anderson in 1964 used Uncemented prosthesis replacement in fresh patient of fracture neck of femur in young patients with poor general condition, in patient of parkinsonism, in patient with pathological fracture and also in patient above 70 years, 80.72% patient had excellent to good result. According to Nottage & Mc Master(1981) 77% patient got excellent to good results on HSS, while in our study according to HSS 36.6% patients got excellent results,

53.8% good results and 10% fair response; that show about 80-90% patients got excellent to good results.<sup>4,3</sup>

When we compare the results of Austein-Moore prosthesis with other type of arthroplasty we can conclude that this is the most cost effective, simpler and safer method of treatment in elderly patients of neck femur fracture in comparison of other highly technical arthroplasty. In our study regular data references and comparative guidance was taken from Simonen O. Incidence of femoral neck fractures: senile osteoporosis<sup>5-10</sup>

Most of patients were of remote areas despite advise not to squat avoided by them and no any major complication was noted in our study. In our study prediction of outcome was compared with the study of Zlowodzki M, Tornetta P, Haidukewych G, Hanson BP, Petrisor B, Swiontkowski MF.<sup>7</sup> In our study no direct comparison was made between internal fixation methods for elderly as discuss in previous studies Dai Z, Li Y, Jiang D. Meta-Analysis Comparing Arthroplasty with Internal Fixation for Displaced Femoral Neck Fracture in the Elderly.<sup>8</sup>

**CONCLUSION**

In our study 60 patients treated b hemiarthroplasty by using A.M. prosthesis and followed up for a period ranging from two(2) month to eight & half (8.5) years. Maximum fracture neck femur were in 60-69 age group(53%) followed by 50-59 & 70-79 years (20%) each.

In our study maximum excellent result were about 85%, with Harris Hip Score of 80% no poor result.

In long follow up period no major problem was detected except for moderate pain in about 10% cases and limb discrepancy of about 1 inch in <50% cases, but this didn't interfere with functional ambulation any way.

Maximum range of post operative movement at hip joint between 90\*- 100\* (66.6%), 110\*-120\* (13.3%), and > 120\* about 20% which was > enough for functional ambulation

**REFERENCES**

1. Moore AT: The Moore self-locking vitallium prosthesis in fresh femoral neck fractures: a new low posterior approach (the southern exposure). At American Academy of Orthopaedic Surgeons:

Type	Unipolar
Acetabular erosion	None
Protrusio acetabuli	None
Loosening of femoral stem	None
Position of femoral stem-Valgus	03
Varus	03
Neutral	54

**Table-4:** Complications

Mode	Score	Excellent	Good	Fair	Poor	Failure	Mean
Uncemented	H.S.S.	22	32	06	00	00	80-90%

**Table-5:** Harris hip score of the study

- Instructional Course Lectures, 16. St. Louis, CV Mosby, 1959; 16: 309-21.
2. Verberne GH. Femoral head prosthesis with a built-in joint: a radiological study of the movements of the two components. *J Bone Joint Surg [Br]* 1983; 65: 544-7.
  3. Heck, D.A.; Partridge, C.M.; Reuben, J.D.; Lanzer, W.L., Lewis, C.G., Keating, E.M., *J. Arthroplasty* 1995;115:575-580
  4. Nottage WM, McMaster WC. Comparison of bipolar implants with fixed-neck prostheses in femoral-neck fractures. *Clin Orthop Relat Res.* 1990;251:38-43.
  5. Simonen O. Incidence of femoral neck fractures: senile osteoporosis in Finland in the years 1970-1985. *Calcif Tissue Int.* 1991;49:8-10.
  6. Macaulay W, Pagnotto MR, Iorio R, Mont MA, Saleh KJ. Displaced femoral neck fractures in the elderly: hemiarthroplasty versus total hip arthroplasty. *J Am Acad Orthop Surg.* 2006;14:287-293.
  7. Zlowodzki M, Tornetta P, Haidukewych G, Hanson BP, Petrisor B, Swiontkowski MF, Femoral neck fractures: evidence versus beliefs about predictors of outcome. *Orthopedics.* 2009;32:19-22
  8. Dai Z, Li Y, Jiang D. Meta-Analysis Comparing Arthroplasty with Internal Fixation for Displaced Femoral Neck Fracture in the Elderly. *J Surg Res.* 2009. in press.
  9. Benterud JG, Kok WL, Alho A. Primary and secondary Charnley-Hastings hemiarthroplasty in displaced femoral neck fractures and their sequelae. *Ann Chir Gynaecol.* 1996;85:72-76.
  10. R. Pandit. Bipolar femoral head arthroplasty in osteoarthritis: a prospective study with a minimum 5-year follow-up period. *The Journal of Arthroplasty* 1996;11:560-564.