



FUNCTIONAL OUTCOME OF CEMENTED BIPOLAR PROSTHESIS IN NECK OF FEMUR FRACTURE

S. A. Lad	Professor and head of Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India
Pradeep Patil*	Associate Professor Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India*Corresponding Author
Sanju Dey	PG Resident, 2nd year Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India
Vismay Kothari	PG Resident, 2nd year Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India
Umang Jain	PG Resident, 2nd year Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India
Rishabh Nair	PG Resident, 2nd year Department of orthopaedics Dr. D. Y. Patil medical College, Hospital and research institute, Kadamwadi Kolhapur, Maharashtra, India

ABSTRACT Introduction: Fracture neck of femur is commonly seen in old people but in India quite a good number of patients are young adults below the age of 50. In modern days the bipolar prosthesis with cement is the best option wherein they can be more active, especially the modular bipolar prosthesis with or without cement can give a very good active life to the patients treated. Further some surgeons would like to do total hip replacement in older patient, as a primary procedure. The present study was conducted to compare the hip functional score pre and post-operatively at 1 month, 2 months and 6 months using the Harris Hip Scoring System including the hip pain score. **Materials and Methods:** This prospective study included 25 patients of greater than 60 years of age and having fracture of neck of femur between June 2022 and October 2022. These patients were followed up post-operatively for 1 month, 2 months and 6 months for functional analysis using Modified Harris Hip Score and VAS score was also measured. **Results:** There were 25 patients (14 female; 11 male) underwent bipolar prosthesis treatment and. All the patients were above the age of 55 years. The mean age of patient was 61.8 years. Mean duration of surgery was 79.76 min and mean blood loss was 290.72ml. The Harris Hip Score at Preop-op, post op at one month, 2 months and 6 months were 70.23, 73.23, 77.16 and 80.82 respectively. Similarly, pain score at pre-op, one month, 2 months and 6 months were 34.33, 37.74, 38.19 and 39.41 respectively. Modified Harris Hip Score, pain score as well as gait and range of motion were significantly improved postoperatively. **Conclusion:** Cemented bipolar prosthesis is an effective method for reducing pain and improving range of motion based on our short-term functional outcome for the management of fracture of neck of femur in elderly patients.

KEYWORDS : bipolar prosthesis, femur neck fracture, Harris Hip Score

INTRODUCTION

Fracture neck of femur is one of the most prevalent conditions affecting the hip joint. The most frequent injury leading to morbidity and mortality in patients in the senior age range, femur neck fractures are becoming more common among the elderly in recent years⁽¹⁾.

Femur neck fractures are often observed in elderly individuals, although in India, quite a few cases are young adults under the age of 50. However, children seldom experience it⁽²⁾. The most common explanation given by patients for their injuries is a low-energy fall. There is no prior history of trauma in 2-3% of instances, and the damage may be pathologic or a stress fracture⁽³⁾.

An elderly patient with severe osteoporosis, a substantial co-morbid illness, and a fractured neck of the femur are typical patients⁽⁴⁾. The management and outcome of femur neck fractures have long been a mystery to orthopaedic surgeons, and this problem still hasn't been fully resolved. The main goal of therapy should be to execute a procedure that gives the patient the best chance to ambulate as soon as possible. Studying the functional result of a cemented bipolar prosthesis using the Harris Hip Score was the main goal of the current investigation. The Harris Hip Scoring System was used to evaluate the hip functional score before and after surgery at one month, two months, and six months. The Visual Analogue Scale was used to assess the hip discomfort before and after surgery (VAS).

MATERIALS AND METHODS:

The prospective study was conducted at Department of Orthopaedics, D.Y. Patil Hospital Kolhapur's. Institutional ethics approval was acquired before the study. In this institution, patients who presented to the emergency room with displaced fractures of the neck of the femur had surgical treatment. By obtaining and reviewing the patients'

medical histories, we were able to compile records for the patients. Before the trauma, all of the patients were able to do everyday tasks on their own. The study excluded patients with open fractures, suspected pathological fractures, and any other concomitant fractures or head injuries. Patients who couldn't afford the surgery's costs were also excluded from the trial. 25 patients in total received cemented bipolar prostheses treatment. A thorough history was collected, paying special attention to the mechanism of injury and any accompanying medical conditions. Each patient had a thorough clinical evaluation. Preoperative skin traction was used on the afflicted lower limb in all patients for two to three days in order to alleviate discomfort, avoid shortening, and needless movement of the damaged limb. To treat pain, analgesics were administered orally or intravenously. For all of the patients, antero-posterior radiographs of the afflicted hip joint of the pelvis with both hips were obtained. All patients provided written informed permission for the surgery after being educated about the procedure, its risks, costs, and potential complications.

A joint-care programme rehabilitation regimen was used for post-surgical rehabilitation. Within the first three days following surgery, full weight bearing and vigorous workouts were started as tolerated. According to typical procedure, patients were released after 5-7 days and underwent rehabilitation throughout the research time. Range of motion was assessed and exercises for active muscle strengthening were recommended. All of the patients received some lifestyle recommendations. At one month, two months, and six months after surgery, the Modified Harris Hip Score was evaluated for functional evaluation. Additionally, the VAS score was evaluated prior to surgery as well as after 1 month, 2 months, and 6 months after.

Data was imported into Microsoft Excel and examined using the statistical programme SPSS Version 22. The Mann Whitney U test was

utilised to compare the results. P values below 0.05 were regarded as significant.

RESULTS

There were 25 patients (14 female; 11 male) underwent bipolar prosthesis treatment and. All the patients were above the age of 55 years. The mean age of patient was 61.8 years. The common problems in our series were gross anaemia, hypertension, diabetes mellitus and bronchial asthma. 18 patients (72%) in the study had one or more of the problems.

Mean duration of surgery was 79.76 min and mean blood loss was 290.72 ml. The Harris Hip Score at Preop-op, post op at one month, 2 months and 6 months were 70.23, 73.23, 77.16 and 80.82 respectively. HHS was significantly higher at 2 months and 6 months (p value <0.001). VAS score at Preop-op, post op at one month, 2 months and 6months were 34.33, 36.74, 38.19 and 39.41 respectively. Modified Harris Hip Score was significantly higher postoperatively. Pain was improved drastically and score was significantly improved postoperatively.

Table I: Demographic profile of the patients

Variables	Value
Age	61.8 ± 6.3 years
Male: Female	11: 14
Hypertension	11
Diabetes mellitus	6
Anemia	6

Table II: Surgical profile of the patients

Surgical profile	Value
Duration of surgery	79.76 ± 17.39
Blood loss	290.72 ± 103.62

Table 3: Mean Harris Hip Score of the patients:

Mean Harris Hip Score	Pre-op	Pot-operative			P value		
		1 month	2 months	6 months			
Total Score	70.23±4.57	73.23±5.46	77.16±4.28	80.82±2.77	<0.01		
Pain Score	34.33±2.62	36.74±3.32	38.19±2.77	39.41±0.00	<0.01		
Function	Gait	16.52±1.89	19.43±2.24	21.19±1.51	22.23±1.32	<0.01	
		Activity	5.92±0.27	7.40±1.00	8.84±1.43	9.76±1.67	<0.01
			Range of motion	7.05±0.38	8.72±0.28	8.92±0.44	9.07±0.51

Graph 1 shows that at post-op 6 months, 56% had excellent score and 32% had good score which was better compared to pre-op and post-op 1 month.

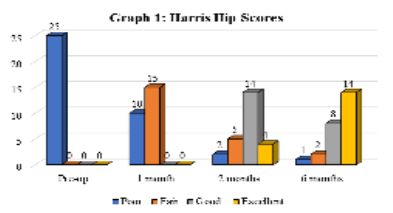


Fig. 1: Pre-op X ray of patient with fracture neck femur

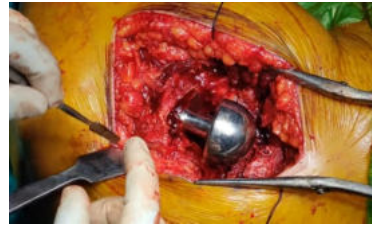


Fig 2. Cemented bipolar prosthesis



Fig. 3: 6 month Follow up X ray of patient



Fig 4 (a, b, c). 6 months follow up of the patient on clinical examination

DISCUSSION:

Among senior adults, femoral neck fractures are a frequent injury⁽⁶⁵⁾. The replacement of the femoral head is a frequent procedure for an older patient with a displaced femoral neck fracture. Bipolar prosthesis or THR can be used for the arthroplasty. In this context, we use the Harris Hip Scoring System, which includes the hip pain score, to compare the hip functional score pre- and post-operatively at 1 month, 2 months, and 6 months. Femur neck fractures are more common in older women than in younger ones⁽⁶⁷⁾. Few series have reported a male predominance. In our study, 56% of the participants were female.

In our series, chronic bronchitis, hypertension, diabetes mellitus, bronchial asthma, and gross anaemia were the most frequent concomitant disorders. In Western series, ischemic heart disease was widespread, but not in our series. While they were widespread in Western series, individuals with nervous system disorders and mental health issues were not seen in our investigation.

There were two (8%) superficial infections in our investigation. In a similar manner, Blomfeldt et al⁽⁷⁾ reported two cases of superficial

infection and one case of severe infection requiring wound debridement. In our investigation, there were no instances of profound infection. Patients with diabetes and anaemia were found to have a superficial infection. In the first post-operative week, they started to show indications of infection. They received the proper medications and bandages for their condition. Since all of these illnesses were discovered while the patients were still in the hospital, their time there had to be extended.

In our investigation, there were no peri-prosthetic fractures and no patient dislocations. This is consistent with the findings of a related research by Blomfeldt et al⁽⁷⁾. According to the Harris Hip Score, each case in our series was evaluated and given one of the following grades: Excellent, Good, Fair, Poor, or Failure. Our findings were consistent with those of the research by Blomfeldt et al⁽⁷⁾, which indicated a mean Harris Hip Score of 77.5 that steadily improved over a 6-month period. In 20 patients after bipolar hemiarthroplasty for fracture neck of femur, Somashekar et al⁽⁸⁾ reported a mean harris hip score of 86.18 with a standard deviation of 12.18. This is comparable to the results of the current study.

In contrast to pre-op and post-op one-month, post-op six months had a 56% outstanding score and 32% good score. In a study of 43 patients receiving bipolar hemiarthroplasty for fracture neck of femur, **Sharoff et al**⁽⁹⁾ found that 44.7% of cases had outstanding Harris Hip scores at final follow up.

CONCLUSION

Cemented bipolar prosthesis is an effective method for reducing pain and improving range of motion based on our short-term functional outcome for the management of fracture of neck of femur in elderly patients. All the patients had satisfactory functional outcome. It is a good and safe option in treating fracture neck of femur in the elderly with good recovery and pain free function in spite of having several co-morbidities.

CONFLICT OF INTEREST: No

REFERENCES:

1. Maruthi CV, Shivanna. Management of fracture neck of femur in elderly by hemiarthroplasty. *Ind J Orthop.* 2016; 2(2):170-180.
2. Sandhu HS. Management of fracture neck of femur. *Ind J Orthop.* 2005; 39(2):130-136.
3. Ponraj RK, Arumugam S, Ramabadrana P. Functional outcome of bipolar hemiarthroplasty in fracture neck of femur. *Sch. J. App. Med. Sci.* 2014; 2(5D):1785-1790.
4. Hopley C, Stengel D, Ekkernkamp A, Wich M. Primary total hip arthroplasty versus Prosthesis for displaced intracapsular hip fractures in older patient systematic review. *BMJ.* 2010; 340: c2332.
5. Parker MJ. Fractures of the neck of the femur. *Trauma.* 2008; 10(1): 43-53.
6. D'Arcy J, Devas M. Treatment of fractures of the femoral neck by replacement with the Thompson prosthesis. *J Bone Joint Surg.* 1976; 58B: 279-86.
7. Blomfeldt R, Tornkvist H, Eriksson K, Söderqvist A, Ponzer S, Tidermark J, et al. A randomised controlled trial comparing bipolar hemiarthroplasty with THR for displaced intracapsular fractures of the femoral neck in elderly patients. *J Bone Joint Surg Br.* 2007; 89(2): 160-5.
8. Somashekar, Krishna SV, Murthy SJN. Treatment of Femoral neck fractures: Unipolar versus bipolar prosthesis. *Malay Orthop j.* 2013; 7:6-11
9. Sharoff L, Nazeer M, Unnikrishnan R. Functional outcome of cemented bipolar hemiarthroplasty in fracture neck of femur in elderly: A prospective observational study. *Int J Med Res Health Sci.* 2016; 5:70-76.