ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 16, Issue 9, 2023

Online - 2455-3891
Print - 0974-2441

Research Article

PROSPECTIVE STUDY OF THE FUNCTIONAL OUTCOME OF BIPOLAR HEMIARTHROPLASTY VERSUS TOTAL HIP REPLACEMENT IN ELDERLY PATIENTS WITH FRACTURE OF THE NECK OF FEMUR BY USING HARRIS HIP SCORE

SHELENDRA SAIYAM[1], KISHOR UIKEY[1], MONA BHALAVI[2], YOGESHWAR JAMRE[1]*

[1]Department of Orthopedics, CIMS, Chhindwara, Madhya Pradesh, India. [2]Department of Anaesthesiology, CIMS, Chhindwara, Madhya Pradesh, India.
*Corresponding author: Dr. Yogeshwar Jamre; Email: yjamre@gmail.com

Received: 12 June 2023, Revised and Accepted: 04 August 2023

ABSTRACT

Objectives: Prospectively study of the functional outcome of bipolar hemiarthroplasty (BHA) versus total hip replacement in elderly patients with fracture of the neck of the femur using Harris Hip Score (HHS).

Methods: This prospective study was conducted in January 2020, in the Department of Orthopedics and Trauma Centre in J.A. Group of Hospitals, Gwalior (M.P.). 30 patients based on inclusion criteria, Garden type 3 and 4 intracapsular femoral neck fractures in the age group of 60 years and above, with independent ambulation before the injury and requirement of high functional demand activity to be treated with either BHA or THR. Functional assessment was made using HHSs at 14 day, 3 month, and 6 month, post-operatively.

Results: This study shows the advantage of total hip arthroplasty (THA) in the recovery of hip function early. Six months after surgery, the Harris score of the THA group was higher than that of BHA group, and the excellent and good score in the THA group was also significantly higher than that in BHA group ($p<0.001$).

Conclusion: THA compared to BHA gives a better functional outcome as evaluated by HHS at the end of 6 months in elderly patients with fracture of the neck of femur by using HHS.

Keywords: Total hip arthroplasty, Bipolar hemiarthroplasty, Harris hip score, Femur neck of fracture, Elderly.

 DOI: http://dx.doi.org/10.22159/ajpcr.2023v16i9.49070. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

In older patients, hip fractures are associated with impaired mobility, increased morbidity and mortality, and loss of independence [1,2]. In hip fractures, displaced femur neck fracture is one of the most common fractures and these unstable fractures generally require surgical intervention. For elderly patients hemiarthroplasty is currently the most common treatment of displaced femoral neck fractures, but several recent studies suggest it may not be the best treatment choice [3-7].

After sustaining neck of femur fracture patients with existing degenerative or inflammatory arthritis at the same hip have been treated with total hip arthroplasty (THA) when sustaining femoral neck fracture. THA, as a treatment of displaced femoral neck fractures, has been associated with low rates of complications and revision operations while demonstrating improved functional hip scores and activity levels [8,9]. The purpose of this study was to compare the functional outcomes, revision rate, and complications after the THA and bipolar hemiarthroplasty (BHA) for displaced fracture neck of femur in independently mobile elderly patients of aged 60 and more than 60 years.

METHODS

This prospective study was conducted in the Department of Orthopedics and Trauma Centre in J.A. Group of Hospitals, Gwalior (M.P.), between January 2020 and June 2020. Ethical committee clearance from the institutions was obtained before the conduction of the study. Patients presenting to the emergency department with displaced fractures neck of the femur were admitted to this hospital. Full evaluation of the admitted patient, which included biochemistry and clinical, radiology, and received standard primary care.

The inclusion criteria were as follows: Intracapsular neck fractures (Garden type 3 and 4), age 60 years and above, Independent ambulation before injury, and patient with high functional demand and activity. The exclusion criteria were as follows: refusal to consent, age <60 years, suspected pathological fracture, and patient who are bedridden or barely mobile bed to chair.

A total of 30 patients were selected for this study. This patient were divided into two groups of 15–15 and table was generated online. Group A was treated with BHA and Group B with THR. X-ray of the pelvis with both hips (in 15° internal rotation) AP view and lateral view of involved hip. Medical and anesthesia fitness were taken.

After pre-operative assessment cases were prepared for surgery. Under aseptic precaution and prophylactic antibiotic coverage, a dose preferably of ceftriaxone 1 g was given 30 min before the skin incision. Preparation of the part was done half an hour before the surgery. Instruments were checked and sterilized for forehand.

Cases are operated on either with cemented BHA or primary cemented THA depending on their admission, even or odd. Post op: Nil per oral for 6 h. Patients were on standard intravenous antibiotic regimen a part

Table 1: Age wise distribution

Category (years)	Male	Female	Total
60–65	07	12	19
66–70	02	03	05
71–75	03	00	03
76–80	02	01	03
Total	14	16	30

Table 2: Harris hip score

Harris Hip Score	Groups	n	Mean Harri ship score	SD	t	p-value
HHS at 15th postop day	Primary Total HIP				2.254	0.032
	Arthroplasty	15	57.00	8.510		
	Bipolar Hemi Arthroplasty	15	50.67	6.78		
HHS at 3 month	Primary Total HIP				2.789	0.009
	Arthroplasty	15	70.87	9.30		
	Bipolar Hemi					
	Arthroplasty	15	61.47	9.16		
HHS at 6 months	Primary Total HIP				3.637	0.001
	Arthroplasty	15	82.53	9.32		
	BipolarHemi					
	Arthroplasty	15	68.53	11.64		

HHS: Harris hip score, SD: Standard deviation

from analgesics and supportive treatment. Soakage dressing was done if any soak age was present. On the 3rd day, 1st check dressing of the surgical site was done under full aseptic condition and postoperative X-ray was done. The patients were encouraged early movement of the knee and ankle joints and muscular exercises. Stitches were removed on the 14th day, After 4th week Patients were evaluated for infection and reviewed X-ray for alignment. In hemiarthroplasty, the post-operative mobilization protocol included immediate mobilization starting from the 3rd to 4th post-operative days with partial weight bearing as tolerated with the use of crutches or a walker for 6 weeks and then full weight bearing. In THA: Weight-bearing was encouraged on the 7th post-operative day, initially with support and then without support. The patients were encouraged early movement of the knee and ankle joints and muscular exercises.

Statistical analysis

The data were presented in terms of mean±standard deviation, frequencies, and percentages. To compare categorical variables between the groups, the Chi-square test was used. To compare the mean change in scores, a paired t-test was used. A p<0.05 was considered statistically significant.

RESULTS

Our study has 30 patients, of which 15 patients underwent BHA and 15 patients underwent THR. The demographic attributes of all the patients are present in Table 1. In our study, the age of the patients ranged from 60 to 80 years, with the fracture most commonly occurring in the age group 61–70: mean age 65.50 and Graph 1 shows males constituted 47% and females constituted 53% of total patients.

Table 2 and Graph 2 Shows significant difference was found at 6 month of follow-up in the mean Harris Hip Score (HHS) with (t=3.637, p=0.001) mean HHS 82.53±9.32 was significantly higher in THA group as compared to BHA with mean HHS 68.53±11.64.

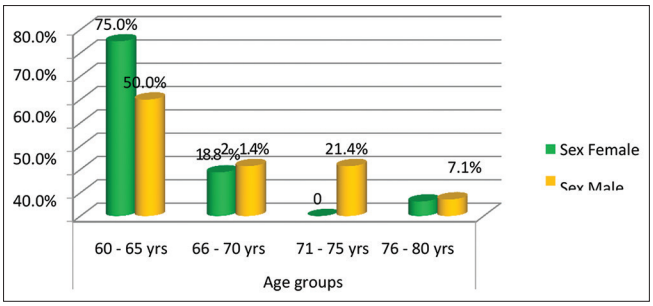
In the last follow up, among THA group, 86.7% patients had fair to excellent HHS and only 13.3% patient had poor HHS.

In BHA group 53.3% patients had poor Harri ship score at last follow up.

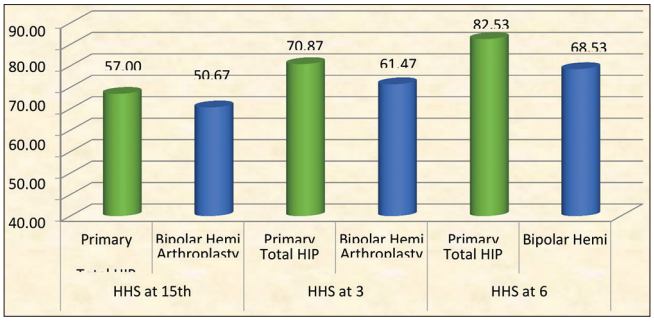
The results of this study show the advantage of THA in the recovery of hip function early. 6 month after surgery, the Harris score of the THA group was higher than that of BHA group, and the excellent and good score in the THA group was also significantly higher than that in BHA group (p<0.001).

DISCUSSION

In this study, the result shows the advantage of THA in the recovery of hip function early. After 6 month of surgery, the Harri ship score was significantly higher in THA (82.53) with comparison to BHA (68.53) (p<0.001), and in THA group excellent and good scores were more than that in bipolar group.



Graph 1: Gender distribution according to age group



Graph 2: Mean harris hip

Limitations

The study period is small for follow-up and less sample size. Six months follow-up is not sufficient for a concrete conclusion on long-term functional outcomes.

CONCLUSIONS

At the end of 6 months, functional outcome was measured in terms of HHS and it was significantly higher in THA group in comparison to BHA group in elderly patients.

CONFLICT OF INTEREST

There are no conflicts of interest.

FUNDING

Nil.

REFERENCES

1. Butler M, Forte M, Kane RL, Joglekar S, Duval SJ, Swiontkowski M, *et al.* Treatment of common hip fractures. Evid Rep Technol Assess (Full Rep) 2009;184:1-85, v.
2. Giannoudis PV, Kontakis G, Christoforakis Z, Akula M, Tosounidis T, Koutras C. Management, complications and clinical results of

femoral head fractures. Injury 2009;40:1245-51. doi: 10.1016/j.injury.2009.10.024, PMID 19897188

3. Keating JF, Grant A, Masson M, Scott NW, Forbes JF. Randomized comparison of reduction and fixation, bipolar hemiarthroplasty, and total hip arthroplasty. Treatment of displaced intracapsular hip fractures in healthy older patients. J Bone Joint Surg Am 2006;88:249-60.
4. Baker RP, Squires B, Gargan MF, Bannister GC. Total hip arthroplasty and hemiarthroplasty in mobile, independent patients with a displaced intracapsular fracture of the femoral neck. A randomized, controlled trial. J Bone Joint Surg Am 2006;88:2583-9.
5. Iorio R, Schwartz B, Macaulay W, Teeney SM, Healy WL, York S. Surgical treatment of displaced femoral neck fractures in the elderly: A survey of the American association of hip and knee surgeons. J Arthroplasty 2006;21:1124-33. doi: 10.1016/j.arth.2005.12.008, PMID 17162171
6. Blomfeldt R, Törnkvist H, Eriksson K, Söderqvist A, Ponzer S, Tidermark J. A randomised controlled trial comparing bipolar hemiarthroplasty with total hip replacement for displaced intracapsular fractures of the femoral neck in elderly patients. J Bone Joint Surg Br 2007;89:160-5.
7. Healy WL, Iorio R. Total hip arthroplasty: Optimal treatment for displaced femoral neck fractures in elderly patients. Clin Orthop Relat Res 2004;429:43-8. doi: 10.1097/01.blo.0000150273.13949.62, PMID 15577464
8. Papandrea RF, Froimson MI. Total hip arthroplasty after acute displaced femoral neck fractures. Am J Orthop (Belle Mead NJ) 1996;25:85-8. PMID 8640391
9. Kofoed H, Kofod J. Moore prosthesis in the treatment of fresh femoral neck fractures. A critical review with special attention to secondary acetabular degeneration. Injury 1983;14:531-40. doi: 10.1016/0020-1383(83)90057-8, PMID 6874062