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ORIGINAL ARTICLE

Functional Outcome of Intracapsular Femoral Neck Fractures Treated by Bipolar Hemiarthroplasty

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ABSTRACT

Aim: To evaluate the functional outcome of bipolar hemiarthroplasty in intracapsular fracture neck of femur.

Study design: Descriptive cross sectional study.

Place and duration of study: Department of Orthopaedic Surgery & Traumatology, Peoples Medical University Hospital, Shaheed Benazir Abad from 1st December 2017 to 31st December 2020.

Methodology: Sixty six cases of intracapsular femoral neck fractures with age ranging from 50 year to 75 year of either gender who were ambulatory before injury were included; while basicervical, younger than 50 years, with neuromuscular disorder, unfit for surgery, open fracture, bilateral injuries, osteoarthritis of hip, Rheumatoid, Gouty, pathological fractures, bedridden & who did not give consent for study, were excluded from the study. Functional outcome assessed by Harris hip score & data analyzed by SPSS version 23.

Results: Twenty six (59.09%) were male and 40 (40.91%) were female with mean age of 64.3±7.77 year. Average time from injury to hospital arrival was 14.7±6.8 hours. Average time from hospitalization to surgery was 4.67±2.23 days. Average time of surgery was 55.67±9.9 minutes. Average hospital stay was 9.7±4.3 days. The average time of follow-up was 18.45±7.63 months.

Conclusion: Bipolar implant is safe, effective, reliable, stable and cost effective implant for intracpsular fracture of femoral neck in elderly populace. The 66.66% of patients have satisfactory Harris hip score in follow up duration of 18.45±7.63 months.

Keywords: Functional, Outcome, Femoral neck fractures, FNF, Bipolar, Hemiarthroplasty, HHS

INTRODUCTION

Hip fracture is a significant and crippling condition in more aged individuals, especially in ladies. The epidemiological information changes between nations, yet it is worldwide assessed that this injury will influence around 18% of ladies and 6% of men. In this way, the worldwide number of hip fracture is expected to increment from 1.26 million to 4.5 million yearly continuously 1990-2050[1]. The risk of femoral neck fracture [FNF] is about 40-50% in females and 13-22% in males[2]. These record for a fourth of all fractures in patients matured 75 years and over[3]. Intra capsular femoral neck fractures count for about half of hip fractures[4] and it is 6.9% in patients above 65 year.[5] Intra-capsular fractures are about 60% of hip trauma, among these 80% are displaced[6]. These expands the danger of interruption to the femoral head blood supply, as, is related with increased risk of AVN of femoral head, nonunion, mal-union and failure to achieve anatomic reduction[7].

The WHO in South-East Asia utilizes an age cutoff of over 60 years is geriatric population[8]. SPEED K labelled this fracture the unsolved fracture because of its no healing potential with conservative methods of bed rest & casting.[9] Extra capsular FNF are treated well by osteosynthesis. There is never-ending consensus on management of intra capsular fractures in osteosynthesis and arthroplasty and has remained controversial for last 5-6 decades[10,11]. More complications and reoperations occur after osteosynthesis in comparison with arthroplasty, however there is no agreement with respect to which treatment gives the best practical outcomes[12]. Regardless of the apparent straightforwardness of the hip hemiarthroplasty method, there are various varieties to the procedure; these incorporate the surgical approach[13], the kind of prosthesis head[14], the strategy for stem inclusion[15], and the sort of prosthesis assembly[16]. The ideal determination for every one of these components stays to be resolved[17].

Literature does not recommend bipolar over unipolar implant. There are lot of studies done but there is no consensus bout superiority of implant. From the current evidence, no doubt, while unipolar can be related with expanded paces of acetabular erosion at present moment follow up to 1 year, there is no critical difference between the two prosthesis types for careful result, confusion profile, useful result and acetabular erosion rates at longer-term follow-up of 2 to 4 years[14,18].

The current data propose that while uncemented hemi-arthoplasties can take into account a more limited especially peri-prosthetic femoral fractures; furthermore, improved post-operative outcomes as far as lingering, thigh pain and loosening of implant. Likewise, there is no critical

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distinction between the two procedures for blood loss, surgical time, cemented hemi-arthroplasties are related with lower paces of prosthesis-related problems and mortality in 1 year follow up[15,17,18].

In country like Pakistan unipolar implant is widely used as a treatment option in femoral neck fractures. This study is planned to know about functional outcome of bipolar hemiarthroplasty in intracapsular fracture neck of femur [FNF] and related complications in our community.

MATERIALS AND METHODS

This descriptive, cross sectional study was conducted at Department of Orthopaedic Surgery & Traumatology, Peoples Medical University Hospital Shaheed Benazir Abad from 1st December 2017 to 31st December 2020. 66 cases of intracapsular femoral neck fractures [FNF] with age ranging from 50 year to 75 year of either gender who were ambulatory before injury were included; while basicervical, younger than 50 years, with neuromuscular disorder, unfit for surgery, open fracture, bilateral injuries, osteoarthritis of hip, rheumatoid, gouty, pathological fractures, bedridden and who did not give consent for study, were excluded from the study. All patients advised for routine baseline investigations, Radiographs like X-rays pelvis with hips lateral view and of chest was advised. Physician, cardiologist and anaesthetist' opinion taken before going surgery and blood was arranged according to expectation of blood loss. If any associated comorbid was dealt accordingly. Surgery was done by orthopaedic surgeon with more than 2 year of experience at least (Fig.1). In operation theatre every effort taken to minimize the risk of postoperative complications as infection, dislocation etc.cemented bipolar arthroplasty was performed through standard technique. Postoperatively all cases were asked to mobilize and to bear weight as tolerable and assistance from physiotherapist taken to mobilize carefully. Intravenous antimicrobials continued for 2-3days. Cases were instructed to avoid movements that could dislocate the prosthesis. Then patient discharged from ward on clinical grounds and called for follow-up in outpatient department weekly for initial four weeks then fortnightly for 3 months then monthly. In each visit patient assessed clinically for any complication and Hips assessed functionally by Hip Harris Score[19] and graded as excellent, good, fair and poor. Each variable noted on predesigned pro-forma. Follow-up time was measured .The data was entered and analyzed through SPSS-23.

Fig. 1: Dislocation of prosthesis with fracture of posterior wall of acetabulum

RESULTS

There were 26(59.09%) were males and 40(40.91%) were female with minimum age of 52 years and maximum of 70 years and having mean age of 64.3±7.77 years (Table 1). Regarding the mode of injury, low energy trauma domestic falls was highest reported in 47(65.9%) patients, and road traffic accident in 19(34.1%) cases. 38(56.81%) cases having left sided while 28(43.19%) having right sided injury. Average time from injury to hospital arrival was 14.7±6.8 hours. Average time from hospitalization to surgery was 4.67±2.23 days. Average time of surgery was 55.67±9.9 minutes. Average hospital stay was 9.7±4.3 days.

Regarding complications; Superficial surgical site infection developed in 4, that dealt according to standards of infection management by drainage debridement deep culture and then culture specific antimicrobials, all wounds healed with proper wound care and management and none of the case complicated to deep infection. 4.54% cases had presented with dislocation during follow-up; all cases successfully reduced by close method under anaesthesia (Table 2). One lady long with dislocation presented with fracture of post wall of acetabulum, she was known case of diabetes, asthma, hypertension, ischemic heart disease, was declared as high risk candidate for surgery by all departments, so she refused for revision surgery (Fig. 2). 3.03% cases presented with periprosthetic fracture Vancouver B and C after having domestic fall that were managed with plating. 3.03% cases had acetabulum erosion and developed secondary osteoarthritis; they were managed by analgesics and physiotherapy. The average time of follow-up was 18.45±7.63 months. Harris Hip Score at final visit of follow up was Excellent (90-100) in 19(28.78%), Good (80-89) 25(37.87%), Fair (70-80) 15(22.72%) & Poor in (<70) 7(10.6%) (Table 3).

Table 1: Demographic information of the patients (n=66)

Variable	No.	%
Gender		
Male	26	39.4
Female	40	60.6
Age (years)	64.3±7.7	
Side		
Right	28	42.42
Left	38	57.58
FNF		
Subcapital	15	22.72
Midcervical	51	77.28
Average time from injury to hospital arrival (hrs)	14.7±6.8	
Average surgery time (minutes)	55.67±9.9	
Average hospital stay (days)	10±4.7	
Mean time of follow-up (months)	18.45±7.63	

Table 2: Frequency of complications (n=66)

Complication	No.	%
Superficial surgical site infection	4	6.81
Dislocation	3	4.54
Periprosthetic fracture	2	3.03
Osteoarthritis	2	3.03

Table 3: Harris Hip Score (n=66)

Harris Hip Score	No.	%
Excellent (90-100)	19	28.78
Good (80-89)	25	37.87
Fair (70-80)	15	22.72
Poor (<70)	7	10.6

Fig. 2: Cemented bipolar hemiarthopalsty

DISCUSSION

Ali[20] has evaluated recently the functional outcome of physiologically active elderly 50 cases, with men age of 63.36±7.27 years, in his conclusion he said that functional level of most cases is restored to pre injury level & found this implant successful in 74% of cases.

Sikorski[21] in his study he found that mobility status of patients compromised after Thompson hemiarthroplsty by anterior approach as compare to posterior approach; the latter resulted the better functional outcome. We also done all cases with posterior Moore approach & observed better functional outcome.

Sierra[22] observed 1.76% dislocations in 1812 cases after bipolar hemiarthroplsty in 26 year period, they opened hips through anterolateral approach in 79% of cases, but in his conclusion he did not found any relationship of dislocation with any of approach, and most cases presented within 6 months of surgery and they reduced by closed method in one third of cases. While in our study we operated all cases through posterior Moore approach & observed the 4.54% dislocation. While in another study dislocation was higher with posterior approach 9.0% (149 in 1656) compared to the direct lateral approach was 3.3% (41 in 2150).[23]

Frihagen[24] compared osteosynthesis to replacement arthroplasty in cases above 60 year of age for functional outcome by Harris hip score & observed better functional status operated by hemiarthroplsty compared to internal fixation group. Parker[25] in his study reported average operative time of 46.4±11.8 with 223 cases of hemiarthroplsty, while we documented 55.67±9.9 minutes in 66 cases. Tol[26] in his 12 year follow up of 252 cases of Partial Hip Arthroplasty and Total Hip Arthroplasty in elderly sample of 252 cases, they found no significant difference in reference to functional status, morbidity and mortality between both groups. Chhabra[27] in his study of 30 cases reported;60% females 40% males, 46.66% midcervical 36.66% subcpital FNF fractures, with satisfactory functional outcome in most of cases. In our study 77% were midcervical cases& 60% females. Somashekar[28] documented the average Harris hip score of 86.18±12.18 in n=20. We also witnessed comparable functional outcome with satisfactory Harris hip score in most of cases.

Robertson[18] in his study of different Meta-analyses and Cochrane reviews summarizes that long term follow up of unipolar and bipolar hemirthroplasty make no difference in any sort of outcome, although bipolar is expensive so it should not be preferred over unipolar component, they reported more dislocation ratio with posterior approach compare to other approaches, cemented component was related with better functional outcome.

CONCLUSION

Bipolar implant is safe, effective, reliable, stable and cost effective implant for intracpsular fracture of femoral neck [FNF] in elderly populace. The 66.66% of patients have excellent to good Harris hip score in follow up duration of 18.45±7.63 months.

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