



PSYCHO-SOCIAL AND HEALTH OUTCOMES IN ELDERLY PATIENTS OF PROXIMAL FEMORAL FRACTURES TREATED OPERATIVELY- INDIAN PERSPECTIVE

Orthopedics

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ABSTRACT

Introduction: The purpose of this study was to assess, whether after operative intervention in elderly with hip fractures improve physical, social and psychological outcomes, find mortality rate and risk factors in Indian perspective.

Material and Methods: 259 elderly patients of fresh proximal femur fracture were followed prospectively for 1 year after operative intervention. All intertrochanteric fractures were fixed with PFN /DHS and intracapsular fractures received cemented bipolar arthroplasty. Well- being assessment was done using SF_36 questionnaire and Modified Harris Hip score quarterly.

Result: Mean age of elderly 69.8 year with M:F ratio was 1:1.3. Total mortality was 12.7% (33 patients) with statistically significant association in those having both diabetes and hypertension. 70.7% patients recovered to moderate physical function at 6 month follow up. Energy fatigue ratio regained from excellent to fair in 84.5% , 92.5% of patients could become moderately active socially. Complications were minimal in the series.

Conclusion: Surgical intervention improves the satisfaction and general health outcomes as early as six month of follow up.

KEYWORDS

Elderly, Health outcomes, Hip fractures, Operative treatment

Introduction:

According to WHO, health is a state of physical, mental and social well being. Despite the availability of better facilities in patient care and surgical methods, proximal femoral fractures cause a considerable amount of healthcare expenditure and hence, impose their effect on economic and social aspects. Proximal femoral Fractures account for a large proportion of hospitalization among trauma cases[1].An overwhelming majority of these patients (>90%) are aged above 50 years[2]. The risk of sustaining a proximal femoral fracture doubles every 10 years after age 50 years. The mortality rate associated with operative intervention in proximal femoral fracture in the elderly is 12-37% after one year, but one in every fifteen elderly individuals with hip fractures die in hospital[3,4,5].The major factors mentioned in literature as predictive for mortality after a fracture are age, comorbidities, cognitive status, time span between fracture and surgery, and the type of anesthesia used for surgery. Life threatening complications found after surgical interventions are infections and deep venous thrombosis. Nonsurgical treatment is usually limited to in-bed patients, unable to walk or presenting absolute contraindications to surgical intervention [6]. The conservative mode of management has its own inherent risks of increased medical complications, morbidity and mortality in elderly age. The purpose of this study was to evaluate physical, functional and psychological outcome of operated cases of proximal femur fractures in elderly populations and their mortality rate in our set up .

Materials and Methods:

The present study is a prospective study done on 259 patients of proximal femur fracture age above 60 year during a period of one year (June 2015-16). This study was conducted at a tertiary level trauma centre, after obtaining institutional ethical committee approval and written informed consent by enrolled patients. 259 patients of fresh proximal femur fracture, (Trochanteric or intracapsular neck femur fracture) age above 60 year admitted from the emergency services or from the outpatient department of the hospital were selected for the study. Younger patients, pathological fractures, associated polytrauma, infection, previous hip surgery were excluded from the study. After pre-anaesthetic check up and consent for surgical procedure, all intertrochanteric fracture were fixed with PFN or DHS depending on fracture pattern or surgeon's preference, in consultation with geriatric expert . All intracapsular fractures were treated with cemented bipolar arthroplasty. Comorbidities ,intra or post-op complications, duration of hospital stay were noted. Patients were followed up at regular intervals and clinico- radiologically. Well- being assessment was done using SF_36 questionnaire and hip functions were scored by Modified Harris Hip score. Follow up visits, telephonic interviews, home visits were employed to complete the questionnaire. Hip functions were evaluated using the modified HHS (MHHS).

Results:

259 patients were classified into two groups, on the basis of nature of surgery; Osteosynthesis or Hemiarthroplasty. In group A, 86 patients with fracture neck femur treated with cemented bipolar Hemiarthroplasty were included and in group B, 173 patients with trochanteric fracture treated with PFN/DHS (Osteosynthesis) were enrolled. Patient demographics according to groups is listed in **Table1**.

Parameter	Hemiarthroplasty	Osteosynthesis	Total
Proximal femur fracture	86 (33.2%)	173(66.8%)	259
Age 60-70yrs	53	107	160 (61.8%)
Age 70-80 yrs	23	50	73(28.2%)
Age >80 yrs	10	16	26(10%)
Male	46	64	110(42.5%)
Female	40	109	149(47.5%)
Mean Duration of Surgery(Min)	80± 9	76±12	
Post-op Complications			22(8.4%)
Superficial infections	4	2	6
Deep infections	2	1	3
DVT	2	1	3
Pressure sores	2	0	2
Dislocation	1	0	1
Non-union and Fixation failure	0	7	7
Comorbidities			
Diabetes Mellitus	21	40	61
Hypertension	26	34	60
Diabetes+ Hypertensive	18	13	31
Pre-existing arthritis, Rheumatoid/ psoriatic/ secondary	0	10	10
Other ailments(cataract, UTI,Benign Prostatic hyperplasia)	5	8	13

Mean age of elderly patients , in our population sample, who sustained proximal femur fracture is 69.8 year, majority of the patients lie in range of 60-70 years. Male:Female ratio was 1:1.3, demonstrating a female preponderance. Majority of patients 78% had trivial fall & low

velocity injury as the mode of injury. Most often fracture was trochanteric fracture 66.8% as compared to 33.2 % intracapsular fracture, with a ratio of 2:1 in between the two fracture types. Mean duration between injury and surgery was 5.4+/- 4.7 days, while median duration was 5 days. The mean hospital stay was 6+/- 2 days ranged from 3-15 day. 22(8.4%) complications occurred in the entire series. Outcomes were assessed before and after the surgery by Short Form - 36 questionnaire and Modified Harris Hip scores and are summarized in Table 2.

Parameter	Pre- Injury(%)	Post-surgery(%)
Overall Physical function:	3.5%	37.6%
Low	2.3%	59.7%
Moderate	94.2%	2.7%
Full/N		
Role limitation due to Physical health:		
Severe Restriction	4.6%	52.2%
Moderate	21.6%	27%
Minimal./No	73.8%	20.8%
Role limitation due to Emotional Problem:		
Severe Restriction	3.5%	38.1%
Moderate	16.2%	6.6%
Minimal./No	80.3%	55.3%
Energy fatigue ratio:		
Poor	6	35
Fair	16	87
Good	188	100
Excellent	49	4
Emotional well being:		
Extremely low pleasant feeling	0	6
Very low pleasant feeling	3	26
Moderate pleasant feeling	64	139
Highly pleasant	101	43
Extremely Pleasant	191	12
Social Functioning:		
Not active	0	17
Moderately active	99	166
Highly active	160	43
Pain		
Regular	2	19
After heavy work	22	86
Minimal	46	81
No pain	189	40
Perception of General health		
Poor	6	24
Fair	38	60
Good	215	142
Hip Function:Modified Harris Hip scores		
Excellent	168	46
Good	30	100
Fair	33	51
Poor	28	29

Discussion;

Mortality from hip fracture decreased with active surgical treatment in the mid-20th century but has remained unchanged at 25% to 30% at 1-year post injury since then. In a study of a Danish hip fracture registry, an increase in mortality after hip fracture over past twenty years, was reported as compared to non-hip fracture-matched controls [7]. Demographics from our study are comparable to other studies (Table 1). Female preponderance is attributable to postmenopausal osteoporosis. The lifetime risk of fracture for a 60-year-old woman is approximately 44%, nearly double the risk of 25% for a man of the same age [8].

Daichi et al in a larger series demonstrated a ratio of 3:2 between extracapsular and intracapsular. Our study also shows this ratio to be 2:1. Ferris et al theorized that the site of the fracture relates to the length of the femoral neck in which they found the patients with trochanteric fractures had a significantly shorter femoral neck (4.50.5cm) than patients with subcapital fractures or osteoarthritis (5.40.4cm). [9,10]

Our study demonstrates a relative paucity of complications (8.4%),comparable to other studies. Superficial and deep infection

rates were 2.3% and 1.2% respectively. Similar to results of Edwards et al , in a series of 3000 cases, most common causative organism was *Staphylococcus aureus*. DVT rate was comparable to studies by McNamara et al in a larger sample population of 5,300 patients where incidence of DVT was 1.5% . Lower incidence of pressure sore can be attributed to orthogeriatric care and lesser hospital stay. The overall dislocation rate after bipolar hemiarthroplasty is 0.9% to 10.9%[11-13].

Mortality after hip fracture has been extensively studied. In our study, the mortality rate was 12.7 per cent, with no differences between genders. In those who died we found increased incidence with comorbidities. Those with both diabetes and hypertension were at increased risk of death. An increased risk of death after hip fracture was associated with advanced age , male sex, poorly controlled systemic disease, operative management before stabilization of coexisting medical conditions and postoperative complications [14-17]. The influence of delay of surgery on mortality remains debatable. In our study, average delay in those with mortality was 5.5±3.1 days which were comparable in those who survived,thus ,no significance was obtained.

Functional outcome

Cooper stated that the consequences of hip fractures relate to (1) premature death, averaging a 20% rate at 1 year, (2) permanent disability of up to 30%, (3) an inability to ambulate independently in 40% of patients, and (4) loss of at least one activity of independent daily living (i.e., driving or groceryshopping) in 80% of treated patients[18]. Another study by Svensson et al found important factors to predict outcome were: (1) pre-injury function in activities of daily living (2) absence of other medical conditions which would impair rehabilitation and (3) cognitive function better than 7 on the Pfeiffer mental questionnaire. When all predictors were positive at admission, 92% were living independently at one year; with one, two or three negative predictors, the percentages living independently were 76%, 61% and 27%, respectively.[19]

Of all factors, pre-injury ambulation status predicted the outcome. In our study, 160 patients recovered to moderate physical function at 6 month follow up. 14 patients became bedridden. 85 patients became dependent on others for their day to day activities. 50% patients had restricted their activity due to physical and emotional problem. Energy fatigue ratio could be regained from excellent to fair in 84.5% of patients at 6 months. 92.5% of patients could become moderately active socially. Lastly overall general health 89.3 % patients were enjoying good to fair health after 6 month follow-up.

A potential argument against the follow up is that it is short. Improvement in functions have been reported to be plateau by 6 months. 78 patients above age of 75 years were treated by hemiarthroplasty by Tonetti et al, with a overall mortality of 41% and those in survivors 61.5% could regain independent function with a maximum recovery within 6 months post-op[20-23]. Most of patients in our study had rural background, after surgery as they were advised not to squat and sit cross legged especially, in hemiarthroplasty group, most of them got emotionally uncomfortable. Most of their activities of daily living like sanitation, feeding, praying were hampered. As they were adapting to this habit, energy fatigue ratio and emotional wellbeing shows improvement .Similarly, in osteosynthesis group partial weight bearing was allowed after 6 weeks, thus patient were already confined to the household premises for this amount of time and were uncomfortable in emotional and social aspects. [24-25]

Another possible limitation was that functional outcomes were not compared to non-surgical cases, as we assumed that by six months, most of the conservative managed cases will be barely ambulatory. Most of studies in literature which compared conservative treatment of proximal femur fracture to operative, highlighted the increased mortality and complications in non-surgical group. Recent studies have found poor prognosis in elderly patient with medical problem or economic burdened resorting to conservative treatment showed cumulative mortality rate ,upto 61% by 6 month and 82% by 2 month.[26-27]

Uniqueness of our study is it provides an approximate idea to operating surgeon and rehabilitating physician to predict outcome and prognosis. It also helps in decision making to allow patients and it relatives to opt for conservative treatment which has its own sets of previous

complications. Emotional and social recovery is time dependent and is subjective, thus, counseling is necessary to understand expectations of patients and their caregivers according to their social norms.

In conclusion, proper institution of orthogeriatric care in elderly patients with hip fractures improves the psychosocial and functional outcome after surgical fixation. There is a predictable risk of mortality with co-morbidities like diabetes and hypertension, which is significantly high. Pre-injury functions are a good predictor of post-operative functional outcome.

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