



Original Research Article

Mortality and morbidity of proximal femur fractures in elderly population – A three year follow-up study

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ABSTRACT

Introduction: Proximal femur fractures in elderly population occur with simple history of slip and fall at home. They are difficult to treat, in presence of comorbidities of patient, osteoporotic and comminuted fracture. Post operatively, mobilization and control of comorbidities are difficult, can result in higher post-operative mortality and morbidity in that group.

Aim: To know mortality and morbidity in post-operative proximal femur fracture patients over a period of 3 years.

Materials and Methods: Retrospective study included the cases which got admitted and treated during the period of March, 2016 to March 2017. Patient's details were collected from the medical records section available. Pre and post-operative and present status mobility status were assessed through New Mobility Score. Mortality over three years was calculated.

Results: Though 70 patients were included into study, complete data was available for 47 patients. Mobility score which was 7.25 pre-operatively before fall came down to 6.3 (six months) and 5.4 (three years) six months, post-operatively. Out of 47 patients, 12 patients expired at various stages of study. At the end of 3 years of study, mortality rate is 26%.

Conclusion: Mortality and morbidity of proximal femur fractures in elderly population is at significant level in India, which needs to be addressed at early stage.

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1. Introduction

In elderly population, proximal femur fractures can decrease health status of individuals. This can also contribute to increase in mortality and morbidity in population.¹ A study in United States showed decrease in incidence of Hip fractures in general population over 65 years over the period from past to present. This decrease in incidence is in terms of increased bisphosphonate use for osteoporosis. There was also decrease in mortality rate in male and female patients at 30, 180, 360 days post-operatively due to better health care facilities there.² The study also shows increased use of bisphosphonates, selective estrogen receptor modulator in women with decreased trend in estrogen use with pass of

time from 1992 to 2005.² The incidence of hip fracture is not yet measured expect for few studies showing 129 per 1 lakh population above 50 years. This study also shows great difference between male and female population 105:159 per 1 lakh population.³

We don't know mortality and morbidity in Indian population except for few studies showing in hospital mortality at about 10.03%.⁴ One year mortality was at 21.2% with male (26.8%) and female (19.1%) in study done by Scott Schnell et al. study.⁵

In this context, we started to find out, what is post-operative morbidity and mortality in hip fracture, in our local population.

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2. Aims

To know mortality and morbidity in proximal femur fracture patients over a period of 3 years post-operatively.

3. Materials and Methods

A retrospective study was done and data was collected from patients admitted into BIRRD (T) Hospital, Tirupati over a period of March, 2016 to March, 2017. All patients with history of proximal femur fracture admitted were included into study after satisfying inclusion and exclusion criteria.

3.1. Inclusion criteria

1. Patient with age greater than 50 years.
2. Patient with history of fall at home, trivial injury only.
3. Patient with history of proximal femur fracture only.

3.2. Exclusion criteria

1. Patients less than 50 years old.
2. Patient with history of trauma.
3. Patients with other fractures other than proximal femur fractures.
4. Patient with CVA, Cerebral palsy, Poliomyelitis were excluded from study.

Patients were evaluated for History of fall and type of fracture. All patients admitted were posted for surgery as required. They were mobilized later dependent upon fixation and patient's ability post-operatively with walker support. Physiotherapy and mobilization was started at home. Patient's morbidity was calculated with New Mobility Score pre fall and post operatively at 6 months and 3 years were evaluated.⁵ Mortality was assessed through personal interview with family members.

3.3. Statistical analysis

Simple average statistics and standard deviations.

3.4. Observations

In our study 70 people were included, complete data available for 47 patients only. Average age of patients was 69 years. There were 26 male and 21 female patients. There were 27 intertrochanteric, 17 fracture neck of femur and 3 sub trochanteric fractures.

New mobility score of patients before fall was 7.25 (+2.3). This has come down to 6.3 (+ 2.7) (6 months post-operatively), which further decreased to 5.4 (+ 3.2) by the end of 3 years post-operatively. There was no significant difference between male and female population in terms of mobility. There were 12 deaths reported at various periods of study. This brought the mortality rate to 26% at the end of 3 years in proximal femur fracture patients post-operatively.

We had two expired during surgery, and remaining 10 patients at various periods during the 3 years.

Time of surgery varied based of patients age, implant used, type of fracture, communiton of fracture experience of surgeon. Delay between history of fall and admission into hospital depended upon patient and bystander factors like lack of seriousness and knowledge of impact of fall and fracture in bystanders and patient, transportation facilities available, distance between home and hospital, socio-economic status of patient. Delay between admission to surgery of patient depended upon of preparedness of patient and bystanders, socio-economic conditions of patients for purchase of implant and medicines, control of comorbidities of patient, pre-operative hemoglobin status and requirement of pre and post-operative transfusions. This also includes approval delays from insurance companies, State and Central Government scheme related delays. Delay in post-operative mobilization depends upon control of comorbidities, electrolyte imbalances, type of surgery and implant used, communiton and osteoporosis of the patient.

There are 5 patients with once again history of fall in these three years and went for surgery once again. Out of five, four patients with intertrochanteric fracture had once again intertrochanteric fracture, when one with fracture neck of femur had intertrochanteric fracture at second history of fall.

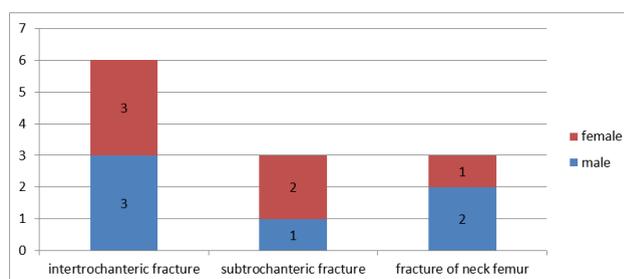


Fig. 1: Showing mortality in type of fracture in patients

4. Discussion

India, a country with 1.3 billion people, has youngest working population (average age of Indian 29 years).⁶ Presently, it has around 16% of people above 50 years, and may more to be added in years to come.⁷

Over the years, there is significant decrease in hip fractures in United States.² Probably, this might be due improved medical care, use of Bisphosphonates for treatment of osteoporosis in individuals.² Osteoporosis is most common cause of hip fracture. There is no study done, to know incidence, pattern and progression of Hip fractures in India. A study done in Rohtak district of Haryana reveals hip fracture incidence was about 129 per lakh population above 50 years of age.³ If we could generalize this to whole

Table 1: Showing no intertrochanteric, sub trochanteric and fracture neck of femur in male, female and total number of patients.

Sex	Age of patient	Intertrochanteric fracture	Sub trochanteric fracture	Fracture neck of femur	Total No.of patients
Male	69+ 7.1years	16	1	9	26
Female	69 +8.7years	11	2	8	21
Total	69 +7.75years	27	3	17	47

Table 2: Showing mortality in patients with respect to time (post-operative surgery)

Duration from surgery	No of patients expired	Percentage of mortality
During Surgery	2	4.2%
Post- operative surgery 1day -3months	2	4.2%
Post-operative surgery end of 3months to end of 6 month	3	6.3%
Post-operative surgery from start of 7th months to end of 2nd year of surgery	2	4.2%
Post-operative surgery from end of 2nd year to end of 3rd year of surgery	3	6.3%
Overall mortality to the end of 3 years post-operatively	12	26%

population of India, it would be more than 3 lakh hip fractures for year. With 2/3rd of country's population still rural, and health care at primary level is still developing, it would be difficult to imagine forgetting about how to manage such a load there. This would have significant impact on already constrained health resources in this country.

Mortality in our study at end of 3 years was 26% which is less when compared with other studies shown in chart. Why mortality is important? Five year survival of hip fracture is about 93.9% postoperatively, in comparison with 91% (thyroid cancer), and 99.8% (breast Carcinoma), which is in-turn very better.⁹In this situation, it is better to manage the osteoporosis in elderly population, in India which can help in many ways. It can improve the bone health, reduce the fragility fractures in elderly population, and decrease the mortality and morbidity in such individuals. In Hospital mortality rate in our institute is around 4.2% when compared to 10.03% in Ganesh G Ram study in India.⁴ Probable reasons might be due Urban and rural divide between both the institutes. One year average mortality rates post-operatively in United States, are decreasing over years in United states.¹⁰ It was 24%, 22% and 21% over 1980's, 1990's and above 1999 years respectively. Intertrochanteric fractures also show same decrease over years i.e, 34% in 1980, to 23% in 2000.¹⁰ Fracture neck of femur mortality shows mild increase over years i.e, is from 19% in 1980, to 20% in 2000.¹⁰ The cause of mortality may be due to pneumonia, cognitive disorders, osteoporotic fractures.⁸ Similarly, one year mortality rate 16.9% when compared to non-fractures mortality rate 8.4%.⁸ Cause of mortality after surgery may be due to delayed mobilization. Delayed mobilization results in decreased broncho-alveolar clearance in immobile patient in bed. Decreased clearance can result in pneumonia. Bowel and bladder clearance is also difficult, results in soiling of these areas. Old age

patient, who are confined to bed when not taken care of ankle pumps will cause in stasis in circulation. This can result in thromboembolism. These are the complications, to be managed during hip fractures, and post-operatively. These complications can result in mortality in post-operatively.

Most of our admissions are from rural population, with decreased literacy, low socioeconomic status, ignorant about health condition after history of fall, treatment by traditional bone setters in our region. We had an average of 16 days from history of fall to admission into hospital. Average hospital stay was 28 days. This was far from other studies like 5 days (Brauer CA et al.).² The same study also revealed that hospital stay also decreased from 12 days (1986-88) to 5 days (2003-05).² Reason for increased hospital stay in our study may be increased time for surgery, post-operative control of comorbidities, start of post-operative mobilization.

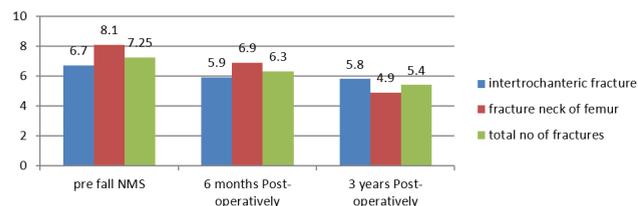
We calculated New Mobility Score¹¹ pre fall, post-operatively 6 months and 3 years after. We excluded the expired patients during calculation. There was decrease in mobility score of individuals post-operatively 6 months and 3 years, when compared to pre fall status. There were three intertrochanteric fractures, one fracture neck of femur patients, who had intertrochanteric fracture previously on other side. There was one intertrochanteric fracture patient, who had history of fall 6 months after post-operatively. We had 10.6% of patients with history of fall previously or had another history of fall resulting in second hip fracture on other side.

5. Conclusion

We infer that there is decrease in mobility status of individuals with hip fracture, from 6 months to 3 years post-operatively. This requires better management of

Table 3: Showing mortality in Various Study in comparison with my study

Study	Mortality rate	Mortality rate (duration)
Brauer CA et al. ²	34%(Men) 23%(Women)	At the end of one year
Scott Schnell et al. ⁵	21.2%	At the end of one year
Erin s LeBlanc et al. ⁸	16.9%	At the end of one year
Young-Kyun Lee et al. ⁹	32.3%	At the end of five years
Simran Mundi et al. ¹⁰	21%	At the end of one year
My study	26%	At the end of three years

**Fig. 2:** Bar-charts showing the New Mobility Score pre fall, post-operatively 6 months and 3 years after excluding the expired patient

comorbidities, better and early post-operative mobilization of individuals. We also conclude that those people who are mobilized at the earliest have maintained their good life style, control of comorbidities, decreased post-operative mortality.

We conclude that mortality rate post-operative hip surgery in elderly population at the end of 3 years is 26%.

6. Source of Funding

None.

7. Conflict of Interest

None.

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