

Epidemiology of Mortality in Hip Fracture Patients During One Year of Post Operative Period

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Received: 06-02-2026 / Revised: 16-03-2026 / Accepted: 06-04-2026

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Conflict of interest: Nil

Abstract:

Background: Hip fractures are a major cause of morbidity and mortality among elderly patients, particularly when associated with prolonged immobilization and pre-existing comorbidities. Postoperative complications such as cardiac failure, pneumonia, sepsis, deep vein thrombosis, pulmonary embolism, and cerebrovascular events significantly increase mortality risk.

Objective: This study aimed to assess one-year postoperative mortality among elderly patients with hip fractures and to identify major factors and causes contributing to mortality.

Methods: A retrospective observational study was conducted among patients aged 60 years and above who underwent surgical treatment for hip fractures at a tertiary care centre in rural Tripura. A total of 56 operated cases were included. Data were collected from case records, including demographic details, fracture type, operative procedure, comorbid conditions, postoperative complications, and follow-up outcomes. Patients were followed for 12 months, and mortality data were obtained from hospital death records and telephonic communication with attendants.

Results: Among 56 patients, 24 were male and 32 were female. Thirty-two patients were aged 60–74 years, while 24 were above 75 years. Comorbidities were present in 38 patients, with hypertension, diabetes, respiratory disease, circulatory disease, and obesity being common. Surgical procedures included prosthesis, dynamic hip screw, proximal femoral nail, and proximal femoral locking compression plate fixation. During one-year follow-up, 9 deaths were recorded, including 4 males and 5 females. Causes of death included aspiration pneumonia, bedsores with sepsis, deep vein thrombosis with pulmonary embolism, cerebrovascular accident, and cardiac failure. Cardiac failure was the most frequent cause, especially in later follow-up.

Conclusion: Hip fracture in elderly patients is associated with considerable one-year postoperative mortality, mainly influenced by age, comorbidities, immobility, and postoperative complications. Early diagnosis, prompt optimization of comorbidities, timely surgery, early mobilization, physiotherapy, and coordinated long-term care may reduce morbidity and improve survival after hip fracture.

Keywords: Hip Fracture, Mortality, Hip Joint.

DOI: 10.25258/ijcpr.18.4.255

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Introduction

Hip fractures are common causes of mortality and morbidity in elderly. Hip fractures are most debilitating condition especially in elderly as they restrict the mobility makes the patients bed ridden for long time. Elderly patients more often have many co morbidities such as diabetes, hypertension, cardiovascular disease, respiratory disease, neurological disease these factors along hip disease are always troublesome and increase the risk of morbidity and mortality in elderly.

Prolong immobility along with hip fractures increases complication such as deep vein thrombosis pneumonia, infection, sepsis, bedsores and heart failure. The aims of this present study is to evaluate patterns of death by age, sex and hip fracture type and type of operative management with a specific focus on the cause of death.

Aim and objectives of the study

1. Study of risk of mortality in one year post operative period in hip fracture patients

2. To identify the causes which increases risk of mortality in post operative period.

Materials and Methods

In this retrospective study Patients aged 60 and above admitted during the period from April 2024 to June 2025 the department of orthopedics at tertiary care centre for surgical intervention in a rural setup in Tripura with peri trochanteric HIP FRACTURES were included. A sample size of 56 patients operated during this period was considered in this study.

The data was collected from the patients Case Record Form (CRF). A detailed history of illness past medical history, medical conditions complicating the present illness and detailed clinical examination and relevant investigations were noted down. Patients were followed up to 12 months for this study all cases of mortality in these postoperative 12 months period was noted down and case sheets were reviewed to note down any cause complicating the peritrochanteric fractures leading to mortality. Deaths of patients were

retrieved from death register and telephonic conversation with the patients' attendants were done.

Cause-of-death statistics are compiled from data obtained from death certificates. Cause-of-death statistics contain data on deaths by cause of death, age, sex, marital status, and other demographic variables and data on the circumstances of the death.

Inclusion Criteria

- a) Patients aged above 60 years
- b) Patients with peritrochanteric femur fractures
- c) Both high and low velocity injuries

Exclusion Criteria

- a) Poly trauma and associated life threatening conditions
- b) Patients who chose conservative treatment
- c) Pathological fractures and open fractures
- d) Medically unfit for surgery
- e) Psychiatric and paralytic patients

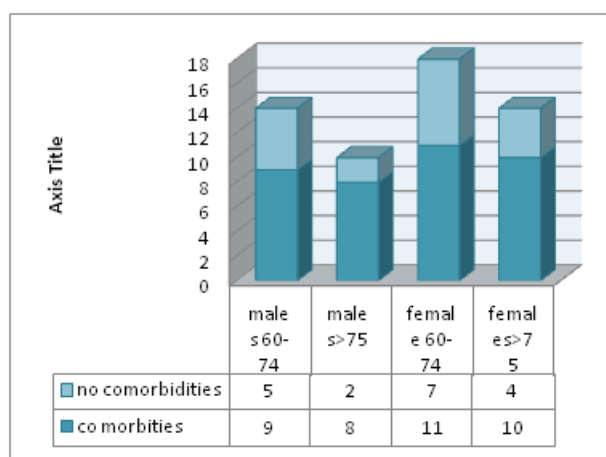


Figure 1: Pre Existing Disease

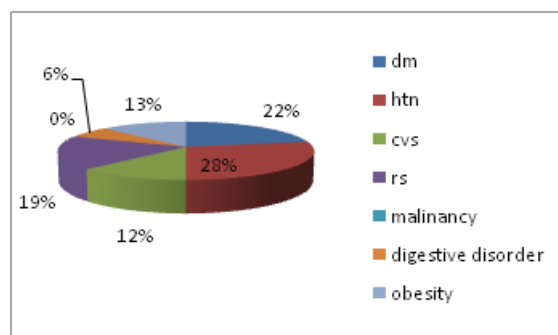


Figure 2: Comorbidities

Results

There were 56 patients operated for hip fractures between April 2014 to June 2014 who were more than 60 years of age. Of which 24 (43%) were male

and 32 (57%) were female each case was followed for period of one year. 32 (57%) patients were between 60-74 years and 24 (43%) were more than 75 years. patients with neck of femur fractures

were 24 male 10(17%) female 14 (25%) and peritrochanteric fractures were 32 in then 15(26%)male and 17(30) females. Patient operated with prosthesis (bipolar and amp) 18 (32%), dynamic hip screw (dhs) were 14 (25%), proximal femoral nail (pfn) 18(32%) and proximal femur locking plate (pflcp) were 6 (11%).

Patients associated with co morbidities were 38 (67%) in which diabetes were 32 (57%), hypertension were 34 (60%), circulatory disease 14 (25%), respiratory disease 18 (32%) obesity 12 (24%)and digestive disease 6 (10%). Among these 38 patients 27 were on medication for their following disease. In these co morbidities females were relatively more affected with diabetes, hypertension and obesity than in males. Males on other hand had more respiratory and circulatory disease.

Total number of death were 9 in one year of follow up males 4 and in females 5.2 patients died in first one month of follow up one due to aspiration pneumonia and second patient from bedsores with sepsis. 3 patients died in first 3 months 1 deep vein thrombosis leading to pulmonary embolism ,1 from cardiac failure and 1 from cerebrovascular accident 1 patient during first 6 months of follow up one patient died due to cardiac failure one year follow up 3 patients died due to cardiac failure .

Total of 9 death 4 were in hospital 3 in home , one in old age home and one person in unknown place In 9 death 2 patients had got dhs implant 2 with pflcp and 2 with pfn and 3 with bipolar and 1 with amp prosthesis death of patients more than 75 years were 5 and between 65-74 years was 4.

Table 1:

	Age	Sex	Fracture Type	Fixation Type	Comorbidities	Cause of Death	Follow-up Period
1	66	F	IT	DHS	DM, HTN, Obesity	Aspiration pneumonia	4thday
2	76	M	IT	PFLCP	DM, HTN, COPD	Bed sore sepsis	3th weeks
3	81	F	N	bipolar	DM, HTN, CHF	Dvtpul embolism	6th weeks
4	62	F	IT	PFN	Obesity	Cardiac failure	2th month
5	79	F	N	Bipolar	HTN, Obesity	Cva	4 th month
6	75	M	IT	PFN	COPD	Cardiac failure	6 th month
7	69	M	N	DHS	HTN,	Cardiac failure	9 th month
8	71	M	IT	PFLCP	DM, HTN	Cardiac failure	11 th month
9	76	F	N	AMP	HTN, Obesity	Cardiac failure	11 th month

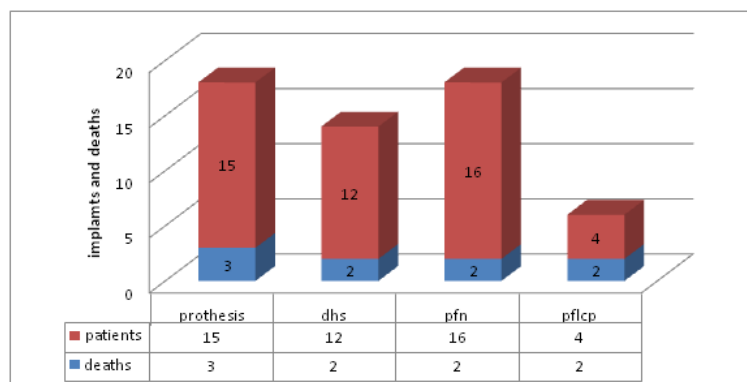


Figure 3:

Discussion

High mortality after hip fracture may be linked to complications following the fracture, such as pulmonary embolism [2], infections [2,3], and heart

failure [1,3]. Factors associated with the risk of falling and sustaining osteoporotic fractures may also be responsible for the excess mortality [4,5]. Excess mortality after fracture may be due to the individual characteristics of the person sustaining

the hip fracture [6]; e.g., low-bone density is associated with increased non-trauma mortality, even without fractures.

The increased mortality was related to every cause-of-death category, i.e., diseases of circulatory, respiratory, and digestive systems; and other of hip fracture patients, men(16%) had significantly higher mortality than women(15%) during the follow-up even though the exact pathology is still unclear [3,7,8,9]. Men were more likely to die from respiratory system disease, and circulatory system disease after hip fracture than women. Daily activities of living, mobility, and walking speed were grossly impaired post operatively which was observed more in male hip fracture patients compared to women. This may indicate a greater loss of physiologic reserve after hip fracture in men than in women and, hence, a greater risk of death. Circulatory failure was one of the major causes of death almost two fold increase post operatively after hip fractures [11,12], in our study more than half of the deaths were due to heart failure especially after 3 months of followup. Silber et al. showed that while acute mortality is related to patient characteristics, later deaths are more closely related to hospital characteristics such as prompt cardiac treatment provision [11,12]. Myers, A.H et al stated Age above 90yrs, male sex, a history of cardiovascular disease were all significant risks for developing post-operative heart failure[10,12]. In a study conducted by Roche, J.J et al patients who developed post-operative heart failure, mortality was 65% at 30 days and 92% at 1 year[1]. Few study showed routine use of echocardiogram in all hip fracture patients pre-operatively considerably delayed time surgery even though helpful in identifying high risk patients to be identified on admission and additional care [13] in our study we could identify 14 patients had altered echocardiogram changes who required additional medications and anticoagulants post operatively. Two factors added the risk of myocardial infarction one stress and anxiety due to delay in surgery secondly fluids given preoperatively increased chances of fluid overload and cardiac decompression both of these were precipitating factors for cardiac failure, hence early and effective triage of cardiac patients pre and post operatively along with prompt pain management and early surgery can reduce the risk factors mortality.

Second important cause of mortality in hip fractures was respiratory failure. Pneumonia was seen in early post operatively period which is often a curable cause of death[1]. Men are more susceptible for chronic obstructive pulmonary disease[1] due to habits such as smoking and infections of chest are seen with use of steroid and increased age in early post operative period in a study conducted by Moja, L., et al results showed

mortality from pneumonia was significantly less when surgery was performed within 24h of admission [14]. It has been postulated that the high incidence of chest infections in hip fracture patients is a result of the patient being in pain (reducing their ability to cough) and being immobile[10].

Maxwell, M.J., et al stated early surgical fixation and better pain management with routine involvement of the acute pain team should reduce pain and allow early mobilisation. Greater emphasis was placed on provision of seven day physiotherapy and nursing patients at 30 degrees to prevent aspiration of gastric contents. Some patients may already have subclinical infections prior to their fracture [14]; antibiotics are given to patients with a high preoperative CRP and lowering the threshold for initiating antibiotics in the post operative period. A Cochrane Review of 21 studies addressing prophylactic antibiotics in hip fracture identified that most studies were poor to moderate [19], but pooled data suggested that prophylactic preoperative antibiotics reduced respiratory infections as well as wound infections.

Venous thromboembolism(VTE) and massive pulmonary embolism (PE) was the third common cause of post-hip fracture mortality [1,16]. Common causes of VTE were surgical delay, prolong immobilization and greater age and mortality was significantly less when surgery was performed within 24 hours of admission [14,16].

The benefit of early ambulation to prevent VTE further justifies aggressive surgical intervention. Rosencher, N., et al conducted systematic review of five clinical trials of mechanical prophylaxis of VTE post-hip fracture concluded that although the rate of DVT was reduced with these devices, all the studies were small, and there is no evidence that they protect against fatal PE or reduce overall mortality [17]. At present, most major organisations advocate at least 28 days of post-operative chemical prophylaxis, unless contraindicated [18]

Similarly, patients who are immobilized and those with osteoporosis following a stroke may not only have an increased risk of falls and fractures, but also an increased risk of dying following complications related to neurovascular disease [19]

Recently developed National Institute of Clinical Excellence (NICE) guideline on hip fracture care identified early surgery (within 48h), regional anaesthesia, optimal analgesia (including nerve blockade), surgeon experience, choice of surgical approaches and implants, and optimal rehabilitation, as priorities in treatment [20].

NICE recommends rapid optimisation as fit for surgery which it details as prompt identification and treatment of correctable comorbidities .Correctable comorbidities were identified by them

as volume depletion, electrolyte imbalance, anaemia, anticoagulation, uncontrolled diabetes, uncontrolled heart failure, arrhythmia or ischemia and acute chest infection.

It is recommended performing surgery on the day of, or the day after, admission. The recommendations include prompt physiotherapy assessment and mobilisation on 1 day post-surgery, subsequent patient mobilisation once a day and regular physiotherapy review.

Conclusion

Hip fractures are one of the common cause of increasing mortality in elderly population. However early recognition of patients in hip fracture and admission to hospital, prompt identification of the co morbidities and treating then, early surgery and early mobilization, physiotherapy would reduce the risk of morbidity and mortality of hip fractures. However, are hospital-focused and long-term cooperation between primary health care and specialist health care needs to be enhanced to improve survival after hip fracture.

Drawbacks of this study: Less Number of Cases, Duration of Study Is Not That Longer.

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