

The Effect of Timing of Surgery on the Results in Intertrochanteric Fractures: A Retrospective Clinical Study



ORTHOPAEDIC

KEYWORDS: Intertrochanteric (IT) Fracture, Mortality, Delayed group

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ABSTRACT

Objective: To study the impact of timing of surgery in intertrochanteric fractures.

Design: Retrospective clinical study.

Methods: At Eras Lucknow Medical College and Hospital, Lucknow (India) this retrospective clinical study was done on patients of Intertrochanteric fractures of Hip who underwent surgery from 1 July 2012 to 30 June 2016. A Surgery done ≥ 72 hours was considered as a delayed procedure and its impact on outcome was assessed.

Results: In this study 310 operated cases of IT fracture were enrolled out of which 227 (73.22%) were of early group and 83 (26.18%) of delayed group. In majority of cases of delayed group in 24 (28.9%) patients electrolyte imbalance was the cause for delay. In comparison to early group higher ASA grades and morbidity were present in delayed group ($p < 0.05$) and mortality was also significantly higher in the delayed group ($p = 0.006$). Multivariate analysis showed the same for mortality.

Conclusions: In intertrochanteric (IT) hip fracture patients, timing of surgery is very important to reduce post operative morbidity and mortality as delay in surgery is associated with higher postoperative complications and mortality rate, so optimization of time of surgery is important to enhance postoperative rehabilitation and reduce morbidity and mortality.

INTRODUCTION

Intertrochanteric (IT) fractures are a variety of proximal hip fractures which occur between greater trochanter where gluteus medius and minimus (hip extensor and abductor) attach & lesser trochanter where the iliopsoas (hip flexor) attaches. IT fractures usually occur in old age group which is also associated with comorbid conditions like diabetes (DM), hypertension (HTN), urinary tract infection (UTI). Mortality rate in fractures around hip in elderly increases with associated comorbid conditions like dementia. Incidence of IT fracture is double in females in comparison to males². As per literature commonest cause of IT fracture is fall at home (95%), road traffic accidents (RTA) 2% and least common is pathological fracture³. The patients with IT fracture usually present with pain, inability to bear weight, shortening of limb and an externally rotated foot⁴. Time of surgery since fracture is a crucial factor affecting the overall prognosis of the patient. National Institute for Health and Clinical Excellence (NHS) in IT fracture management recommends an earlier identification of comorbidities so that surgery could be done on the day of admission or the day after admission and try not to delay beyond 48 hours⁵. This study was done to assess the impact of time of surgery in patients with IT (intertrochanteric) fractures.

MATERIALS AND METHODS-

After approval from institutional ethical committee (IEC), this retrospective clinical study was done on patients of Intertrochanteric fracture of Hip of both sexes who underwent surgery from 1 July 2012 to 30 June 2016. A Surgery done ≥ 72 hours was considered as a delayed procedure and its impact on outcome was assessed. Patients with pathological hip fractures, poly-trauma and patients with missing records were excluded. Two groups were formed according to timing of surgery, early group (surgery timing < 72 hours since fracture) and delayed group (surgery timing ≥ 72 hours since fracture). To study variables such as age, gender, comorbid conditions descriptive analysis was done while American Society of Anaesthesiologists (ASA) grade and their relation to surgery outcomes were based on how much time delay each patient faced before undergoing optimisation and subsequent surgical management.

STATISTICAL ANALYSIS-

The statistical analysis was done using SPSS (Statistical Package for

Social Sciences) version 15.0 statistical analysis software. The values were represented in Number (%) and Mean $\pm$ SD.

RESULTS-

Table-1 Baseline data-

Demography Male/Female	115/195 Total 310 (37.1%/62.9%)
Age of patients Mean $\pm$ SD	69.4 $\pm$ 8.1 yrs, Range 62-87 yrs
Early Group	227 (73.22%)
Late Group	83 (26.18%)
Cause of delay (electrolyte imbalance)	24 (28.9%)

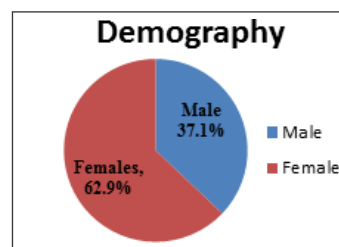


Chart-1 Demography

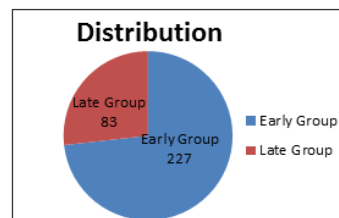


Chart-2 Distribution

Table-2

P=0.004	ASA Level				Total
	I	II	III	IV	
Early Group	24	98	97	8	227
Delayed	2	15	58	8	83
Total	26	113	155	16	310

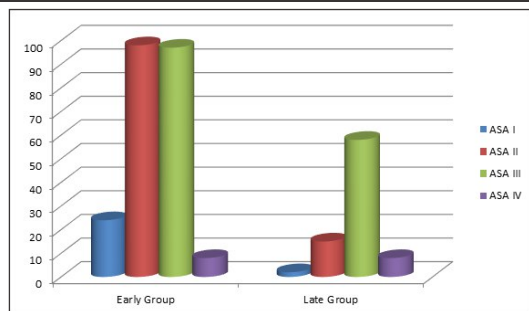


Chart-3 ASA Level

Table-3 Postoperative Complications.

	Post Operative Complication			
	UTI	DVT	Wound Infection	Mortality
Early Group (n=227)	6	0	5	2
Delayed Group (n=83)	8	2	5	7
P value	0.145	0.28	0.21	0.006
Total (n=310)	14	2	10	9

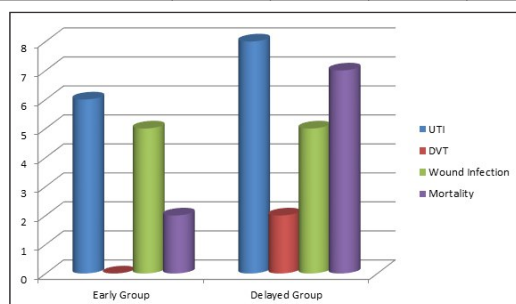


Chart-4 Post operative Complication

In this study 310 operated cases of IT fracture were enrolled out of which 227 (73.22%) were of early group and 83 (26.18%) of delayed group. Out of 310 enrolled patients 115 were male (37.1%) and 195 were females (62.9%) and mean age of participants was 69.4±8.1 years, age of participants ranged from 62 to 87 years.

In the early group out of 227 patients, 79 patients (34.80%) had multiple comorbidities while in the delayed group, out of 83 patients 57 (68.6%) patients had multiple comorbid conditions ($p < 0.05$). Most patients in the early group were ASA level II and III, while in the delayed group the majority of patients were ASA level III and IV ($p < 0.05$) (Table-2 & chart-3).

In the pre-injury functional class status, majority of patients in the early group were functional Class I and II, while delayed group patients were in functional Class III with 39 (46.98%) patients performing daily activities only with external help. In majority of cases of delayed group, in 24 (28.9%) patients electrolyte imbalance was the cause for delay, other significant causes for delay were such as thyrotoxicosis, combined HTN and diabetes mellitus (DM), and UTI with DM. In early group 6 patients (2.64%) developed UTI post-operatively while in delayed group 8 patients (9.63%) suffered from UTI in post operative period ($p > 0.05$). Wound infection occurred in 5 (2.20%) patients in the early group in comparison to 5 (6.02%) in the delayed group ($p > 0.05$) (Table 3 & Chart 4). In early group mortality occurred in 2 patients (0.88%) in comparison to 7 (8.43%) in the delayed group ($p < 0.05$). Multivariate analysis showed that delay in surgery was an independent predictor for mortality ($p < 0.05$).

DISCUSSION-

Intertrochanteric hip fractures are more common in elderly patients and are associated with significant morbidity and mortality. Patient

factors like male gender, young age, absence of pre-existing dementia and use of a walking cane before the injury are associated with speedy recovery and regaining most of the pre-fracture walking ability after surgery⁶.

Some important conditions affecting outcome are delay in surgery, surgical technique, post operative care and rehabilitation, multiple risk factors such as advancing age, male gender, poorly-controlled medical conditions, psychiatric issues. Despite all efforts, the mortality rate within elderly patients within the first year of fracture repair is reported to be as high as 14-36%⁷.

There is an inconsistent perception that delay in surgical treatment of hip fracture patients is associated with an increase in postoperative complications and mortality. Some surgeons perceive that the standard of care regarding hip fracture management involves operating within 24 hours of presentation, while others operate on a case to case basis⁸.

Our study also shows low mortality maybe among patients who underwent surgical fixation within 72 hours of trauma. However, studies comparing time to surgery and mortality have generally had conflicting results^{9,10}. These studies usually had small sample sizes and hence, their results cannot be generalised. Grimes et al.¹¹ in their retrospective study of approximately 8380 patients undergoing surgical hip fracture fixation concluded that delay in surgery seemed to have no adverse effect on patient outcomes if their medical illnesses were adjusted for. This study explored both the primary outcomes in the form of long-term mortality and secondary outcomes as 30 day patient mortality, decubitus ulcers, bacterial infections, myocardial infections and thrombo-embolism. Data was adjusted for medical illnesses which revealed that surgical delay had no effect on patient outcomes apart from developing decubitus ulcers. This is in sharp contrast to our study results with a much smaller sample size which showed that surgical delay is indeed associated with postoperative complications and a higher rate of mortality when compared to patients in the early surgical group. However, unlike conventional assumptions, surgical delay is not a measure of comorbidity or a higher ASA grade. Our study has recognized surgical delay as an independent factor leading to poor outcomes for a hip fracture surgery patient independent of ASA grade and medical comorbid conditions. In patients with several comorbid conditions, expedited optimisation for surgery may be warranted to reduce mortality. The limitations of our study include a retrospective design with a small sample size and limited follow-up. Future prospective studies need to study outcomes of these patient cohorts from both early and delayed surgery categories. As high risk patients tend to be optimized prior to surgery, the bias may explain the potential of higher mortality in the delayed surgery group.

CONCLUSION-

In intertrochanteric (IT) hip fracture patients timing of surgery is very important to reduce post operative morbidity and mortality as delay in surgery is associated with higher postoperative complications and mortality rate, so optimization of timing of surgery is important to enhance postoperative rehabilitation and reduce morbidity and mortality.

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