

Relationship of Preoperative Surgical Delay to Mortality in patients with Hip Fractures. A Retrospective Study

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ABSTRACT

Objective: The objective of my study is to develop Relationship of Preoperative Surgical Delay to Mortality in Patients with Hip Fractures at 1year.

Study design: Retrospective observational study

Place and Duration of Study: We conduct this retrospective study in the department of Orthopedic and Spine Surgery, from January 2020 to December 2021.

Methods: Patients divided into 3 groups according to the surgical timings from the time of injury.

Group A surgery performed within 24 hours, Group B surgery performed between 24-48 hours and group C surgery performed after 48 hours and mortality is being checked in each group till 1-year post-operative time period by contacting each patient. Age, Gender, co morbidities, surgical procedure performed, fracture pattern (extracapsular, intracapsular) time of injury data was collected from registry of the hospital after taking permission from the authorities involved.

Results: One hundred and fifty patients presenting with hip fractures were studied. Majority of our patients were females (n=85, 56.66%) and males (n=65,43%). Out of which 94 (62.6%) patients are included in group A, 34(22.6%) patients in group B, and 22 (14.66%) patients in group C. In group A 6 patients (6.3%) has mortality within 1 year. In group B 17 patients (50%) has mortality within 1 year. In group C 16 patients (72%) has mortality within 1 year.

Conclusion: Mortality increases with surgical delay in hip fracture patients. Survival was higher for patients operated within 24h of admission.

Keywords: Hip fractures, mortality, surgical delay.

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INTRODUCTION

Fractures of hip joint has high rates of mortality and morbidity among general population. The incidence of hip fractures in elderly is expected to be 6.26 million patients per year globally by 2050. Hip fractures are managed through surgical intervention, treating without surgery has high mortality and morbidity.¹

Many researches have exhibited that delay in surgery is the cause of mortality.¹ Mortality after hip fractures at 30 days raised by 41% and by 32 % at 1 year in those whose surgery was delayed more than

48 hours after hospitalization.¹ Worst outcomes have been seen in hip fractures including mortality considers it as significant medical condition.² The Rationale of my study is to establish link between the mortality and timings of surgical procedure performed. The objective of my study is to develop Relationship of Preoperative Surgical Delay to Mortality in Patients with Hip Fractures at 1year.

The Rationale of my study is to establish link between the mortality and timings of surgical procedure performed. By relating the postoperative results of our patients with early and delayed surgical

intervention. It will be helpful in decreasing our mortality rate just by preventing the delay in surgery.

METHODOLOGY

The study was approved by Institutional ethical committee. Total 150 number of patients were included in the study. Inclusion criteria is all adult patients above 40 yrs till 90yrs admitted through Emergency or OPD with hip fractures. Exclusion criteria are Age below 40 yrs and above 90yrs and cases admitted with hip pathological fractures. It is Retrospective observational study. We will conduct this retrospective study in the department of Orthopedic and Spine Surgery of Dr.Ziauddin hospital Clifton campus. Data is retrieved from hospital registry from January 2020 to December 2021 in patients with hip fractures age, gender, comorbidities, date of injury, date of procedure, and mortality was checked. This is a tertiary care hospital in which patients get admit through 2 means , One through emergency department. Secondly, patient can directly arrive in orthopedic consultant OPD and get admit from there directly. In hip fractures, we received extra capsular and intra capsular fractures

In intra capsular subcapital, transcervical, basicervical neck of femur fractures present.

In extracapsular pertrochanteric, intertrochanteric, subtrochanteric femur fractures are there.

In intracapsular fracture if patient's age is more than 60 years and has limited mobility then we usually perform bipolar hemiarthroplasty. In patient's age less than 60yrs and with good mobility and activity level then Total hip Replacement was done. For extra capsular fractures Dynamic Hip screw and proximal femur nail was done. Post operatively every patient get inj.Enoxaparin 40mg subcutaneously for DVT prophylaxis with DVT stockings.

Patients divided into 3 groups according to the surgical timings from the time of injury.

Group A surgery performed within 24 hours with 94 patients, Group B surgery between 24-48 hours with 34 patients and group C surgery performed after 48 hours with 22 patients in this group and mortality was assessed in each group until 1-year post-operative time period by contacting each patient. Age, Gender, co morbidities, surgical procedure performed, fracture pattern (extra capsular, intracapsular) time of injury data was collected from registry of the hospital after taking permission from the authorities involved.

All data will be compiled and calculated with SPSS 20. Frequency and percentage were calculated for categorical variables. The descriptive measure, like mean \pm standard deviation was calculated for continuous variables. Chi-square test was applied to compare categorical variables. P value <0.05 was consider significant.

RESULTS

This study conducted in hospital surgery was performed by four experienced surgeon with minimum of 8 yrs and maximum of 25 yrs of experience.

150 patients were included in this study.

With minimum age of 40 yrs and maximum age of 99yrs a with mean age of 72.46. Out of which 94 (62.6%) patients are included in group A, 34(22.6%) patients in group B, and 22 (14.66%) patients in group C.

Out of 150 patients 49 (32.6%) bipolar hemiarthroplasty, 16 (10.6) Total hip replacement, 69 (46%) DHS, 16 (10.6%) PFN was done

In group A: 32 Bipolar hemiarthroplasty, 8 Total hip replacement, 42 DHS, 12 PFN. (Table 3)

In group B: 11 Bipolar hemiarthroplasty, 4 Total hip replacement, 17 DHS, 2 PFN. (Table 3)

In group C: 6 Bipolar hemiarthroplasty, 4 Total hip replacement, 10 DHS, 2 PFN. (Table 3)

Mean age in group A is 71.5 (SD 13.40), group B 73.2 (SD 12.2), and group C 74.4 (SD 8.6). (Table 2)

In group A 6 patients (6.3%) had mortality within 1 year. In group B 17 patients (50%) has mortality within 1 year. In group C 16 patients (72%) has mortality within 1 year. (Table 1)

There is significant association of increased mortality in patients with delayed surgery (group B and C) with p value <0.001 . (Table 1)

Mortality was raised in males that is 20 (30%) and in females 19 patients (22%). But there was no significant association with p(0.134). (Table 4)

Out of 150 patients 30 patients are ASA III with multiple comorbids and other are ASAAII and ASA I. Mortality was higher in patients with ASA III 30 patients (31%) and it was statistically significant with p(0.04). (Table 5)

We have further data of 18 months but in this study, we only discuss until 12 months.

1. Mortality in Relation to Timing of Surgical Intervention

Intervention time	Mortality period			Total	P-value
	Mortality within 6 months	Mortality 6 months to 12 months	Total Mortality		
within 24 hours	2	4	6 (6.3%)	94	<0.001
24 to 48 hours	3	14	17(50%)	34	
After 48 hours	12	4	16(72%)	22	
Total	17	22	111	150	

2. Mean Age

Mean Age	Intervention time within 24 hours	Intervention time 24 to 48 hours	Intervention time after 48 hours
	Mean Age	71.5	73.2

3. Procedures

PROCEDURE	Intervention time			Total
	within 24 hours	24 to 48 hours	after 48 hours	
BIPOLAR HEMIARTHROPLASTY	32 (34%)	11 (32%)	6 (27%)	49 (32%)
THR	8 (8.5%)	4 (11.7)	4 (18%)	16 (10%)
DHS	42 (44)	17 (50%)	10 (45.4%)	69 (46%)
PFN	12 (12.7)	2 (5.8%)	2 (9%)	16 (10%)
Total	94	34	22	150

4. Mortality According to Gender

GENDER	Mortality within 6 months	Mortality Period			Total	p-value
		Mortality 6 months to 12 months	Total Mortality	Alive		
MALE	12 (18%)	8 (12%)	20 (30%)	45 (69%)	p-0.134	
FEMALE	5 (5.8%)	14 (16%)	19 (22%)	66 (77%)		
Total	17 (11.3%)	22 (14.6%)	39 (26%)	111 (74%)		

Chi-square test

5. Co-morbidities in Relation to Mortality

COMORBIDITIES		Mortality within 6 months	Mortality 6 months to 12 months	Total mortality	Alive	Total	p-value
		NKCM	2	0	2	14	
HTN	0	1	1	14	15		
DM	0	1	1	4	5		
PARKINSON	0	1	1	0	1		
IHD	0	1	1	1	2		
ASTHMA	0	0	0	3	3		
MULTIPLE COMORBIDITIES (ASA III)	15	15	30(31%)	64	94		
Psych/dementia	0	0	0	7	7		
other	0	3	3	4	7		
Total		17	22	39	111	150	

Chi-square test

DISCUSSION

This study showed that patients who underwent surgery for hip fractures within 24 hours had better post-operative results in terms mortality, when compared to patients who had delayed surgery.

Hip fractures are associated with adverse outcomes, including mortality. One-year mortality rate for patients with hip fracture was reported to be up to 20–24%.²

As a consequence of hip fractures, ambulation and functional status of the patient is compromised. Furthermore, such patients are seen to exhibit signs of depression.³

Better outcome and low mortality have been reported in patients who underwent early surgical intervention as compared to individuals who received delayed operative treatment.⁴

In geriatric patients, having hip fractures has 3-4 times higher mortality when compared to general population.⁵

The death rate seen in older individuals with hip fractures is unacceptably high (30% after 1 year and up to 40% within 3 years), despite advancement in therapy.¹⁵

Geriatric male population with decreased pre-ambulatory status and post-operative immobilization have a higher risk of mortality during even during hospitalization period.⁶

This research supports early mobilization following hip fracture surgery, as is recommended.²⁰

Mobilizing a patient within 24 hours of having a hip or knee replacement is associated with a shorter hospital stay.¹⁷

In the last 17 years there is 2% rise in annual mortality rate in patients with hip fractures specifically noticed among men.⁷

Male gender is an independent risk factor linked to high morbidity irrespective of co-morbidities. Therefore, they require special attention in post-operative care and subsequent follow-ups.⁸

Fractures of hip joints are more common among males. As compared to general population, a higher mortality rate has been seen in patients who suffered from a hip fracture in the male gender.⁹

Pre-fracture medical illnesses are found to be associated with increased long-term and short-term mortality.¹⁰

Our study depicts that short-term and long-term mortality after hip fracture surgery is substantially

correlated with age, blood transfusion, decrease hemoglobin levels, regardless of co-morbidities.¹³

The National Institute of Clinical Excellence (NICE) guidelines for THA and NOF#, in England and Wales, recommend mechanical prophylaxis combined with LMWH or Fondaparinux for 4 weeks post-surgery.¹⁸

Unless there is a contraindication, the use of a combination of mechanical and pharmacological prophylaxis against venous thromboembolism in patients with hip fracture is recommended by the 2010 NICE guidelines.¹⁹

To lower the mortality rate, surgical intervention should be considered as soon as possible.¹⁴

This study shows that the prime time for surgery for a patient with hip fractures is 48 hours following injury. The study states that age and medical co-morbidities have a more significant play in affecting mortality rather than timing of surgical intervention.¹¹

Various guidelines recommend surgery for hip fractures within 24-hours of injury and they further state that delay in surgery is the sole responsible factor for increased mortality in such patients. Different definitions of "delayed," with cutoffs ranging from 12 to 96 hours, may be to blame for this discrepancy.¹²

Early surgical intervention within first 24-hours of injury is recommended by guidelines of New Zealand and Scottish Health Care System to reduce the post-operative mortality and associated complications. Following delayed surgery, 41% higher mortality within 30 days and 32% raised mortality at 1-year has been seen.¹⁶

Early surgical intervention especially in patients with hip fractures significantly reduces the mortality. Therefore, we recommend surgical intervention within 24-hours to reduce the incidence of mortality at 1-year post-op.

Study limitations:

Along with the time period of surgical delay, the age and comorbidities are also significantly play important role in mortality of the patients which could not be differentiated in this study

CONCLUSION

Mortality increases with surgical delay in hip fracture patients. Survival was higher for patients operated within 24h of admission.

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