

# Functional Outcomes and One Year Survival after Surgical Management of Geriatric Hip Fractures

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**Abstract:- Hip fractures (Neck of femur, Intertrochanteric femur, Sub trochanteric femur) are a common source of morbidity and mortality worldwide in geriatric population. Geriatric population is defined as one greater than 65yrs of age<sup>20</sup>. The global burden of hip fractures is likely to increase significantly from an estimated 1.7 million in 1990 to 6.3 million in 2050. <sup>1,2</sup> Management of hip fractures is based on individual patient factors, such as preinjury ambulatory status, age, cognitive function, and comorbidities, and on fracture factors, including fracture type and the degree of displacement. Treatment options include nonsurgical management and surgical managements. Joint medical, anaesthetic and orthopaedic care from the time of admission can lead to a reduction in length of stay and inpatient mortality and increase the proportion of patients returning to their original level of activities. Well-designed primary, secondary, and tertiary preventive efforts applied in both affluent as well as developing countries are desirable to reduce the present and future burden associated with hip fracture injuries.**

## I. INTRODUCTION

Previous studies reported various predictors of adverse clinical outcomes for patients with hip fractures. A systematic review done recently identified several mortality predictors up to 12 months including pre-fracture mobility, age > 85 years and cognitive impairment [7]. Other important clinical outcomes other than mortality, especially functional ability were not examined. The new vision of healthy ageing by World Health Organization has been “Developing and maintaining the functional ability that enables well-being” [8]. Rapid ageing populations worldwide have resulted in increasing attention from researchers and policy makers to ageing related syndromes affecting patients’ functioning such as sarcopenia and frailty which gave special importance to information about patient’s functional outcome [9, 10].

It is well recognized that muscle function and physical performance are. It is imperative to conduct an updated review on patients with hip fractures to include functional outcomes, given the rapid development and global emphasis on functional ability of the elderly.

### ❖ AIM

Functional outcomes and one year survival after surgical management of geriatric hip fractures

### ❖ OBJECTIVES

1. To evaluate functional outcomes of surgically managed hip fractures in geriatric patients.
2. To study the one year survival of surgically managed geriatric hip fractured patients.
3. To evaluate the factors causing failure of treatment
4. To study the effect of pre-existing comorbidities on the surgical outcomes of hip fractures

## II. MATERIALS AND METHODS

### ➤ Inclusion Criterion

- All geriatric patients with clinically and radio graphically diagnosed hip fracture and (Neck of femur, Intertrochanteric, Subtrochanteric femur fractures). A geriatric person is defined as one greater than 65yrs of age<sup>20</sup>
- No associated fractures in other bones of both lower limbs
- Patients' willing to participate in the study

### ▪ Exclusion Criterion

- Age less than 65 years.
- Prior history of hip fracture
- Pathological fractures
- Fractures caused by complications or failure of the treatment of a previous hip fracture.
- Patient’s medically unfit for surgery

### ➤ Study Centre

- All IPD and OPD patients presenting to dept of Orthopedics MGM Hospital, Aurangabad.

### ➤ Study Duration

- Two year; November 2018 – October 2020

## III. OBSERVATION AND RESULTS

### Statistical Analysis

Data obtained from the study was coded and entered into the Microsoft Excel Spreadsheet. The categorical data and the quantitative data were expressed as ratio, rate or percentage. The continuous data was expressed as mean (average) +/- Standard Deviation (S.D.). The continuous data was compared using independent sample t test, paired T test and Chi Square Test. Value of less than or equal to 0.05 was considered as statistically significant.

The present hospital based two years prospective study was conducted in the department of Orthopaedics, Mahatma Gandhi Mission Medical College and Hospital, Aurangabad.

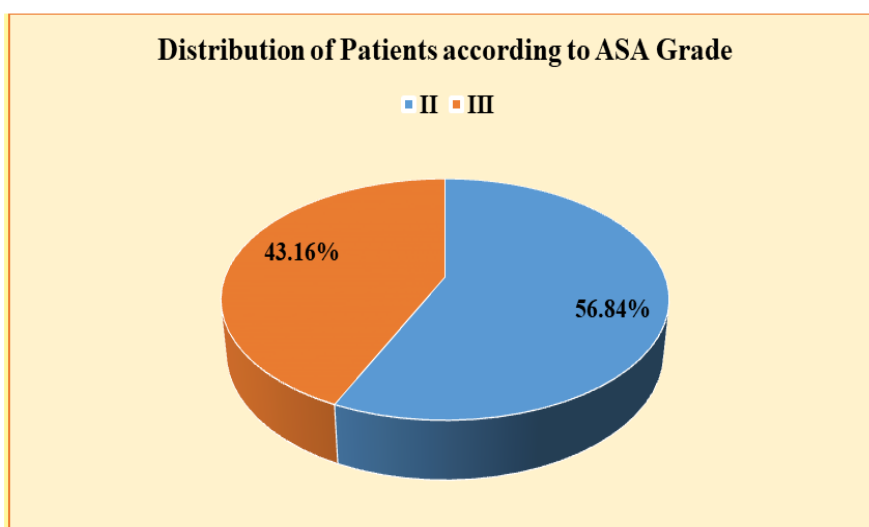
A total of 93 patients with intertrochanteric femur fractures of any grade satisfying the inclusion criteria were included in the study.

Distribution of patients was done according to their mode of trauma.60 patients had fall at home,30 patients had Road traffic accidents.5 patients had trauma from fall from push.

The data obtained was analysed and the final results and observations were tabulated as below.

**Table 1 : Distribution of patients according to ASA Grade**

ASA Grade	No. of Patients	Percentage
II	54	56.84
III	41	43.16
<b>Total</b>	<b>95</b>	<b>100</b>

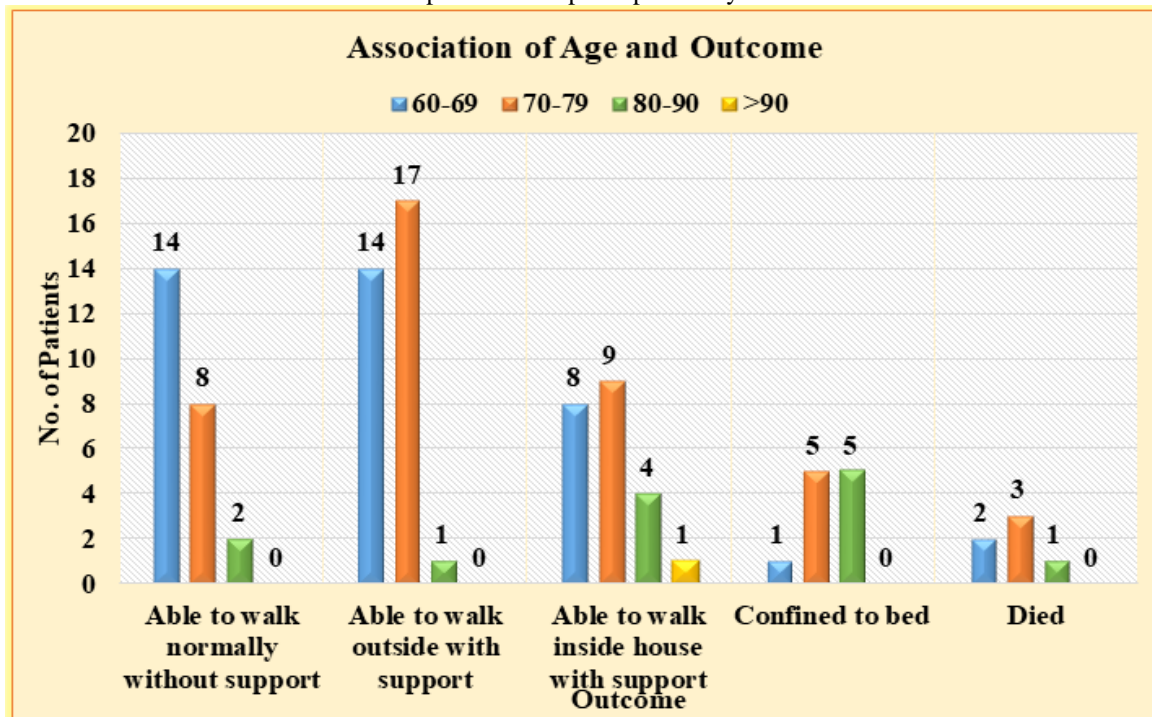


Distribution of patients according to ASA grade was also done. All patients were in grade II and grade III.No other grade was given.54 patients had grade II and 41 patients had grade III

**Table 2: Association of Age and Outcome**

Outcome		Age Groups				Total	χ <sup>2</sup> -Value	p-Value
		60-69	70-79	80-90	>90			
Able to walk normally without support	No	14	08	02	00	24	20.971	0.051 Not Sig. p>0.05
	%	14.7%	8.4%	2.1%	0.0%	25.3%		
Able to walk outside with support	No	14	17	01	00	32		
	%	14.7%	17.9%	1.1%	0.0%	33.7%		
Able to walk inside house with support	No	08	09	04	01	22		
	%	8.4%	9.5%	4.2%	1.1%	23.2%		
Confined to bed	No	01	05	05	00	11		
	%	1.1%	5.3%	5.3%	0.0%	11.6%		
Died	No	02	03	01	00	06		
	%	2.1%	3.2%	1.1%	0.0%	6.3%		
<b>Total</b>	<b>No</b>	<b>39</b>	<b>42</b>	<b>13</b>	<b>01</b>	<b>95</b>		
	<b>%</b>	<b>41.1%</b>	<b>44.2%</b>	<b>13.7%</b>	<b>1.1%</b>	<b>100%</b>		

Association between age and outcome was made. 24 patients were able to walk normally without support. 32 patients were able to walk outside with support. 22 patients were able to walk inside house with support, 11 patients were confined to bed. 6 patients died post operatively.



It was found that there was no significant association between age and outcome in geriatric hip fracture patients

There was no significant association between sex and outcome in geriatric hip fracture patients

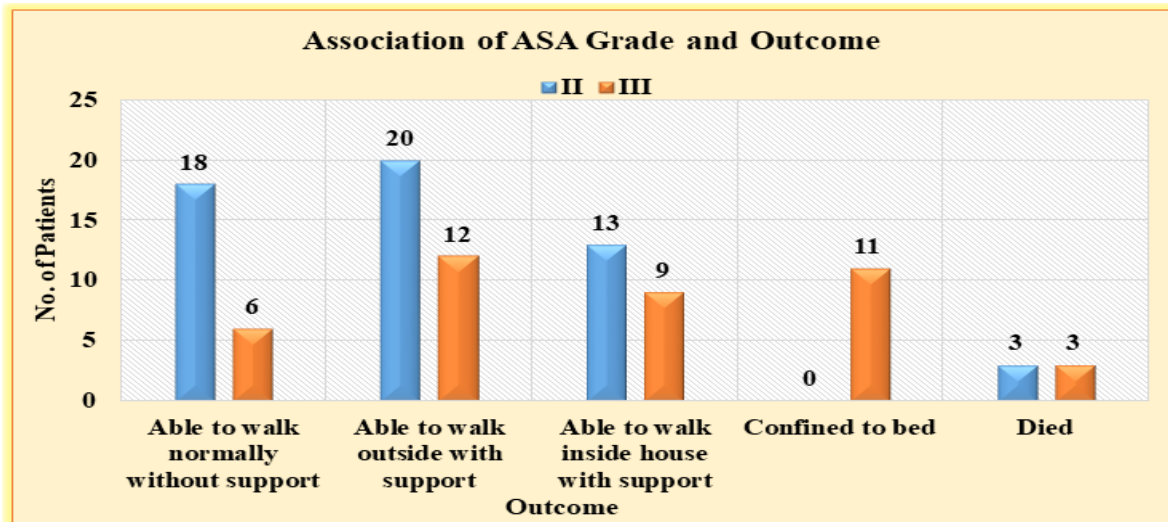
There was no significant association between mode of trauma nad outcome

There was no significant association between co moribidity and outcome

Association between type of fracture and outcome. There was no significant association found between type of fracture and outcome.

**Table 3: Association of ASA Grade and Outcome**

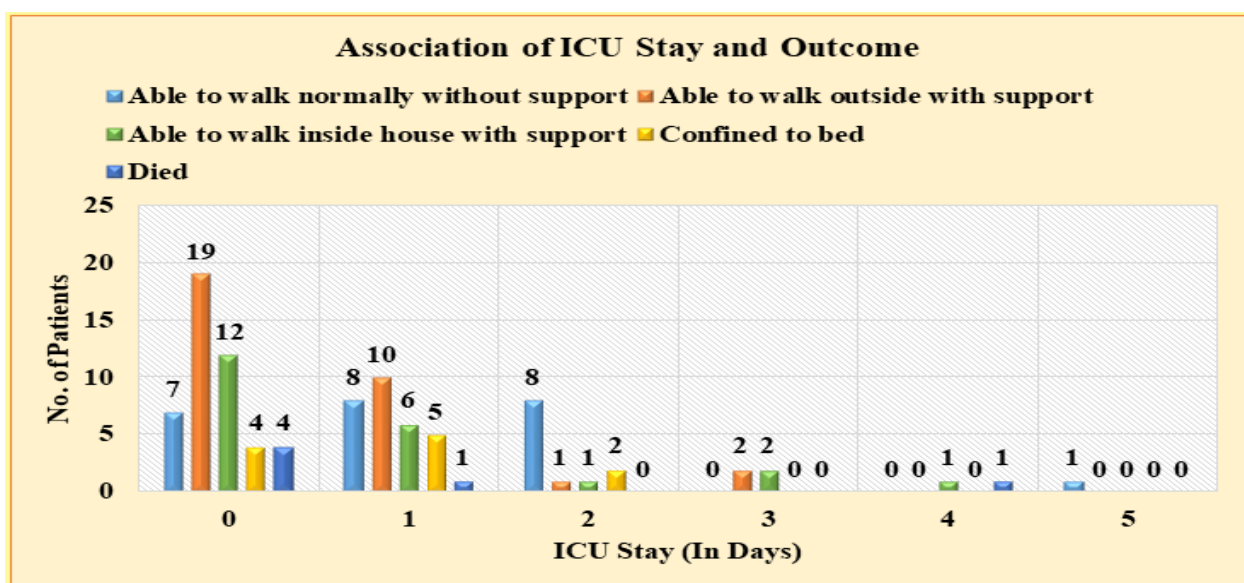
Outcome		ASA Grade		Total	χ <sup>2</sup> -Value	p-Value
		II	III			
Able to walk normally without support	No	18	06	24	18.291	0.001 Sig. p<0.05
	%	18.9%	6.3%	25.3%		
Able to walk outside with support	No	20	12	32		
	%	21.1%	12.6%	33.7%		
Able to walk inside house with support	No	13	09	22		
	%	13.7%	9.5%	23.2%		
Confined to bed	No	00	11	11		
	%	0.0%	11.6%	11.6%		
Died	No	03	03	06		
	%	3.2%	3.2%	6.3%		
<b>Total</b>	<b>No</b>	<b>54</b>	<b>41</b>	<b>95</b>		
	<b>%</b>	<b>56.8%</b>	<b>43.2%</b>	<b>100.0%</b>		



Association was made between ASA grade and outcome. 54 patients had grade II and 41 patients grade III. Significant association was found between ASA grading and functional outcome. Better functional outcome was seen in patients with grade II than in grade III

Table 4: Association of ICU Stay and Outcome

Outcome		ICU Stay ( In Days)						Total	χ <sup>2</sup> -Value	p-Value
		0	1.00	2.00	3.00	4.00	5.00			
Able to walk normally without support	No	07	08	08	00	00	01	24	31.709	0.047 Sig. p<0.05
	%	7.4%	8.4%	8.4%	0.0%	0.0%	1.1%	25.3%		
Able to walk outside with support	No	19	10	01	02	00	00	32		
	%	20.0%	10.5%	1.1%	2.1%	0.0%	0.0%	33.7%		
Able to walk inside house with support	No	12	06	01	02	01	00	22		
	%	12.6%	6.3%	1.1%	2.1%	1.1%	0.0%	23.2%		
Confined to bed	No	04	05	02	00	00	00	11		
	%	4.2%	5.3%	2.1%	0.0%	0.0%	0.0%	11.6%		
Died	No	04	01	00	00	01	00	06		
	%	4.2%	1.1%	0.0%	0.0%	1.1%	0.0%	6.3%		
Total	No	46	30	12	04	02	01	95		
	%	48.4%	31.6%	12.6%	4.2%	2.1%	1.1%	100.0%		



Comparison between ICU stay and outcome was made. 46 patients had no ICU stay, 30 patients had 1 day ICU stay, 12 patients had 2 day ICU stay, 4 patients had 3 day ICU stay, 2 patients had 4 day ICU stay, 1 patient had 5 day ICU stay. It was found that lesser ICU stay had a better functional outcome in patients.

Comparison of duration between admission and trauma and outcome was made. 22 patients were admitted on day of trauma, 50 patients were admitted 1 day after, 12 patients were admitted 2 days after, 10 patients were admitted 3 days after trauma, 1 patient was admitted 7 days after trauma. It was found that there was better functional outcome with lesser duration.

Comparison between duration between admission and procedure and outcome. 69 patients were operated within 2 days, 19 patients were operated with 3 to 5 days and 7 patients were operated within 6 to 8 days. It was found that was better functional outcome with earlier operated patients.

#### IV. DISCUSSION

The main goal of our study was to assess and find out the mortality rates and functional outcomes in operated cases of the geriatric hip fractures treated with any fixation modality.

##### 1. Age distribution:

In our study, average age of the patient was 71 years and all the patients were in geriatric age period of the life. The range was 60-99 years.

##### 2. Sex Distribution:

Our study involved the patients from both genders. The distribution of the gender was such that there were 40 male and 55 female patients. In majority of studies involving the geriatric hip fractures, there was a female preponderance. As compared to the similar study performed by Amir Moayedpour et al<sup>(37)</sup>, there was a female predominance in all groups. Similarly, in contrast to our study, study performed by the Peter A.W. Ostermann et al, Out of total 590 treated patients, females were 337 and males were 153, again predominant involvement of females.

This was due to the fact that most of the traumas were as a result of fall at home, fall from a height and females are frequently involved in such activities<sup>(28)</sup>

##### 3. Type of fractures:

Patients involved in this study were classified and distributed according to site of geriatric hip fractures. Previously operated cases were not included in this study. In our study about 72 patients suffered from a intertrochanteric femur 4 patients had subtrochanteric femur fracture and 19 patients had neck of femur fracture. There was no significant difference in the distribution of patients according to grade in different age groups. There was no case included in the study having open fracture of hip bones. There was no separate classification of patients based on the type of

intertrochanteric fractures. All subtrochanteric fractures were included under one group.

##### 4. Distribution of patients according to Mode of Trauma:

Fall at home was dominant in both groups. Road traffic accidents (RTA) were other modes of trauma which were more observed in the female age group. Out of 95 patients assessed in our study Total 30 patients suffered from road traffic accidents (RTA). Remaining 60 patients were victims of fall at home and 5 were due to fall from push (location not specified) and other causes. There was no significant difference in the distribution of the patients according to mode of trauma. According to the recent study performed by Abdel Rahim Elniel, Peter V. Giannoudis<sup>(39)</sup>, it was found that primary and most common mechanism of injury was high energy trauma, with over 50% of patients had suffered from Road traffic accidents or falls from a height.

##### 5. Distribution of the patients according to presence of comorbidities:

Being in the geriatric age group most patients had some co morbidities. Asthma, diabetes mellitus (DM), hypertension (HTN), chronic kidney disease were the common comorbidities considered in this study. 7 patients had asthma, 17 had HTN, 3 had chronic kidney disease (CKD) and 13 had diabetes mellitus. 55 patients did not have any comorbidities. There was no significant association found between functional outcome of patients and their associated comorbidities.

##### 6. Comparison of patients according to Trauma to presentation time:

Time taken by the patient to reach first medical attention from trauma was also considered. The time of presentation of patients was ranging from 0 to 7 days. There was significant difference in the functional outcome of the patients according to the duration between trauma and presentation to hospital for admission. It does not take into consideration any primary treatment taken by patients before arriving to the hospital. They represent a minority sub group of people which did not change the overall management of these patients.

##### 7. Complications:

Various known complications, like Lag screw cut out, non-union, Stiffness in the adjacent joints with operated limb segments, Osteomyelitis and shortening were observed in very few patients. Incidence of rate of complications in these categories were observed in 3 patients with infection, 2 patients having bed sores, 2 patients having dehydration, 1 patient having stiffness in adjacent joint.

#### V. CONCLUSION

This study was aimed to evaluate and compare the functional outcome of fracture fixation of geriatric hip fractures. At the ends of this study, following conclusions can be drawn: Patients with geriatric hip fractures with ASA grade II had a better post operative functional outcome compared to people with ASA grade III.

No single treatment option is superior in all circumstances for a particular fracture and each case should be individualised. Based on the findings in this study it may be concluded that post operative functional outcome was not dependent upon the age or sex of the patient. There has been no significant relationship found between association of comorbidities in patients with type of fractures and their functional outcome. The time spent waiting for operation is directly related with long term functional outcome first year after the operation or with functional long term capacity.

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