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ORIGINAL RESEARCH

Result of Primary Hemi-replacement Arthroplasty in Case of Unstable Trochanteric Fracture in Elderly Age

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Abstract

Background: In this study, we wanted to evaluate the results of unstable inter-trochanteric fractures treated with primary hemi-replacement arthroplasty in elderly with regard to function restored, morbidity, associated complications, pain score in post-operative period and mortality.

Materials and methods: This was a hospital based longitudinal interventional study conducted among 35 patients who presented withperi-trochanteric fractures to the Department of Orthopaedics in M.K.C.G. Medical College and Hospital, Berhampur, Gangnam, Odisha, over a period of one year after obtaining clearance from Institutional Ethics Committee and written informed consent from the study participants.

Results: Most of the patients were reported with satisfactory outcome at the end of the study. Younger age group patients, male patients had better outcome. Patients with Evans type II fracture type had better outcome than the type III variety. Female patients specially having some form of co-morbidity had less favourable outcome. A significant relationship between early post-operative weight bearing and good functional outcome with fewer incidences of complications was noted. Better fracture stability led to better outcome. Our study was limited in aspects like small sample size, short duration of follow-up with variable patient characteristics.

Conclusion: Primary hemi replacement arthroplasty is a good treatment option in treating unstable trochanteric fracture in elderly patients.

Keywords: Primary Hemi Replacement Arthroplasty, Unstable Trochanteric Fracture, Elderly Age

Introduction

Intertrochanteric fractures in elderly are a frequent problem & is becoming more common as proportion of elderly person is increasing.[1] The worldwide annual number of hip fractures in 1990 were 1.66 million, with an expected incidence of 6.26 million by the year 2050.[2] Reported life time risk of hip fracture for individuals at 50 years as 5.6% in men & 20% in

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women. Since 1986, in the Tottori Prefecture, Japan, the acceleration of hip fracture incidence continues for both genders.[3] Low-energy trauma (fall <1 metre) caused 53% of all fractures in the persons of 50 years & older. In those above 75 years, low energy trauma causes more than 80% of all fractures. This is contributed of course due to osteoporosis.[4,5] Stable fractures can easily be treated with internal fixation with predictable results but problem lies in treatment of the unstable variety mainly because of failure of obtaining a good anatomical reduction. Unstable intertrochanteric fractures (first described by Evans classification)[6] in the elderly is associated with high mortality rate as much as 20% during the first post-operative years.[7-11] The treatment of such unstable trochanteric fracture is still controversial, despite publication of lots of reports of randomised trials & comparative studies.[12-14]In the past, fixed nail plate devices were used for fixation of these fractures had high rates of cut-outs[15-17]& fracture displacement. Subsequently, a sliding hip screw was used with much success & became the predominant method of fixation of these fractures.[18-21] Complications like head perforations, excessive sliding leading to shortening, plate pull-out & plate breakage continued to be a problem especially with the unstable type of fractures.[22-25] Osteoporosis & instability are one of the most important factors leading to unsatisfactory results.[26-28] Also in these elderly patients with osteoporotic unstable intertrochanteric fractures a period of immobilisation is suggested.[29-30]which may cause complications like atelectasis, bed sores, pneumonia & deep vein thrombosis.[31] Thus, fracture stability, bone strength, early rehabilitation determined the final results in cases of intertrochanteric fractures in elderly patients. Intramedullary interlocking devices have shown reduced tendency to cut-outs in osteoporotic bones [32,33]& also have better result in unstable intertrochanteric fractures.[34-38] However, the role of interlocking intramedullary devices in unstable osteoporotic & severely comminuted intertrochanteric fractures is still to be defined. For all of the above-mentioned complications & problems, some surgeons recommended endo-prosthetic replacement for treatment of unstable intertrochanteric fractures in elderly.[39-45] Prosthetic replacement shown to achieve early rehabilitation & good long term results. The aim is to give early mobilisation & prevention of post-operative complications as much as possible. However, ideal treatment method is still rather controversial because of poor quality of bone mass, co-morbid disorders & difficulties in rehabilitation in these patients.[46] The purpose of this study is to analyse the role of primary hemiarthroplasty in case of unstable trochanteric fractures in elderly.

Aims and Objectives

To evaluate the result with regards to function, morbidity and mortality restore after surgery & to study the associated complications in unstable inter-trochanteric fractures treated with primary hemi-replacement arthroplasty in elderly.

Materials and methods

This was a hospital based longitudinal interventional study conducted among 35 patients who presented with peri-trochanteric fractures to the Department of Orthopaedics in M.K.C.G. Medical College and Hospital, Berhampur, Ganjam, Odisha, over a period of one year after obtaining clearance from Institutional Ethics Committee and written informed consent from the study participants.

Inclusion Criteria

1. Age >65 years of either sexes.
2. Evan's type II and III trochanteric fractures.
3. Fracture <4 weeks old.
4. Gross posteromedial comminution.

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5. Lateral wall fracture.

Exclusion Criteria

1. Evan's type I trochanteric fractures.
2. Compound intertrochanteric fractures.
3. Polytrauma patient.
4. Fracture >4 weeks old.
5. Patients age <65 years.
6. Patients unfit for surgery.
7. Patients with CVA and movement disorder.

Statistical Methods

Date was entered in MS Excel and analysed using Statistical Package for Social Sciences (SPSS) software. Results were presented as tables.

Results

Age in Years	**No. of Patients**		**Percentage**
61-70	09		30.0
71-80	13		43.3
81-90	08		26.7
Total	30		100
Age Distribution			
Age in Years	**No. of Patients**		**Percentage**
Female	12		40
Male	18		60
Total	30		100
Gender Distribution			
Age in Years	**No. of Patients**		**Total**
	Male	Female	
61-70	3(25%)	6 (33.3%)	9 (30%)
71-80	3(25%)	10 (55.6%)	13 (43.3%)
81-90	6 (50%)	2 (11.1%)	8 (26.7%)
Total	12(100%)	18(100%)	30(100%)
Age Distribution			
Demographic Distribution			
Side	**No. of Patients**		**Total**
	Male	Female	
Left	4 (33.3%)	7 (38.9)	11 (36.7%)
Right	8(66.7%)	11 (61.1)	19 (63.3%)
Total	12(100%)	18(100%)	30 (100%)
Side Distribution			

Table 1

SD (Min-Max) and results on categorical measurements were presented in number (%). Significance was assessed at 5% level of significance. The following assumptions on data were made: Assumption 1: Dependent variables should be normally distributed, Assumption 2: Samples drawn from the population should be random; cases of the samples should be independent.

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Associated Co-morbid Conditions	**No. of Patients**		**Total**
	Female (n=12)	Male (n=18)	(n=30)
No	7 (58.3%)	11 (61.1%)	18 (60%)
Yes	5 (41.7%)	7 (38.9%)	12 (40%)
COPD	0 (0%)	1 (5.6%)	1 (3.3%)
HTN	2 (16.7%)	4(22.2%)	8 (26.7%)
DM	0 (0%)	2(11.1%)	2 (6.7%)
COPD/HTN	1 (8.3%)	0 (0%)	1 (3.3%)
DM/COPD	1 (8.3%)	0 (0%)	1 (3.3%)
HTN/DM	1 (8.3%)	0 (0%)	1 (3.3%)
Associated Co-morbid Conditions			
Fracture Type	**No. of Patients**		**Total**(n=30)
	Female (n=12)	Male (n=18)	
Evans II			
No	8 (66.7%)	4 (22.2%)	12 (40%)
Yes	4 (33.3%)	14 (77.8%)	18 (60%)
Evans III			
No	4 (33.3%)	14(77.8%)	18 (60%)
Yes	8(66.7%)	4(22.2%)	12 (40%)
Fracture Type Distribution			
Calcar Reconstruction Done With	**No. of Patients**		**Total**(n=30)
	Female (n=12)	Male (n=18)	
S-S wire			
No	1(8.3%)	6 (33.3%)	7 (23.3%)
Yes	11(91.7%)	12 (66.7%)	23 (76.7%)
TBW			
No	11(91.7%)	13(72.2%)	24 (80%)
Yes	1(8.3%)	5(27.8%)	6 (20%)
Ethibond			
No	4 (33.3%)	13 (72.2%)	17 (56.7%)
Yes	8 (66.7%)	5(27.8%)	13 (43.3%)
Reconstruction Done with Distribution			
OT Time (Approx) in Minutes	**No. of Patients**		**Total**
	Female	Male	
<50	0(%)	2(11.1%)	2(6.7%)
50-70	9(75%)	15(83.3%)	24(80%)
>70	3(25%)	1(5.6%)	4(13.3%)
Total	12(100%)	18(100%)	30(100%)
OT Time (Approx) in Minutes Distribution			
OT Time (Approx) in Minutes	**No. of Patients**		**Total**
	Female	Male	
<350	1(8.3%)	6(33.3%)	7(23.3%)
350-390	11(91.7%)	11(61.1%)	22(73.3%)
>390	0(0%)	1(5.6%)	1(3.3%)
Total	12(100%)	18(100%)	30(100%)
Intra-Op Blood Loss in ml. (Approx) Distribution			
Post-operativeWeight Bearing Day	**No. of Patients**		**Total**
	Female	Male	

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1-5	3 (25%)	16(88.9%)	19(63.3%)
6-10	1(8.3%)	0(0%)	1(3.3%)
11-20	2(16.7%)	0(0%)	2(6.7%)
>20	6 (50%)	2 (11.1%)	8 (26.7%)
Total	12(100%)	18(100%)	30(100%)
Post-Op Weight Bearing Day Distribution			
Immediate Post-operativeComplication	**No. of Patients**		**Total**
	Female	Male	
No	8 (66.7%)	18 (100%)	26 (86.7%)
Bed sore	4 (33.3)	0(0%)	4(13.3%)
Total	12(100%)	18(100%)	30(100%)
Immediate Post-operative Complication Distribution			

Table 2

Analysis of variance (ANOVA) has been used to find the significance of study parameters between three or more groups of patients. Student 't' test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (inter group analysis) on metric parameters. Student 't' test (two tailed, dependent) has been used to find the significance of study parameters on continuous scale within each group.

Harris Hip Score	**Pre-op.**	**Post-op. 6 Weeks**	**6 Months**	**1 Year**	**% Change**
1-10	3(10%)	0(0%)	0(0%)	0(0%)	-10.0%
11-20	27(90%)	0(0%)	0(0%)	0(0%)	-90.0%
21-30	0(0%)	0(0%)	0(0%)	1(3.3%)	3.3%
31-40	0(0%)	0(0%)	0(0%)	0(0%)	0%
41-50	0(0%)	0(0%)	0(0%)	0(0%)	0%
51-60	0(0%)	0(0%)	0(0%)	0(0%)	0%
61-70	0(0%)	30(100%)	3(10%)	0(0%)	0%
71-80	0(0%)	0(0%)	27(90%)	24(80%)	80%
81-90	0(0%)	0(0%)	0(0%)	5(16.7%)	16.7%
Total	30(100%)	30(100%)	30(100%)	30(100%)	-
Harris Hip Score Distribution of Patients					
Harris Hip Score	**Min-Max**	**Mean±SD**	**Difference**	**t Value**	**P Value**
Pre-op	9.60-18.30	13.87±2.32	-	-	-
Post-op: 6 wks.	61.40-67.60	64.83±1.60	-50.953	-207.195	<0.001**
6 months	65.30-76.70	73.63±2.70	-59.753	-152.932	<0.001**
1 year	21.20-83.70	77.06±10.78	-63.187	-35.045	<0.001**
Harris Hip Score					
Abductor Lurch	**Gender**			**Total**	
	Female	**Male**			
No	4 (33.3%)	15 (83.3%)		19 (63.3%)	
Yes	8 (66.7%)	3 (16.7%)		11 (36.7%)	
Total	12 (100%)	18 (100%)		30 (100%)	
Abductor Lurch Distribution of Patients					
Abductor Lurch	**Gender**			**Total**	
	Female	**Male**			
No	11 (91.7%)	18 (100%)		29 (96.7%)	
Yes	1 (8.3%)	0 (0%)		1 (3.3%)	

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Total	12 (100%)	18 (100%)	30 (100%)
Dislocations Distribution of Patients Studied			
Abductor Lurch	**Gender**		**Total**
	Female	**Male**	
No	11 (91.7%)	18 (100%)	29 (96.7%)
Yes	1(8.3%)	0 (0%)	1 (3.3%)
Total	12 (100%)	18 (100%)	30 (100%)
Infections			
Age in Years	**Fracture Type**		**Total**
	Evans II	**Evans III**	
61-70	7 (38.9%)	2 (16.7%)	9 (30%)
71-80	9(50%)	4(33.3%)	13 (43.3%)
81-90	2 (11.1%)	6 (50%)	8 (26.7%)
Total	12 (100%)	18 (100%)	30 (100%)
Age Distribution of Patients Studied in Relation to Fracture Type			
P=0.070+, significant, Fisher's exact test			
Gender	**Fracture Type**		**Total**
	Evans II	**Evans III**	
Female	47 (22.2%)	8 (66.7%)	12 (40%)
Male	14(77.8%)	4(33.3%)	18 (60%)
Total	12 (100%)	18 (100%)	30 (100%)
Gender Distribution of Patients Studied in Relation to Fracture Type			
Side	**Fracture Type**		**Total**
	Evans II	**Evans II**	
Left	6 (33.3%)	5 (41.7%)	11 (36.7%)
Right	12(66.7%)	7(58.3%)	19 (63.3%)
Total	12 (100%)	18 (100%)	30 (100%)
Side Distribution of Patients Studied in Relation to Fracture Type			

Table 3

Chi-square/Fisher'sexact test has been used to find the significance of study parameters on categorical scale between two or more groups, non-parametric setting for qualitative data analysis.

Associated Co-morbid Conditions	**No. of Patients**		**Total**
	Evans II(n=18)	**Evans III (n=12)**	(n=30)
No	14 (77.8%)	4 (33.3%)	18 (60%)
Yes	4 (22.2%)	8 (66.7%)	12 (40%)
COPD	0 (0%)	1 (8.3%)	1 (3.3%)
HTN	3 (16.7%)	3(25%)	6 (20%)
DM	1(5.6%)	1(8.3%)	2 (6.7%)
COPD/HTN	0 (0%)	1 (8.3%)	1 (3.3%)
DM/COPD	0 (0%)	1 (8.3%)	1 (3.3%)
HTN/DM	0 (0%)	1 (8.3%)	1 (3.3%)
Associated Co-morbid Conditions of Patients Studied in Relation to Fracture Type			
P=0.024*, Significant, Chi-square Test			
****Strongly Significant (p value: p≤0.01)**			

Calcar Reconstruction Done with	**No. of Patients**		**Total**	**P Value**
	Evans II (n=18)	Evans III (n=12)	(n=30)	
S-S wire	11 (61.1%)	12 (100%)	23(76.7%)	0.024*

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TBW	6(33.3%)	0(0%)	6(20%)	0.057+
Ethibond	1(5.6%)	12(100%)	13 (43.3%)	<0.001**

Calcar Reconstruction Done of Patients Studied in Relation to Fracture Type

Post-operativeWeight Bearing Day	**No. of Patients**		**Total** (n=30)
	Evans II	Evans III	
1-5	17 (94.4%)	2 (16.7%)	19(63.3%)
6-10	1(5.6%)	0(0%)	1(3.3%)
11-20	0(0%)	2(16.7%)	2 (6.7%)
>20	0(0%)	8(66.7%)	8(26.7%)
Total	18 (100%)	12 (100%)	30(100%)

Post-operative Weight Bearing Day of Patients Studied in Relation to Fracture Type

Immediate Post-operative Complications	**No. of Patients**		**Total** (n=30)
	Evans II	Evans III	
No	18 (100%)	8(66.7%)	26(86.7%)
Bed sore	0 (0%)	4 (33.3%)	4 (13.3%)
Total	18 (100%)	12 (100%)	30(100%)

Immediate Post-operative Complications of Patients Studied in Relation to Fracture Type

P = 0.018*, Significant, Fisher Exact Test

Complications	**No. of Patients**		**Total** (n=30)	**P Value**
	Evans II(n=18)	Evans III (n=12)		
Abductor lurch	1 (5.6%)	10 (83.3%)	11(36.7%)	<0.001**
Dislocations	0(0%)	1 (8.3%)	1(3.3%)	0.400
Infections	0(0%)	1(8.3%)	1 (3.3%)	0.400

Abductor Lurch/Dislocations/Infections of Patients Studied in Relation to Fracture Type

Chi-square Test/Fisher's Exact Test

Variables	**No. of Patients**		**Total** (n=30)	**P Value**
	Evans II (n=18)	Evans III (n=12)		
Age in years	72.50±4.82	79.25±5.55	75.20±6.05	0.001**
OT time	52.22±3.73	69.58±6.56	59.17±9.97	<0.001**
Intra-op. blood loss	349.72±14.93	380.43±9.25	362±20.07	<0.001**

Comparison of Age, OT Time and Intra-op. Blood Loss Patients Studied in Relation to Fracture Type

Harris Hip Score	**No. of Patients**		**Total**	**P Value**
	Evans II	Evans III		
Pre op.	15.36±1.49	11.65±1.33	13.87±2.32	<0.001**
Post op. 6 weeks	65.78±1.01	63.40±1.23	64.83±1.60	<0.001**
6 months	74.88±1.51	71.75±3.04	73.63±2.70	0.001**
1 year	79.96±1.71	72.72±16.35	77.06±10.78	0.071+

Harris Hip Score Assessment of Patients Studied in Relation to Fracture Type

Table 4

Age in Yrs.	**Associated Co-morbid Conditions**							**Total**
	No	**DM**	**HTN**	**COPD**	**HTN/DM**	**DM/COPD**	**COPD/HTN**	
61-70	7 (38.9%)	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)	9 (30%)

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71-80	8 (44.4%)	0 (0%)	3(50%)	1 (100%)	0 (0%)	1 (100%)	0 (0%)	13 (43.3%)
81-90	3 (16.7%)	2(100%)	2(33.3%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	8 (26.7%)
Total	8(100%)	2(100%)	6(100%)	1 (100%)	1 (100%)	1 (100%)	1 (100%)	30(100%)

Age Distribution of Patients Studied in Relation to Associated Co-morbid Conditions

P=0.249

Associated Co-morbid Conditions	**Immediate Post-operative Complications**		**Total**
	No	Bed sore	
No	17 (65.4%)	1(25%)	18(60%)
DM	2 (7.7%)	0 (0%)	2 (6.7%)
HTN	4 (15.4%)	2 (50%)	6 (20%)
COPD	1 (3.8%)	0 (0%)	1 (3.3%)
HTN/DM	0 (0%)	1 (25%)	1 (3.3%)
DM/COPD	1 (3.8%)	0 (0%)	1 (3.3%)
COPD/HTN	1 (3.8%)	0 (0%)	1 (3.3%)
Total	26(100%)	4 (100%)	30 (100%)

Associated Co-morbid Conditions in Relation to Immediate Post-operative Complications

P = 0.113, Not Significant, Fisher's Exact Test

Associated Co-morbid Conditions	**Infections**		**Total**
	No	Yes	
No	18 (62.1%)	0 (0%)	18 (60%)
DM	2 (6.9%)	0 (0%)	2 (6.7%)
HTN	6 (20.7%)	0 (0%)	6 (20%)
COPD	1 (3.4%)	0 (0%)	1 (3.3%)
HTN/DM	0 (0%)	1 (100%)	1 (3.3%)
DM/COPD	1 (3.4%)	0 (0%)	1 (3.3%)
COPD/HTN	1 (3.4%)	0 (0%)	1 (3.3%)
TOTAL	29 (100%)	1 (100%)	30 (100%)

Associated Co-morbid Conditions in Relation to Incidence of Infections

P = 0.001, Significant, Fisher'sExact Test**

Post-operativeWeight Bearing Day	**Immediate Post-operative Complications**		**Total**
	No	Bed sore	
1-5	19 (73.1%)	0 (0%)	19 (63.3%)
6-10	1 (3.8%)	0 (0%)	1 (3.3%)
11-20	2 (7.7%)	0 (0%)	2 (6.7%)
>20	4 (15.4%)	4 (100%)	8 (26.7%)
Total	26 (100%)	4 (100%)	30 (100%)

Post-operative Weight Bearing Day in Relation to Immediate Post-operative Complications

P = 0.009, Significant, Fisher's Exact Test**

Table 5

Post-operative Bearing Day	**No. of Patients**	**Percentage**
S-S wire (n=23)		
1-5	13	56.5
6-10	0	0
11-20	2	8.7

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>20	8	34.8
TBW (n=6)		
1-5	5	83.3
6-10	1	16.7
11-20	0	0
>20	0	0
Ethibond (n = 13)		
1-5	3	23.1
6-10	0	0
11-20	2	15.4
>20	8	61.5

Post-operative Weight Bearing Day in Respect to Types of Calcar Reconstruction

Age in Years	**Immediate Post-operative Complications**		**Total**
	No	BED sore	
61-70	9 (34.6%)	0 (0%)	9 (30%)
71-80	13 (50%)	0 (0%)	13 (43.3%)
81-90	4 (15.4%)	4 (100%)	8 (26.7%)
Total	26 (100%)	4 (100%)	30 (100%)

Age Distribution of Patients Studied in Relation to Immediate Post-operative Complications

P = 0.003, Significant, Fisher's Exact Test**

Harris Hip Score	**No. of Patients**		**Total**	**P Value**
	<75 years	>75 years		
Pre Op.	15.24±1.64	2.09±1.84	13.87±2.32	<0.001**
6 weeks	65.83±0.99	63.52±1.27	64.83±1.60	<0.001**
6 months	74.70±1.59	72.22±3.23	73.63±2.70	0.010**
1 year	79.9671.61	73.25±15.8	77.06±10.78	0.091+

Harris Hip Score in Relation to Age of Patients Studied

Harris Hip Score	**Post-operative Weight Bearing Day**				**Total**	**P Value**
	1-5th day	**6-10th day**	**11-20th day**	**>20th day**		
Pre op.	15.22±1.56	12.30±0.00	12.70±1.56	11.16±1.27	13.87±2.32	<0.001*
6 weeks	65.70±1.03	63.70±0.00	64.90±0.57	62.88±1.11	64.83±1.60	<0.001*
6 months	74.87±1.46	72.10±0.00	73.00±0.85	71.01±3.47	73.63±2.70	0.003**
1 year	79.97±1.06	77.30±0.00	78.25±0.21	69.83±19.79	77.06±10.78	0.170

Harris Hip Score in Relation to Post-operative Weight Bearing Day

Table 6

Discussion

In our study, we chose 35 patients of more than 65 years old having unstable intertrochanteric fracture pattern and treated them with primary hemi-replacement arthroplasty and reconstruction of the calcar done by various [47-49] methods. Outcome of this treatment modality has been evaluated on the basis of Harris Hip score and various future complications.

In our study, among the 35 patients, 3 patients died due to medical conditions and 2 patients were lost in follow up. Total 30 patients were followed up for at least 1-year post operatively.

The mean age of patients in our study was 75.20 years with standard deviation of 6.05. Age of the youngest patient was 66 years and eldest was 86 years. 22 (70%) patients were between (66-80) years and 8 patients (30%) were more than 80 years. 12 (40%) patients were female and 18 (60%) were male. Among the 12 female patients, 6 (50%) had age more than

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80 years and among the 18 male patients 2 (11.1%) had age more than 80 years. Total 11 (36.7%) patients had left side fracture and 19 (63.3%) patients had right side fracture.
Total 12 (40%) patients had some of the co-morbidities like hypertension, diabetes, chronic obstructive pulmonary disease (COPD) etc. This is statistically significant. Among the 8 patients of more than 80 years, 6 (62.5%) had some form of co-morbidities. Higher age group patients had increase number of co-morbidities which significantly influence the future functional outcome. Total 18 (60%) had Evans type II fracture and 12 (40%) had type III fracture. 4 female patients had type II fracture and 8 had type III fracture. Most of the female patients (66.6%) had type III fracture which is statistically significant (p=.024).
Among the 22 patients between age (66-80) years, 6 (27.2%) had type II fracture and among the 8 patients more than 80 years 6 (75%) had type III fracture which is significant (p=.070). Mean age in type II fracture was 72.50 with standard deviation of 4.82 and mean age of type III fracture was 79.25 with standard deviation of 5.55. This signifies higher age group is associated with more comminute fractures. In our study, 12 right side fractures had type II variety and 7 had type III variety.
Among the 18 patients of type II fracture, 4 (22.2%) had some form of co-morbidity but among the 12 patients of type III variety, 8 (66.7%) had some form of co-morbidity which is statistically significant (p=.024).
For calcar reconstruction, SS wire was used in 12 (66.7%) male patients, TBW for 5 (27.8%) male patients and ethibond used for 5 (27.8%) male patients. Among total 18 patients with type II fracture, SS wire was used for 11 (61.1%), TBW for 6 (33.3%) and ethibondwas used for 1 (5.6%). In all 12 patients with type III fracture, calcar was reconstructed using both SS wire and ethibond.
Higher fracture types need dual modality of calcar reconstruction. 17 (94.4%) patients among the 18 patients with type II fracture were allowed to bear weight within 5 days after operation, which is statistically significant (p<0.001). On the other hand, only 2 (16.7%) patients with type III fracture were allowed to bear weight within 5 days after operation and 8 (66.7%) patients with type III fracture were allowed to bear weight after 20 days of operation. (56.5%) patients in whom SS wire was used for calcar reconstruction were allowed to bear weight within 5 days of operation. (83.3%) patients in whom TBW was used were allowed to bear weight within 5 days post-operatively.
Mean operating time in type II fracture was 52.22 min. with standard deviation of 6.56 which is significant (p<.001). Mean intra operative blood loss for type II fracture was 349.72 ml. with standard deviation of 14.90 and mean intra operative blood loss for type III fracture was 380.83 ml with standard deviation of 9.25 which is significant (p<.001). Higher fracture pattern is associated with more operating time and more intra operative blood loss.
4 patients had immediate post-operative complication in the form of bed sore, all of them had type III fracture and age more than 80 years which is significant (p=.018). Among the 12 patients with type III fracture, 10 (83.3%) had abductor lurch which is significant (p=<.001). 1 patient with infection also had both hypertension and diabetes. All 4 patients with bed sore post-operatively were allowed to bear weight after 20 days of operation which is significant (p=.009). Delayed weight bearing is associated with more post-operative complications.
1 patient who had infection was treated through wound debridement and a period of intravenous antibiotics for four weeks according to the culture sensitivity report. As the infection was superficial and implant was stable, implant removal was not done. The patient who had dislocation was treated by open reduction and abduction cast done for four weeks post-operatively. Then the cast was removed and position of the implant was confirmed by x-ray and she was instructed to bear weight.
Mean pre-operative Harris Hip score was 13.87 with standard deviation of 2.32. Mean one-year post-operation Harris Hip score was 77.06 with standard deviation of 10.78 27 (90%)

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patients of our study had pre-operative Harris Hip score between (11-20) and 24 (80%) patients of our study had one year post-operative Harris Hip score between (71-80). Mean pre-operative Harris Hip score with type II fracture was 15.36 with standard deviation of 1.49 and mean one year post-operative Harris Hip score with type II fracture was 79.96 with standard deviation of 1.71. Mean pre-operative Harris Hip score with type III fracture was 11.65 with standard deviation of 1.33 and mean one year post-operative Harris Hip score with type III fracture was 72.72 with standard deviation of 16.35. This is significant (p=.071+). Higher fracture pattern is associated with less improvement in Harris Hip score with time. In patients with age <75 years, the mean pre-operative Harris Hip score was 15.25 with standard deviation of 1.64 and mean 1 year post-operative Harris Hip score was 79.97 with standard deviation of 1.61. In patients with age >75 years, the mean pre-operative Harris Hip score was 12.09 with standard deviation of 1.84 and mean one year post-operative Harris Hip score was 73.25 with standard deviation of 15.8. This is statistically significant (p=.091+). Patients who were allowed to bear weight within five days after operation had mean six weeks post-operative Harris Hip score of 65.70 with standard deviation of 1.03 and mean one year post-operative Harris Hip score of 79.97 with standard deviation of 1.6. Patients who were allowed to bear weight after 20 days of operation had mean six weeks post-operative Harris Hip score of 62.88 with standard deviation of 1.11 and mean one year post-operative Harris Hip score of 69.93 with standard deviation of 19.79 which is significant (p=.170). Patients with younger age group and early post-operative weight bearing had better improvement of Harris Hip score post-operatively with time.

Our study had several limitations. The sample size was small (N=35) and the follow up period was only one year. The post-operative rehabilitation was done under supervision only for first 5-10 days before the patients were discharged and it was not possible to determine whether the patients were following the rehabilitation protocol with equal motivation. We also unable to eliminate the other various patient variables like socio-economic status, psychosocial encouragement in our study. Our aim was to find the result of primary hemiarthroplasty in case of unstable trochanteric fracture in elderly and we found this modality of treatment is good option in this type of fracture with good functional outcome.

Conclusion

Results were recorded on the basis of Harris hip score and various complications at interval of six weeks, six months and one year. Most of the patients were reported with satisfactory outcome at the end of the study. Younger age group patients, male patients had better outcome. Patients with Evans type II fracture type had better outcome than the type III variety. Female patients specially having some form of co-morbidity had less favourable outcome. A significant relationship between early post-operative weight bearing and good functional outcome with fewer incidences of complications was noted. Better fracture stability led to better outcome. Our study was limited in aspects like small sample size, short duration of follow-up with variable patient characteristics. Keeping these in mind, we can conclude that primary hemi-replacement arthroplasty is a good treatment option in treating unstable trochanteric fracture in elderly patients.

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