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Complications Patients Faces while Fixation, in Terms of Pain Relief, Walking, Sitting

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Abstract **Original Research Article**

Background: The fracture of the trochanteric area of the femur is one of the most frequent and challenging complications orthopedic surgeons deal daily. In virtually all instances, fractures develop through the highly vascular cancellous bone and heal within 8 to 12 weeks, independent of therapy. Malunion and varus angulations are prevalent. Due to the demands placed on the patient, nursing staff, and length of hospitalization, conservative therapy is no longer acceptable. Seventy percent of intertrochanteric fractures are considered unstable. During regular exercises, the proximal femoral loading has been calculated to reach up to three times the body weight. Muscle attachments apply force vectors in several directions, hence contributing to a trend for fracture displacement. This fracture is typically accompanied by severe comminution and osteopenia. ***Objective:*** The main objective of this study is to find thecomplications patients faces while fixation, in terms of pain relief, walking, witting. ***Materials and Methods:*** Descriptive study conducted at Department of Orthopedic Surgery, Chittagong Medical College Hospital, Chittagong, with the sample size of 36 patients aged above 50 years admitted to the Chittagong Medical College Hospital with closed trochanteric fracture. The aim of the study is to find out the Effectiveness of dynamic hip screw in fixation of trochanteric fractures of femur in elderly patients. ***Results:*** The patients' ages ranged from 52 to 95 years. The majority of patients were 70-79 years old (36.1 percent), followed by 80-89 years (25 percent), 60-69 years (22.2 percent), 50-59 years (11.1 percent), and 90-99 years (5.6 percent). The mean (±SD) age of the total study patients (n=36) was 72.± 1.20 years, male (n=21) was 75.05±12.62 years and female (n=15) were 68.07±7.46 years. There are considerable disparities between the age groups of 70-79 and 90-99.Males made up the majority of patients (58.3 percent), while females made up 41.7 percent. Male and female patients exhibit considerable variances., out of 36 (100%) patient, 18(50%) patient had no limping and 3 (8.3%) become unable to bear weight at 24 weeks follow up, 11(30.6%) patient regained previous walking ability, flip movement was not possible in 3(8.3%) at 24 weeks follow up. All parameters show gradual improvement.that the mean (±SE) hospital stay of the patients was 22.78±0.94 days (range: 8 to 35 days). Sex wise hospital stay was male 23.67±1.08 days and female 21.53±1.68 days; however, statistically the sex difference is not significant. The early and late complications of the patients. Statistically there are no significant differences between highest and lowest complication rates. ***Conclusion:*** Trochanteric fracture of the femur treated with a dynamic hip screw considerably simplifies nursing care, permits early mobilization, and lowers mortality and morbidity, especially in patients over the age of 50. There are other complications they face after the fixation but yet the best-case scenario is a successful fracture fixation that allows the patient to begin walking with crutches as soon as feasible.

Keywords: Fixation failure, Hip screw fixation, complications after fixation, pain relief.

INTRODUCTION

The fracture of the trochanteric area of the femur is one of the most frequent and challenging complications orthopedic surgeons deal daily [1]. In virtually all instances, fractures develop through the highly vascular cancellous bone and heal within 8 to 12 weeks, independent of therapy. Malunion and varus

angulations, however, are prevalent. Due to the demands placed on the patient, nursing staff, and length of hospitalization, conservative therapy is no longer acceptable [2].

Seventy percent of intertrochanteric fractures are considered unstable [3]. During regular exercises, the proximal femoral loading has been calculated to reach up to three times the body weight. Muscle attachments apply force vectors in several directions, hence contributing to a trend for fracture displacement. This fracture is typically accompanied by severe comminution and osteopenia [4]. To decrease morbidity and mortality, the goal of all treatments is to enable quick and unrestricted patient movement. For better therapy, orthopedic surgeons have attempted to describe the kind and architecture of the fracture line and fracture fragments. Numerous categorization methods for this fracture have been suggested, with the primary objective being to determine if the fracture is stable or unstable [9].

There are several methods for fixing trochanteric fractures, including the Smith-Peterson triflanged nail, the Jewett fixed-angle nail-plate, the Gamma interlocking nail, and the upper femoral interlocking nail, among others [5]. The Jewett fixed-angle nail plate is still present on this continent and in our institution [6].

Even after fixation of the patients they face pain and some other complication while doing physical activity [10]. Continuous; unrelieved pain has a psychological impact on both the sufferer and his or her family. Anxiety and sadness are frequent psychological reactions to pain [8]. The inability to escape from pain may induce feelings of helplessness and even hopelessness, which may predispose the patient to develop a more chronic form of depression. Patients who have received insufficient pain treatment may be hesitant to seek medical attention for additional health issues [7]. These authors will draw knowledge about these complications patients faces while fixation, such as pain relief, walking, sitting, etc.

MATERIALS AND METHODS

Descriptive study conducted at Department of Orthopedic Surgery, Chittagong Medical College Hospital, Chittagong, with the sample size of 36 patients aged above 50 years admitted to the Chittagong Medical College Hospital with closed trochanteric fracture. The aim of the study is to find out the Effectiveness of dynamic hip screw in fixation of trochanteric fractures of femur in elderly patients.

Also, a pre -designed pro-forma containing history and examination findings of patient and follow-up were used to collect the data. Collected data were compiled and appropriate analyses were done using computer-based software SPSS (Statistical Package for Social Science). P value <0.05 was taken as minimum level of significance.

RESULTS

The patients' ages ranged from 52 to 95 years. The majority of patients were 70-79 years old (36.1 percent), followed by 80-89 years (25 percent), 60-69 years (22.2 percent), 50-59 years (11.1 percent), and 90-99 years (5.6 percent). The mean (±SD) age of the total study patients (n=36) was 72.± 1.20 years, male (n=21) was 75.05±12.62 years and female (n=15) were 68.07±7.46 years. There are considerable disparities between the age groups of 70-79 and 90-99. Males made up the majority of patients (58.3 percent), while females made up 41.7 percent. Male and female patients exhibit considerable variances. As a result, the majority of patients (44.4 percent) were retired, 41.7 percent were housewives, and 13.9 percent were service members. There are considerable discrepancies between the retired and service-holder populations. Because the majority of the research patients were either retired or housewives, the most common cause of injury was a domestic fall (69.4 percent); just 30.6 percent were injured in a road traffic accident (RTA). There are important distinctions between domestic fall and RTA.

Table 1: Age distribution of the patient (n =36)

Age group	Number of patients	Percentage
50-59	4	11.1
60-69	8	22.2
70-79	13	36.1
80-89	9	25.0
90-99	2	5.6
Total	**36**	**100**

Z=1.45, P<0.05

Table 2 shows cause of injury. As most of the study subjects were either retired person or housewife, mostly the cause of injury was domestic fall (69.4%); only 30.6 percent suffered injuries from Road Traffic Accident (RTA). There are significant differences between domestic fall and RTA.

Table 2: Cause of injury (n = 36)

Cause of injury	Number of patients	Percentage
Road traffic accident	11	30.6
Domestic fall	25	69.4*
Total	**36**	**100**

Z = 2.32, *P<0.05

Table 3: Type of fracture (n = 36)

Type	Number of patients	Percentage
Stable	26	72.0
Unstable	10	28.0
Total	**36**	**100**

Table 4 shows follow up outcome regarding limping, walking ability and hip joint range of motion, out of 36 (100%) patient, 18(50%) patient had no limping and 3 (8.3%) become unable to bear weight at 24 weeks follow up, 11(30.6%) patient regained previous walking ability, flip movement was not possible in 3(8.3%) at 24 weeks follow up. All parameters show gradual improvement.

Table 4: Follow up outcome of the patient (n = 36)

Findings	Follow up		
	6 weeks No (%)	12 weeks No (%)	24 weeks No (%)
Limping			
None/ minimum	3 (8.3)	13 (36.1)	18 (50.0)
Weight bearing not possible	23 (63.9)	5(13.9)	3 (8.3)
Walking ability			
Regained previous walking ability	0	8 (22.2)	1 1 (30.6)
Almost non-ambulatory	3 (8.3)	0	.0
Hip joint range of motion			
Full	1 (2.8)	21 (58.3)	25 (69.4)
Not possible due to pain	9 (25.0)	4(11.1)	3 (8.3)

Table 5 shows that the mean (±SE) hospital stay of the patients was 22.78±0.94 days (range: 8 to 35 days). Sex wise hospital stay was male 23.67±1.08 days and female 21.53±1.68 days; however, statistically the sex difference is not significant.

Table 5: Hospital stay (n=36)

Sex	No. of patient	Hospital stay (days) (Mean+SE)	P value
Male Female	21 15	23.67±1.08 21.53±1.68	0.272 NS
Total	**36**	**100**	

[1]NS=Not significant

Table 6 shows previous walking ability of the study subjects. Statistically there is highly significant difference between the two groups.

Table 6: Previous walking ability (n = 36)

Walking ability	Number of	Percentage
	patients	
Walking without	30	88.3***
support		
Walking with a	6	16.6
cane		
Total	**36**	**100**

Table 7 shows that overall radiological improvement was observed in 33 (91.7%) patients at 6 weeks and 12 weeks follow-up, however, at 24 weeks, it declined to 32 (88.9%). There are significant differences between satisfactory and unsatisfactory group in terms of radiological assessment 24 weeks after group in terms of radiological assessment 24 weeks after operation.

Table 7: Overall radiological assessment (n=36)

Assessment	**Follow up**		
	6 weeks No (%)	12 weeks No (%)	24 weeks No (%)
Satisfactory	33(91.7)	33(91.7)	32(88.9)***
Unsatisfactory	3 (8.3)	3 (8.3)	4(11-1)
Total	**36(100)**	**36(100)**	**36(100)**

Z - 4.8, ***P< 0.001

Table 9 shows the early and late complications of the patients. Statistically there are no significant differences between highest and lowest complication rates.

Table 9: Complication in the patients (n=36)

Complications	**Number of patients**	**Percentage**
Early		
Nonspecific pain	5	13.8
Deep wound infection	3	8.3
Stitch infection	4	5.5
Urinary tract infection	1	2.7
Pneumonia	1	2.7
High fever and late death	1	2.7
Late		
Lag screw cutout	2	5.5
Total	**36**	**100**

DISCUSSION

In the present study, the mean age at fracture of 36 patients is 72.14 years (range: 52-95 years), and the age groups 70-79 years comprise the highest number of 13 (36.1%) patients.

Out of 36 patients, 11 (30.6%) gave the history of road traffic accident (RTA). On the other hand, 25 (69.4%) out of 36 patients gave the history of fall at home or outside home. The incidence of RTA is more among males probably due to our social setup i.e. male are busy outside the home and females are housewives, remain at home.

In this study, according to Evans classification, 72 percent. (26 out of 36) of fractures were found to be stable and 28 percent (10 patients) of fractures were unstable. In the series of Evans *et al.,* 75 percent had stable fractures and 25 percent had unstable fractures. This finding was almost similar to the present series.

In the present series of 36 patients, 16 (44.4%) patients had associated illness. These were diagnosed from patient's histories, clinical examination and relevant investigations. Statistically, approximately similar rate of associated ailments was detected by Larsson *et al.,* 13 and they cited that patient with hip fractures had more associated illness than the standard population. This appears to be true for patients of present series as well.

Six (16.6%) of the 36 patients needed a cane in their hands as support for walking; remaining 30 (83.3%) patients could walk without support before fracture. The associated systemic ailments and reduced ambulatory function before the fracture often compromise the successful treatment.

Physical therapy is essential for successful restoration of mobility. The goal of physical therapy is a return to previous activity and occupational levels. Moreover, early ambulation is essential to avoid morbidity and mortality related to these fractures in elderly patients. Most of the authors are in favor of partial weight bearing within three to five days after operation depending on the stability of fixation ' '. In our hospital, operation was delayed (average 17 days), operation time was longer (average 132 minutes). Although isometric exercises were started on the day of operation, the average time of toe-touch walking with walker support was 10 days and average time to walk partial weight bearing with crutch support was 24 days.

There is significant difference between satisfactory and unsatisfactory groups in terms of radiological assessment 24 weeks after operation. The causes of unsatisfactory radiological findings were due to advanced age, osteoporotic bone, unstable fracture but insecure fixation, failure to attend the hospital in time for follow up, negligence of the attendants and early weight bearing to some extent.

The cases in which mechanical failure occurred were unstable fractures, the bones were severely osteoporotic, the position of the lag screw within the femoral head were 1/3 (most vulnerable position for cutout), on the whole the fixation was unsatisfactory from the beginning. For these reasons, partial weight bearing was also delayed and full weight bearing was never possible.

Full range of painless hip movement is given the prime importance so far the grading of result is concerned. Painless full range of motion is very prerequisite for leading a normal life. This is why this parameter is taken as the main factor upon which the status of the final result depends. Out of 36 patients in the present series, 3 (8.3%) patients had pain of such severity that any motion caused pain. One due to lag screw cutout of the femoral head superiorly with varus angulation and another due to deep wound infection. Another 8 (22.2%) patients had moderate pain and limited range of hip mobility, needed crutch support for walking. They had no definite cause but probably these were due to contracture of hip capsule and surrounding musculature as a consequence of delayed and prolonged surgery.

Wound infection occurred in 5 (13.8%) patients, 2 (5.5%) had just stitch infection and 3 (8.3%) had deep infection. Causative organism was Staphylococcus aureus in all the cases and was sensitive to flucloxacillin. Stitch infection was controlled within 5 days of antibiotic therapy and removal of the infected stitches only but the antibiotic was continued up to 2 weeks. The deep infection was managed by open drainage and secondary closure associated with antibiotic therapy for 3 weeks. The infection rate was 2.1 and 0.8 percent deep infection rate.

Over all, the study conducted on 36 cases of trochanteric fracture in elderly patients over 50 years of age, treated by closed reduction and internal fixation by dynamic hip screw (DHS). These patients were evaluated with a mean follow-up of 11 months (range; 6 to 12 months) showed a satisfactory (good to excellent) result of 75 percent. But at the same time while fixation they had faced some post-surgery complications as well.

CONCLUSION

Trochanteric fracture of the femur treated with a dynamic hip screw considerably simplifies nursing care, permits early mobilization, and lowers mortality and morbidity, especially in patients over the age of 50. The best case scenario is a successful fracture fixation that allows the patient to begin walking with crutches as soon as feasible.

When all these factors are taken into account, it has been shown that internal fixation by dynamic hip screw (DHS) is the best treatment for both stable and unstable trochanteric fractures of the femur, especially in patients over the age of 50 and in late cases who have already spent several days in bed.

This may be followed up on in the future to gain long-term findings, and the series can be expanded by include more instances to establish more precise outcomes.

REFERENCES

1. Ganz, R., Thomas, R. J., & Hammerle, C. P. (1979). Trochanteric fractures of the femur: treatment and results. *Clinical Orthopaedics and Related Research®*, (138), 30-40.
2. Flores, L. A., Harrington, I. J., & Heller, M. A. R. T. I. N. (1990). The stability of intertrochanteric fractures treated with a sliding screw-plate. *The Journal of Bone and Joint Surgery. British volume*, *72*(1), 37-40.
3. Knobe, M., Gradl, G., Ladenburger, A., Tarkin, I. S., & Pape, H. C. (2013). Unstable intertrochanteric femur fractures: is there a consensus on definition and treatment in Germany?. *Clinical Orthopaedics and Related Research®*, *471*(9), 2831-2840.
4. Hesse, B., & Gächter, A. (2004). Complications following the treatment of trochanteric fractures with the gamma nail. *Archives of orthopaedic and trauma surgery*, *124*(10), 692-698.
5. Sun, D., Park, B. S., Jang, G. I., & Lee, B. (2017). The fixation method according to the fracture type of the greater trochanter in unstable intertrochanteric fractures undergoing arthroplasty. *Hip & Pelvis*, *29*(1), 62-67.
6. Jensen, J. S. (1980). Mechanical Strength of Jewett and McLaughlin hip Nail Plates Manufactured from Cobalt-Chromium-Molybdenum Alloy: A Biomechanical Study of Unstable Trochanteric Fractures. IV. *Acta Orthopaedica Scandinavica*, *51*(1-6), 145-156.
7. Scott, J. E., Mathias, J. L., & Kneebone, A. C. (2016). Depression and anxiety after total joint replacement among older adults: a meta-analysis. *Aging & mental health*, *20*(12), 1243-1254. doi: 10.1080/13607863.2015.1072801. Epub 2015 Aug 7. Erratum in: Aging Ment Health. 2016 Dec; 20(12), 1339. PMID: 26252414.
8. Woo, A. K. (2010). Depression and anxiety in pain. *Reviews in pain*, *4*(1), 8-12. doi: 10.1177/204946371000400103. PMID: 26527193; PMCID: PMC4590059.
9. Audigé, L., Bhandari, M., Hanson, B., & Kellam, J. (2005). A concept for the validation of fracture classifications. *Journal of orthopaedic trauma*, *19*(6), 404-409.
10. Borsook, D., Kussman, B. D., George, E., Becerra, L. R., & Burke, D. W. (2013). Surgically-induced neuropathic pain (SNPP): understanding the perioperative process. *Annals of surgery*, *257*(3), 403-412. doi: 10.1097/SLA.0b013e3182701a7b. PMID: 23059501; PMCID: PMC3546123