

Examine the Outcomes of Dynamic Hip Screw Fixation in Patients with Intertrochanteric Femur Fractures

Hip Screw
Fixation in
Intertrochanteric
Femur Fractures

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ABSTRACT

Objective: To examine the outcomes of dynamic hip screw fixation in patients presented with intertrochanteric femur fractures.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Department of Orthopedic, Bolan Medical College Hospital, Quetta from January 2019 to March 2020.

Materials and Methods: Thirty patients of both genders with ages 20 to 70 years presented with intertrochanteric femur fractures were enrolled. Patients demographic including age, sex and side of fracture were recorded. All patients received dynamic hip screw placement under general anesthesia. Radiological assessment was done. Follow-up was taken at 12 weeks and 24 weeks postoperatively. Functional outcomes were assessed by Harris Hip Scoring (HHS) system. Post-operative wound infection, union of bone, range of hip motion, shortening of limb was examined. Patient's satisfaction was recorded at final follow-up.

Results: Eighteen (60%) were males and 12 (40%) were females. 5 (16.67%) patients were ages 20 to 40 years, 14 (46.67%) patients were ages 41 to 60 years and 11 (36.67%) patients had ages above 60 years. 1 (3.33%) patients had limb shortening more than 2cm. Wound infection found in 2 (6.67%) patients. There was 1 (3.33%) patient with non-union. 22 (73.33%) patients had excellent, 4 (13.33%) patients had good, 2 (6.67%) patients had fair and no patient with poor outcome by HHS. 21 (%) patients were very satisfied.

Conclusion: Dynamic hip screw placement for intertrochanteric femur fractures is better and very effective treatment modality with fewer rate of complications.

Key Words: Intertrochanteric Femur Fracture, Dynamic Hip Screw, Functional Outcomes.

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INTRODUCTION

Intertrochanteric fractures are fractures that involve the proximal region of the femur from the extra capsular part of the femoral neck to the transverse line at the level of the distal end of the lesser trochanter.¹ Nearly 90% of these fractures occur in patients older than 65 years. They are more common in women than in men with ratio 3:1. Other risk factors include white race, neurological impairment, malnutrition, impaired vision, malignancy, and decreased physical activity.²

Intertrochanteric fractures are predominantly seen following low energy injuries in elderly women due to

osteoporosis and they are associated with high morbidity and mortality especially in patients with medical comorbidities whose declining health status is further worsened by trauma.^{3,4}

Successful treatment of intertrochanteric fractures depends on many factors including the age of patients, the patients' general health, the time from fracture to treatment, concurrent medical illness and the stability of fixation.⁵ There are various types of hip fracture fixation devices available for treatment of intertrochanteric fractures. Dynamic hip screw (DHS) is the gold standard device of fixation of this fracture, regardless of number of parts, by which all other fixation devices are to be measured. This is because of its telescoping properties, which allows impaction of the fracture site (controlled collapse), thereby achieving bone-on-bone stability and reducing chances of implant failure.^{6,7}

Numerous internal fixation devices have been used to stabilize intertrochanteric femoral fractures. These devices can be divided into 2 categories: extramedullary fixation devices and intramedullary fixation devices. It is generally accepted that dynamic hip screw (DHS) is the implant of choice in the treatment of stable intertrochanteric femur fractures.⁸ For unstable intertrochanteric femoral fractures, the

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commonly used extramedullary fixation devices, such as DHS, dynamic condylar screw (DCS), and angular blade plates are often problematic.⁹ The importance of a well-performed surgical treatment in hip fracture care is undisputable; however, treating the patients from a holistic point of view is probably even more important in order to improve the overall outcome for these patients.¹⁰

The present study was conducted aimed to examine the outcomes of dynamic hip screw placement in patients with intertrochanteric fractures.

MATERIALS AND METHODS

This retrospective case series study was conducted at Department of Orthopedic, Bolan Medical College Hospital Quetta from 1st January 2019 to 31st March 2020. A total of 30 patients of both gender with ages 20 to 70 years presented with intertrochanteric femur fractures were enrolled. Patients demographic including age, sex and side of fracture were recorded. Causes of fractures were also recorded. Patients with pathological fractures, unstable intertrochanteric fractures, non-operatively treated fractures, bed-bounded patients and patients with no consent were excluded. All patients received dynamic hip screw placement under general anesthesia. Radiological assessment was done preoperatively and postoperatively. Functional outcomes were assessed by Harris Hip Scoring (HHS) system. Post-operative wound infection, union of bone, range of hip motion, shortening of limb was examined. Patient's satisfaction was recorded at final follow-up. Follow-up was taken at 12 weeks and 24 weeks postoperatively. Data was analyzed by SPSS 24.0. Chi-square test was applied to compare the preoperative and postoperative findings of HHS. P-value <0.05 was set at statistically significant.

RESULTS

There were 18 (60%) were males and 12 (40%) were females. 5 (16.67%) patients were ages 20 to 40 years, 14 (46.67%) patients were ages 41 to 60 years and 11 (36.67%) patients had ages above 60 years. 16 (53.33%) patients had left side fracture and 14 (46.67%) had right side fracture. Slip on ground were the most common etiology found in 13 (43.33%) followed by road traffic accident and fall from height in 11 (36.67%) and 6 (20%) patients (Table 1). According to the Harris Hip Score, it was 18.8±23.5 preoperatively, at postoperative 12 weeks 65.4±10.7 and at 24 weeks it was 93.4±11.6 (p=<0.05) (Tables 2-3). At final follow up, we found 24 (80%) patients had excellent, 4 (13.33%) patients had good, 1 (3.33%) patients had fair and 1 (3.33%) patient with poor outcome by HHS (Table 4).

There was 1 (3.33%) patient with limb shortening more than 2cm. Wound infection found in 2 (6.67%) patients, 1 (3.33%) patient with screw cut-out (Table 5).

According to the patients satisfaction scoring, we found 26 (86.67%) patients were strongly satisfied, 2 (6.67%) were satisfied and 2 (6.66%) were not satisfied (Table 6).

Table No.1: Demographic information of the patients

Variable	No.	%
Gender		
Male	18	60.0
Female	12	40.0
Age (years)		
20 – 40	5	16.67
41 – 60	14	46.66
> 60	11	36.67
Fracture side		
Left	16	53.33
Right	14	46.67
Cause of fracture		
Slip on ground	13	43.33
RTA	11	36.67
Fall from height	6	20

Table No.2: Comparison of Harris Hip Score (HHS) preoperative and postoperative 12th week

HHS	Pre-operative	Postoperative 12 th week	P value
	18.8±23.5	65.4±10.7	0.0001

Table No.3: Comparison of Harris Hip Score (HHS) preoperative and postoperative 24th week

HHS	Pre-operative	Postoperative 24 th week	P value
	18.8±23.5	93.4±11.6	0.0001

Table No.4: At final follow-up findings by Harris Hip Score (HHS)

HHS	No.	%
Excellent (90-100)	24	80.0
Good (80-89)	4	13.34
Fair (70-79)	1	3.33
Poor (0-69)	1	3.33

Table No.5: Postoperative complications

Complication	No.	%
Limb Shortening	1	3.0
Wound Infection	2	3.67
Screw Cut-out	1	3.33

Table No. 6: Patient's satisfaction

Variable	No.	%
Strongly satisfied	21	70%
Satisfied	7	23.33%
Not satisfied	2	6.67%

DISCUSSION

Intertrochanteric fractures are the most common femoral fractures and can cause mortality and

morbidity. In elderly patients hip fractures are common with high rate of mortality and morbidity.^{11,12} Dynamic hip screw procedure considered as a procedure of choice for the treatment of intertrochanteric femur fractures with high rate of union of bone.¹³ The present study was conducted to examine the outcomes of dynamic screw placement in patients with intertrochanteric fractures. In our study the union rate was 96.67%. Many of previous studies reported bone union rate was 88-98%.^{14,15}

In this study total 30 patients of intertrochanteric fractures were included. Mostly patients were male 60% as compared to females 40% and 83.33% patients were ages 41 to 70 years. These results were similar to several previous studies conducted regarding intertrochanteric fractures, in which most of the patients were males as compared to females with majority of patients had elderly ages.^{16,17} In our study we found the most common cause of fracture was slip on ground 13 (43.33%) followed by road traffic accident and fall from height in 11 (36.67%) and 6 (20%) patients. These results were comparable to many other studies.^{17,18}

In the present study, according to the Harris Hip Score, we found significant difference in term of pre and postoperatively ($P < 0.05$). The values obtained, 18.8 ± 23.5 preoperatively, at postoperative 12 weeks 65.4 ± 10.7 and at 24 weeks it was 93.4 ± 11.6 . A study conducted by Arojuraye et al¹⁹ reported statistically significant differences between the pre-operative Harris hip score and the Harris hip scores at 3 months and 6 months respectively ($P < 0.05$). We found 24 (80%) patients had excellent, 4 (13.33%) patients had good, 1 (3.33%) patients had fair and 1 (3.33%) patient with poor outcome by HHS. There was 1 (3.33%) patient with limb shortening more than 2cm. Wound infection found in 2 (6.67%) patients, 1 (3.33%) patient with screw cut-out. These results were similar to multiple studies in which majority of patients had excellent HHS 75 to 90% and fewer rate of complications 2-10%.^{20,21}

This study showed that patients satisfaction scoring, we found 21 (70%) patients were strongly satisfied, 7 (23.33%) were satisfied and 2 (6.66%) were not satisfied. Arojuraye et al¹⁹ reported 62.5% patients were very satisfied, 31.3% patients were satisfied and 6.3% patients were dissatisfied.

CONCLUSION

Dynamic hip screw placement for intertrochanteric femur fractures is better and very effective treatment modality with fewer rate of complications. The bone union rate was 96.67% with higher rate of patient's satisfaction and good functional outcomes.

Author's Contribution:

Concept & Design of Study: Attiq-ur-Rehman
 Drafting: Karim Bakhsh
 Data Analysis: Muhammad Ishaq

Revisiting Critically: Attiq-ur-Rehman,
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