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ORIGINAL ARTICLE

Outcome of Dynamic Hip Screw Fixation in Patients with Fractures Related to Intertrochanteric Femur

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ABSTRACT

Objective: To assess the outcome of dynamic hip screw fixation in intertrochanteric femur fractures.
Study Design: Prospective cohort study.
Place and Duration of Study: Department of Orthopaedics, Pak Red Crescent Medical & Dental College, Dina Nath from 1st October 2020 to 31st March 2022.
Methodology: Fifty Patients suffering from intertrochanteric femur fractures were enrolled. The operational time as well as incision length, measurement of blood loss during surgery was recorded. The chance of re operating on a patient and post-operative infection was also observed and documented. A complete follow up for assessing the outcomes of dynamic hip screws were continued until 18 months.
Results: The mean age of the patients was 58.05±7.58 year. There were 64% males in this study while only 36% females. The ASA grade presented 32% cases within grade II while grade I and IV had equal number of cases in it. The Harris hip score presented outcome scores at 1 then 2 followed by 12 then 15 and 18 months as mean 75.37, 85.40, 88.25, 88.76 and 87.53 respectively.
Conclusion: Dynamic hip screw fixation is reliable surgical procedure for treating intertrochanteric femur fractures with decreased complication rate and improved Harris hip scoring.
Keywords: Proximal femoral nail technique, Distal hip, Hip fracture

INTRODUCTION

Hip bone fractures have globally been apprehended as requiring emergent focused treatment.[1,2] Hip fractures are caused as a result of fall or accident. The frequency being very high in Asia as is predicted to raise up to half of the total hip fracture cases reported from all over the world by mid of the current century.[3] The most common hip fracture types observed in adults are intertrochanteric fractures.[4] Efficient treatment requires mobilization of the hip.[5]

Various studies have created a debate on opting the precise surgical technique for generation of an implant and intra/extra medullary fixation which is required in fixation of intertrochanteric femur fractures (IFF). Dynamic hip screw (DHS) has been widely adapted for the hip bone fracture treatment.[6] Other techniques have also provided proximal femoral nail technique (PFNT). However, DHS have been preferred in many researches over other techniques.[7-11]

The present study was generated to assess the efficiency of dynamic hip screw fixation method for intertrochanteric femur fractures. The outcomes of DHS protocol analysis will assist in understanding the reliability of this procedure and facilitate the surgeons in decision making regarding preference of best IFF operative method for beneficial health outcomes.

MATERIALS AND METHODS

This prospective cohort study was conducted at Department of Orthopaedics, Pak Red Crescent Medical & Dental College, Dina Nath from 1st October 2020 to 31st March 2022. Fifty patients suffering from IFF were included after their written approval (consent) for participation. The sample size was generated as 50 after calculating through WHO provided software. Power of test was considered as 80% while 95% confidence interval was used. Patients having sub-trochanteric or pathological fractures of femur were placed in exclusion criteria. In each patient dynamic hip screw fixation was performed after deliverance of neuraxial anesthesia. Reduction of fractures was done it was exposed by making a 5cm linear incision over greater trochanter. A side plate with 4 holes was applied at 135° using 4.5mm size lag-screw within neck of the femur posteroinferiorly. The tip apex distance was kept as <25mm. Blood loss during surgery was measured through weighing of the blood swabs. The operational time as well as incision length, measurement of blood loss during surgery was recorded. The chance of re operating on a patient and post-operative infection was also observed and documented on a well structure proforma. A complete follow up for assessing the outcomes of DHS was continued until 18 months with the initial follow up at 1-2 weeks proceeded by 12, then 15 weeks. Harris hip scoring method was applied for assessing the outcomes with <70 as poor while 70-80 as fair, 80-90 as good and 90-100 as excellent classification of scoring. Clinical information as well as clinical history of each patient was documented. Data was analyzed using SPSS version 25.

RESULTS

The mean age of the patients was 58.05±7.58 years. There were 32 (64%) males while only 18 (36%) females. The ASA grade presented 32% cases within grade II while grade I and IV had equal number of cases in it. The quality of reduction was good in 82% of the patients. The mean Harris hip scoring was as 39.451±3.01 (Table 1).

Table 1: Demographic and clinical characteristics of DHS patients (n=50)

Variable	No.	%
Age (years)	58.05±7.58	
Gender		
Male	32	64.0
Female	18	36.0
ASA Grade		
I	14	28.0
II	16	32.0
III	6	12.0
IV	14	28.0
Quality of reduction		
Good	41	82.0
Acceptable	8	16.0
Poor	1	2.0
Mean time to bone healing(weeks)	14.51±2.42	
Pre-operative Harris Hip Score(HHS)	39.451±3.01	

The peri-operative outcomes showed that majority of the hip fractures were related to left side while incision length during DHS technique was 7.65±0.91 cm. The mean duration of surgery was recorded as 70.52±6.3 with mean blood loss as 777.18 ml (Table 2).

The Harris hip score presented outcome scores at 1 then 2 followed by 12 then 15 and 18 months as mean 75.37, 85.40, 88.25, 88.76 and 87.53 respectively. Highest scoring was observed at 15-month time (Table 3)

The post-operative outcomes presented data where blood transfusion was only required in 8% of the cases while open reduction was seen in 18. No suboptimal fixation or infection chances were recorded with implant failure only observed in a single case (Fig. 1)

Table 2: Peri-operative outcomes of DHS (n=50)

Peri-operative outcome	Mean±SD
Left	33 (66%)
Right	17 (34%)
Incision length (cm)	7.65±0.91
Surgery Duration	70.52±6.3
Mean Blood Loss ml	777.18
Hospital Stay in days	12.07±10.52

Table 3: Post-operative outcomes of DHS (n=50)

Post-operative outcome (months)	Mean±SD
1	75.37 ±4.7
2	85.40 ±3.3
12	88.25 ±4.1
15	88.76 ±4.0
18	87.53±3.8

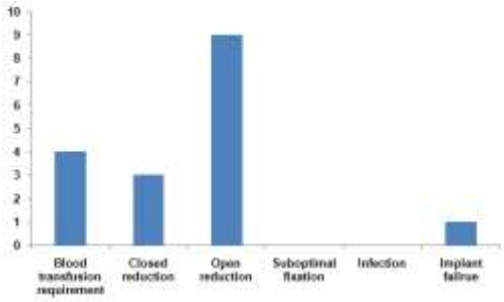

Figure 1: Follow-up outcomes of DHS

DISCUSSION

Unstable fractures cause a major health threat and are considered as a challenge for most of the orthopedic surgeons. The patients which were admitted had a substantial population of elderly population which had complicated fractures, reduced-functional reserves and deprived immune response. They also had increase risk of developing anesthesia related complications. The outcomes of DHS technique were observed in the present study. There was higher male population suffering from IFF was than the females. Similar result has been reported in literature.[12]

The mean age of the patients was 58.05±7.58 year which presents that patients registered with IFF are more frequently of older age. Studies from various regions have also documented the fact that IFF is typically associated with elderly people.[8,13] Elder people are more prone to fall and fracture due to fragile bone and stature instabilities.[13]

The blood loss associated with DHS was also not significantly higher therefore referring to the control state of this disease. Mean hospital stay of the patients presented with a similar result as detailed by previously published literature.[14-16] The Harris hip score improved with passing time as was recorded up till 18 months' time in the present study patients. Harris hip score of various surgical techniques such as PFNT as well as DHS became similar with prolongation in the time.[17,18] There was no mortality with using DHS technique. Also, the risk of complications was also nominal with applying DHS surgical technique.[19,20]

CONCLUSION

Dynamic hip screw is a reliable surgical procedure for treating intertrochanteric femur fractures caused decreased complication rate and improved Harris hip scoring. The pre- and post-outcomes suggest that this procedure can be opted for efficient results in intertrochanteric femur fractures.

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