A Retrospective Study In The Management Of Inter Trochanteric Fracture By DHS Fixation In Boyd And Graffin Type I & II Fractures.

Anand B. Jabshetty*

*Assistant Professor, Department of Orthopedics, BRIMS Medical College, Bidar, Karnataka-585401, India.

Abstracts: Background: Hip fractures are devastating injuries that most commonly affect the elderly and have a tremendous impact on both the health care system and society. It is now accepted universally that internal fixation is the best method of treatment of intracapsular fracture as it allows early stabilization and patient mobility.[1] Methodology: This study consists of 20 cases of intertrochanteric fracture treated with dynamic hip screw and plate. Results**:** In our study most of the fractures were Boyd and Griffin type II fracture with 14 patients (70%) and type I were 6 patients (30%). In the study trochanteric fracture was common in old age group and were treated with Dynamic Hip screw, because of its sliding mechanism which gives compression at the fracture site. Discussion: The average time of consolidation of fracture in our study was 20 weeks. It was 9 months in conservative method with deformity as seen by Frew.[2] So, dynamic hip screw is a better implant for the treatment of trochanteric fracture. This is because of sliding screw, which gives compression at the fracture site. Due to its sliding mechanism, the fracture union rate and movement at hip joint were good in most of our cases. Due to its sliding mechanism the fracture union rate and movement at the joint were good in most of the cases. Conclusion: DHS is a good modality of treatment for internal fixation of intertrochanteric fractures Boyd and Graffin's type I & II. However good medial cortical opposition either by close reduction or open reduction with/without medial displacement of distal femoral fragment is mandatory for good result. [Jabshetty A NJIRM 2015; 6(3):19-21]

Key Words: Dynamic Hip Screw, Intertrochanteric Hip Fracture.

Author for correspondence: Dr. Anand B Jabshetty, Assistant Professor, Department of Orthopedics, BRIMS Medical College, Bidar, Karnataka-585401, India. Email: docanand.joc@gmail.com.

Introduction: Intertrochanteric hip fracture is a common injury treated by orthopaedic surgeons. A variety of hip fracture fixation devices are available for treatment of intertrochanteric fracture, and dynamic hip screw (DHS) has been the gold standard treatment of intertrochanteric fracture of femur. DHS is based on the concept of allowing fracture fragments to impact, thereby achieving bone-on-bone stability, and reducing chances of implant failure, so called "controlled collapse".3 Such collapses continue until proximal fragment rests on, stable, intact distal fragments. It is now almost universally accepted that internal fixation is the best method. The main feature of sliding hip screw is its sliding effect which allows fracture site compression and minimizing the dangers of screw cut out and migration associated with non-sliding devices and to minimize the complications like malunion and nonunion.

Design: Retrospective analysis

Material and Methods: The study is permitted by IRB BRIMS Bidar.

This study consists of 20 patients treated at BRIMS teaching hospital Bidar. On admission all patients were immobilized in Thomas splint and buck's traction with 3-4 kgs of weight. All the patients were evaluated for associated injuries and anteroposterior lateral x-rays of the affected hip taken. Most of the surgeries operated between 4-7 days after trauma. Different size Dynamic Hip Screw and Barrell plate were used in the study. The advantages are screw threads on the hip nail to improve purchase in porotic bone, sliding features to allow for controlled collapse and impaction of the fracture while maintaining the neck shaft angle and controlling rotation.

Inclusion criteria: All intertrochanteric fractures were according to Boyd & Graffin type I & II classification.[1] Patients were more than 40 years of age both male and female. Mode of injury was from RTA, slip and fall.

Exclusion criteria: Intertrochanteric fracture III and IV Boyd and Graffin were excluded. Patients less than 40 years were excluded.

Results: In our study, there was a male preponderance with 15 patients (75%) and female 5 (25%). most of the patients in our study who sustained injury are due to slip and fall i.e., 14 patients (70%) and RTA who sustained injury were 6 patients (30%). In our study, right sided preponderance was noted with 16 patients (80%) and left side with 4 patients (20%). Fractures were classified based on Boyd and Graffin,[1] type of classification. In our study most of the fractures were Boyd and Graffin type II fracture with 14 patients (70%) and type I were 6 patients (30%). Most of surgeries were operated between 4-7 days (80%) after trauma. The average duration between trauma and surgery was 5 days. Most of the cases were done under spinal anaesthesia.

Implant design: In 80 percent of the cases 80 mm size dynamic hip Screw was used and in 20 % of the cases 70 mm size dynamic screw was being used. In 60 percent of the cases 5 hole barrier plate was used and in 40 % of the cases 4 hole barrier plate was being used. In our study we used 130, 135 barrel plate for all the patients. If general condition permits patient were made to sit up on bed next day. Dynamic quadriceps exercises started by 2nd day and followed by flexion extension of knee exercise were done in all 20 patients.

Non-weight bearing mobilization with walker was allowed by 5th day. Depending upon the patient condition and stability of internal fixation, partial weight bearing with walker was allowed by 4-6 weeks for all 20 patients. Commencement of full weight bearing observed in 12 weeks (20 %) of the patients, 75% of the patients took 16-20 weeks and rest required more than 20 weeks.

Time of union: The union was the period between the time of operation and full weight bearing without external support with the evidence of healing seen radiographically. Time of union in weeks was 10-12 wks in 20% and 13 24wks in 80% of the cases. In our study, shortening was seen in 1 patient out of 20 who had severe communited fracture.

Discussion: The present study is based on the observations and results of 20 patients of intetrochanteric fractures of hip treated with dynamic hip screw.

In our study, 45% of the patients were in 41- 60 years age group and 30% of the patients were between 61-80 years of age group and 25% between 21- 40 years of age. Ecker Malcolm[4] treated patients with intertrochanteric fracture with an average age of 75.1 years. Ingemar Sernbo[5] treated unstable fractures in 70 years of age and compared with Ender's pins showed superior rate of healing with fractures treated with dyanamic hip screw. There was a male preponderance seen in our study due to the following reasons. Indian males are being more active and mobile than the females. Indian females are mainly confined to household activities and are less prone to sustain an extra capsular fracture of hip. Dimon[6] considered 302 intertrochanteric fractures to assess the value of medial displacement fixation in unstable intertrochanteric fractures. He suggested unstable type should be treated by primary medial displacement fixation with reduction. Trochanteric fractures were common in persons aged above 40-60 year the mechanism was a direct trauma with twisting force such as missing a step, fall from bicycle or road traffic accident. These direct forces act along the axis of femur or directly over greater trochanter, which results in a trochanteric fracture. Hardy et al.[7] in his prospective study of 60 patients noted that intramedullary hip screw device was associated with significantly less sliding of lag screw with subsequent shortening of limb in region of thigh. Olsson and Cedel[8] compared 60 patients treated with compression hip screw. They found femoral shortening and concluded that biaxial dynamization allowed by DHS is less. In our study, mean range of movements at hip was 0-1200 and knee was 0-1300. In the present study, pain deformity, daily activities, ability to squat and sit cross-legged, walking distance was good in 80% of the patients. 20% of patients who had mild restriction of movement and on prolonged walking, few complaints of pain. In our study, 90% of cases were operated between 4-7 days, 2 patients had delayed fixation in 3 weeks. There was no evidence of non-union, fat embolism or pulmonary embolism in our study. Frew[2] noted pulmonary embolism in 6 patients treated conservatively. The average time of walking with the help of walker with partial weight bearing was 4 weeks when compared to 10 weeks treated conservatively. The average time of consolidation of fracture in our

study was 20 weeks. It was 9 months in conservative method with deformity as seen by Frew.[2] So, dynamic hip screw is a better implant for the treatment of trochanteric fracture. This is because of sliding screw, which gives compression at the fracture site. Due to its sliding mechanism, the fracture union rate and movement at hip joint were good in most of our cases.

Summary & Conclusion: In our study group of 20 cases of trochanteric fractures, all patients needed one bag blood transfusion during operation or post-operatively , good to fair results were obtained in most of the cases. Overall good results were 70% and fair results were 30%.Post operative complication like, non-union was not found in our study group.

Dynamic hip screws and plate is an implant which is cheap and easy to assemble and use intraoperatively unlike fixed angle nail plate which requires great deal of accuracy for insertion. The degree of barrel plate allows for compression at fracture site and decreases stress concentration and hence there is increase rate of union with less incidence of implant failure. We conclude that DHS is a good modality of treatment for internal fixation of intertrochanteric fractures. Boyd and Graffin's[1] type I & II. However, good medial cortical opposition either by close reduction or open reduction with/without medial displacement of distal femoral fragment is mandatory for good result.

References:

1. Boyd HB and Graffin LC, Classification and treatment of trochanteric fractures. Arch. Surg. 1949; 58: 583-566.
2. Frew JFM Conservative treatment of fractures. J. Bone Jt. Surg. (Am), 1972; 54B: 748-749.
3. Chacko V and Mohanty SP, Comparative analysis of operative and non-operative management of trochanteric fractures. Indian J. Orthopaedics. Jan 1984; 18(1): 19-24.
4. Ecker Malcolm L, The treatment of trochanteric fractures using compression screw. J. Bone Jt. Surg. Am. 1975; 57A: 1-22.
5. Ingemar Sernbo Johnell O, Gentz CF and Nilsson JA, Unstable intertrochanteric fractures of hip, treatment with Enderpins compared with a compression hip screw. JBJS. 1988; 270A : 1297-1302.
6. Dimon JH and Hughston JC, Unstable intertrochanteric fractures of hip. J. Bone Jt. Surg. (Am) 1967; 49(3): 440 450.
7. Hardy DCR, et al., Use of an Intramedullary Hip-Screw Compared with a Compression Hip-Screw with a Plate for Intertrochanteric Femoral Fractures. A Prospective, Randomized Study of One Hundred Patients. JBJS. 1998; 80:618-30.
8. Olsson O and Cedel L, Comparative study between MSP &Compression screw for IF of IT fractures. JBJS. 1991; 83B: 572-578.
9. Crenshaw AH, Campbell's operative orthopaedics. Crenshaw AH (Ed.) 2007 ; 11th Edition. pp:329- 330.
10. Dimon JH, Unstable intertrochanteric fracture. Clin. Ortho. 1973 ; 92 : 100-107.
11. Evans EM, Treatment of trochanteric fractures of the femur. J. Bone Jt. Surg. (Am). 1949 ; 31B: 190-203.
12. Evans EM, Treatment of trochanteric fractures of femur. J. Bone Jt. Surg. (Am), 1951; 33B: 192-204.
13. Jacob RR, Treatment of intertrochanteric hip fracture with a compression hip screw and nail plate. J. Trauma. 1976; 16: 599-602.
14. Kaufer H, Matthews LS and Sonstegard D, Stable fixation of intertrochanteric fractures. J. Bone Jt .Sur. (Am), 1974; 56: 899-907.
15. Tronzo RG, The use of an endoprosthesis for severely comminuted trochanteric fractures. The Orthopedic Clin. North Am., 1974 ; 5(4): 679-681.

Conflict of interest: None
Funding: None
Cite this Article as: Jabshetty. A, A Retrospective Study In The Management Of Inter Trochanteric Fracture By DHS Fixation In Boyd And Graffin Type I & II Fractures. Natl J Integr Res Med 2015; 6(3): 19-21