



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3533803>Available online at: <http://www.iajps.com>

Research Article

**TO DETERMINE THE RESULTS OF DYNAMIC HIP SCREW
FIXATION IN TERMS OF FUNCTIONALITY AFTER
INTERTROCHANTERIC FRACTURES**¹Dr Imtiaz Ahmad, ²Dr Basit Hussain, ³Dr Nadeem ur Rehman¹Orthopedics Department, DHQ Hospital Dir Lower, Pakistan., ²Orthopedics Department, DHQ Hospital KDA Kohat, basithussain85@gmail.com, ³Orthopedics Department, Khyber Teaching Hospital, MTI, Peshawar. nadeemjay@yahoo.com**Article Received:** September 2019 **Accepted:** October 2019 **Published:** November 2019**Abstract:**

Aim: The aim of this study was to determine the functional results of intertrochanteric fracture managed with dynamic hip screw by noticing union time, infection rate, range of hip movement and limb shortening.

Methods: A prospective study was performed in thirty femoral intertrochanteric fractures cases. Using a dynamic hip screw, all these cases were treated.

Place and Duration: In the Orthopedics Department, Khyber Teaching Hospital, MTI, Peshawar for one year duration from March 2018 to March 2019.

Results: 68.17 ± 12.49 years was the average range. The injuries occurred more often in 17 (57%) men than in 13 (43%) women. It was found that the injury mechanism mostly was a fall in 17 patients (56.7%) and other cause responsible in 13 (43.3%) was road accidents. All patients were hospitalized six hours later and not a single patient received proper management within 6 hours after the injury. The associated injuries occurred in five patients (16.7%). In (60%) of cases right limb was convoluted and in the left limb (40%). In 2 (6.66%) of cases, superficial infection was noted within two weeks. At the end of the six weeks, all patients have a clean wound. None of our patients had a deep infection. 1 patient (3%) only had limb shortening greater than 2 cm, while 29 patients (97%) had limb shortening less than 2 cm. 96.7% of patients achieved full load bearing ability after 24 weeks. At the end of our study, many of our patients (96.7%) received hip flexion / extension at 121 °. ± 8.80 and 9.33 ± 2.5, internal and external rotation 30.5 ± 7.1 and 30.2 ± 6.9 and adduction / abduction 31.80 ± 6.50 and 26.80 ± 5.60. Overall outcome was good.

Keywords: Dynamic hip screw, Intertrochanteric femoral fracture.

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Please cite this article in press Imtiaz Ahmad et al., *To Determine the Results of Dynamic Hip Screw Fixation In Terms Of Functionality after Intertrochanteric Fractures.*, Indo Am. J. P. Sci, 2019; 06(11).

INTRODUCTION:

Intertrochanteric fractures are comparatively communal injuries in the elderly and adults. Intertrochanteric fractures are the consequence of high energy strain in young people, while in the elderly only minimal trauma requires for fracture [1-2]. The proximal femoral fractures incidence is increasing and is supposed to rise from 1.8 million in 1992 to 6.4 million in 2055 [3]. These fractures effects is usually catastrophic; Social impact is very intensive and comparative treatment costs are growing [4]. Due to these causes, surgeons are looking for osteosynthesis methods that ensure rapid return to independence levels and early mobilization. Surgical fixation is the Standard treatment for these fractures, internal fixation and close reduction, which improves comfort of patient, facilitates nursing care and reduces hospitalization [5]. A sliding hip screw with a sliding plate is widely used as an implant to repair these fractures. The 135 degree plate is used more often. This is calmer to set angle in the preferred mid-position of the femoral neck and head than for devices with a large angle and causes less tension in the sub-trochanteric region. The sliding head screw operates on the basis of a tension band in stable fracture systems (Evans 1 and 2), which transfer forces along the middle cortex and allow the fracture to break down to minimize the possibility of middle penetration [6]. The sliding hip screw is the preferred implant for many hip intertrochanteric fractures because DHS is easy to connect, directs the proximal part in a stable position, shearing forces are shifted to the sliding hip screw axis. [7] Additional compression is achieved with start of weight bearing by the patient. Dynamic compression was obtained when the volunteer began to support the weight. DHS enables early rehabilitation and has fewer infections rate, rotational deformities and adhesions. Despite these biomechanical and theoretical benefits, there are limitations of sliding hip screw construction. Excessive shock causes a malfunction. Displacement greater than 15 mm leads to more frequent detection failure [8]. Medialization of the femoral shaft over a third of the femur diameter is linked with a 7-fold rise in failure of fixation. Implant cutting may needed in incorrect implant placement and heavy osteoporotic bone [9]. D.H.S failure rate is around five percent. There is excessive or insufficient slip length between the barrel and screw [10]. Screw the jam into the barrel at a low angle. (120 or 125 angle). Most failures are due to the low position of the screw. TAD > 25 and the screw is not align in the head mid place. DHS gives poor outcomes in reverse oblique fractures.

MATERIALS AND METHODS:

This is a descriptive case series conducted in patients with proximal femoral fractures treated with a dynamic hip screw. For the study, 30 subjects were enrolled. Non probability convenience was the sampling technique method.

Inclusion criteria:

1. Proximal femoral fracture diagnosed based on clinical history, AP radiographs and lateral radiography.
2. The patients who were skeletally mature (epiphysis has been united).
3. Intertrochanteric fractures of no more than 7 days.

Exclusion criteria:

1. Patients treated before surgery. The patients having infection signs and symptoms in the area to be worked on or in any part of the body.
2. Patients with mal-united and non-united femur fractures.
3. Pathological fractures, i.e. bone metabolic diseases, bone tumours, TB fracture etc.
4. Stroke, Parkinson's disease, CKD, immunosuppression, etc. Patients with other problems, such as those that affect rehabilitation or healing of fracture.
5. Poly trauma individuals.

DATA COLLECTION PROCEDURE:

After meeting the inclusion criteria, the patients admitted in the accident and emergency department and OPD. Detailed history, detailed examination and X-ray examination with known concomitant diseases were performed after admission. All patients were done with initial chest examinations and x-rays, ECG, pelvic radiography, AP view and lateral view. Written and informed consent was taken before the operation. After 48 hours of study, prophylactic antibiotics were administered orally after bandage change. For 5 days; oral antibiotics were specified. Under the spine or under GA, the patient reduction of the fracture was achieved and before applying drapes fracture reduction was confirmed. Along the lateral approach of the exposed bone, the guide pin is positioned 2 cm below the vastus lateralis ridge. We use both techniques to insert a guide pin, i.e. Free hand insertion and Aiming Device. Guide pin in the middle of the head towards the postero medial or in the centre. The power combination reamer was adjusted to the length of the retard screw designated by the meter and recorded till the distal aspects stop surface reached the lateral cortex. Lag screw was applied, the side plate was slide onto the lag screw shaft and completely secured and seated with bone clamp and with 4.5mm cortical screw it was fixed. After surgery, patients

were mobilized on the night of surgery and allowed to sit by the bed on the first day after surgery. Patients were discharged on the third day after surgery. In the first week, inactivity was performed with abduction-free exercise and gait and quadriceps strengthening exercises with abduction and walking. After six weeks, they were allowed to lift a partial weight, and after clinical and radiological evidence of association can lift all the weight. The OPD examination was performed after 2 weeks to remove the sutures, and the OPD examination was performed after 6, 12, 18 and

24 weeks to assess the limb joint, motion range, infection and shortening of limb.

RESULTS:

30 total patients with proximal femoral fractures detected on lateral and AP of X rays or after clinical evaluation were selected. According to Evan's modified intertrochanteric fracture classification, the most common type of fracture was I-C in 13(43.3%) patients, in 7 patients (23.3%) there was type I-A fracture and 7(23.3%) patients had type I-B fracture and 3(10%) cases had Type I-D.

Type of Fractures in Patients given in Table-I

Type Of Fractures	Number of Patients in percentage
I-C Type	13(43.3%)
I-A Type	7(23.3%)
I-B Type	7(23.3%)
I-D Type	3(10%)

There was radiological union evidence in 29 (96.7%) cases within 12 weeks and non-union in 1 (3.3%) case within 24 weeks. For 2 years, all patients were followed after surgery. Twenty-eight (93.33%) patients had clean wounds, superficial infection was noted in 2 (6.66%) in the second week, followed by subsequent weeks of observation in the sixth week it became clean wound. No patients had a deep infection. None patients maintained full body weight after seven days of surgery. The partial body weight was allowed after 6 weeks, and after radiological and clinical indication of union full body weight was allowed. 29 (96.7%) patients bear partial weight in six weeks, and one (3.3%) individuals not permitted weight lifting within six weeks. 26 (86.7%) individuals were permitted for full weight lift in 12 weeks, and four (13.3%) patients were not permitted. 28(93.3%) of patient maintained full weight at 18 weeks and

eventually 29 (96.7%) patients attained full weight at 29 weeks. The weight bearing was painful in 1(3.1%) so he was not allowed till 24 weeks. The mean extension and flexion were 9.33 ± 2.5 and 121.0 ± 8.80 weeks over twenty four weeks, respectively. The extension and flexion were closed for normal flexion and range of motion ($p < 0.01$; Friedman test). The average adduction and abduction were 31.8 ± 6.5 and 26.8 ± 5.6 after 24 weeks; which was closed for the normal range of adduction and abduction in the hip joint (Friedman test; $p = 0.0001$). The mean motion range in the external and internal rotation was at 24 weeks and were closed for the normal range of external and internal rotation in the hip joint ($p = 0.0001$, Friedman test). Only one of thirty patients (3%) had a shortening of the limb larger than 2 cm, while 29 patients (97%) had a shortening of the limb 2 cm.

Shortening of Limb ratio given in Table- II

Limb shortening greater than 2cm	1 patient (3%)
Limb shortening of 2cm	29 patients (97%)

DISCUSSION:

The proximal femoral fractures treatment with fixed angle implants was achieved with sliding screw devices that improved the frequency of fixation and decrease implant failure. As natural history shows, it is known that these fractures happen usually in aged patients [10-11]. In our study, youngest patient was forty five years old, the 90 years old was the oldest one

and about 70 years was the average age. In a study by SALEH TAREEN at QUETTA (modified Evana classification), in 5(12.5%) patients Type I- reducible un-stable (1c) was noted, type I- un-displaced fracture (1a) was noted in 15(37.5%), type I- reducible stable (1b) in 18(40%)¹². The immediate radiographs of patient is given in figure 1.



In our study, the usual fractures were type IC in 13 subjects (43.3%), type IA in 7 patients (23.3%), type I-B in 7 patients (23.3%) and type ID in 3 patients (10%). In this study, 29 patients (96.7%) had radiological results after 12 weeks, while one patient (3.3%) had no union after 24 weeks. In a study of 110 cases in India, intact bone relationship was observed in 72 patients [13]. In 32 patients satisfactory results were obtained with a low terminal restriction of hip movement. In the work of Ahmad fawad a lack of union was noted [13]. In our study, the wounds of 28(93.33%) patients were clear out of 30 patients, and the superficial infection was settled in two (6.66%) patients in the second week, sixth and subsequent weeks [14]. No patient was found to have a deep infection. Islamabad study found 1.7% of superficial wound infections. A SALEH TAREEN study presented that superficial wound infection occurred in 2.6% of cases [15]. Our infection rate was very high compared to developed countries. A study in India showed that 72 (65.4%) of 110 cases showed good recovery, 32 (29%) was good and 6 weak. In our study, only 1 (3%) of 30 patients had limb shortening greater than 2 cm, and 29 (97%) had limb shortening less than 2 cm.

CONCLUSION:

In summary, the epidemic of geriatric hip fractures is a serious medical care issue in which an orthopaedic surgeon plays a primary but not isolated role. We conclude that the sliding hip compression is the

implant of choice selected with good functional results in the treatment of intertrochanteric fractures. Supervisors and interns need further research to popularize this important method of stabilizing proximal femoral fractures.

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