MANAGEMENT OF INTERTROCHANTER FRACTURES OF HIP WITH DYNAMIC HIP SCREW: A CLINICAL STUDY
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ABSTRACT: BACKGROUND & OBJECTIVES: Fractures of proximal femur are the most commonly encountered fractures by orthopedic surgeon. Many management techniques are described in literature but internal fixation with Dynamic Hip Screw is the treatment of choice. This study analyzes the outcome of treatment of intertrochanteric fracture with Dynamic Hip Screw. MATERIALS AND METHODS: Between April 2010 and May 2012, 40 patients with intertrochanteric fracture admitted in the department of Orthopedics, Government General Hospital, Kurnool were treated with internal fixation with Dynamic Hip Screw and the results were evaluated using Kyle’s criteria. RESULTS: Incidence among both sexes was same. Average age of occurrence was 62.7 years, with level of osteoporosis Singh’s index 3 or 4. There were 25% excellent, 50% good, 15% fair, 10% poor results. CONCLUSION: Internal fixation with Dynamic Hip Screw is the treatment of choice for treatment of intertrochanteric fractures. KEYWORDS: Intertrochanteric fracture, Dynamic Hip Screw, Kyle’s criteria.
classification and treatment with dynamic hip screw and their surgical and functional outcome with or without residual complication. The end results were evaluated according to Kyle’s criteria³.

RESULTS: The following observations were made from the data collected during the study in the treatment of 40 cases of intertrochanteric fractures of proximal femur in the Department of Orthopaedic Surgery, Kurnool Medical College and Govt. General Hospital, Kurnool from April 2010 to May 2012.

The average age for the whole group was 62.7 years. The youngest patient was 30 years. In this study, 20 cases were males and 20 were females. Male to female ratio for the whole series was 1:1. Maximum patients were in the age group of 70-79 & 60-69. There was only one case in the age group of 30. These findings suggest that intertrochanteric fractures are essentially fractures of old age.

In this study as per Boyd and Griffins classification,³ 7 patients (17.5%) had grade I 27 patients (67.5%) had grade II 4 patients (10%) had grade III 2 patients (5%) had grade IV Intertrochanteric fractures.

In most of the patients level of osteoporosis was either 3 or 4 confirming that intertrochanteric fractures usually occur in osteoporotic bone according to Singh’s index.⁴ 1 patient (2.5%) had grade 6, 4 patients (10%) had grade 5, 15 patients (37.5%) had grade 4, 15 patients (37.5%) had grade 3, 5 patients (12.5%) had grade 2, and none had grade 1 as per Singh’s index.⁴

All fractures were classified according to Boyd and Griffin’s classification and all the patients underwent internal fixation. Of 40 patients, 29 had unstable fracture patterns and 11 had stable, i.e. 27.5% stable and 72.5% unstable fractures. Two techniques were followed 1) anatomical reduction-31 patients, 77% 2) Dimon Hugston (D&H) reduction-9 patients, 23 %.

The average hospital stay in this study was 18.3 days. In most cases delay occurred due to associated medical illness, anaemia. Patient is allowed to sit up on bed on 2nd and 3rd day. Static quadriceps exercises started from 2nd day, Hip and knee flexion exercises from 6th or 7th day, Patient allowed non weight bearing walking form 10th day, partial weight bearing started on when radiological signs of union were present. In this study it was average 6th week post-operative. Full weight bearing was allowed after clinical and radiological union confirmation.

Deep infection in one case and screw penetration in another case was responsible for long duration of inpatient stay. In this study following complications were seen, screw penetration into hip joint 1 case(2.5%),superficial wound infection 1 case(2.5%),deep infection 1 case(2.5%). Technical errors, neck cut through, delayed union, nonunion and other post-operative complications were not seen.

The outcome of the treatment of intertrochanteric fractures using Dynamic Hip Screw were assessed by using Kyle’s Criteria.⁵ Excellent results were seen in 10 patients (25%), good results were seen in 20 patients(50%),fair results were seen in 6 patients (15%),poor results were seen in 4 patients(10%).

DISCUSSION: An accurate reduction and proper surgical technique is of greatest importance in the treatment of unstable trochanteric fractures. Present day it is generally believed that, all intertrochanteric fractures to be internally fixed to reduce the morbidity and mortality by early ambulation, but differences still exist regarding the type of implant to be used, hence in this
study results after treatment with DHS are analyzed.

In the present study, the average age 62.7yrs was comparable to those of other Indian studies, and most of the western studies. We had equal male to female ratio, unlike male preponderance in most of Indian studies, female in most western studies. In this study, type II fractures were most common with 67.5% and type III, IV accounted for 23.5% and are comparable to Boyd and Griffin’s study\(^6\), but are in contrast to Pathak.\(^7\)

Marty,\(^8\) in their study Quality adjusted life years and cost of several type hip fracture with various treatment options showed that operative treatment proved cost effective than conservative treatment for extra capsular fractures. In this study all cases were operated. Dolk,\(^9\) in his study found no difference in mortality and hospital stay between those operated within 8hrs of admission and those treated within 48hrs of admission, indicating that there was no need to operate on those as emergencies.

Gustilo,\(^10\) reported an infection rate of 3 to 5% without preoperative prophylactic antibiotics. In our study only one deep infection occurred of 40 (2.5%) cases.

The goal of surgical treatment is strong stable fixation of the fragments; Kaufer,\(^11\) has listed the following variables that determines the strength of the fracture fragment and implant assembly 1.Bone quality 2.Fragment geometry 3.Reduction 4.Implant design and 5. Implant placement.

According to Parke,\(^8\) screw should be placed centrally or inferiorly on antero posterior view and centrally on lateral view. In this study the same principle of placement of screw was followed.

Cutting out of DHS related to its position according to Jensen,\(^12\) is 53% and according to Davis\(^11\) is 16.8%, in this study there was one cut through, (2.5%) for which implant removal was carried out.

Reduction of the intertrochanteric fracture may be carried out either by open or closed means. In either circumstance the objective is to achieve a stable reduction, be it anatomical or non-anatomical in configuration. If the fracture is severely comminuted, anatomical reduction even by open reduction may be difficult, in such circumstances non-anatomic but stable reduction obtained by elective medial displacement of the femoral shaft has been used by Dimon Hugston,\(^13\) to achieve stability followed by internal rotation.

Chang compared the result of compression hip screw fixation with anatomic reduction versus fixation with medial displacement and found that in four parts intertrochanteric fracture, anatomic reduction with dynamic hip screw, regardless of the presence of a postero medial fragments, provided significantly higher compression across the calcar region and significantly lower tensile strain on the plate than did medial displacement osteotomy. In this study, anatomical reduction was done in 31 (77.5%) patients, Dimon Hughston ostetomy in only 9 (22.5%) cases. There was no significant difference in healing of the fractures between these two methods.

Good results were reported by Charnley,\(^14\) Larson,\(^15\) Rao,\(^16\) with lesser complications such as breakage (Strength is more than nail plate), nail cutout or intrusion than other devices. Kaufer,\(^10\) Wolfgang,\(^17\) noted mechanical complications in 9% of stable and 19% of unstable fractures and shortening of 1.5 to 2.0cms. Parameters of pain, mobility and fracture compression showed no difference between Jewett nail plate and Dynamic hip screw but at 6 months, showed in favor of Dynamic hip screw More\(^18\). Campbell’s clinic,\(^19\) used this device for all intertrochanteric
CONCLUSION: In this study done upon 40 patients with intertrochanter femur fractures treated with dynamic hip screw mean age was 62.7 years, youngest being 30 years, male and female ratio in this study was 1:1, most cases 67.5% cases belonged to Boyd type II, 75% cases belonged to grade 3 and 4 of Singh’s osteoporosis index. 27.5% cases were unstable, 72.5% cases were stable fractures. Anatomical and Dimon and Hugston reduction were used. 2.5% cases had screw penetration, 2.5%cases had superficial infection, 2.5% cases had deep infection. Intertrochanteric fractures are essentially fracture of elderly, with osteoporotic bones. By this study we feel that Dynamic hip screw system is an effective internal fixation system and gives good results in stable intertrochanteric fractures, or unstable fractures, made stable by Dimon and Hughston technique or anatomical reduction. The use of DHS is technically easy and needs lesser learning curve. Complications can be avoided by proper technique. Early post-operative mobilization and physiotherapy improves the results of DHS system.

REFERENCES:

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