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A study on the management of Extracapsular Fractures of Neck of Femur by dynamic HIP Screw.

Orthopaedic

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ABSTRACT

Background: Intertrochanteric fractures are the most frequently operated fracture type, have the highest post operative fatality rate of surgically treated fractures and have become a serious health resource issue. Since the majority of people that suffer from Extracapsular fractures are elderly, a special attempt is needed to avoid complications of prolonged immobilization like deep vein thrombosis, pulmonary embolism, bed sores, hypostatic pneumonia and enhanced osteoporosis. The present study was undertaken to assess the utility of DHS as a useful method in the management of Extracapsular fractures of Neck of femur in our institution.

Aim & Objectives: 1. To assess clinical and functional results in Extracapsular fractures neck of femur treated by Dynamic Hip Screw fixation.
2. To assess complications in Extracapsular fractures neck of femur treated by Dynamic Hip Screw fixation.

Materials and Methods: The present study has been conducted at ASRAM HOSPITAL, Eluru during theperiod between September 2014 and February 2016.Fifty patients with stable extracapsular fracture neck of femur treated with DYNAMIC HIP SCREW fixation were selected for the present study.

Results: In the present study there was an increase in Male to Female ratio Of1.6:1 with 31 being Males and 19 being Females. the average age was 57.9 years with minimumage being 29 years and maximum age being 77 years. From this study we conclude that DHS is a good implant for thetreatment of EVANS type -1 Extra capsular fractures neck of femur.

KEYWORDS:

Extracapsular fractures neck of femur, Dynamic Hip Screw fixation.

INTRODUCTION

Intertrochanteric fractures are the most frequently operated fracture type, have the highest post operative fatality rate of surgically treated fractures and have become a serious health resource issue[1].Due to thesereasons both developing and developed countries are facing a sort ofepidemic of peritrochanteric fractures[2].Since the majority of people that suffer from Extracapsular fractures areelderly, a special attempt is needed to avoid complications of prolongedimmobilization like deep vein thrombosis, pulmonary embolism, bedsores, hypostatic pneumonia and enhanced osteoporosis[3].

In intertrochanteric fractures, healing was generally associated withvarus deformity and shortening because of inability of traction toeffectively counteract the deforming muscular forces. For these reasons, treatment of intertrochanteric fractures by reduction andinternal fixation has become the standard method of treatment all overthe world.

The Dynamic Hip Screw isa very simple, affordable device and surgically not a demandingprocedure[4].

The present study was undertaken to assess the utility of DHS as auseful method in the management of Extracapsular fractures of Neck offemur in our institution.

AIMS AND OBJECTIVES

1. To assess clinical and functional results in Extracapsular fracturesneck of femur treated by Dynamic Hip Screw fixation.
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MATERIALS & METHODS:

The present study has been conducted at ASRAM HOSPITAL, Eluru during theperiod between September 2014 and February 2016.Fifty patients with stable extracapsular fracture neck of femur treated with DYNAMIC HIP SCREW fixation were selected for the present study.

INCLUSION CRITERIA:

1) Type 1 Evans classification
2) Inter trochanteric fractures in adults

EXCLUSION CRITERIA:

1) Type 2 Evans classification
2) Compound fractures
3) Pathological fractures
4) Fractures in children
5) Fractures in elderly Patients with intractable osteoporosis.

OPERATIVE PROCEDURE:

PATIENT POSITIONING:

Use of fracture table allows good roentgenographic control andenables manipulation of leg, with patient lying in supine position.

DRAPING:

Prepare the skin over the hip and square off the lateral aspect ofthe hip from the iliac crest to the distal thigh with towels and drapes. Drape the C-arm separately.

REDUCTION OF FRACTURE:

After positioning the anaesthetized patient supine on the fracturetable, taking care to avoid undue pressure or tension on any part of thebody. Closed reduction of fracture is performed, generally

obtained withtraction in neutral or slight external rotation. The pelvis must resthorizontally to allow successful insertion of internal fixation device.

EXPOSURE:
Mid lateral incision is done a little distal to the tip of greater trochanteralong the shaft of the femur to the extent needed for fixation of implant.After splitting the fascialata, the vastus laterals is cut along theattachment of the muscle to the femur using L shaped incision. Aperiosteal elevator is used to clear the lateral surface of proximal femur.

INSERTION OF GUIDE PIN:
With the 135 degrees angle guide, under image intensifier, the guide pininserted 2cm below the flare of the greater trochanter, midway betweenthe anterior and posterior cortices. The guide pin should be in the centreor inferior, within a distance of 1 cm from the articular surface of thefemoral head in anteroposterior x - ray and in the center or slightlyposterior in lateral x-ray. The length of the guide pin lying outside thebone is measured for depth calculation.

REAMING OF THE FEMUR:
The triple reamer, serves the function of reaming for the screw (8mm),barrel (13mm) and for the barrel plate junction. Reaming is performedaround the guide pin until the correct depth is reached. However, inosteoporotic bone, the reamer is set 5mm less than the length of theguide pin to reduce the chance of pin withdrawal and to allow better purchase of lag screw within unreamed bone.

DEROTATION SCREW:
In unstable trochanteric fractures, an additional stabilizing pin may beused to prevent rotation of proximal fragment during insertion of the lagscrew.

TAPPING OF THE FEMUR:
With a screw lock tap to facilitate the setting of lag screw especially inyoung patients within firm cancellous bone. In osteoporotic bone tap 1-2cm less to allow the screw to engage firmly into the subchondral bone.

INSERTION OF LAG SCREW AND PLATE:
The correct length of lag screw is determined with the measuringgauge. This measurement allows for 5 mm of compression. If morecompression is desired, a shorter screw is used. A screw of shorter than10 mm should not be used. Otherwise, there is insufficient coverage ofthe screw within the barrel. The appropriate plate and lag screw areassembled onto the insertion wrench and inserted into the reamed holeover the guide wire. Care should be taken to avoid penetration of thefemoral head or the lack of screw engagement within the barrel. Thecentering sleeve is removed and the side plate is advanced onto the lagscrew. The plate is then clamped to the femur and then fixed securely.The compression screw must be left in place to prevent disengagementof screw plate assembly. The wound is finally closed in layers over asuction drainage system after securing homeostasis.

DISCUSSION:
1) AGE : In the Present study the average age was 57.9 years with minimumage being 29 years and maximum age being 77 years.

In a study done by Kyle et al[5] the average age was 62 years withminimum age being 21 years and maximum age being 93 years.

2) SEX: In the present study, out of the 50 patients studied 31 were Male patients and 19 were Females. In the present study there was an increase in Male to Female ratioof1.6:1 with 31 being Males and 19 being Females which was similar to CH Arun KumarSeries[8] who had a Male to Female ratio of 1.7:1 with62 males and36 females.

3) MODE OF INJURY: The most common mode of injury in the Present study wasdomestic fall, in 46 patients accounting to 92%. Out of the 46 domesticfalls 7 patients sustained fracture due to fall at work place and theremaining 39 due to fall at home. The other modes of injury were RTAin 4 patients accounting to 8%.

4) SIDE OF INJURY: In the **Present study** 30% patients (15 patients of which 8 were females and 7 were males) had Right sided fracture and 70% patients(35 patients of which 11 were females and 24 were males) had Leftsided fracture.

5) FRACTURE PATTERN : In the **Present study** 10 patients (20%) had Subtype I fracture pattern, 18 patients (36%) had Subtype II fracture pattern, 14 patients(28%) had Subtype III fracture pattern and the remaining 8 patients(16%) had Subtype IV fracture pattern.

6) SINGH'S INDEX: Osteoporosis was measured by the Singh's index. More osteoporosiswas present in older patients and post menopausal females. In the present study 5% patients had Grade 2 osteoporosis, 45%patients had Grade 3 osteoporosis, 10% patients had Grade 4osteoporosis, 20% patients had Grade 5 osteoporosis and 20% patientshad Grade 6 osteoporosis.

7. Admission operation interval: In the Present study was 5.6 days ascompared to 10 days in **Anil Kumar Mishra Series**[9]and 3 days in **Gulzar Ahmed Seies**[12].

8. Intra operatively closed reduction was achieved in all the patientsand the result was good in 45 patients (90%). Only one superficialinfection (2%) resulted after surgery which subsided with intravenousantibiotics. Coxavara was noted in 4 patients (8%). Cut out of hipscrew was noted in 1 patient, pullout of barrel plate from shaft was seen in 1 patient**.**

9. Mean duration of hospital stay The mean duration of hospital stay in the **Present Study** was 19.24days which is same as found in **N.Chirodian Series**[7](19.26 days) andin **Gulzar Ahmed Series**[12](2-3 weeks). Average time for fracture union in the **Present Study** was 4.3 months.

10. Majority of the patients in the **Present study**, 45 out of 50 patients(88%) had no pain. Moderate pain was present in 4 patients (8%)which were relieved with analgesics.

11. In the **Present study** more than 2cms shortening was seen in 5 outof the 50 patients (10%). Shortening was associated with limp. Outof the 50 patients in the Present study 42 patients (84%) did not require any support for walking. 8 patients (16%) were using canefor long walks and 1 patient(2%) could not walk.

12. In the **Present study** squatting was possible in 47 out of the 50patients (94%) but 6 patients(12%) had mild difficulty and 3patients(6%) were unable to squat. 45 out of the 50 patients (90%)were able to sit cross legged but 6 patients(12%) had limitation of abduction and external rotation and 1 patient(2%) was not able todo so.

13.FINAL OUTCOME: In the **Present study** final outcome was excellent in 30 patients (60%),Good in 15 patients (32%), Fair in 4 patients (6%), and Poor in 1 patient(2%) in whom cut out of the screws from the shaft of the femuroccurred.In**Gulzar Ahmed Series**[12]the final outcome was Excellent to Good in96.5% and Poor in 3.5%.

CONCLUSION
From this study we conclude that DHS is a good implant for thetreatment of EVANS type -1 Extra capsular fractures neck of femur.Because it enhances fracture stability and union with controlled collapsein addition to being versatile and a cost effective device.

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