



To study evaluation of intracapsular fracture of neck femur treated by screw fixation

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Abstract

Background: Fractures of neck of femur have always presented great challenges to the Orthopedics surgeons. Fractures of neck of femur are usually entirely intracapsular. Results depend upon the extent of injury and adequacy of reduction and fixation. Fixation with cannulated cancellous screws is usually adequate for femoral neck fractures. Lateral cortex plays a very important role in screw fixation.

Objective: To evaluation of intracapsular fracture of neck femur treated by screw fixation.

Materials and Method: Total 50 patients with intracapsular fracture neck of femur are evaluated with preoperative x-rays of the concerned hip joints both in anteroposterior and lateral views and their outcome post operatively after fixation with cancellous screws. The outcome is evaluated in terms of pain relief, extent of ambulation achieved after surgery. The classifications we followed are Gardens classification of fracture neck of femur. The patient will be followed up to one year to assess the functional outcome.

Results: A good result was obtained in 65.38% of the patients, excellent in 23.07%, fair in 3.84% and poor result in 7.69% of the patients. Complications such as Non union & avascular necrosis in one case, Non-union and Extrusion of screws in one case, cut through of screws into articular surface leading to painful joint in one case. Most of the cases of intracapsular neck of femur were in the age group of 26-50 years. There was male preponderance as shown in this study.

Conclusion: By the usage of multiple cannulated cancellous lag screws, compression effect at the fracture site is achieved; it also avoids re displacement and rotations. The implant occupies less volume in the small sized femoral necks of Patients allowing better osteosynthesis of intracapsular fracture neck of femur. Multiple cannulated cancellous screw fixations for intracapsular fracture neck of femur are an easy, safe & useful procedure with encouraging results.

Keywords: neck femur fracture, canulated screw

Introduction

Fractures of the neck of the femur have always presented great challenges to orthopaedic surgeons. With life expectancy increasing each decade², our society is becoming more and more geriatric with significant increase in number of hospitalized and nursing home patients suffering from femoral neck fractures and their sequel. Femoral neck fractures in young patients usually are caused by high energy trauma and often are associated with multiple injuries and high rates of avascular necrosis and non-union. Even when undisplaced fracture neck of femur, there is no assurance that a fracture will attain an excellent result. From 10% to 15% of these patients will develop complications over which the surgeon has little or no control. The quotation "we came into the world under the brim of pelvis and go out through the fracture neck of femur" reflects the defeatist attitude that has long been held by medical and lay personnel towards femoral neck fractures.(fig 1)

Though most of these fractures are due to trivial trauma the elderly age up in which they commonly occur, leads to catastrophic consequences unless early mobilization out of the bed is made possible. Moreover successful union with conservative management is uncommon. So operative intervention has become the routine for all types of femoral neck

fractures. Early anatomical reduction compression of the fracture and rigid internal fixation are used to promote union. An attempt has been made in this dissertation to evaluate the role of multiple cancellous lag screws in intracapsular fracture of femur neck with internal fixation. Patients selected for this operation were between the age group of 21 to 75 years with intracapsular fracture neck of femur.

Garden's Classification

1. **Garden Stage I:** Undisplaced incomplete, including valgus impacted fractures
2. **Garden stage II:** Undisplaced complete
3. **Garden stage III:** complete fracture, incompletely displaced
4. **Garden Stage IV:** complete fracture, completely displaced

Material and Method

To study the effectiveness of cannulated cancellous screw fixation for treatment of fracture neck of femur in adults. On basis of

1. Rate of union (radiological and clinical)
2. Study the incidence of complications

3. Compare the results of my study with the works reported.

Inclusion Criteria

1. Age 21-75 yrs
2. Intracapsular neck of femur fractures only

Exclusion Criteria

1. Age <21 years, >75 years
2. Extra capsular neck of femur fractures excluded
3. Patient with polytrauma
4. Patient medically unfit for surgery

Surgical Technique

All patient we used whitmann method for reduction after anesthesia given.in this method consist of traction of the hip in extension followed by internal rotation and abduction. This method prevent damage of blood supply and intact blood supply of neck femur.

After satisfying with the reduction vertical incision given over the lateral surface of the greater trochanter and extended distally up to 10cm carried the dissection down through the skin and subcutaneous tissue and split the fascia lata. Femoral neck approached by detaching vastus lateralis and reflecting its. Then predrill the lateral cortex with 2mm drill bit. Guide pins placed across the fracture from the lateral aspect of the femoral shaft parallel to the neck usually at a 135° angle. Place one guide pin adjacent to the medial cortex at 135° angle. Two guide pins placed at the middle of the head, one anterior and one posterior, and drive them to within 5mm of subchondral bone. Check X rays taken both anteroposterior and lateral views; the guide pins should be measured to determine the correct screw length. After satisfying with the position of the guide wires in the neck, drilled and tapping should be done over the guide wires with cannulated drilled and cannulated tap respectively. Cannulated cancellous lag screws inserted over the guide wires by using the cannulated screw driver, Confirmation of adequate fixation done by taking check X rays both anteroposterior and lateral view.

The screws should be within 5mm of subchondral bone. If necessary washers were used to prevent the screw head shrinking and get the uniform compression at the fracture site. After fixation of each screw, guide wire has to be removed to prevent loss of reduction drill tap and insert each screw before proceeding to the next. Haemostasis has to be secured. Wound closed in layers over the suction drain. Neck fracture of femoral with internal fixation with a cannulated screw. Reduction is confirm, 3 parallel guide wires are placed using the guide and fluoroscopic Control, The wire Length is measured. Screw are inserted over

the guide wires to the preselected depth and inserted in reverse triangle pattern and confirm in iitv image.

Advantage

1. Cheaper
2. Less chance to damage to blood supply
3. Less trauma
4. Less bleeding
5. Easy to insert

Disadvantages

1. Loosening of screws
2. No immediate weight bearing

Post-Operative Management

The patient is kept in the bed supine with a pillow under the knee. I.V. antibiotics for 5 days & oral antibiotics for 5 days and analgesics for a week were given. (Fig 2) Post operatively on day 1 all patients were mobilized in the bed with Quadriceps exercises and ankle movements. on day 2, patients were made to sit with knee bending on day 10 Sutures were removed and follow up in OPD.

Follow-Up

3rd and 6th week and then Monthly check-up is done clinically and radiological until the union of fracture is seen. (Fig 3) Full weight bearing is allowed after definite radiological evidence of union.

Complication

1. Nonunion
2. Avascular necrosis of head
3. Late segmental collapse table

Observation and Results

This retrospective study includes 50 patients treated for intracapsular fracture femur by screw fixation. (fig2).

Table 1: Demographic Description. Common age group between 26-75 years. Incidence of non-union and AVN is more in 51-75 age group. (Table 1)

Age group	No. of patients	Non Union	AVN
25-35	08	-	-
36-50	22	05	03
51-75	20	08	09
Total	50	13 (26%)	12(24%)

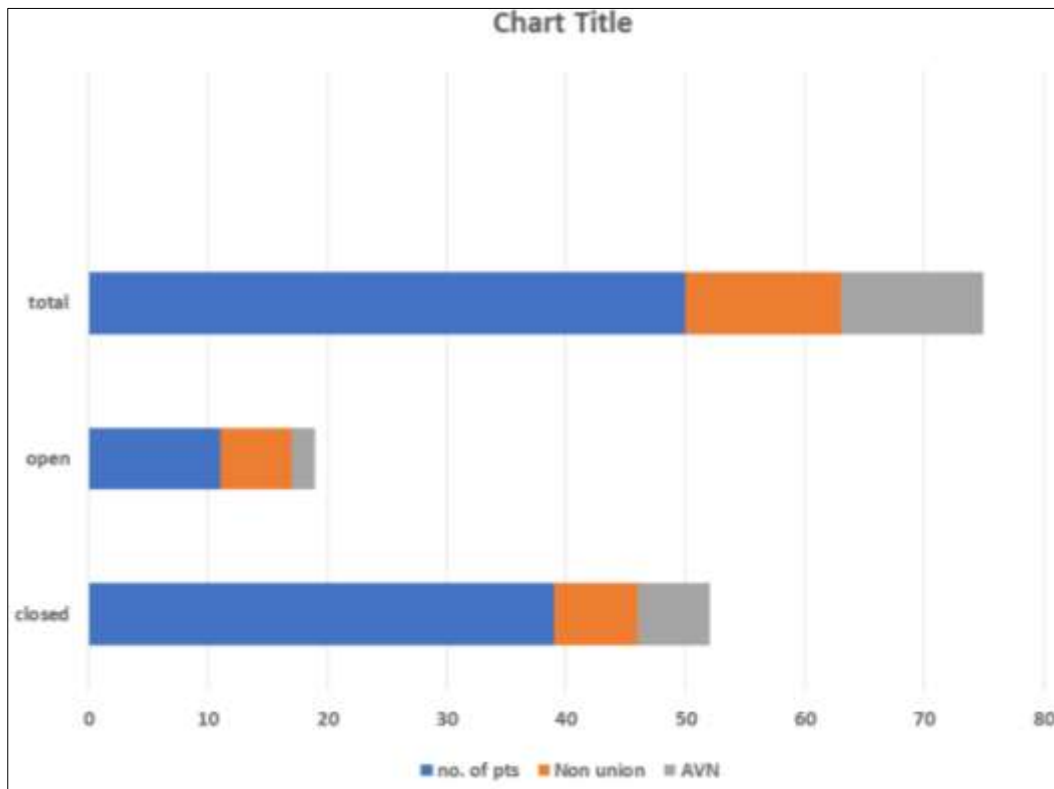


Fig 1: Closed reduction have union rate 66.66% is higher than open reduction 45.45%. Open reduction have higher AVN rate 54.55% than closed reduction (chart) 1

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Fig 1: Intracapsular neck femur fracture (pre op xray)



Fig 2: Post op xray



Fig 3 and 6: Month follow

Discussion

The main aim in the treatment of a femoral neck fracture is to facilitate a patient’s return to his normal activities as soon as possible. Cserhati¹ *et al*, described and treated patients with neck femur fracture conservative and operative and concluded more complication occur in non-operative group with prolong hospital stay and increase reoperation rate. Internal fixation of these fractures is more important than arthroplasties today, because the patient’s native bone tissue is used and low costs are achieved. Haidukewych² *et al*, described and treated Yonge patient fracture neck femur with less occurrence of osteonecrosis and malunion (chart 1). While selecting a treatment method for these fractures,

determination of the patient's physiological and chronological age is important along with determination of fracture type. Femoral neck fractures in the young population must be treated immediately and internal fixation must be performed after closed reduction [6-8hours]. To obtain stable osseous support of the femoral head on the femoral neck. Bosch³ *et al* described and treated of neck femur fracture with cannulated screws had minimal invasive surgery and less expensive in old age patients. The fixation is used to increase stability by compressing the fracture and then maintaining the reduction by neutralizing forces acting on the hip. Graham⁴ *et al* described and treated of neck femur fracture with screw had great failure in early weight bearing group of patients. The purposes of the fixation screws are to lock the fracture in a position in which the femoral neck gives bone-on-bone support to the femoral head-neck fragment, to prevent posterior and varus migration of the femoral head, and to be parallel so as to maintain bone-on-bone support as the fracture settles in the healing period. Barnes⁵ *et al* described and treated of subcapital neck femur fracture higher chance of collapse segment in women than men. Sufficient bone stock is needed for internal fixation, and functional status before fracture must be kept in mind to select a treatment method. Upadhyay A⁶ *et al* described and treated young patients had Posterior comminution, poor reduction and improper placement of the screws were the major factors contributing to nonunion. There are several reasons for use of a cannulated screw system: (1) The smaller- diameter guide-pins can be used to determine the screw position and length accurately.(2) Cannulated screw systems improve the accuracy of screw placement by supplying jigs that can place guide pins very accurately; and with parallel screws, excellent compression can be produced a traumatically by the lag effect of the screws. It uses a minimal invasive technique, Protects vascular supply of head, Prevents additional soft tissue injury, The total numbers of cases of Intracapsular fracture neck of femur followed are 50. The cases were treated by multiple cannulated cancellous screws and follow up from 6 months to 1 year. All patients were given regional anesthesia.

To achieve good union, we followed

- Good anatomical reduction
- Rigid fixation
- Partially threaded screws were used and threads crossed the fracture site
- Valgus reduction was acceptable but varus reduction has high chances of failure
- Strict postoperative physiotherapy
- No early weight bearing

Summary

- In this series, 50 cases were operated that were in the age grouped of 25-75 years.
- Cannulated cancellous screws were used and got excellent results; fracture union was seen in 41 cases.
- There were 5 cases of poor results with one case of non-union and loosening of the screws, one case landed up in Girdle stone Excision arthroplasty and one case not turned up for further follow up.

Conclusions

In our institute accurate reduction and rigid internal fixation of intracapsular fracture neck of femur was done with the help of C-Arm and the results were encouraging even up to the age of 75 years.

- In early mobilization of the patients the complications of prolonged immobilization like thromboembolism, hypostatic pneumonia was avoided.
- By the usage of multiple cannulated cancellous lag screws, compression effect at the fracture site is achieved; it also avoid re displacement and rotations. The implant occupies less volume in the femoral necks of Patients allowing better osteosynthesis of intracapsular fracture neck of femur.
- Multiple cannulated cancellous screw fixation for intracapsular fracture neck of femur is an easy, safe & useful procedure with encouraging results.

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