



FUNCTIONAL OUTCOMES OF FEMORAL NECK FRACTURE FIXED WITH CANNULATED CANCELLOUS SCREWS

Orthopaedics

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ABSTRACT

AIM: To assess the functional outcomes of femoral neck fracture fixed with cannulated cancellous screws.

METHOD: 20 patients of neck of femur fracture were treated with cannulated cancellous screws fixation technique in this prospective study after obtaining their consent regarding the same and satisfying inclusion and exclusion criteria over the period of 9 month. Functional outcomes were assessed using Harris Hip Score. Clinical & radiographic were obtained on follow up and Garden's alignment index were used to assess adequacy of resolution.

RESULTS: In our series of 20 patients of 18-60 years of age group, all patients were followed up for period of 9 months. 15 fractures healed satisfactorily. 1 case of obese patient (120kg) show back out of screw due to early weight bearing in 1 month. No wound infection or avascular necrosis of femur head reported. Functional outcome was excellent in 15 cases (75%) good in 2 cases (10%) moderate in 2 cases (10%) and poor in 1 case (5%).

KEYWORDS

Fracture, Neck Of Femur, Cancellous Cannulated Screw, Harris Hip Score

INTRODUCTION

Femoral neck fractures are common injuries encountered by older individuals due to trivial fall and young individual due to High velocity trauma. They are associated with high mortality and morbidity [1]. Numerous methods have been proposed for the stabilization of femoral neck fractures [2]. Dynamic hip screws, cannulated screws and so on are commonly used implants. However, in patients who are not suitable for arthroplasty, especially young ones, inverted triangle parallel cannulated screws remain a feasible and effective choice [3]. With the increase in life expectancy and accompanying ageing population there has been increase in incidence of hip fractures from 1.17 per thousand female >60 years old in 1965 to 1.5 in 1985 [4].

With the characteristics of excellent stability and limited disturbance to the blood supply of femoral head, patients treated with three cannulated screws exhibit good clinical prognosis for the fixation of femoral neck fractures. Furthermore, to improve strength and lower rate of non-union, surgeons usually propose different screw patterns that is close to the cortex and separated. Innovative configurations with four rhombic screws have also been proposed recently.

When a screw is very close to the hip joint surface and still appears to be within the head on radiographs, it is possible that the screw may have perforated the femoral head. Furthermore, it is difficult to determine the exact distance between the anterior and posterior cortex in the same horizontal plane to the femoral neck through 2-dimensional images. A comprehensive understanding of the morphology of the femoral neck fracture is vital to both screw fixation and the clinical results. We evaluated the functional results of 20 patients who underwent cc screw fixation for neck of femur fracture.

MATERIAL AND METHODS

This prospective study had been conducted in the Department of Orthopedics, GCS Medical College and Research Hospital, Ahmedabad. Between July 2020 and August 2021.

20 patients of neck of femur fracture were treated with cannulated cancellous screw technique after obtaining their consent regarding the same and satisfying inclusion and exclusion criteria. Inclusion criteria were age group 18-60 years, all 4 garden classification variety, closed fracture. Exclusion criteria were age less than 18 and more than 60 years, or pathological fractures, Open fractures.

Age of patient was taken as the age on day of admission to the hospital. Elapsed time was calculated from time of injury to starting time of surgery. Fracture displacement was classified as either displaced (Garden Classification Type III and IV) or undisplaced (Garden

Classification Type I and II). Fracture reduction acceptability was assessed using Garden Alignment Index by measuring the angle of the compression trabeculae on AP and lateral view relative to the longitudinal axis of the femoral shaft and considered acceptable if it fell within the 155° - 180° range.

Patients were admitted history evaluated primary treatment was given, counselled for surgery and pre op work up was done. Post operatively they were given Derotation boot. In physiotherapy all the patients were started in bed knee bending from the evening of day of surgery or from the next day of surgery along with other exercises like static quadriceps exercises, ankle toe movement, chest physio. Post operatively, the patients were advised strictly non-weight bearing for 3 months. Post-operative hip radiographs were taken and these were subsequently analysed for acceptability of fracture reduction and fixation using the Garden's Alignment Index. Operated patients were then followed up at 2 weeks, 6 weeks, 3 months and 6 monthly interval till 9 months. Functional outcomes were assessed using Harris Hip Score. Radiograph were obtained on follow up and Garden's alignment index were used for evaluation.

Avascular necrosis (AVN) of the femoral head was assessed based on radiographic evidence and clinical features, using the Ficat & Arlet Classification. [5]

Good outcome was defined as clinical union with no pain and good hip range of movement and ambulation as pre fracture condition and radiologically as fracture union with no evidence of non-union or avascular necrosis.

SURGICAL PROCEDURE-

Closed reduction and cannulated screw fixation of the femoral neck fractures were performed in all our patients under either general or spinal. During the procedure, the patient was positioned supine on a traction table with the foot secured to the footplate. The fracture was then visualised with an image intensifier. Most fracture were reduced by traction and internal rotation. In few cases, the Whitlow technique in which give traction to the affected limb, Hip extension has to be done followed by 20 degree abduction, 20 internal rotation and then maintaining hip traction brought back hip to its neutral position. In few cases we have performed Leadbetter technique to reduce the fracture. Three standard cannulated (6.4mm cancellous) screws were inserted for all our patients, in some patients we have given incision of around 5cm and in some patients we have used percutaneous stab for screw insertion with help of Steinmann pin. In "Inverted triangle" manner in lateral view and "Parallel" in AP view. In which one screw inserted "Supro-Anterior", "Supro-Posterior" and one in the "Postero-

Inferior" quadrant.

CASES AND CLINICAL PHOTOS



PRE-OPERATIVE X-RAY

POST OPERATIVE X-RAY



Clinical Photo

Clinical Photo

RESULTS

In our series of 20 patients of fresh fracture neck of femur in age group 18-60 years treated surgically by internal fixation with cannulated cancellous screw. The mean age is 39.75 years and 11 patients were male and 9 patients were female. Majority 14 [70%] Patients affected were due to road traffic accident, 06[30%] patients due to fall. Garden's classification system was used for operative evaluation. All of them underwent closed reduction and cannulated screw fixation. Most of the patients were operated between 1st to 3rd day of trauma. In all patients we used 3 screws for each hip fixation. The time to consider union was taken as 3 months. In one case there was backout of screws as patient was obese (120kg) & started early weight bearing at home soon he was discharged despite strict Non weight bearing instructions. We had to remove screws in this case and we did bipolar prosthesis. No patients had AVN of femoral head. Excellent results were achieved in cases [95%].

RESULTS	NO.OF PATEINTS(%)
CONSTATE SCORE	
EXCELLENT	75
GOOD	10
MODERATE	10
POOR	5

HIP RANGE OF MOVEMENT	
EXCELLENT	14
GOOD	3
MODERATE	2
POOR	1
COMPLICATION	
NON UNION	0
AVASCULAR NECROSIS OF FEMORAL HEAD	0
SCREW BACK O	

DISCUSSION

In our study, fractures are common in the 18-60 years age group, with mean age being 39.75 years. Our findings are comparable to the studies 12 made by MP Singh et al (mean age=36 years). In the current study, Garden's classification system was used for operative evaluation. The most common type of injury was type 3 and 2. The functional results of the present study (using harris hip score 1- 100) were comparable with that of MP Singh et al and with 75% having excellent results, 10% have good results, 10% have good results & poor results in 5%. [6]

On comparing our study with MP Singh et al (1) We have lesser number of patients which is 20 as compared with MP Singh et al which

is 32. (2) The mean follow up time is lesser in our study which is 9 months as compared to MP Singh et al which is 16-28 months. (3) In MP Singh et al total 4 pt have shown avascular necrosis changes in the hip where in our study 0 incident of AVN has been reported.

In our series we have kept patients non weight bearing strictly for 3 months. Following this period based on clinical and radiological signs of union we started Partial weight bearing with walker and gradually shifted to full weight bearing without support in few months.. The range of motion hip was retained to near pre trauma level in almost all the cases. Our drawbacks of study are (1) No of patients is 20 which is less (2) Duration of follow up is 9 months. We need a long term follow up to evaluate functional outcomes for a long term (3) None of our patients were more than 60 years of age.

CONCLUSION

We conclude that fracture neck of femur in 18-60 years age group treated surgically by close reduction and internal fixation with 6.5 mm cannulated cancellous screws give excellent functional outcomes with low complication rate.

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