

Management of Intra capsular fracture of neck of femur with cannulated cancellous screw fixation

ORTHOPAEDICS

S.K.Venkatesh Gupta*, D.S.Hanuman, N. Naga Rajendra, C.H.Nagaraju

ABSTRACT

Introduction: Fractures of neck of femur have always presented great challenges to the orthopaedic surgeons. In many ways today the unsolved fracture as far as treatment and results are concerned. 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.

Aims & Objectives: To evaluate the cannulated cancellous screw fixation in case of Intracapsular fracture neck of femur.

Materials and Methods: The patients with intracapsular fracture neck of femur are evaluated with pre operative X-rays of the concerned hip joints both in antero posterior 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 patient will be followed up to one and half 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. 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 31-40 years. There was male preponderance as shown in this study (69%).

Conclusion: To conclude, by the usage of multiple cannulated cancellous lag screws, compression effect at the fracture site is achieved, it also avoids redisplacement and rotations. Multiple cannulated cancellous screw fixation for intracapsular fracture neck of femur is an easy, safe & useful procedure with encouraging results.

Key words: *cannulated cancellous screw, femur, intra capsular fracture*

Introduction

Fractures of the neck of the femur have always presented great challenges to orthopaedic surgeons and remain in many ways today the unsolved fracture as far as treatment and results are concerned [1]. 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 [2]. Even in undisplaced fracture neck of femur, there is no assurance that a fracture will attain an excellent result [3]. From 10% to 15% of these patients will develop complications over which the surgeon has little or no control [4]. Moreover successful union with conservative management is uncommon. So, operative intervention has become the routine for all types of femoral neck fractures [5]. Early anatomical reduction compression of the fracture and rigid internal fixation are used to promote

union. An attempt has been made in this study to evaluate the role of multiple cancellous lag screws in internal fixation of intracapsular fracture neck of femur.

Materials & Methods

This study is conducted at Mamata General Hospital, Khammam, Andhra Pradesh. A total of 26 cases of Intracapsular fracture neck of femur in adults were treated during August 2009 to October 2011, after accurate reduction and rigid internal fixation under X ray control with 2 or 3 cannulated cancellous screws (Figure: 1). All the patients were pre-operatively assessed to grade the type of fracture by GARDEN'S CLASSIFICATION [6] (Table: 1) and prepared for surgery. All fractures were reduced by LEADBETTER (In flexion) method [7].

The patient is kept in the bed supine with a pillow under the knee, antibiotics & analgesics were given for a week post operatively and all patients were mobilized in the bed with Quadriceps exercises. Sutures were removed on the 10th day. Non-weight crutch walking is advised after subsidence of the

pain in the operated area. Monthly check-up is done clinically and radiological until the union of fracture is seen. Full weight bearing is allowed after definite radiological evidence of union. Harris hip score [8] is used to assess functional outcome.

Figure: 1. a) Pre-operative, b) 1st month follow up c) 6th month follow up d) At implant removal.

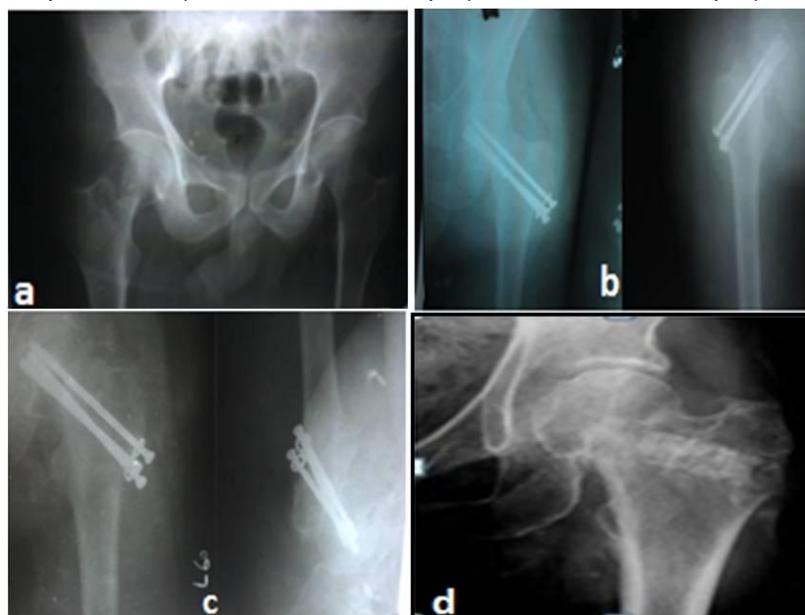


Table: 1. Relation of union with Gardens Grading of fracture

Grade	No. of cases	Union	Non-union
I	-	-	-
II	08	08	Nil
III	06	06	-
IV	12	09	03
TOTAL	26	23	03

Results

Majority of patients in our study were included in the age group of 31-40 yrs with males (69%) outnumbering the females. 88.46% of cases achieved union. 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.

Discussion & Conclusion

Our important objective in the treatment of an intracapsular fracture of the hip is to obtain stable osseous support of the femoral head on the femoral neck [8,9]. The fixation is used to increase stability by compressing the fracture and then maintaining the reduction by neutralizing forces acting on the hip [9,10]. 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 [11-15].

This series contains patients who are hardworking laborers and sedentary females. The mechanism of injury in most cases is in the form of fall from height. There is also slightly violent injury leading to intracapsular fracture. The commonest radiological type of fracture is Garden's grade IV followed by Type-II. In our study Gardens type IV showed poor results when compared to others [14,15]. In most of the cases the fixation of fracture was done by 2 or more than two to prevent rotation of the proximal fragment. The threaded portions of the screws were seen to cross the fracture line to get a better lag effect [15]. To conclude, by the usage of multiple cannulated cancellous lag screws, compression effect at the fracture site is achieved, it also avoids redisplacement and rotations [14]. The implant occupies less volume in the small sized femoral necks of South Indian Patients allowing better osteosynthesis of intracapsular fracture neck of femur [12,13]. Multiple cannulated cancellous screw fixation for intracapsular fracture neck of femur is an easy, safe & useful procedure with encouraging results [14].

References

- Zetterberg CH, Elmerson S, Andersson GB. Epidemiology of hip fractures in Goteborg, Sweden, 1940-1983. *Clin Orthop Relat Res* 1984; 191:43-52.
- Raaymakers E. Fractures of the femoral neck: a review and personal statement, *Acta Chir Orthop Traumatol Cech* 2006;73(1):45-59.
- Robinson CM, Court-Brown CM, McQueen MM, Christie J. Hip fractures in adults younger than 50 years of age: Epidemiology and Results. *Clin Orthop Relat Res* 1995; 312:238-46.
- MM Anwar, The fracture of the neck of the femur: A review of the relevant aspects as a guide in clinical practice, *The ORIN* vol. 2 January 1999.
- Gwilym GD, The treatment of intracapsular fractures of the hip. *Philadelphia Academy of Surgery, Ann Surg* 1912; 56(4): 622-30
- Olerud C, Rehnberg L, Hellquist E. Internal fixation of femoral neck fractures. Two methods compared. *J Bone Joint Surg Br* 1991; 73: 16-9.
- Gautam VK, Anand S, Dhaon BK. Management of displaced femoral neck fractures in young adults (a group at risk). *Injury* 1998; 29: 215-8.
- Lin SQ Peng LP, Yao ZC. Case-control study on cannulated screw fixation and percutaneous autogenous bone marrow grafting for the treatment of femoral neck fractures]. *Zhongguo Gu Shang* 2010; 23(9):675-8.
- Soontrapa S, Soontrapa S, Srinakaran J, Chowchuen P. Singh Index Screening for Femoral Neck Osteoporosis. *J Med Assoc Thai* 2005; 88: S13-6,
- Cho MR, Lee SW, Shin DK, Kim SK, Kim SY, Ko SB, Kwun KW. Predictive method for subsequent avascular necrosis of the femoral head (AVNFH) by observation of bleeding from the cannulated screw used for fixation of intracapsular femoral neck fractures. *J Orthop Trauma* 2007; 21(3):158-64.
- Dedrick DK, Mackenzie JR, Burney RE. Complications of femoral neck fracture in young adults. *J Trauma* 1986; 26:932-7.
- Skála-Rosenbaum J, Dzupa V, Bartoníček J, Dousa P, Pazdírek P. Osteosynthesis of intracapsular femoral neck fractures. *Rozhl Chir.* 2005; 84(6):291-8.
- Naseem UG, Khursheed AK, Mohammed FB, Gulam ND, Mudassir MW. More than two years delay in the union of fracture neck of femur after primary intervention. *Cases Journal* 2008, 61.
- Skála-Rosenbaum J, Dzupa V, Bartoníček J, Dousa P, Pazdírek P. Osteosynthesis of intracapsular femoral neck fractures. *Rozhl Chir* 2005; 84(6):291-8.
- Frangakis EK. Intracapsular fractures of the neck of the femur Factors Influencing Non-union and Ischaemic Necrosis. *J Bone Joint Surg Br* 2004; 86:1035-40.

AUTHOR(S):

1. Dr.S.K.Venkatesh Gupta, Professor & HOD, Dept. of Orthopaedics, Mamata Medical College / General Hospital, Khammam, Andhra Pradesh, India
2. Dr.D.S.Hanuman, Professor, , Dept. of Orthopaedics, Mamata Medical College / General Hospital, Khammam, Andhra Pradesh, India
3. Dr.N.Naga Rajendra, Senior Resident, , Dept. of Orthopaedics, Mamata Medical College / General Hospital, Khammam, Andhra Pradesh, India
4. Dr.C.H.Nagaraju, Professor, Department of Anaesthesia, Mamata Medical College / General Hospital, Khammam, Andhra Pradesh, India

CORRESPONDING AUTHOR:

*Dr.S.K.Venkatesh Gupta,
Professor & HOD of Orthopaedics,
Mamata Medical College / General Hospital,
Khammam, Andhra Pradesh,
India
Email: svkguptammc@gmail.com*

Conflict of Interest: None

