

A STUDY OF INTERNAL FIXATION OF INTRACAPSULAR FRACTURE NECK OF FEMUR IN ADULTS BY MULTIPLE CANNULATED CANCELLOUS LAG SCREWS

C. Sanjeevaiah¹, K. Praneeth Reddy²

HOW TO CITE THIS ARTICLE:

C. Sanjeevaiah, K. Praneeth Reddy. "A Study of Internal Fixation of Intracapsular Fracture Neck of Femur in Adults by Multiple Cannulated Cancellous Lag Screws". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 53, July 02; Page: 9211-9218, DOI: 10.14260/jemds/2015/1338

ABSTRACT: INTRODUCTION: Fractures of neck of femur have always presented great challenges to the Orthopaedic surgeons. In many ways today the unsolved fracture as per as treatment and results are concerned. Fractures of neck of femur are usually entirely intracapsular results depend upon extent of injury and adequacy of reduction and fixation. Fixation with cannulated cancellous lagscrews is usually adequate for femoral neck fractures. Lateral cortex place a very important role in screw fixation. **AIMS & OBJECTIVES:** To evaluate the cannulated cancellous lagscrew fixation in case of intra capsular neck of femur. **MATERIAL AND METHODS:** The patients with intra capsular 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 was evaluated in terms of pain relief and ambulation after surgery. The patients followed upto one year to assess the outcome. **RESULTS:** The excellent results was obtained in 22.63% good result in 59.09% fair in 9.09% poor in 9.09%. Nonunion and loosening of screws in one case. Nonunion and extrusion of screws in one case. Cut through of the screws in to the articular surface leading to painful joint in one case. Most of the cases are fracture neck of femur were in the age group of 20 to 40 with male preponderance. **CONCLUSION:** By the usage of cannulated cancellous lag screws compression of the fracture site is achieved, with also avoids rotations. Multiple cannulated cancellous lagscrews in intra capsular neck of femur is an easy procedure with encouraging results. **AIM:** An attempt has been made to evaluate the role of multiple cannulated cancellous lag Screws in internal fixation of intracapsular fracture neck of femur. Patients selected for this operation were between the age group of 15 to 55 years with intracapsular fracture neck of femur during the years 2011 to 2014.

KEYWORDS: Internal Fixation, Intracapsular fracture neck of femur, Multiple cannulated cancellous lag screws.

INTRODUCTION: Civilization has ushered in high injury rates increased fracture pattern by virtue of high speed transportation accidents, industrial accidents, sports and recreational injuries. Fracture of the neck of the femur have always presented great challenges to orthopaedic surgeons and remain in many ways today the unsalved fracture as far as treatment and results are concerned. With life expectancy increasing each decade, 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 sequelae.⁽¹⁾ The femoral neck fractures in young patient usually are caused by high energy trauma and often are associated with multiple injuries and high rates of avascular necrosis and nonunion. 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.

ORIGINAL ARTICLE

The quotation “we came in to the world under the brim of pelvis and go out through the neck of femur” reflects the defeatist attitude that has long been held by medical and lay personal towards femoral neck fractures.⁽²⁾ Though most of these fractures are due to trivial trauma the elder age group 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 result internal fixation are used to promote union.^(3,4)

1ST CASE:



2nd CASE:



TREATMENT^(5,6,7): Pre-Operative: Patient was admitted and below knee skin fraction applied with 3kg weight. Analgesics were given for pain relief. Prepared for surgery.

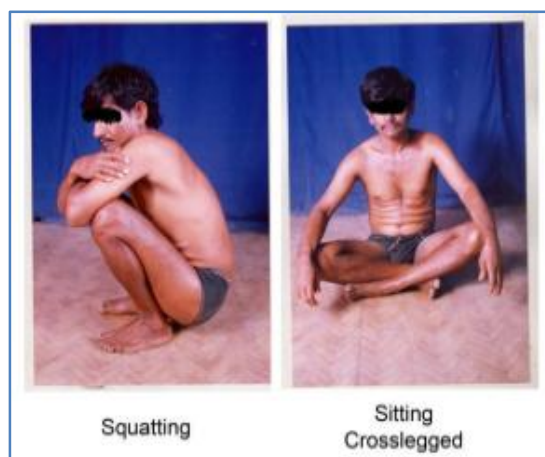
SURGERY: Under spinal anesthesia patient was shifted on to the fracture table. The fracture reduced with Lead better technique and reduction was conformed to Image intensifier both AP and lateral.

ORIGINAL ARTICLE

Through lateral approach fracture fixation was done with two cannulated Cancellous screws under Image intensifier.^(8,9,10)

Post-operative: ISO metric quadriceps exercises were advised. Suture removed was done on 10th post OP day. Discharge with an advice not to weight bear for two months.

FOLLOWUP: Follow-up was done upto 4 months.



COMMENT: A 32 years old male was admitted with Intra Capsular fracture neck of femur with garden Type-IV. Surgery was done and the post-operative period was uneventful. Patient regained full range of movements and is able to bear the weight at 4 months and the result was excellent.

Sl. No.	Name	Age in Years	Sex	Garden's Grading	Union occurred	Follow up	Results
1.	Rajendra	45	Male	III	4 Months	2 years	Good
2.	A. Sathemma	45	Female	III	3 Months	1½ year	Good
3.	D. Raju	33	Male	IV	-	-	Poor
4.	Ch. Srinivas	34	Male	III	4 Months	1½ year	Good
5.	P. Nagaiah	51	Male	IV	3 Months	1½ year	Good
6.	P. Venkanna	18	Male	III	3 Months	1 year	Excellent
7.	K. Radha	22	Female	II	3 Months	1 year	Good
8.	T. Ramana	54	Male	III	3 Months	1 year	Excellent
9.	Sabasirin	19	Female	II	3 Months	1 year	Excellent
10.	Ravi Kumar	26	Male	III	3 Months	1 year	Good
11.	D. Satish	18	Male	III	3 Months	1 year	Excellent
12.	J. Ravi	22	Male	III	3 Months	1 year	Good
13.	B. Laxmi	40	Female	III	4 Months	9 Months	Good
14.	A. Surya-narayana	45	Male	IV	Non Union	9 Months	Poor
15.	B. Valsingh	32	Male	IV	3 Months	9 Months	Excellent
16.	S. Krishnaiah	52	Male	III	3 Months	6 Months	Good
17.	E. Ram Murthy	40	Male	III	3 Months	6 Months	Good
18.	G. Balu	28	Male	IV	3 Months	6 Months	Good

ORIGINAL ARTICLE

19.	B. Rajanna	35	Male	IV	3 Months	6 Months	Good
20.	N. Laxmi	40	Female	IV	3 Months	6 Months	Fair
21.	Shiva Koteswar Rao	30	Male	IV	3 Months	6 Months	Good
22.	Narsimha Rao	24	Male	III	4 Months	10 Months	Fair
Master Sheet							

MATERIAL AND METHODS: The present work on “A Study of Internal fixation of Intracapsular fracture neck of femur in adults by Multiple Cannulated Cancellous Lag Screws” is carried out during the years 2011 to 2014.

All the patients were pre-operatively assessed to grade the type of fracture by “GARDEN’S CLASSIFICATION” and prepared for surgery. All fractures were reduced by LEADBETTER (In flexion) method.

A total of 22 cases of Intracapsular fracture neck of femur in adults were treated after accurate reduction and rigid internal fixation under X ray control with 2 or 3 cannulated cancellous screws.

Post operatively all patients were mobilized in the bed with Quadriceps exercises. Sutures were removed on the 10th day. A pair of crutches was advised and no weight bearing till the fracture got united.

ANALYSIS:

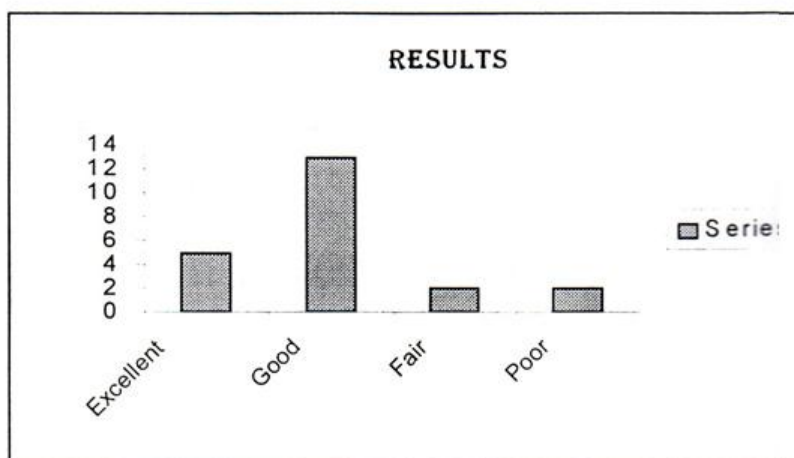
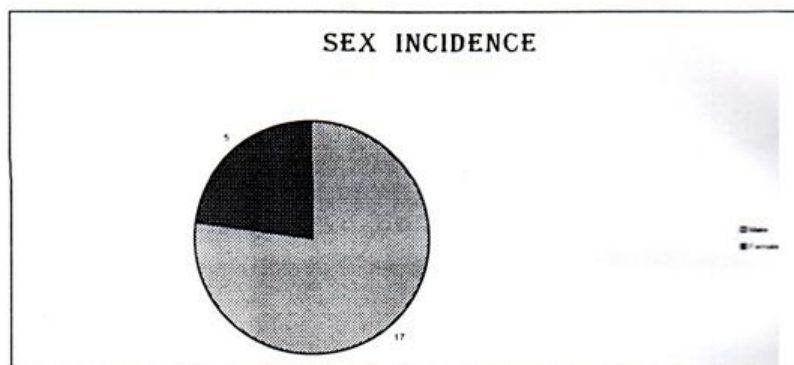
Age Incidence	No. of Cases
20-30 Years	8
31-40 Years	6
41-50 Years	5
51-60 Years	3
Age Incidence	

Sex	No. of Cases
Male	17
Female	5
Sex Incidence	

Grade	No. of Cases	Union	Non-Union
I	-	-	-
II	2	2	Nil
III	13	13	-
IV	7	5	2
TOTAL	22	20	2
Relation Of Union with Garden’s Grading of Fracture			

ORIGINAL ARTICLE

Result	No. of Cases	Percentage
Excellent	5	22.63%
Good	13	59.09%
Fair	2	9.09%
Poor	2	9.09%
Result of Cases Treated		



ORIGINAL ARTICLE

GRADING OF RESULTS:

EXCELLENT: There is sound bony union of the fracture, No avascular necrosis of head. Full range of movements and strength. Full weight bearing. No pain or tenderness.

GOOD: There is a sound bony union of the fracture. No avascular necrosis of the head. No pain or tenderness. Minimal restriction of movement's particularly last degree of flexion and abduction.

FAIR: Sound bony union, Gross restriction of hip movements and pain on walking with discomfort to squat.

POOR: Severe restriction of function with corroborative radiographs requiring salvage procedures.

COMPLICATIONS NOTED IN THIS SERIES⁽¹¹⁾:

1. Non-union and loosening of screws in one case.
2. Non-union and Extrusion of screws in one case.
3. Cut through of screws into articular surface leading to painful joint in one case.

DISCUSSION: The total number of cases of Intracapsular fracture neck femur followed is 22. The cases were treated by Multiple cannulated cancellous screws and follow up from 6 months to 2 years. Male patients are more than female patients. The commonest age group of the followed cases in between 30-50 years.

This series contains patients who are hardworking labourers and sedentary females. The mechanisms of injury in most cases are 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-III followed by type-II.

All the patients were explained the precaution to be followed after surgery. The reduction of fracture was done by lead better method without fail. The reduction was confirmed by an Image intensifier both Anteroposterior and lateral views.

Though lateral approach, the fracture was fixed by multiple cannulated cancellous screws. In most of the cases the fixation of fracture was done by 2 or more than two to prevent motion of the proximal fragment. The threaded portion of the screws was seen to cross the fracture line to get a better lag effect.

One case has developed absorption of the neck and loosening of the screws and for that Girdle Stone excision arthroplasty was done. One case developed collapse at the fracture site and extrusion of screws due to early weight bearing and the case not turned up for further follow up.

SUMMARY: In this series, we have operated 22 cases who were in the age group of 18-60 years. We have used cannulated cancellous screws with a pitch of 16 TPL. We have got excellent results.

We have encountered 2 cases of poor results with a complication of nonunion and loosening of the screws. One case landed up in Girdlestone Excision arthroplasty and one case not turned up for further follow up.

The prerequisites for sound healing of intracapsular fracture neck of femur are^(12,13,14):

1. Anatomical Reduction.
2. Rigid Fixation.
3. Impaction.
4. Strict post-operative physiotherapy.
5. No premature weight bearing.

ORIGINAL ARTICLE

CONCLUSION: The injuries around the hip were mostly extra capsular neck of femur followed by intracapsular neck of femur and posterior dislocations of hip:

1. The most of the cases of intracapsular neck of femur were in the age group of 30-50 years.
2. There was male preponderance as shown in this study of intracapsular neck of femur.
3. The nature of violence in this study shows, mainly, fall from a height. This injury usually not associated with any other injuries.

In our institute accurate reduction and rigid internal fixation of intracapsular fracture neck of femur was done with the help of Image Intensifier and the results were encouraging even up to the age of 60 years. In early mobilization of the patients the complications of prolonged immobilization like thromboembolism, hypostatic pneumonia etc., were avoided.

By the usage of multiple cancellous lag screws has compression effect at the fracture site avoid re displacement and rotations.

The implant occupies less volume in the small sized femoral necks of South Indian Patients allowing better osteosynthesis of intracapsular fracture neck of femur.

The results have been encouraging and better than the implants which do not causes compression at fracture site or occupies large volume in the femoral neck or allows rotations.

REFERENCES:

1. Zetterberg CH, Elmerson S, Andersson GB. Epidemiology of hip fractures in Goteborg, Sweden, 1940-1983. Clin Orthop Relat Res 1984; 191: 43-52.
2. Raaymakers E. Fractures of the femoral neck: a review and personal statement, Acta Chir Orthop Traumatol Cech 2006; 73(1): 45-59.
3. 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.
4. Gwilym GD, The treatment of intracapsular fractures of the hip. Philadelphia Academy of Surgery, Ann Surg 1912; 56(4): 622-30.
5. Olerud C, Rehnberg L, Hellquist E. Internal fixation of femoral neck fractures. Two methods compared. J Bone Joint Surg Br 1991; 73: 16-9.
6. Gautam VK, Anand S, Dhaon BK. Management of displaced femoral neck fractures in young adults (a group at risk). Injury 1998; 29: 215-8.
7. 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.
8. Soontrapa S, Soontrapa S, Srinakaran J, Chowchuen P. Singh Index Screening for Femoral Neck Osteoporosis. J Med Assoc Thai 2005; 88: S13-6.
9. Cho MR, Lee SW, Shin DK, Kim SK, Kim SY, Ko SB, Kwun KW. Predictive method for subsequent avascular necrosis of the femoral head (AVNHF) by observation of bleeding from the cannulated screw used for fixation of intracapsular femoral neck fractures. J Orthop Trauma 2007; 21(3):158-64.
10. Dedrick DK, Mackenzie JR, Burney RE. Complications of femoral neck fracture in young adults. J Trauma 1986; 26:932-7.
11. Skála-Rosenbaum J, Dzupa V, Bartoníček J, Dousa P, Pazdírek P. Osteosynthesis of intracapsular femoral neck fractures. Rozhl Chir. 2005; 84(6):291-8.

ORIGINAL ARTICLE

12. 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.
13. Skála-Rosenbaum J, Dzupa V, Bartoníček J, Dousa P, Pazdírek P. Osteosynthesis of intracapsular femoral neck fractures. Rozhl Chir 2005; 84(6): 291-8.

AUTHORS:

1. C. Sanjeevaiah
2. K. Praneeth Reddy

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Orthopaedics & Traumatology, RIMS, Medical College, Kadapa, Andhra Pradesh.
2. Senior Resident, Department of Orthopaedics & Traumatology, RIMS, Medical College, Kadapa, Andhra Pradesh.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. C. Sanjeevaiah,
H. No-501, Sai Residency,
Arvind Nagar, Kadapa,
Andhra Pradesh.
E-mail: drsanjeevaiahchalla@gmail.com

Date of Submission: 04/06/2015.
Date of Peer Review: 05/06/2015.
Date of Acceptance: 24/06/2015.
Date of Publishing: 01/07/2015.