ORIGINAL RESEARCH PAPER

Volume-7 | Issue-2 | February-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A STUDY OF TREATMENT OF FRACTURE NECK OF FEMUR IN ADULT BY CONVENTIONAL CANNULATED HIP SCREWS:

Orthopaedics

Dr Jiju George Assistant Professor, Department of Orthopedics, Travancore Medical College, Kollam

Dr Anizh Cheriyan* Assistant Professor, Department of Orthopedics, Travancore Medical College, Kollam
*Corresponding Author

ABSTRACT

Femoral neck fractures are most frequently in elderly female patients. They are uncommon in patients younger than 50 years. There is some racial variation in the incidence. They are less common in black races and more common in black females than in males. Currently, these fractures are most common in the white populations of Europe and North America[5]. Incidence increases exponentially with age. The risk of a second hip fracture within 2 years approaches 10% in women and 5% in men. In patients who sustain a second hip fracture, it is the same type of hip fracture in over 70%. This study is intended to help and understand the treatment and outcome of the above mentioned procedure.

Patients who have sustained an intra-capsular femoral neck fracture admitted in the Department of Orthopedics, Travancore Medical College, Kollam from July 2010 to August 2013 were taken for this study after taking their consent.

The age of the patient in the present study ranged from 50 to 60 years, with an average of 56.41 years, cases treated with Cannulated Cancellous Screw (CCS).

Though fractures of femoral neck are now better understood and the methods of treatment have improved, non-union and screw breakage of the femoral head are still serious problems.

KEYWORDS

Treatment, Fracture, Neck of Femur, Conventional Cannulated Hip Screw

Introduction:

The history of management of femoral neck fractures parallels with the history of modern Orthopaedics Surgery. Hip fractures are common and comprise 20% of the operative workload of an orthopaedic trauma unit[1]. Intracapsular femoral neck fractures account for 50% of all hip fractures. The lifetime risk of sustaining a hip fracture is high and lies within the range of 40% to 50% in women and 13% to 22% in men. Life expectancy is increasing worlwide, and these demographic changes can be expected to cause the number of hip fractures occuring worldwide to increase from 1.66 million in 1990 to 6.26 million in 2050[2].

Femoral neck fractures are most frequently in elderly female patients. They are uncommon in patients younger than 50 years. There is some racial variation in the incidence. They are less common in black races[3] and more common in black females than in males[4]. Currently, these fractures are most common in the white populations of Europe and North America[5]. Incidence increases exponentially with age[6]. The risk of a second hip fracture within 2 years approaches 10% in women and 5% in men [7,8]. In patients who sustain a second hip fracture, it is the same type of hip fracture in over 70%[9].

Ambrose Pare a French Surgeon recognized the existence of this fracture 400 years ago. Sir Astley- Paston Cooper was the first person to delineate between intra capsular fractures from other fractures about the hip. In 1859 Gross stated that he has never seen a bony union in intracapsular fracture neck of femur.

First internal fixation for hip fracture was reported by Von - Langen Beck way back in 1850. In 1875 Konig described a method for internal fixation of these fractures.

In 1895 Roentgen discovered X-rays which revolutionized the management of these fractures. In 1897 Royal Whitman advocated forcible manipulative reduction and immobilization in a hip spica cast. He felt that it is imperative to restore the normal anatomical alignment to prevent future deformity. Bohler and Austrian Surgeon advised continuous longitudinal traction for management of these fractures. In 1897 Nicolaysen [10]reported a method for internal fixation for these fractures, but the failure rate was high due to sepsis.

Hey Groves in 1916 had a series of cases where four flanged nail was used but failure rate was high due to metal reaction. In 1931 Marius Nygard Smith Peterson from Boston was responsible for reviving and popularising the procedure of internal fixation for femoral neck fractures. He advocated reduction, impaction and internal fixation using Tri flanged Nail. In 1932 Johnson devised a guide pin for easy positioning of the nail. Wescott (1932) simplified the technique by introducing cannulated nail under roentgen graphic control. The success rate in this series was 50 to 60%. This method failed to prevent shearing stress at the fracture site.

In 1934 Moore Introduced corelled pins. In 1935 Friderich Pauwell a German Surgeon who worked with Schanz stated that pseud arthrosis of the femoral neck would unite within few months' time if one changes the inclination of pseud arthrosis in such a way that the resultant force ceased to exert shearing force on the pseud arthrosis and was converted into a force of compression which promotes unio[10]. This study is intended to help and understand the treatment and outcome of the above mentioned procedure.

Aims and Objectives:

To compare functional and radiological outcome of intracapsular fracture of femoral neck treated with Conventional Cannulated Hip Screws.

Materials and Methods:

Patients who have sustained an intra-capsular femoral neck fracture admitted in Department of Orthopedics, Travancore Medical College, Kollam from July 2010 to August 2013 were taken for this study after taking their consent.

Sampling Simple Random Sampling: Sample Size has been found to be 12 Sample Size Calculation

Inclusion Criteria

1. Fracture Neck Of Femur (Garden's Type 1 – 3)
2. Age of patient 55yrs to 70yrs

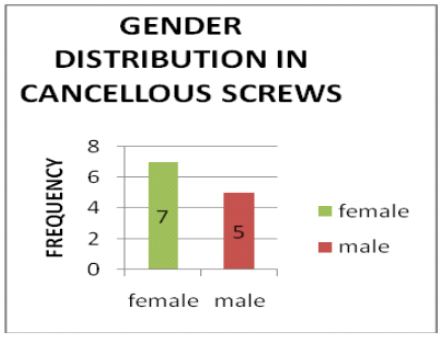
Exclusion Criteria

1. Type IV Osteoporosis
2. Pathological Fracture

Results:

GENDER

In the Cancellous group the gender distribution was seven female patients (58.3 %) and five male patients (41.7 %).



Age Distribution & Frequency

AGE	CCS
50 - 55 YEARS	5
56 - 60 YEARS	7

Comorbidities:

CO MORBIDITIES IN CCS GROUP	NUMBER
DM	0
HTN	3
HTN, DM	2
NAD	7

DURATION OF HOSPITAL STAY IN DAYS

DURATION OF HOSPITAL STAY	CCS
6 - 9 DAYS	7
10 - 13 DAYS	5

PARTIAL WEIGHT BEARING

PARTIAL WEIGHT BEARING IN DAYS	CCS
<65 DAYS	6
>65 DAYS	5

Full Weight Bearing

FULL WEIGHT BEARING	CCS
< 95 DAYS	5
> 95 DAYS	5

In this series, there were 5 patients with excellent Harris Hip Score 4 patients with good Harris Hip Score and none showed fair results according to Harris Hip Score and 2 had poor results.

Discussion:

The age of the patient in the present study ranged from 50 to 60 years, with an average of 56.41 years, cases treated with Cannulated Cancellous Screw (CCS).

Krishnamurthy M.O et al[11] in their study of Evaluation and Outcome of Management of Intracapsular Neck of Femur Fracture Treated With Cannulated Cancellous Screw Fixation shows the mean age of patients to be 39.5 years in a total of 26 patients with age ranging from 21 to 60 years.

In the present study, it includes female dominants in keeping with the fact that femoral neck fractures are more common in females due to postmenopausal osteoporosis.

Krishnamurthy M.O et al[11] their study of Evaluation and Outcome of Management of Intracapsular Neck of Femur Fracture Treated With Cannulated Cancellous Screw Fixation shows that there were 18 male patients and 8 female patients in a total of 26 patients.

In this series, there were 5 patients with excellent Harris Hip Score 4 patients with good Harris Hip Score and none showed fair results according to Harris Hip Score and 2 had poor results.

PK Sundara Raj et al[12], in their prospective study of treating fracture neck of femur with Cannulated Cancellous Screw (CCS) and Bone Impregnated Hip Screw (BIHS) in elderly, included 59 patients with excellent Harris Hip Score (18 in CCS and 41 in BIHS), 15 patients with fair Harris Hip Score (13 in CCS and 2 in BIHS), none showed good results according to Harris Hip Score and 4 had poor results (3 in CCS and 1 in BIHS).

Conclusion:

Though fractures of femoral neck are now better understood and the methods of treatment have improved, non-union and screw breakage of the femoral head are still serious problems.

The case of non-union was reported with CCS Screw in present study was treated with quadratus femoris muscle pedicle graft (MPG) as adjunctive treatment as described by Johnson KD et al in J Orthop Trauma Journal 1989.

References:

1. Singer BR, McLauchlan GJ, Robinson CM, et al. Epidemiology of fractures in 15,000 adults: The influence of age and gender. J Bone Joint Surg Br. 1998;80(2):243-248.
2. Dennison E, Mohamed MA, Cooper C. Epidemiology of osteoporosis. Rheum Dis Clin North Am. 2006;32(4):617-629
3. Solomon L. Osteoporosis and fracture of the femoral neck in the South African Bantu. J Bone Joint Surg. 1968;50B:2-13
4. Piirtola M, Vahlberg T, Isoaho R, Aarnio P, Kivelä SL. Incidence of fractures and changes over time among the aged in a Finnish municipality: a population-based 12-year follow-up. Aging clinical and experimental research. 2007 Aug 1;19(4):269-76.
5. Kannus P , Parkkaria J, Sievänena H, et al. Epidemiology of hip fractures. Bone. 1996;18(suppl 1):57S-63S 42. Elffors L, Gulberg B, Alexander , et al. Validity and relevance consideration. Bone. 1993;14:S45-S49.
6. Berry SD, Samelson EJ, Hannan MT, et al. Second hip fracture in older men and women. The Framingham Study. Arch Intern Med. 2007;167(18):1971-1976.
7. Chevalley T, Guilley E, Hermann FR, et al. Incidence of hip fracture over a 10 year period (1991-2000): Reversal of a secular trend. Bone. 2007;40(5):1284-1289.
8. Fukushima T, Sudo A, Uchida A. Bilateral hip fractures. J Orthop Sci. 2006;11(5):435438.
9. Beris AE, Payatakes AH, Kostopoulos VK, Korompilias AV, Mavrodontidis AN, Vekris MD, et al. Nonunion of femoral neck fractures with osteonecrosis of the femoral head: Treatment with combined free vascularized fibular grafting and subtrochanteric valgus osteotomy. Orthop Clin North Am. 2004;35:335–43
10. Pauwels, F. Der schenkelhalsbrucheinmechanisches problem. Z OrthopIhre Grenzgeb,1935, 63, 1-135.
11. Krishnamurthy MO, Sreenivasulu PSB, Srinivas Rao Puli, Aswin kumarP, Mahaboob VS.Evaluation and Outcome of Management of Intracapsular Neck of Femur Fracture Treated With Cannulated Cancellous Screw Fixation.J Med Sci & Clin Res. 2014; 2(12): 3140-5
12. PK Sundar Raj, Jiju A Nuuman, and Amish Sunder Pattathil. Bone impregnated hip screw in femoral neck fracture: Clinicoradiological results. Indian J Orthop. 2015 Mar-Apr; 49(2): 187–192.