

# A Study of Weight Bearing (Partial and Complete) and Complications in Operated Cases of Fracture Neck Femur using Conventional Cannulated Hip Screws (CCS) Vs Bone Impregnated Hip Screws (BHS)

Dr Paul Babu<sup>1</sup>, Dr Prashanth<sup>2</sup>

<sup>1</sup>Resident, Department of Orthopedics, Azeezia Institute of Medical Sciences and Research

<sup>2</sup>Assistant Professor. Department of Orthopedics, Azeezia Institute of Medical Sciences and Research

**Abstract:** *Cancellous Screw being gold standard treatment for fracture neck of femur, an alternative screw Bone Impregnated Hip Screw was also used. We found these procedures to be relatively easy, with minimal soft tissue dissection, minimal operating time and hence decreased chance of infection and bleeding, no need for blood transfusion. The use of Cannulated system of screws under C- arm control gave a good assessment of reduction and also ideal positioning of the implants hence preventing the complications that could have occurred otherwise like screw fixation into the joint space or out of the neck etc. This study puts in a sincere effort to study the weight bearing qualities of post-operative patients using both the above mentioned screws and also to find out any differences that could possibly make to the early complete recovery of the patients.*

**Keywords:** Weight Bearing, CCS, BHS, Femur neck fracture, Complications

## 1. Introduction

Intracapsular fracture of neck of femur for Orthopaedics Surgeons all over the world is one of the difficult problems as far as the treatment and results are concerned<sup>1</sup>. The increasing incidence of high velocity injuries increases the incidence of these fractures. Ideal treatment for these fractures has been surged by various Orthopaedics Surgeons in the past. Even though femoral neck fractures can occur at any age group, it is most commonly seen in elderly. Incidents of non-union and avascular necrosis are high in these fractures. The interruption or diminished circulation to the proximal fragment is the cardinal reasons for the non-union and avascular necrosis. Most of these fractures are unstable, absence of cambium layer of periosteum and bathing of fracture site by synovial fluid adds to the cause of above complication<sup>2</sup>. Cancellous Screw being gold standard treatment for fracture neck of femur, an alternative screw Bone Impregnated Hip Screw was also used<sup>3</sup>. We found these procedures to be relatively easy, with minimal soft tissue dissection, minimal operating time and hence decreased chance of infection and bleeding, no need for blood transfusion<sup>4</sup>. The use of Cannulated system of screws under C- arm control gave a good assessment of reduction and also ideal positioning of the implants hence preventing the complications that could have occurred otherwise like screw fixation into the joint space or out of the neck etc<sup>5</sup>.

Early internal fixation can reduce morbidity and mortality of these fractures but not the incidence of non-union and avascular necrosis<sup>6</sup>. The long term results of arthroplasty are not good but can provide pain relief and early mobilization<sup>7</sup>. To preserve one's own head of femur rather than to bring associated problems with the replaced head is always better.

Most of patients were willing to follow and perform the post-operative rehabilitation and hence had good functional recovery.

This study puts in a sincere effort to study the weight bearing qualities of post-operative patients using both the above mentioned screws and also to find out any differences that could possibly make to the early complete recovery of the patients.

Aims and objectives:

Study of Weight Bearing (Partial and Complete) in operated cases of fracture neck femur using conventional cannulated hip screws and in bone impregnated hip screws.

## 2. Materials and Methods:

### Study Design

Research Approach: Quantitative Study

Research Design: Analytical

Study Setting: .....

Study Population: Patients who have sustained an intra-capsular femoral neck fracture admitted in ..... Medical College from August 2014 to August 2016 were taken for this study after taking their consent.

Sampling: Simple Random Sampling

Sample Size has been found to be 12 for each group and hence total of 24 patients are required.

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### 3. Results



**Image 1:** (Left) Conventional Cannulated Hip Screws Insertion



**Image 2:** (Right) Bone Impregnated Hip Screws Insertion.

**Table 1:** Duration of Hospital Stay

Duration of hospital stay	CCS	BIHS
6-9 Days	7	6
10-13 Days	5	6

The mean duration of hospital stay in days was found out to be 8.50 days in Cancellous group and 9.50 days in BIHS group.

**Table 2:** Partial Weight Bearing:

Partial Weight Bearing in Days	CCS	BIHS
<65 Days	6	6
>65 Days	5	5

In the study it was found that six patients in Cancellous group and six patients in BIHS group had partial weight bearing before 65 days and five patients in Cancellous group and five patients in BIHS group had partial weight bearing after 65 days and follow up of one patient each from Cancellous and BIHS group was lost. The mean partial weight bearing for cancellous group was 63.50 days and for BIHS group was 63 days.

**Table 3:** Full Weight Bearing

Full Weight Bearing	CCS	BIHS
<95 Days	5	5
>95 Days	5	5

In the study it was found that five patients in Cancellous group and five patients in BIHS group had full weight bearing before 95 days and five patients in Cancellous group

and five patients in BIHS group had partial weight bearing after 95 days and two patients were lost follow up and one patient had non union in Cancellous group and one patient had implant breakage in BIHS group. The mean full weight bearing for Cancellous group was 95 days and for BIHS group was 94 days.

We had one case of Screw Breakage (4 %) in BIHS group treated with Total Hip Replacement and one case of Non - union (4 %) treated with Muscle Pedicle Grafting

### 4. Discussion

This series comprises of 24 cases of intracapsular fracture neck of femur treated with Cannulated Cancellous Screws and Bone Impregnated Hip Screws. Almost all cases were done within one week of injury including those with co-morbidities like HTN, DM etc. Out of the 24 cases, 2 cases were lost follow up. We had one case of screw breakage and one case of non union as complication.

In the present study of 24 patients with fracture neck of femur in elderly, 12 patients were treated with CCS and 12 patients were treated with BIHS.

PK Sundara Raj et al<sup>1</sup>, in their prospective study of treating fracture neck of femur with Cannulated Cancellous Screw (CCS) and Bone Impregnated Hip Screw (BIHS) in elderly, included 78 patients out of which 34 were treated with CCS and 44 were treated with BIHS.

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. We had one case of Screw Breakage (4 %) in BIHS group treated with Total Hip Replacement and one case of Non - union (4 %) treated with Muscle Pedicle Grafting. Bonnaire FA et al<sup>2</sup> in analysis of fracture gap changes, dynamic and static stability of different osteosynthetic procedures in the femoral neck found screw breakage to be a possible complication which can be corrected with Total Hip Arthroplasty.

Dedrick DK et al<sup>3</sup> citing complications of femoral neck fracture in young adults in a 2 year prospective study found non - union to be 20 % (5 out of 25 patients).

Garden RS et al<sup>4</sup> malreduction and avascular necrosis in subcapital fractures of the femur states about the number of non - union which is found to be 83 out of 500 cases (16.6 %) for which inter trochanteric osteotomy was done. 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<sup>1</sup> in J Orthop Trauma Journal 1989.

### 5. Conclusion

Recommendation of BIHS as a novel implant and its long term benefits/ risks is difficult to evaluate in the present study due to the short follow up. It requires a longer follow up.

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