



COMPARISON OF OUTCOME OF DYNAMIC HIP SCREW + DEROTATION SCREW VERSUS CANNULATED CANCELLOUS SCREWS IN FRACTURE FEMUR NECK

Orthopaedics

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ABSTRACT

Introduction: Management of fracture of femur neck remains a challenge. Avascular necrosis of the femur head and nonunion of fracture are well-known consequences of neck of femur fractures. A union can be promoted by accurate reduction, rigid fixation and compression. In our study, we are comparing the functional outcome of DHS+ derotation screw with CC Screws alone. Compare in terms of benefits and complications. Thus, provide evidence for the treatment of neck femur fracture. **Aim:** To compare the functional outcome of neck femur fracture treated with DHS with derotation screw or CC Screws alone. **Materials and methods:** This study was conducted in the Department of Orthopaedics, SMS Hospital, Jaipur over 20 months from June 2020 to December 2020. A total of 60 patients (30 in each group) of age 18-60 years, presenting with # Neck of the femur in orthopaedics wards were enrolled in this study. **Results:** We found among 30 cases in the DHS group 29 united and the CCS group 26 of them united. The mean union time for the DHS group was 13 weeks as it was longer for the CCS group at 16 weeks. Also based on Harris Hip Score DHS with derotation screw has better outcome than CC Screws alone. **Conclusions:** DHS plus derotation screw is better than CCS alone for fracture neck of femur, because of ease of usage, functional outcome of patients and minimalization of complications

KEYWORDS

Fracture neck of femur, DHS vs CC screws,

INTRODUCTION

Management of fracture of femur neck remains a challenge. High energy trauma is required in young adults for a neck femur to fracture. Avascular necrosis of the femur head and nonunion of fracture are well-known consequences of neck of femur fractures. A union can be promoted by accurate reduction, rigid fixation and compression. Much attention has focused on the common problem of femoral neck fractures in the elderly, while little has been written with regards to the same in younger. Though it is less common in a younger population, the potential complications like nonunion and avascular necrosis are a concern, hence need a thorough study.

"Unsolved fracture" is the famous name given to the fractured neck of the femur due to limited treatment methods and its outcome-(1). In recent practice, we have various methods to treat fractures neck or femur. Cancellous cannulated screws and Dynamic Hip Screw are among the most commonly used implants for neck femur fractures in young. Both have their advantages and drawbacks. CC Screws being less invasive are more widely used in intracapsular, non-displaced fractures and also have anti-rotation properties (2,3). On the contrary, DHS is more invasive with larger incision, but have better neck shaft angle maintenance and thus better fixation rates(4). Both these surgical procedures have been reported with implant failure following surgery(2,3). Previous works of the literature show that DHS has a better success rate compared to CCS (5). Some recent studies have also shown there is no significant difference between the two—(6).

In our study, we are comparing the functional outcome of DHS+ derotation screw with CC Screws alone. Compare in terms of benefits and complications. Thus, provide evidence for the treatment of neck femur fracture.

MATERIALS AND METHOD:

Patients in the Orthopaedics department of teaching hospitals affiliated with S.M.S. Medical College and Hospital were enrolled in the study from June 2020 to December 2020 with the ethical committee's consent.

Inclusion Criteria:

- Closed fracture neck of femur.
- Patients aged between 17 to 60 years.
- The patient gave informed consent for the study.

Exclusion Criteria:

- Compound fractures.
- Abnormal Femoral canal.
- Infections or unsuitable skin conditions.
- Pathological fractures.
- Medically unfit for surgery.

60 patients were enrolled in the study by considering the inclusion and exclusion criteria. Pauwel's and Garden's classifications were used for the classification of the fracture. The procedure was done by the same surgeon and was done in a similar environment. The procedure was performed under spinal anaesthesia.

Both the procedures were done with standard operative steps. Post Operatively sitting with support, quadriceps exercise and knee bending were initiated on the second day. Patient weight bearing was started depending upon the type of fracture, reduction and fixation achieved.



Fig 1: Radiological Images of Follow-up of a patient with DHS + Derotation screw.

Follow-ups were advised on the 2nd week, 6th week and monthly for 6 months. In each follow-up, patients were examined clinical-radiologically. The patient was advised for physiotherapy during each visit. Functional outcomes were evaluated and recorded using the Harris Hip score(7). The results were graded as excellent, good, fair and poor. Radiological images were used to observe union, absorption of the neck, implant failure, osteoarthritic changes etc.

RESULTS:

We studied 60 cases with neck of femur fractures. Among them, 30 were treated with DHS + Derotation screw and 30 with CC Screws. Among the study group, 39 were male and 21 were female. The peak incidence of the injury was between 41-50 years.

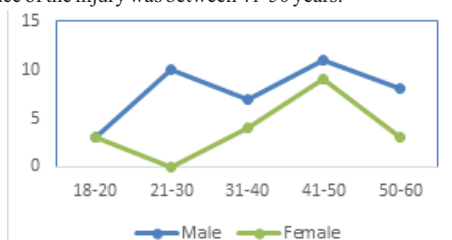


Fig 2: Age Distribution

Most of the injuries were due to high-energy trauma i.e RTA and falls from height. Hospital stay for both groups was the same. The final functional outcome of our procedure was evaluated using the Harris Hip Score at 6 months of follow-up (7) and has been depicted in Figures 3 and 4.

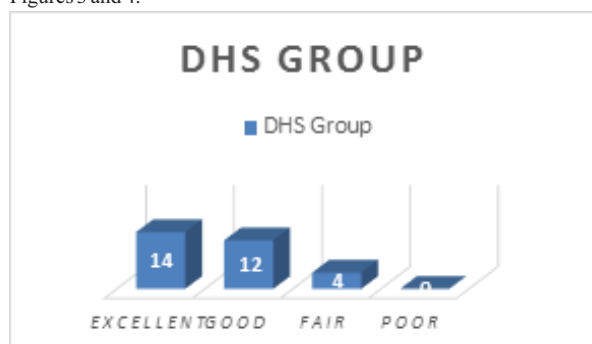


Fig 3: Function outcome of patients with DHS using Harris Hip Score.



Fig 4: Function outcome of patients with CC Screws using Harris Hip Score.

In the Radiological assessment, during the follow up we found among 30 cases in the DHS group 29 united and the CCS group 26 of them united. The mean union time for the DHS group was 13 weeks as it was longer for the CCS group at 16 weeks.

In our study, there were minimal complications in DHS plus derotation screw when compared to the CCS group. Both groups had a case which got infected. There were 4 cases of implant backout in the CCS group and 1 derotation screw back out in the DHS group.

DISCUSSION:

Joint preserving surgeries like internal fixation are always better as the native joint and bone are preserved. The challenge here is to prevent the know complications like nonunion, implant failure and avascular necrosis of the femoral head. Attaining anatomical reduction of the fracture plays an important role in the prevention of complications. Tronzo in 1974 identified more than 100 different available implants for ORIF of femoral neck fractures(8). Dynamic Hip Screw and C.C Screws are the most widely used implants and have better results when compared to others. DHS when supplemented with an extra screw to the femoral head added stability preventing rotation of the proximal segment. In our study 14 cases showed excellent results while none of the cases treated with DHS showed poor results. Whereas 5 cases treated with CCS alone had a poor outcome. The present study is consistent with the study of Azhar Lakhani et al which showed excellent results in only 25.8% of CCS cases and 61.3% of SHS cases–(9).

In our study, we found the common cause of femoral neck fracture is road traffic accidents. It is also observed that incident is being more in males as our study include patient below 60 years thus it excludes most osteoporotic females. Most of the patients were in the age group of 41-50 years which is similar to the study of Sharma A et al their study, the incidence of neck femur fractures was more in men as compared to women and the mean age was 47.5 years with the most common mode of injury being motor vehicle accidents(10).

We have also looked for functional and sociological impact on the injured population, after the injury, most of them fear squatting and

sitting with crossed legs which is the most important activity in daily living in this part of the country.

In our study being a short follow-up study, we cannot comment on avascular necrosis of the femur head following the injury and procedure. Also, our study is limited to a single hospital and procedures were performed by a single surgeon. In this study when combined with other studies around the world the results become much more reliable.

CONCLUSION:

CCS fixation of the neck of femur fractures even though less invasive need a well-trained surgeon and have comparatively high chances of failure. DHS when compared is a very sturdy and forgiving implant. When added with derotation screw stability gets further amplified. Hence DHS plus derotation screw is better than CCS alone for fracture neck of femur, because of ease of usage, functional outcome of patients and minimalization of complications.

ABBREVIATIONS:

DHS: Dynamic hip screw.

HHS: Harris Hip Score.

CCS: Cannulated Cancellous Screws.

SHS: Sliding Hip Screw.

ORIF: Open Reduction & Internal Fixation.

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