

## Original Research

### Assessment of efficacy of DHS fixation in treatment of intertrochanteric fractures

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#### ABSTRACT

**Background:** Intertrochanteric femur fracture is common in the aged population. Although many devices can achieve rigid fixation, the dynamic hip screw (DHS) is the most commonly used device for intertrochanteric fractures. Hence; the present study was undertaken for assessing the efficacy of DHS fixation in treatment of intertrochanteric fractures. **Materials & Methods:** A total of 20 patients of inter-trochanteric femur fractures were enrolled in the present study. Complete medical and clinical details of all the patients were obtained. All the patients underwent treatment of intertrochanteric fractures by DHS under the hands of skilled and experienced orthopedic surgeons. Harris hip score (HHS) was calculated preoperatively and postoperatively. Follow-up records were maintained in all the patients for assessing the outcome of DHS. All the results were analyzed by SPSS software. **Results:** Skin puncturing with superficial infection and cut-out were the two complications in one patient each. We observed significant improvement in mean HHS during the follow-up period.

**Conclusion:** DHS is an effective technique in treating stable intertrochanteric hip fractures in suitable patients.

**Key words:** Dynamic hip screw, Hip fracture

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#### INTRODUCTION

Intertrochanteric femur fracture is common in the aged population. With the improvement in surgical technique and continuous developments in material for internal fixation, surgical treatment of intertrochanteric femur fractures has become a preferred method. In patients with intertrochanteric femur fractures, the mortality rate in the traction treatment group is as high as 34.6%, while that in the internal fixation group is only 17.5%.<sup>1-3</sup> Although many devices can achieve rigid fixation, the dynamic hip screw (DHS) is the most commonly used device for intertrochanteric fractures. However, the disadvantages of conventional DHS (CDHS) techniques are a large skin incision and more soft tissue dissection with greater blood loss.<sup>4-6</sup> Although the effects of DHS in treatment of intertrochanteric fractures have been reported, the results and conclusions are not consistent. Hence; under the light of above mentioned data, the present study was undertaken for assessing the efficacy of DHS fixation in treatment of intertrochanteric fractures.

#### MATERIALS AND METHODS

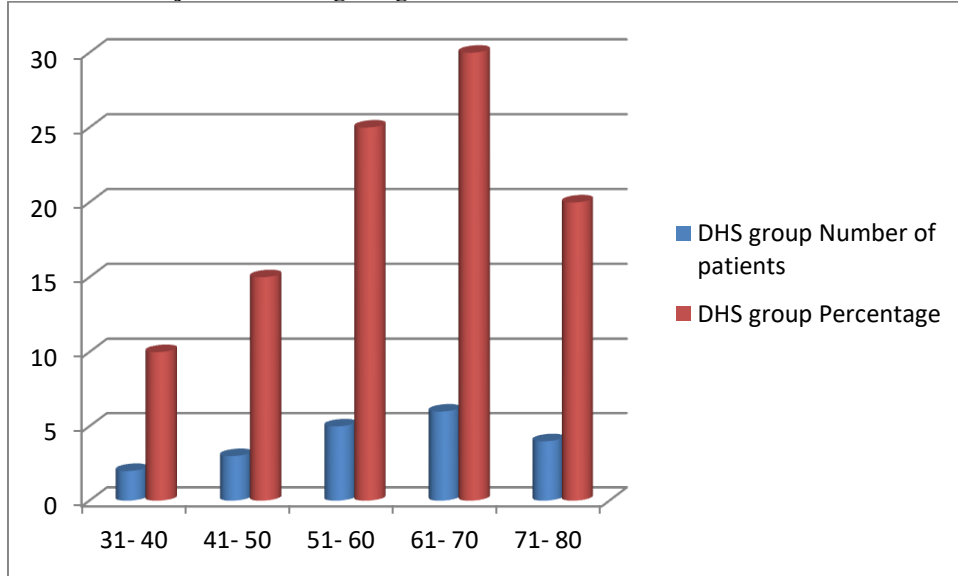
The present stud was conducted in the department of orthopedic of the medical institute and it included assessment of efficacy of DHS fixation in treatment of intertrochanteric fractures. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 20 patients of inter-trochanteric femur fractures were enrolled in the present study. Complete medical and clinical details of all the patients were obtained. All the patients underwent treatment of intertrochanteric fractures by DHS under the hands of skilled and experienced orthopedic surgeons. Harris hip score (HHS) was calculated preoperatively and postoperatively. Follow-up records were maintained in all the patients for assessing the outcome of DHS. All the results were analyzed by SPSS software. Chi-square test and Mann Whitney U test were used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

**RESULTS**

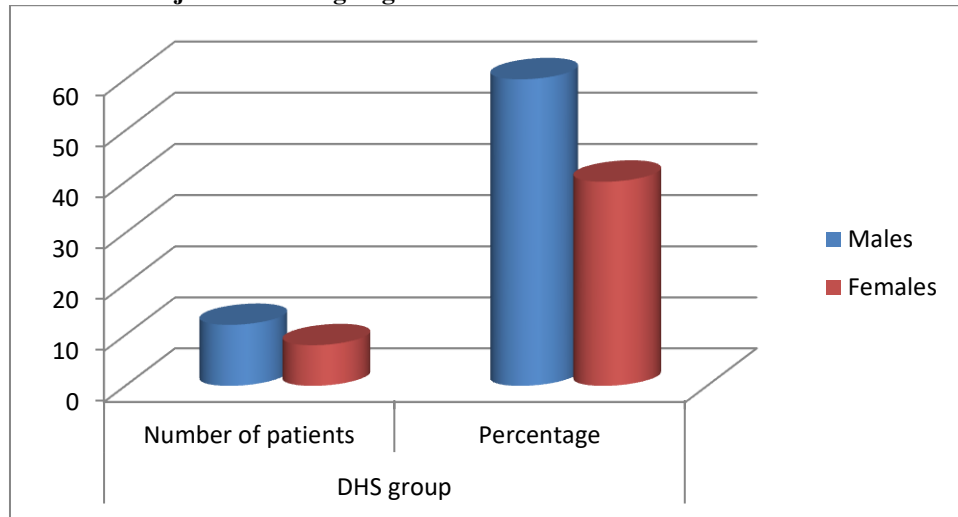
In the present study, a total of 20 patients were analyzed. Mean age of the patients of the present study were 63.5 years. Majority of the patients belonged to age group of 61 to 70 years. 60 percent of the patients in the present

study were males while the remaining were females. Skin puncturing with superficial infection and cut-out were the two complications in one patient each. We observed significant improvement in mean HHS during the follow-up period.

**Graph 1: Distribution of subjects according to age**



**Graph 2: Distribution of subjects according to gender**



**Table 1: Complications among patients of DHS group**

Type of Complication	DHS	
	No. of patients	Percentage
Skin puckering with superficial infection	1	5
Cut-out	1	5
None	18	90

**Table 2: Mean HHS among subjects of DHS**

HHS Score	DHS group	P- value
Preoperative	48.4	0.00
Postoperative 1 month	58.6	
Postoperative 2 month	65.8	
Postoperative 3 month	72.6	
Postoperative 6 month	84.5	

## DISCUSSION

Intertrochanteric fractures are common injuries occurring predominantly as low-energy injuries in the elderly, mostly due to direct injury to hip (e.g. fall). The financial burden to the society is tremendous. The modern era of hip fracture fixation began in 1925 when Smith Peterson introduced a triflanged nail. The real benefit of fixation lies not in improving union rates (intertrochanteric fractures rarely go into nonunion, even when treated conservatively), but in improving functional outcome and mortality rates, which are attributed to the early mobilization and better nursing care possible after surgery.<sup>7,8</sup>

Agrawal P et al compared DHS with proximal femur locking compression plate (PFLCP) in AO type 31A1 and 31A2 intertrochanteric fractures. A randomized prospective study was carried out between June 2011 and June 2013. 26 cases each of DHS and PFLCP were included. Functional and radiological outcome was similar in both groups. Both DHS and PFLCP are good choices for stable intertrochanteric fractures, and both lead to excellent functional outcomes, but non-union might be more common with PFLCP.<sup>6</sup>

In the present study, a total of 20 patients were analyzed. Mean age of the patients of the present study were 63.5 years. Majority of the patients belonged to age group of 61 to 70 years. 60 percent of the patients in the present study were males while the remaining were females. Mardani-Kivi Met al compared the outcome of using DHS or Locking compression plates (LCP) in intertrochanteric fractures. This cross-sectional study was carried out on 104 patients who were referred to Pursina Hospital in Rasht, Iran with intertrochanteric fractures of the femur treated with either the DHS or LCP devices. Demographic features, existence or nonexistence of stability and operating time were obtained from questionnaires. During a 6-month follow-up after surgery, patients were interviewed to record variables such as Harris Hip Scores and complications. They discovered that the number of incidences of limb shortening and device failure was higher for patients treated with the LCP device ( $P = 0.048$  and  $P = 0.014$ ). Patients treated with the DHS device had higher Harris Hip scores for both the 6-month postoperative and the final evaluation visits ( $P = 0.01$  and  $P = 0.018$ ). Despite the complications of fixation with the DHS device, it remains the most successful for treatment of intertrochanteric fractures.<sup>10</sup>

In the present study, skin puncturing with superficial infection and cut-out were the two complications in one patient each. We observed significant improvement in mean HHS during the follow-up period. In the study performed by Nordin et al. on intertrochanteric fractures treated with the DHS device, the incidence of device failure was reported to be 16.7%; however our study found a lower rate (5%). In comparison, Yong et al. reported that the mean operating time was 74 minutes, the mean Harris Hip Score was 80, the rate of limb shortening was 29% and there was no detection of deep infections; in the present study, the incidence of limb shortening and the rate of operating time were lower; the

mean Harris Hip Score was higher however the incidence of deep infection was greater.<sup>11,12</sup>

## CONCLUSION

Under the light of above obtained data, the authors conclude that DHS is an effective technique in treating stable intertrochanteric hip fractures in suitable patients.

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