Analysis of Dynamic Hip Screw (DHS) Fixation in Treatment of Intertrochanteric Fractures: An Observational Study

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ABSTRACT

Background: Although many devices can achieve rigid fixation, the dynamic hip screw (DHS) is the most commonly used device for intertrochanteric fractures. 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 & Methods: Analysis of a total of 25 patients who reported to the Department of Orthopaedics, Dr. Ulhas Patil Medical College & Hospital, Jalgaon Khurd, Jalgaon, Maharashtra (India) with inter-trochanteric femur fractures was included. Detailed demographic profile and clinical details of all the patients were recorded in Microsoft excel sheet. All the surgical procedures were commenced under the hands of skilled and experienced orthopedic surgeons. Harris hip score (HHS) was used for assessment of postoperative treatment outcome. Calculation of HHS was done 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: Mean HHS at preoperative time was 49.2. Mean HHS at one month postoperatively, 2 months postoperatively, 3 months postoperatively and 6 months postoperatively was found to be 57.1, 64.8, 75.9 and 83.8 respectively. A significant improvement in the mean HHS was seen postoperatively at different time intervals. Postoperatively complications were seen was found to be present in 3 patients.

Conclusion: For treating patients with stable intertrochanteric hip fractures, Dynamic hip screw is an effective option.

Keywords: Dynamic Hip Screw, Hip Fracture.

INTRODUCTION

Surgical management of displaced subcapital fractures of the femoral neck continues to be challenging. Internal fixation, hemiarthroplasty, and total hip replacement could be considered as appropriate solutions. Closed methods of treating intertrochanteric fractures have been abandoned. Rigid fixation with early mobilisation of patients should be considered as the standard treatment. Although many devices can achieve rigid fixation, the dynamic hip screw (DHS) is the most commonly used device for intertrochanteric fractures.\(^1\)\(^-\)\(^3\)

There are few published reports focusing on DHS in the treatment of femoral intracapsular displaced neck fractures. Parker and Blundell\(^4\) analysed the use of these implants for internal fixation. They reviewed 25 randomized trials and concluded that most studies have had an insufficient number of subjects to permit a valid comparison. Chen et al.,\(^5\) using DHS in extracapsular basiervical neck fractures, achieved union in 97.5% of their patients, with no cases of avascular necrosis and 1.7% of nonunion. Osteosynthesis not only has the potential to offer normal hip function after fracture consolidation but also has a relatively high rate of failure and complications in the form of nonunion, avascular necrosis, redisplacement, and so forth. 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 study was conducted in the Department of Orthopaedics, Dr. Ulhas Patil Medical College & Hospital, Jalgaon Khurd, Jalgaon, Maharashtra (India) and it included assessment of effectiveness and outcome of DHS fixation in patients with intertrochanteric fractures. For the present study, ethical approval was obtained from the ethical committee of the institution. Also, consent was obtained from all the patients after explaining in detail the entire research protocol. Analysis of a total of 25 patients who reported to the department of orthopedics with intertrochanteric femur fractures was included. Detailed demographic
profile and clinical details of all the patients was recorded in Microsoft excel sheet. All the surgical procedures were commenced under the hands of skilled and experienced orthopedic surgeons. Harris hip score (HHS) was used for assessment of postoperative treatment outcome. Calculation of HHS was done 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. One-way 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.

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

<table>
<thead>
<tr>
<th>Type of Complication</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin puckering with superficial infection</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Cut-out</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>22</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>HHS Score</th>
<th>DHS group</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>49.2</td>
<td>0.01</td>
</tr>
<tr>
<td>Postoperative 1 month</td>
<td>57.1</td>
<td>(Significant)</td>
</tr>
<tr>
<td>Postoperative 2 month</td>
<td>64.8</td>
<td></td>
</tr>
<tr>
<td>Postoperative 3 month</td>
<td>75.9</td>
<td></td>
</tr>
<tr>
<td>Postoperative 6 month</td>
<td>83.8</td>
<td></td>
</tr>
</tbody>
</table>

### Graph 1: Age-wise and gender-wise distribution of subjects

- **Number of patients**
- **Percentage of patients**

### Graph 2: Mean HHS among subjects of DHS
RESULTS
In the present study, a total of 25 patients with intertrochanteric fractures were enrolled in the present study. Mean age of the patients of the present study was 63.8 years. Majority of the patients (52 percent) belonged to the age group of more than 50 years. 60 percent of the patients of the present study were males while remaining 40 percent were females. Mean HHS at preoperative time was 49.2. Mean HHS at one month postoperatively, 2 months postoperatively, 3 months postoperatively and 6 months postoperatively was found to be 57.1, 64.8, 75.9 and 83.8 respectively. A significant improvement in the mean HHS was seen postoperatively at different time intervals. Postoperatively complications were seen was found to be present in 3 patients. Out of these 3 patients, 2 has skin puckering with superficial infection while Cut-out was seen in 1 patient.

DISCUSSION
The incidence of intertrochanteric fractures has been increasing significantly due to the rising age of modern human populations. Generally, intramedullary fixation and extramedullary fixation are the 2 primary options for treatment of such fractures. For internal fixation, most orthopaedic surgeons choose either a dynamic hip screw (DHS) or multiple cannulated screws (MCS). Osteosynthesis with MCS fixation is a less invasive technique and reduces blood loss and soft tissue stripping. With the use of DHS the screw-plate system achieves a more stable condition. In a previous published study, a biomechanical comparison of internal fixation techniques for the treatment of unstable bascervical femoral neck fractures was done. The results support the use of DHS. Its disadvantages are large skin incisions, more extensive soft tissue dissection, a greater need for blood transfusion, and a longer stay in hospital.

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CONCLUSION
From the above results, it can be concluded that for treating patients with stable intertrochanteric hip fractures, Dynamic hip screw is an effective option. However, further studies are recommended.

REFERENCES

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Conflict of Interest: None Declared.

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