

Original Research

A comparison of dynamic hip screw and proximal femoral nail in intertrochanteric fractures

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ABSTRACT:

Background: There are increase incidence of intertrochanteric (IT) fractures due to an ageing population. The present study compared the management of intertrochanteric (IT) fractures using dynamic hip screw (DHS) and proximal femoral nail (PFN). **Materials & Methods:** 76 patients of intertrochanteric (IT) fractures of both genders were divided into 2 groups of 38 each. Group I comprised of patients managed with dynamic hip screw (DHS) and group II patients were managed with proximal femoral nail (PFN). Outcome of treatment was recorded in both groups. **Results:** Authors found that proximal femoral nail in the management of intertrochanteric fractures found to be superior than dynamic hip screw. **Conclusion:** Proximal femoral nail in the management of intertrochanteric fractures found to be superior than dynamic hip screw.

Key words: Dynamic hip screw, Proximal femoral nail, intertrochanteric fractures

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INTRODUCTION

Around 30% of the hip fractures occurring worldwide are occurred in Asian populations. The incidence rate of hip fractures continued increasing year by year.¹ Intertrochanteric fractures constitute one of the most common fractures of the hip, which occurred mainly in elderly people with osteoporosis. Faced with increasing incidence of intertrochanteric (IT) fractures due to an ageing population, clinically urgent problem is how to reduce the mortality rate, and shorten the time in bed and fix fractures through minimal trauma.²

The incidence of IT fractures is increasing every year significantly because of RTA and industrial accidents in young adults but in old people because of increased life expectancy and osteoporosis the IT fractures are increasing due to less severe / trivial trauma.³ For stable fractures with good quality of bone either DHS or PFN give good results, but in unstable, comminuted and osteoporotic bones, shortening of the limb, external rotation deformity, implant cut outs and reoperations are common occurrence with DHS.⁴

Advanced age and associated comorbidities are responsible for high morbidity and mortality and for the high cost of treatment. In the United States, the expenditure is expected to rise from 8.7 billion in 2009 to 240 billion in 2040. The management of stable intertrochanteric fractures involves dynamic hip screw (DHS), proximal femoral nail (PFN) etc.⁵The present study compared the management of intertrochanteric (IT) fractures using dynamic hip screw (DHS) and proximal femoral nail (PFN).

MATERIALS & METHODS

The present study comprised of 76 patients of intertrochanteric (IT) fractures of both genders. All patients were informed regarding the study and their written consent was obtained.

Data of patients such as name, age, gender etc. was recorded. All patients were divided into 2 groups of 38 each. Group I comprised of patients managed with dynamic hip screw (DHS) and group II patients were managed with proximal femoral nail (PFN). Outcome of treatment was recorded in both groups. Results

thus achieved were statistically analysed. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Method	Dynamic hip screw	Proximal femoral nail
M:F	28:10	22:16

Table I shows that group I had 28 males and 10 females and group II had 22 males and 16 females.

Table II Age wise distribution of cases

Age Group (Years)	Group I	Group II
20-30	2	3
30-40	4	5
40-50	4	7
50-60	10	3
>60	18	10

Table II shows that age group 20-30 years comprised of 2 patients in group I and 3 in group II, 30-40 years had 4 in group I and 5 in group II, 40-50 years had 4 in group I and 7 in group II, 50-60 years had 10 in group I and 3 in group II and >60 years had 18 patients in group I and 10 in group II.

Table III Comparison of parameters

Parameters	Group I	Group II	P value
Operative time (mins)	76.2	90.4	0.05
Blood loss (ml)	110.2	104.5	0.91

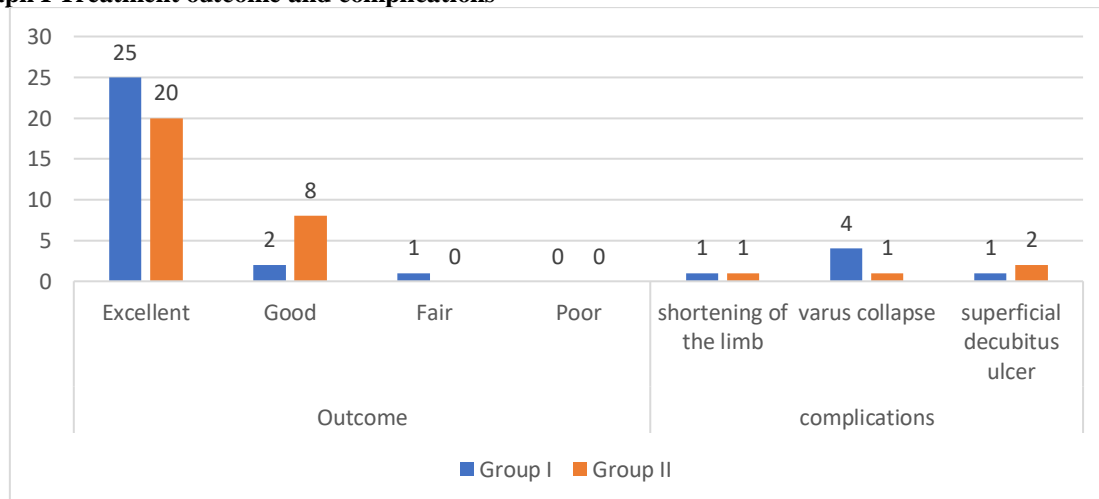
Table III shows that mean operative time in group I was 76.2 minutes in group I and 90.4 minutes in group II and intraoperative blood loss was 110.2 ml in group I and 104.5 ml in group II. The difference was significant (P < 0.05).

Table IV Treatment outcome and complications

Parameters	Variables	Group I	Group II	P value
Outcome	Excellent	25	20	0.05
	Good	2	8	
	Fair	1	0	
	Poor	0	0	
complications	shortening of the limb	1	1	0.04
	varus collapse	4	1	
	superficial decubitus ulcer	1	2	

Table IV, graph I shows that treatment outcome in group I and group II was excellent seen in 25 and 20, good in 2 and 8 and fair in 1 in group I respectively. Complications were shortening of the limb seen in 1 and 1, varus collapse in 4 and 1 and superficial decubitus ulcer in 1 and 2 in group I and group II respectively. The difference was significant (P < 0.05).

Graph I Treatment outcome and complications



DISCUSSION

It has been estimated that nine out of every ten trochanteric fractures occur in individuals over the age of 65 years.⁶ Around one in every 1000 inhabitants per year, in developed countries, is affected by fractures of the proximal femur. Non-surgical treatment is reserved for patients with comorbidities that put them at unacceptable risk in relation to anesthesia, surgical procedures, or both.⁷ Through the principle of relative stability, surgical treatment has the aim of achieving functional reduction and stable fixation for pain relief and early return to walking and to the previous state of independence.⁸ Although surgical treatment does not change the mortality rate over the first six months, it diminishes the complications resulting from prolonged restriction to bed.⁹ The present study compared the management of intertrochanteric (IT) fractures using dynamic hip screw (DHS) and proximal femoral nail (PFN).

We found that group I had 28 males and 10 females and group II had 22 males and 16 females. Chary et al¹⁰ compared management of stable intertrochanteric fractures in young and old individuals either by Dynamic Hip Screw (DHS) or by Proximal Femoral Nail (PFN) and management of unstable IT fractures by PFN in both the age groups young and old. A total no. of 43 patients were included, out of which 20 are stable fractures, remaining are unstable fractures. The mean age is 34 years (range 20-60 years). The mean follow-up period is 34 months (12-36 months). Out of 20 patients with stable fractures treated by DHS, 15 patients (%) are excellent outcome, 3 patients (%) good, 2 patients (%) fair, poor result is nil. Out of 23 patients with unstable IT fractures treated by PFN, 18 patients (%) are excellent, 3 patients (%) good, 1 patient (%) fair & 1 patient (%) with poor result.

We observed that age group 20-30 years comprised of 2 patients in group I and 3 in group II, 30-40 years had 4 in group I and 5 in group II, 40-50 years had 4 in group I and 7 in group II, 50-60 years had 10 in group I and 3 in group II and >60 years had 18 patients in group I and 10 in group II. The mean operative time in group I was 76.2 minutes in group I and 90.4 minutes in group II and intraoperative blood loss was 110.2 ml in group I and 104.5 ml in group II. Borger et al¹¹ assessed the clinical, radiological and functional evolution of osteosynthesis using a cephalomedullary nail, in unstable trochanteric fractures of the femur, over a one-year postoperative follow-up. 14 men and 23 women of mean age 77.7 years were evaluated. Twenty-seven of them had fractures classified as AO/ASIF 31A2 and ten as 31A3. The patients were evaluated clinically, radiologically and functionally one week, two weeks, one month, two months, six months and one year after the operation. The clinical complications comprised five cases of death, one case of calcaneal ulcer, one case of acute arterial obstruction and two cases of DVT. The radiographic evaluation showed

that the mean cervicodiaphyseal angle in the immediate postoperatively was 132.5°. The mean tip-apex index was 22.8 mm. After one year, the mean cervicodiaphyseal angle was 131.7°. Consolidation of fracture was seen in all the patients six months after the operation, except in one case that presented cut-out. There were no cases of fracture below the implant. The functional evaluation using the Harris score after one year showed a mean of 69.3 points. The evaluation of walking progress showed that after one year, 40.6% of the patients had the same ability to walk that they had before the fracture. The visual analogue pain scale showed that a significant decrease in pain complaints occurred, going from 5.19 in the first week to 2.25 after 1 year.

We found that mean operative time in group I was 76.2 minutes in group I and 90.4 minutes in group II and intraoperative blood loss was 110.2 ml in group I and 104.5 ml in group II. The treatment outcome in group I and group II was excellent seen in 25 and 20, good in 2 and 8 and fair in 1 in group I respectively. Complications were shortening of the limb seen in 1 and 1, varus collapse in 4 and 1 and superficial decubitus ulcer in 1 and 2 in group I and group II respectively. Huang et al¹² in their study a total of 186 cases were enrolled including 115 males and 71 females. The surgical operations were performed in all cases and Gamma 3 intramedullary nail was inserted in medullary cavity. Anti-rotation screw displacement into the intermuscular space of inner thigh occurred in 1 case, lateral femoral wall defect in 3 cases; refracture of proximal femur shaft during the Gamma 3 nail inserting into the medullary cavity occurred in 5 cases and fractures with a gap or malalignment in closed reduction of A3 type in occurred 6 cases. Fracture union occurred in 3-4 months postoperative. Recovery situations of all patients were evaluated based on Harris scoring system 6 with an average of 87 points. There are indications and shortcomings in the treatment of intertrochanteric fracture with Gamma 3 intramedullary nail.

CONCLUSION

Authors found that proximal femoral nail in the management of intertrochanteric fractures found to be superior than dynamic hip screw.

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