

# Unstable intertrochanteric fracture femur in elderly: Various treatment modalities and its outcome

Rajesh Ambulgekar<sup>1\*</sup>, Shinde G<sup>2</sup>, Gaike C<sup>3</sup>

<sup>1</sup>Professor and HOD, <sup>2,3</sup>Resident, Department of Orthopedics, Shankarrao Chavan Government Medical College, Nanded, Maharashtra, INDIA.

Email: [drambulgekarrk@gmail.com](mailto:drambulgekarrk@gmail.com)

## Abstract

**Introduction:** It is universally agreed that the treatment of Intertrochanteric fractures is stable internal fixation as early as possible. Stable fixation is the keystone of successful union of trochanteric fractures. Surgical stabilization of Intertrochanteric fracture femur is one of the most commonly performed orthopaedic procedures. Four major categories of operative treatment can be distinguished, including nail plates and blade plates with a fixed angle, sliding screws and plate devices, rigid intra medullary devices, flexible intra medullary devices and arthroplasty. Each method has recognized advantages and disadvantages. Present study was done to analyze the outcome of various treatment modalities for unstable Intertrochanteric fracture femur in elderly. **Methods:** The present clinical study was carried out at our tertiary care hospital. Study duration was from Jan 2009 to Aug 2010. 50 patients over the age of 60 years with unstable Intertrochanteric fracture were selected. Outcome of management of unstable Intertrochanteric fracture femur by using following implants was analyzed: Dynamic hip screw (DHS), Proximal femoral nail (PFN) and Cemented Bipolar prosthesis (CBP). Intra operative and post operative complications, intra operative blood loss, duration of surgery and Harris Hip Score were analyzed for each mode of treatment. **Results:** Most of the patients were between 60-70 years of age. The average age of study group was 70.9 years. 21 patients were treated with DHS, 17 patients treated with PFN and 12 patients treated with CBP. Superficial infection was seen in 4 patients and was the most common complication. Out of them 2 patients were of DHS, 1 patient of PFN and 1 patient of CBP. External rotation deformity was second most common complication seen in 3 patients. Out of them, 2 patients were of DHS and 1 patient of PFN. Deep wound infection occurred in 1 case of DHS and 1 case of CBP. Average blood loss in patients operated with DHS was 316.16 ml; it was 286.47 ml in PFN and 411.66ml in CBP. It was noted that shorter time was required for D.H.S (96.19 min), followed by P.F.N (104.11 min) and then for CBP (112.5min). Average Harris score for DHS was 87.74, for PFN it was 87.70 and for CBP it was 74.33.

**Keywords:** Harris hip score, Dynamic hip screw, Proximal femoral nail, Bipolar prosthesis.

## \*Address for Correspondence:

Dr. Rajesh Ambulgekar, Shree Guru Govind Singh Memorial Hospital, Nanded, Maharashtra, INDIA.

Email: [drambulgekarrk@gmail.com](mailto:drambulgekarrk@gmail.com)

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## INTRODUCTION

There were an estimated 1.66 million hip fractures worldwide in 1990<sup>1</sup>. This worldwide annual number is rising rapidly<sup>2,3</sup>. With an expected incidence of 6.26 million by the year 2050, an increase in these fractures is

on the rise due to the increased life expectancy of the people and osteoporosis<sup>1-4</sup>. The mechanism of injury is mostly trivial trauma. It is universally agreed that the treatment of Intertrochanteric fractures is stable internal fixation as early as possible. Stable fixation is the keystone of successful union of trochanteric fractures. Surgical stabilization of Intertrochanteric fracture femur is one of the most commonly performed orthopaedic procedures. Four major categories of operative treatment can be distinguished, including nail plates and blade plates with a fixed angle, sliding screws and plate devices, rigid intra medullary devices, flexible intra medullary devices and arthroplasty. Each method has recognized advantages and disadvantages. Present study was done to analyze the outcome of various treatment modalities for unstable Intertrochanteric fracture femur in elderly.

## METHODS

The present clinical study was carried out at our tertiary care hospital. Study duration was from Jan 2009 to Aug 2010. 50 patients over the age of 60 years with unstable Intertrochanteric fracture were selected. Outcome of management of unstable Intertrochanteric fracture femur by using following implants was analyzed: Dynamic hip screw (DHS), Proximal femoral nail (PFN) and Cemented Bipolar prosthesis (CBP). Intra operative and post operative complications, intra operative blood loss, duration of surgery and Harris Hip Score<sup>5</sup> were analyzed for each mode of treatment.

## RESULTS

**Table 1:** Showing treatment given in our study group

Treatment group	Number of patients	Percentage
DHS	21	42%
PFN	17	34%
Bipolar Prosthesis	12	24%

**Table 2:** Intra operative and post operative complications

Intra operative and post operative complication	Number of patients			Percentage
	DHS	PFN	BIPOLAR	
Superficial infection	2	1	1	8
Deep wound infection	1	0	1	4
External rotation deformity	2	1	0	6
Pulmonary embolism	0	0	0	0
Dislocation	0	0	0	0
Screw back out	0	0	0	0
Screw breakage	0	0	0	0

**Table 3:** Showing intra operative blood loss

Blood loss in ml	Number of Patients		
	DHS	PFN	Bipolar
<300	10	10	0
>300	11	7	12
Average Blood Loss in ml	316.19	286.47	411.66

**Table 4:** Showing duration of surgery

Duration of surgery (minutes)	Number of patients		
	DHS	PFN	Bipolar
<90	11	6	0
>120	10	11	12
Average duration (minutes)	96.19	104.11	112.5

**Table 5:** Showing Harris Hip Score

Harris hip Score	Norma range	Number of patients			Percentage
		DHS	PFN	Bipolar	
Excellent	90-100	12	9	1	44
Good	80-90	6	6	4	32
Fair	70-80	3	2	6	22
Poor	<70	0	0	1	2
Average Score	100	87.47	87.70	78.58	100

## DISCUSSION

Most of the patients in our study being form rural areas, due to poor economical condition they did not afford proximal femoral nail and cemented Bipolar which is costlier than Dynamic Hip Screw. Hence, DHS was the most common implant used in 21(42%) patients which was more in number than proximal femoral nail used in 17 (34%) patients and cemented bipolar prostheses used in 12 (24%) patients. In our study, superficial infection was seen in 4 patients and was the most common complication. Out of them 2 patients were of DHS, 1 patient of PFN and 1 patient of CBP. External rotation deformity was second most common complication seen in 3 patients. Out of them, 2 patients were of DHS and 1 patient of PFN. Deep wound infection occurred in 1 case of DHS and 1 case of CBP. Average blood loss in patients operated with DHS was 316.16 ml; it was 286.47 ml in PFN and 411.66ml in CBP. It was noted that shorter time was required for D.H.S (96.19 min), followed by P.F.N (104.11 min) and then for CBP (112.5min). Functional outcome in our study was assessed with the help of Harris Hip Score. After evaluation of Harris Hip score at the end of follow up period of 6 month, 42% of patients had excellent score, 32% of patients had good score, 22 % of patients had fair score and poor score in 4% of patients. The average score for DHS was 87.74, for PFN was 87.70 and for cemented Bipolar it was 74.33. Baumgaertner *et al*<sup>6</sup> and Hardy *et al*<sup>7</sup> also studied unstable fractures as a separate group. In their studies, the intra medullary fixation showed a lower risk of implant related complications, earlier and better mobilisation capacity, less impaction of the fracture area and less limb shortening. I.B. Schipper *et al*<sup>8</sup> compared the results of fracture fixation using the Intra medullary Hip Screw to that of extra medullary (sliding hip screw). When stable and unstable fractures were examined separately, several differences became apparent in unstable fractures. The intra medullary device was associated with up to 23% less surgical time and up to 44% less blood loss as compared to the sliding hip screw. The intra medullary Hip Screw was also associated with less impaction of the fracture and consequently, with less shortening of the limb, which resulted in a higher mobility score at each follow-up. With intra medullary Hip Screw, weight bearing was significantly better tolerated postoperatively and at time of discharge, as compared with the sliding hip screw.

## CONCLUSIONS

Considering the amount of blood loss, duration of the surgery and Harris Hip Score, DHS was better for unstable inter trochanteric fracture femur. Though the blood loss was less in cases of PFN, the procedure of PFN technically demanding and requires experience.

Hemiarthroplasty was more invasive surgical procedure as the duration of the surgery and intra-operative blood loss considered. The only advantage of Hemiarthroplasty was early weight bearing. But at the end of 6 month, the outcome of DHS and PFN was better than Cemented Bipolar prostheses.

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