



ORIGINAL RESEARCH PAPER

Orthopaedics

USE OF PROXIMAL FEMORAL NAIL IN PATIENTS WITH UNSTABLE EXTRACAPSULAR PROXIMAL FEMORAL FRACTURES: A CLINICAL OUTCOME STUDY

KEY WORDS: PFN (Proximal femoral nail), ICF (International Classification of Functioning, Disability and Health) questionnaire

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ABSTRACT

Introduction: Unstable trochanteric and subtrochanteric fractures are biomechanically unfavorable fractures and often associated with complications such as cut-out, excessive sliding or varus. The reoperation rate is approximately 10%. The forces that tend to displace the fracture must be neutralized by the implant. The proximal femoral nail is an intramedullary implant and associated with less blood loss and lower infection rate, and allows direct full weight bearing because of its favorable biomechanical properties. In the present study we have observed the functional outcome in unstable extra capsular proximal femoral fractures managed by proximal femoral nail using by ICF (International Classification of Functioning, Disability and Health) questionnaire. **Material & Method:** It was a clinical outcome observation study carried out in eighty patients of unstable extracapsular proximal femoral fractures presented in the department of Orthopaedics DR. RPGMCH, Tanda over a period of one year from 1st April 2013 to 31st March 2014. Patients were assessed functionally by ICF (International Classification of Functioning, Disability and Health) questionnaire on one and half month, three month and sixth month of surgery. **Results:** There was female preponderance with female/male ratio being 46/34. Postoperative health assessment was done by using ICF method where we did the assessment of general, mental and emotional health. After 6 months of the surgery, a total of 66.6% patients rated their health as good to very good and 79 patients had mild to moderate impairment because of pain. In terms of functional assessment, sixty eight percent (68.52%) patients had no to mild impairment in the performance and the capacity and 31.48% patients had moderate impairment in performance and capacity for washing oneself. None of the patients observed with severe to very severe limitation after the surgery. Seventy percent (70.0%) patients had mild to moderate impairment in the performance and the capacity and 29.37% patients had severe impairment in performance and capacity for toileting and dressing. **Conclusion:** It is concluded that a significant change was seen in quality of life of patients postoperatively as evidenced by ICF questionnaire used in present study.

INTRODUCTION

A standard surgical procedure for trochanteric fractures is internal fixation with sliding screw device. Stable two-part trochanteric fractures^{1,2} usually heal well, irrespective of the fixation device used with a rate of complications of less than 5%. Unstable trochanteric and subtrochanteric fractures are biomechanically unfavorable fractures and often associated with complications such as cut-out, excessive sliding or varus. The reoperation rate is approximately 10%.⁶⁻⁹ The forces that tend to displace the fracture must be neutralized by the implant.

The proximal femoral nail is an intramedullary implant and associated with less blood loss and lower infection rate, and allows direct full weight bearing because of its favorable biomechanical properties. Moreover the entry portal of PFN through the trochanter limits the surgical insult to the tendinous hip abductor musculature, unlike those nails which require entry through the piriformis fossa.¹⁰ Various studies have discussed and reported the parameters like time during the operation, blood loss, time to fracture union and active ambulation but limited literature is available assessing the improvement of health from patient perspective. Present study aims to evaluate the improvement in health of the patient following surgery using ICF (International Classification of Functioning, Disability and Health) questionnaire.

MATERIAL&METHOD

It was a clinical outcome assessment study carried out in the department of Orthopedics DR. RPGMCH, Tanda. The study population comprised of individuals coming with unstable extra capsular proximal femoral fractures excluding pathological fractures over a period from 1st April 2013 to 31st March 2014. Patients were assessed functionally by ICF (International Classification of Functioning, Disability and Health) questionnaire on one and half month, three months

and sixth months of surgery.

RESULTS

Eighty patients were eligible for inclusion in the study. There was female preponderance with female/male ratio being 46/34.

International Classification Of Functioning, Disability And Health (ICF)

General Health & Mental and emotional Health

Table 1: General Health & Mental and emotional Health

Parameters	Pre-injury					6 Months				
	1	2	3	4	5	1	2	3	4	5
General health	-	-	4	46	30	-	-	27	35	18
Mental and emotional health	-	-	19	31	30	-	-	22	40	18

1=Very Bad;2= Bad;3= Moderate;4= Good;5= Very Good

General health assessment using ICF method shows that 94.4% patients rated their health before injury as good to very good. After 6 months of the surgery, a total of 66.6% patients rated their health as good to very good.

PAIN

Table 2: Pain

Responses	Pre-injury	6 Months
No impairment	80(100%)	-
Mild Impairment	-	62(77.78%)
Moderate Impairment	-	17(22.22%)
Severe Impairment	-	-
Complete Impairment	-	-

0=No Impairment; 1=Mild Impairment; 2=Moderate Impairment;3=Severe Impairment;4=Complete

Impairment Pain assessment using ICF method shows that 80 (100%) patients had no impairment because of pain before injury. After 6 months of surgery, a total of 79 patients had mild to moderate impairment because of pain.

femoral fractures: dynamic hip screw with trochanter stabilization plate vs. proximal femur nail. *Unfallchirurg* 2003;106:39-47 (in German).
 10. Kumar R, Singh RN, Singh BN. Comparative prospective study of proximal femoral nail and dynamic hip screw in the treatment of intertrochanteric fracture femur. *Journal of Clinical Orthopaedics and Trauma* 2012;3:28-36.

Functional Assessment after six months of Surgery

Table 3: Functional Assessment after six months of Surgery

Sr No.	Pre-injury				6 Month															
	Performance				Capacity															
Score	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4					
Lifting & carry	80	-	-	-	-	80	-	-	-	-	40	40	-	-	-	40	40	-	-	-
Washing	80	-	-	-	-	80	-	-	-	-	40	15	25	-	-	40	15	25	-	-
Toileting	80	-	-	-	-	80	-	-	-	-	40	16	23	-	-	40	16	23	-	-
Dressing	80	-	-	-	-	80	-	-	-	-	40	16	23	-	-	40	16	23	-	-

0=No Impairment; 1=Mild Impairment; 2=Moderate Impairment; 3=Severe Impairment; 4=Complete Impairment

After 6 months of surgery 100 % patients had mild to moderate impairment in the performance and the capacity for lifting and carrying objects. None of the patients observed with severe to very severe limitation after the surgery. Sixty eight percent (68.52%) patients had no to mild impairment in the performance and the capacity and 31.48% patients had moderate impairment in performance and capacity for washing oneself. None of the patients observed with severe to very severe limitation after the surgery. Seventy percent (70.0%) patients had mild to moderate impairment in the performance and the capacity and 29.37% patients had severe impairment in performance and capacity for toileting and dressing.

DISCUSSION

In our study we have used ICF questionnaire for the evaluation of functional outcome among patients of unstable proximal femoral fractures managed by using PFN. Search of similar literature through various databases did not yield any comparable study. Analysis of our own results using ICF questionnaire had shown marked improvement in various domains of health.

CONCLUSION

We consider that PFN is reliable fixation device which offers the advantage of closed procedure with a more stable biomechanical construct. In the face of good functional outcome, we find use of this implant to be of particular interest and perfectly suitable for the management of unstable extracapsular proximal femoral fractures.

REFERENCES

1. Evans M. The treatment of trochanteric fractures of the femur. *J Bone Joint Surg [Br]* 1949;31-B:190-203.
2. Clawson DK. Trochanteric fracture treated by sliding screw plate fixation method. *J Trauma* 1964;4:737-52.
3. Laros GS, Moore JF. Complications of fixation in intertrochanteric fractures. *Surg Musculoskeletal System* 1974;101:110-19.
4. Nungu S, Oleurd C, Rehnberg R. Treatment of intertrochanteric fractures: comparison of Ender nails and sliding screw plates. *J Orthop Trauma* 1991;5:452-7.
5. Saudan M, Laubbeke A, Sadowski C, et al. Peritrochanteric fractures: is there an advantage to intramedullary nail?: a randomized, prospective study of 206 patients comparing the dynamic hip screw and the proximal femoral nail. *J Orthop Trauma* 2002;16:386-93.
6. Haentjens P, Casteleyn PP, De Boek H, Handelberg F, Opdecam P. Treatment of unstable intertrochanteric and subtrochanteric fractures in elderly patients: primary bipolar arthroplasty compared with internal fixation. *J Bone Joint Surg [Am]* 1989;71-A:1214-25.
7. Larsson S, Friberg S, Hansson LI. Trochanteric fractures: mobility, complications and mortality in 607 cases treated with the sliding-screw technique. *Clin Orthop* 1990;260:232-41.
8. Chinoy MA, Parker MJ. Fixed nail plates versus sliding hip systems for the treatment of trochanteric femoral fractures: a meta analysis of 14 studies. *Injury* 1990;30:157-63.
9. Nuber S, Schonweiss T, Rutz A. Stabilization of unstable trochanteric