



ORIGINAL RESEARCH PAPER

Orthopaedics

FUNCTIONAL IMPROVEMENT AMONG PATIENTS WITH UNSTABLE EXTRACAPSULAR PROXIMAL FEMORAL FRACTURES MANAGED WITH PROXIMAL FEMORAL NAIL

KEY WORDS: Proximal femoral nail, Modified Harris Hip Score

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ABSTRACT

Introduction: Fractures of the proximal femur are one of the challenging injuries for orthopaedic surgeons with a high rate of complications including death and serious threat to the patient's future mobility, social functioning, quality of life and autonomy. Proximal femoral nail being an intramedullary device, is a load sharing device and has the inherent advantage of shorter lever arm, thereby decreasing the tensile strain on the implant. In the present study we have evaluated the functional outcome in unstable extracapsular proximal femoral fractures managed by proximal femoral nail using Modified Harris Hip Score. **Material & Method:** It was a hospital based prospective study carried out in the department of Orthopaedics DR. RPGMCH, Tanda over a period of one year from 1st January 2013 to 31st December 2013. Patients were followed up on 14th day then at 3 months and 6 months. On each visit patients were assessed functionally by Modified Harris Hip Score. **Results:** There was female preponderance with Female/Male ratio being 30/24. In our study 2 % of patients had excellent results, 26 % had good results, 22 % had fair results and 50 % had poor results at 6 months after surgery. **Conclusion:** It is concluded that intramedullary nailing with the use of a PFN in unstable proximal femoral fractures is a safe method. A significant change was seen in quality of life postoperatively as evidenced by MHHS used in present study.

INTRODUCTION

Fractures of the proximal femur are one of the challenging injuries for orthopaedic surgeons with a high rate of complications. There has been a persistent increase in the number of hip fractures in the world. Gullberg et al. in 1997 estimated that the future incidence of hip fracture worldwide would double to 2.6 million by 2025, and 4.5 million by 2050.¹ Extracapsular proximal femoral fractures occur between the extracapsular region of the femoral neck and just distal to the lesser trochanter.² Conservative approach to these fractures is related to various complications. So operative treatment has been accepted as the gold standard for management of these group of fractures.^{3,4} The introduction of intramedullary nails in the management of these fractures has enabled patients to walk with early weight bearing.⁵ Intramedullary devices have an advantage with shorter lever arm thereby providing more load sharing.^{6,7} In unstable fracture patterns, cephalomedullary nails offer greater rigidity and resist varus deformity more effectively than sliding hip screws.⁸

Gamma nail is the prototype of intramedullary nail devices, but serious complications, resulted in increased rate of reoperation.⁹⁻¹⁴ To circumvent these complications AO/ASIF group (1997) has designed proximal femoral nail (PFN) with certain design modifications and has been found to be more useful in unstable fracture patterns due to the fact that it is a load sharing device¹⁵ and has been shown to be more biomechanically stronger and can withstand higher static and several fold higher cyclical loading than dynamic hip screw, which leads to lesser complication rates.¹⁶ Various methods for assessment for rating the patient health and functional improvement are available but not being frequently reported following the surgical procedure done for fracture fixation. Present study aims to evaluate the general health and functional improvement of patient post surgery using Modified Harris Hip Score. Sridhar et al (2014)¹⁷ assessed functional outcome by using Modified Harris Hip Score observed that due to quicker union time, earlier postoperative mobilization, shorter operation time and better functional outcome, proximal femoral nail seems to have distinct advantages over other implants and is currently the implant of choice in the surgical management of unstable intertrochanteric fractures.

It was a hospital based prospective study carried out in the Department of Orthopaedics DR. RPGMCH, Tanda over a period of one year from 1st January 2013 to 31st December 2013. The study population comprised of all skeletally mature individuals coming with unstable extracapsular proximal femoral fractures. The fracture classified using AO/ASIF classification system. The surgical wounds were inspected on the 2nd and 5th postoperative day and stitches were removed on 14th postoperative day. Patients were followed up on 14th day then at 3 months and 6 months. On each visit patients were assessed functionally by Modified Harris Hip Score.

RESULTS

Fifty four patients were eligible for inclusion in the study. There was female preponderance with Female/Male ratio being 30/24.

Modified Harris Hip Score At 6 Month Follow (n=54)
Table 1: Modified Harris Hip Score at 6 month follow

SCORE	Number (%)
≥90	1 (2%)
80-89	14 (26%)
70-79	12 (22%)
<70	27 (50%)

≥90 = excellent, 80-89 = good, 70-79 = fair, <70 = poor

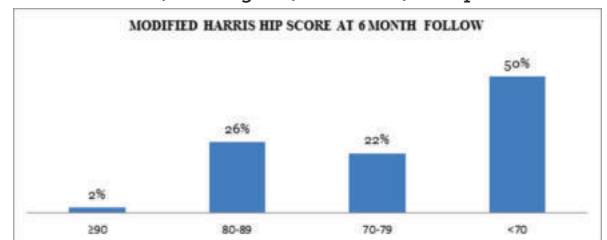


Figure 1: Modified Harris Hip Score at 6 month follow

Two percent of patients had excellent results, 26 percent of patients had good results, 22 percent of patients had fair results and 50 percent of patients had poor results at 6 months after surgery.

MATERIAL & METHOD

Modified Harris Hip Score In Ao31a2.2 Fracture (Proximal

femoral trochanteric, with several intermediate fragments)

Four percent of patients with fracture type 31A2.2 had excellent results, 14 percent of patients had good results, 21 percent of patients had fair results and 17 percent of patients had poor results at 6 months after surgery.

Table 2: Modified Harris Hip Score in AO31A2.2 fracture

Score	Number (%)
≥90	1 (4%)
80-89	4 (14%)
70-79	6 (21%)
<70	17 (61%)

≥90 = excellent, 80-89 =good, 70-79 =fair, <70 =poor

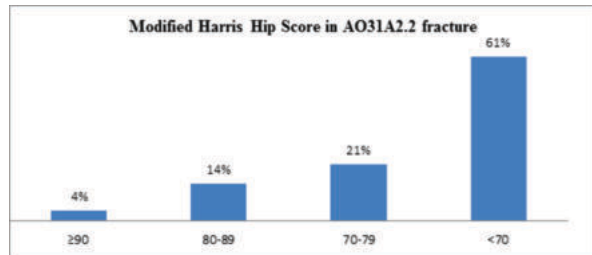


Figure 2: Modified Harris Hip Score in AO31A2.2 fracture

Modified Harris Hip Score Association With Fracture Type Ao31a2.3

(Proximal femoral trochanteric fracture extending more than 1cm below lesser trochanter)

Thirty three percent of patients with fracture type 31A2.3 had good results, 27 percent of patients had fair results, and 40 percent of patients had poor results 6 months after surgery.

Table 3: Modified Harris Hip Score in AO31A2.3 fracture

Score	Number (%)
≥90	0
80-89	5 (33%)
70-79	4 (27%)
<70	6 (40%)

≥90 = excellent, 80-89 =good, 70-79 =fair, <70 =poor

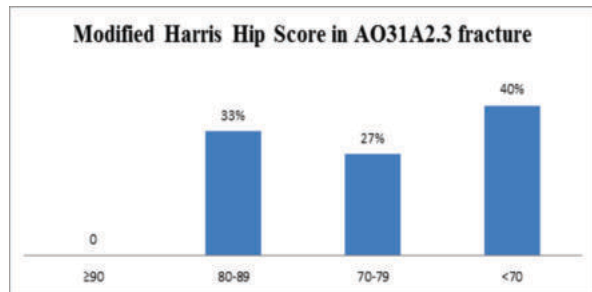


Figure 3: Modified Harris Hip Score in AO31A2.3 fracture

Modified Harris Hip Score Association With Fracture Type Ao31a3.1 (n=6)

Proximal femoral intertrochanteric fracture line extends across both the medial and lateral cortices ,simple oblique (reverse obliquity pattern).

Table 4: Modified Harris Hip Score in AO31A3.1 fracture

Score	Number (%)
≥90	0
80-89	1 (17%)
70-79	1 (17%)
<70	4 (66%)

≥90 = excellent, 80-89 =good, 70-79 =fair, <70 =poor

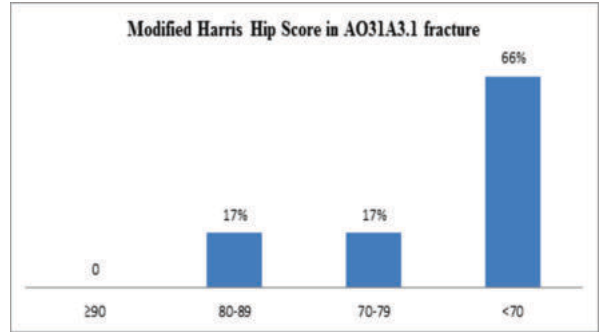


Figure 4: Modified Harris Hip Score in AO31A3.1 fracture

Seventeen percent of patients with fracture type 31A3.1 had good results, 17 percent of patients had fair results and 66 percent of patients had poor results at 6 months after surgery.

Modified Harris Hip Score Association With Fracture Type Ao31a3.2 (n=5)

Proximal femoral trochanteric (Intertrochanteric fracture line extends across both the medial and lateral cortices, Simple transverse

Table 5: Modified Harris Hip Score in AO31A3.2 fracture

Score	Number (%)
≥90	0
80-89	4 (80%)
70-79	1 (20%)
<70	0

≥90 = excellent, 80-89 =good, 70-79 =fair, <70 =poor

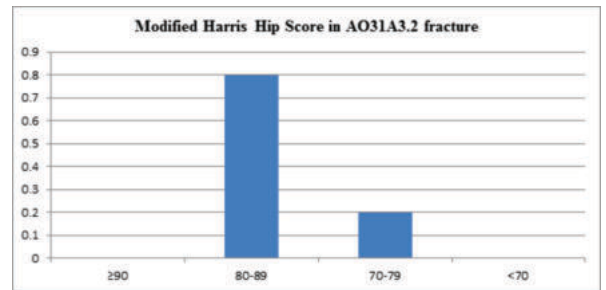


Figure 5: Modified Harris Hip Score in AO31A3.2 fracture

Eighty percent of patients with fracture type 31A3.2 had good results, only one patient had fair result at 6 months after surgery.

Comparison With Other Study (MHHS)

Table 6: Comparison with other study

Score	Present study At 6 months follow up	Sridhar et al At 12 months follow up
≥90	1 (1.9%)	9 (21.4%)
80-89	14 (26.2%)	24 (57.1%)
70-79	12 (22.2%)	9 (21.4%)
<70	27 (50%)	-
TOTAL	54 (100%)	42 (100%)

≥90 = excellent, 80-89 =good, 70-79 =fair, <70 =poor

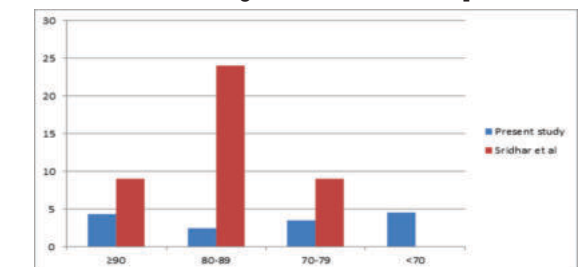


Figure 6: Comparison with other study

DISCUSSION

In the present study patients of extracapsular hip fractures were treated by Proximal femoral nail and evaluated functionally. The mean of Modified Harris Hip Score was 85.17 in pre-injury period and 68.24 after 6 months of surgery. Among them 2 percent of patients had excellent results, 14 percent of patients had good results, 22 percent of patients had fair results and 50 percent of patients had poor results at 6 months after surgery. Sridhar et al (2014)¹⁷ found scores of Modified Harris Hip Score as excellent in 21 percent, good in 57 percent and fair in 21 percent of cases with mean Harris Hip Score 85 after 12 months of follow. Hence mean Modified Harris Hip Score in our study was comparable to other available literature.

CONCLUSION

It is concluded that intramedullary nailing with the use of a PFN in unstable proximal femoral fractures is a safe method. A significant change was seen in quality of life postoperatively as evidenced by various scores used in present study.

Limitation:

Short follow-up period and the inclusion of a small study group.

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