



PROXIMAL FEMORAL LOCKING COMPRESSION PLATE IN INTERTROCHANTERIC AND SUBTROCHANTERIC FRACTURES OF FEMUR: A PROSPECTIVE STUDY

Orthopaedics

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ABSTRACT

Introduction: Complex proximal femoral fractures, particularly in elderly osteoporotic patients, present significant management challenges due to their inherent instability and high complication risk. **Aim and Objective:** To assess clinical and functional outcomes of the Proximal Femoral Locking Compression Plate (PFLCP) in treating these fractures. **Methods:** Prospective study of 30 patients over 24 months, each followed up for a minimum of 6 months. Outcome measures included union rates, time to union, Harris Hip Score (HHS), and complications. **Results:** Union was achieved in 93.3% of patients, with an average union time of 16 weeks. Functional outcomes were largely excellent or good, with few complications observed. **Conclusion:** PFLCP is an effective option for managing complex proximal femoral fractures, providing reliable fixation and satisfactory functional recovery.

KEYWORDS

PFLCP, intertrochanteric fractures, subtrochanteric fractures, Harris Hip Score, locking compression plate, prospective study, osteoporotic bone.

INTRODUCTION

Proximal femoral fractures are a major source of morbidity and mortality, especially in the elderly population. Intertrochanteric and subtrochanteric fractures account for a large proportion of these injuries, often resulting from low-energy falls in osteoporotic bone¹. Traditional fixation methods such as Dynamic Hip Screw (DHS) or intramedullary nails can be associated with implant failure, varus collapse, and cut-out, particularly in unstable fracture patterns or severely osteoporotic bone²⁻³.

The Proximal Femoral Locking Compression Plate (PFLCP) was developed to address these challenges by offering angular stability and better anchorage in osteoporotic bone. Its design allows for multiple locking screws in the femoral head and neck, improving resistance to varus collapse and rotational instability⁴⁻⁵.

This study aims to evaluate the clinical and functional outcomes of patients with unstable intertrochanteric and subtrochanteric fractures treated with PFLCP.

MATERIALS AND METHODS

Study Design: Prospective observational study conducted over 24 months.

Sample Size: 30 patients aged over 18 years with closed proximal femoral fractures.

Fracture Classification:

- Boyd & Griffin type 4: 40%
- Boyd & Griffin type 3: 10%
- Subtrochanteric Russel Taylor type 2: 50%

Inclusion Criteria:

Intertrochanteric fractures Boyd and Griffith classification 2,3 and 4, Comminuted sub-trochanteric fractures, Patients who were able to walk independently prior to injury, Skeletally mature patients

Exclusion Criteria: Pathological fractures, open fractures, and polytrauma patients with unstable vitals.

Surgical Procedure: All surgeries were performed under fluoroscopic guidance using a standard lateral approach. Emphasis was placed on achieving anatomical or near-anatomical reduction before definitive fixation with PFLCP. Postoperative protocol included early mobilization with partial weight-bearing, progressing to full weight-bearing as tolerated.

Follow-up: Clinical and radiological evaluation at 6 weeks, 3 months,

and 6 months.

Outcome Measures:

- Rate and time to radiological union
- Harris Hip Score (HHS)
- Complications such as infection, implant failure, varus malalignment, or non-union

RESULTS

Demographics: Mean patient age was 63 years, with a predominance of males (60%). Right-sided fractures accounted for 53.3% of cases.

Union:

- Union achieved in 28 patients (93.3%)
- Average union time: 16 weeks

Table 1: Patient Demographics and Fracture Types

Parameter	Number (%)
Mean Age	63 years
Male	18 (60%)
Female	12 (40%)
Boyd & Griffin type 4	12 (40%)
Boyd & Griffin type 3	3 (10%)
Subtrochanteric Russel Taylor type 2	15 (50%)

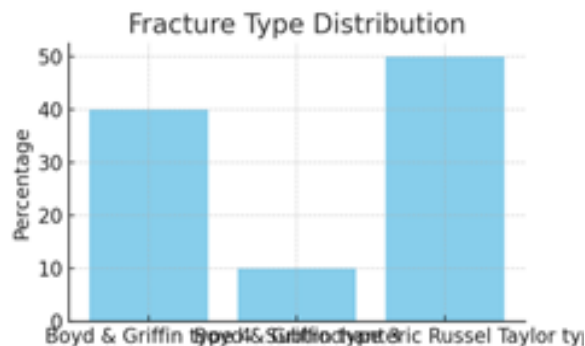


Table 2: Functional Outcomes (Harris Hip Score at 6 months)

Outcome	Patients	Percentage
Excellent (>90)	10	33.3%
Good (80-89)	12	40%
Fair (70-79)	6	20%
Poor (<70)	2	6.7%

Harris Hip Score Outcome Distribution

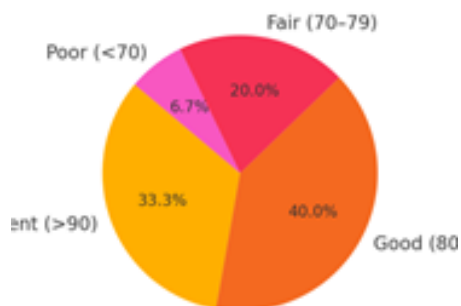
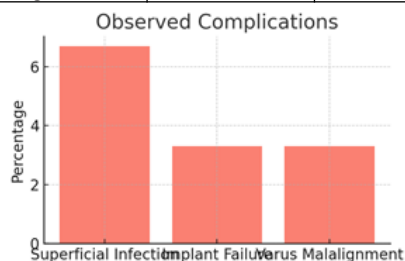


Table 3: Observed Complications

Complication	Patients	Percentage
Superficial Infection	2	6.7%
Implant Failure	1	3.3%
Varus Malalignment	1	3.3%



DISCUSSION

Our study highlights the utility of PFLCP in managing complex proximal femoral fractures, especially in elderly patients with osteoporosis. The high union rate and satisfactory functional recovery observed align with previous research findings³⁻⁶.

Biomechanical Advantages: Locking plates provide angular stability, resisting varus collapse and rotational forces⁴. This is particularly beneficial in comminuted and osteoporotic fractures, where conventional devices may not achieve sufficient fixation⁶.

Literature Comparison:

- Gupta et al. reported a union rate of 96% and similar HHS scores in patients treated with PFLCP³.
- Narayan et al. observed good to excellent functional outcomes in 80% of their cases treated with locking plates⁵.
- Haidukewych noted that locking constructs reduce dependence on bone quality for fixation strength².

Limitations:

- Small sample size
- Relatively short follow-up period
- Lack of a control group treated with other fixation methods for direct comparison

Despite these limitations, the results suggest that PFLCP is a viable option for treating unstable proximal femoral fractures, particularly in high-risk populations.

CONCLUSION

The Proximal Femoral Locking Compression Plate provides stable fixation, early mobilization, and high union rates in complex proximal femoral fractures. Its use is especially advantageous in elderly patients with osteoporosis, with an acceptable rate of complications.

Further large-scale randomized studies are recommended to compare its outcomes directly with intramedullary devices and conventional plating systems.

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