

ORIGINAL RESEARCH

Proximal tibial fractures managed with locking compression plate

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ABSTRACT

Background: Tibial plateau is one of the most critical load bearing areas in the human body. Fractures of tibial plateau affects knee alignment, stability and motion. Incidence of proximal tibia fractures is increasing due to increasing incidence of road traffic accidents. The present study was conducted to assess management of proximal tibial fractures by locking compression plate.

Materials & Methods: 60 proximal tibial fractures of both genders were treated with MIPO and ORIF. Parameters such as side, type of fracture, type of reduction, principal, etc. were recorded.

Results: Out of 60 patients, males were 35 and females were 25. Side was left in 30 and right in 40 cases. Type of fracture was pure cleavage in 25, cleavage with depression in 15, central depression in 5, medial condyle fracture in 7, bicondylar fracture in 4 and metaphyseal diaphyseal dissociation in 4 patients. Method of reduction was MIPO in 41 and ORIF in 19 cases. Principle of reduction was compression in 35, bridging in 20 and combined in 5 cases. The difference was significant ($P < 0.05$). Common complications were infection in 3, varus deformity in 1, knee instability in 2 and knee joint stiffness in 2 cases. The difference was significant ($P < 0.05$).

Conclusion: Using locking compression plate in conjunction with open reduction and internal fixation is a superior method for treating proximal tibia fractures.

Key words: bleeding, humeral shaft fracture, Surgical time

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INTRODUCTION

Tibial plateau is one of the most critical load bearing areas in the human body. Fractures of tibial plateau affects knee alignment, stability and motion. Incidence of proximal tibia fractures is increasing due to increasing incidence of road traffic accidents.¹ Nonsteroidal anti-inflammatory medicines (NSAIDs) for pain management, immobilization with a cast or brace, and physical therapy to maintain range of motion and improve the muscles around the knee joint are all nonsurgical treatment options for small proximal tibial fractures.² A surgical procedure called open reduction and internal fixation (ORIF), which realigns the shattered bones and fixes them with plates, screws, or other hardware, may be necessary for more severe proximal tibial fractures.³ A bone graft can also be required in some circumstances to aid in the fracture's healing. Depending on the type of therapy performed and the degree of the fracture, proximal tibial fracture recovery times can change. A proximal tibial fracture often requires many months to fully heal, and therapy may be required to regain strength, flexibility, and mobility in the injured leg.⁴

The minimally invasive plate osteosynthesis (MIPO) technique has gained prevalence in recent years.⁵ This percutaneous plating technique uses indirect reduction methods and allows stabilisation of distal tibia fractures while preserving the vascularity of the soft tissue envelope.⁶ The present study was conducted to assess management of proximal tibial fractures by locking compression plate.

MATERIALS & METHODS

The present study consisted of 60 proximal tibial fractures of both genders. All patients gave their written consent to participate in the study. Data such as name, age, gender etc. was recorded. A thorough clinical examination was carried out. All patients were treated with MIPO and ORIF. Parameters such as side, type of fracture, type of reduction, principal, operative time, blood loss, hospital stay, healing time etc. were recorded. Data thus obtained were subjected to statistical analysis. P value Less than 0.05 was considered significant.

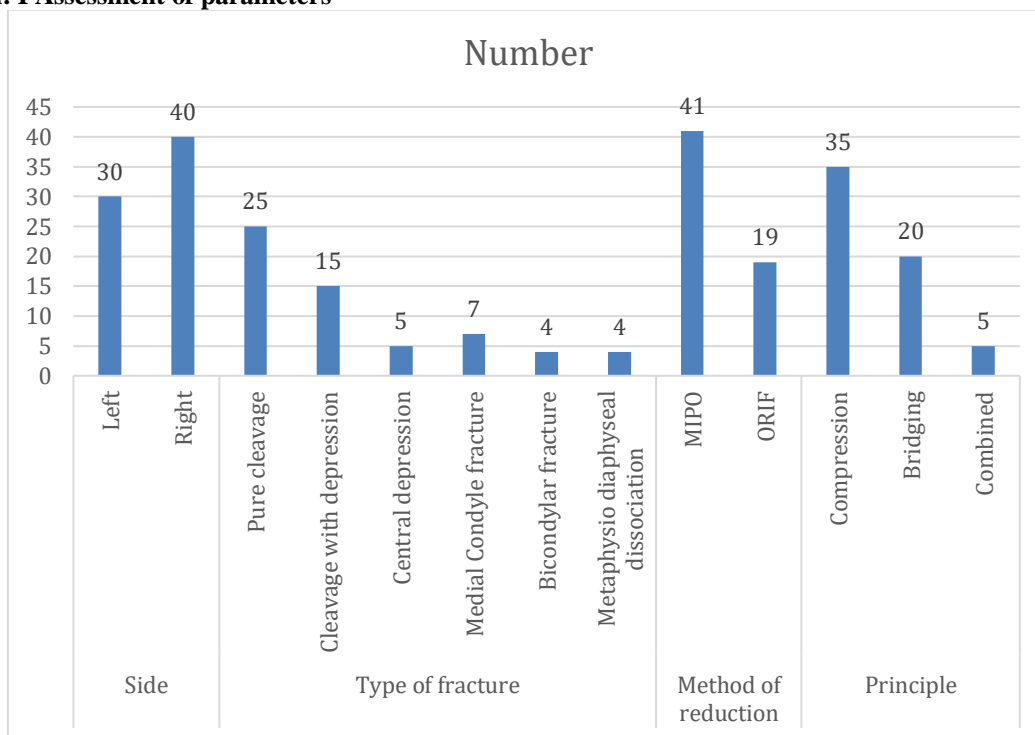
RESULTS

Table: I Distribution of patients

Total- 60		
Gender	Male	Female
Number	35	25

Table I shows that out of 60 patients, males were 35 and females were 25.

Graph: I Assessment of parameters



Graph: I shows that side was left in 30 and right in 40 cases. Type of fracture was pure cleavage in 25, cleavage with depression in 15, central depression in 5, medial condyle fracture in 7, bicondylar fracture in 4 and metaphysio diaphyseal dissociation in 4 patients. Method of reduction was MIPO in 41 and ORIF in 19 cases. Principle of reduction was compression in 35, bridging in 20 and combined in 5 cases. The difference was significant ($P < 0.05$).

Table: III Assessment of complications

Complications	Number	P value
Infection	3	0.87
Varus deformity	1	
Knee instability	2	
Knee joint stiffness	2	

Table: III shows that common complications were infection in 3, varus deformity in 1, knee instability in 2 and knee joint stiffness in 2 cases. The difference was significant ($P < 0.05$).

DISCUSSION

Proximal tibial fractures refer to fractures that occur in the upper part of the tibia, which is the larger bone in the lower leg.⁷ These fractures can range from minor fractures, such as stress fractures, to severe injuries that involve multiple breaks in the bone.⁸ The proximal tibia is an important weight-bearing bone, and fractures in this area can have a significant impact on a person's ability to walk and perform daily activities.⁹ Treatment of proximal tibial fractures depends on the severity and location of the fracture, as well as the patient's overall health and activity level.^{10,11} The present study was conducted to assess

management of proximal tibial fractures by locking compression plate. We found that out of 60 patients, males were 35 and females were 25. In patients with distal 1/3rd extraarticular tibial fractures, Singla et al¹² compared the results of expert tibial nailing with results of distal tibial plating. The mean ages of the patients in the distal tibial plating and expert tibial nailing groups, respectively, were 48.12 years and 49.71 years. In comparison to the patients of the distal tibial plating group (101.2 minutes), the mean operating time for the patients in the expert tibial nailing group was significantly reduced at 83.15 minutes. The average intraoperative blood loss for

skilled tibial nailing and distal tibial plating were compared. In every instance, the tourniquet was employed. The patients in the expert tibial nailing group experienced mean intraoperative blood loss of 51.6 ml, which was significantly less than the patients of the distal tibial plating group (89.1 ml). The mean postoperative weight-bearing time among the patients of expert tibial nailing was 8.95 weeks and was significantly lower in comparison to the patients of the distal tibial plating (14.35 weeks). We observed that side was left in 30 and right in 40 cases. Type of fracture was pure cleavage in 25, cleavage with depression in 15, central depression in 5, medial condyle fracture in 7, bicondylar fracture in 4 and metaphysis diaphyseal dissociation in 4 patients. Method of reduction was MIPO in 41 and ORIF in 19 cases. Principle of reduction was compression in 35, bridging in 20 and combined in 5 cases. We found that common complications were infection in 3, varus deformity in 1, knee instability in 2 and knee joint stiffness in 2 cases. In order to compare the outcomes of two surgical procedures for distal tibia fractures, namely minimally invasive plate osteosynthesis (MIPO) and open reduction and internal fixation (ORIF), Cheng et al.¹³ Thirty distal tibia fracture cases (15 pairs of ORIF and MIPO) with consistent gender, age, and AO fracture classification were submitted for pair comparison. Operative time, blood loss, healing time, time to return to work, implant irritant symptoms, and union status were among the evaluation indicators. It was decided to use the Mazur grading scale for functional evaluation. In the ORIF group, one episode of osteomyelitis developed but no malunions happened. Ten cases in the ORIF group received ratings of excellent, three of good, one of fair, and one of poor. In the study by Kommuru et al.¹⁴, 30 participants who were present at the study location and planned to have the specified procedure were enrolled. Thirty individuals with proximal tibia fractures in all were included. RTAs accounted for the majority of cases, with categories IV, V, and VI having the highest incidence. The typical healing time for a fracture was between 16 and 24 weeks. The ORIF technique was used on 23 patients, and the MIPO technique was used on 7 patients. The LCP was used to implement the compression, bridging, and combined fixation principles. Functional outcomes were assessed, and it was shown that 53.33% of patients had outstanding results, 30% had good results, 13.33% had acceptable results, and 3.33% had bad results.

The limitation of the study is small sample size.

CONCLUSION

Authors found that using locking compression plate in conjunction with open reduction and internal fixation is a superior method for treating proximal tibia fractures.

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