Role of tibial buttress plating in fracture of upper end tibia: A study of 50 cases

JPS Walia*, Avinash Gupta**, Surinder Kumar***, Sonam Kaur Walia****, Sargun Singh*****

*Professor,** Associate Professor ,***Medical Officer,**** Junior Resident ,*****UG student.

Department of Orthopaedics, Patiala, Punjab

ABSTRACT

Fifty cases of fracture upper end of tibia were treated using AO/ASIF 'T' or 'L' buttress plate. We were able to obtain uniformly good to excellent results in most of the cases (47 out of 50) irrespective of associated injuries, type of fracture, degree of comminution, degree of displacement and extension into the joint in the age group of 18 to 80 years. No failure of appliance, any knee pain and instability of knee was observed in any case despite the fact that weight bearing was usually instituted in 10 to 16 Weeks.

Keywords: proximal tibial fractures, buttress plating

INTRODUCTION

Tibia by its very location is the most commonly fractured long bone. Most common causes are fall from a height and road traffic accident. In present era the latter has been the primary cause for the fracture. Fractures of the proximal tibia involves major weight bearing joint, the knee joint and are serious injuries that frequently result in functional impairment. So to preserve normal knee function, one must maintain normal joint congruity, preserve normal mechanical axis, ensure joint stability and restore full range of motion.

Proximal tibial fractures can mainly be devided into two types - Articular Fractures (Tibial Plateau Fractures or tibial condylar Fractures) and Non-articular fractures. Proper reduction is required in articular fracture to avoid osteoarthritis.

Management of tibial fractures dates back to 1822, when Sir Astley Cooper1, reported different treatment methods with variable degree of success. Numerous authors have reported satisfactory results using both nonoperative and surgical methods of treatment. Hohl & Luck2 (1956) managed 726 un-displaced fractures with conservative treatment. Walter et al. (1984) studied buttress plate in reconstructive surgery of proximal tibia. Hsu et al.3 (2001) and Stevens et al.4 (2001) separately studied treatment of displaced tibial plateau fractures with buttress plate with good to excellent results.

Present study was done with aim to report the role of tibial buttress plating in management of fracture of upper end tibia.

MATERIAL AND METHODS

The present study was conducted in 50 patients of displaced, incongruous, unstable or mal-aligned upper end tibial fractures treated with tibial buttress plate in the Department of Orthopaedics, Govt. Medical College, Rajindra Hospital, Patiala.

Tibial buttress plating was done in supine position under tourniquet control through medial and lateral incision depending upon which condyle is involved. After exposure buttress plate was fixed on anteromedial or anterolateral side accordingly. Large extensile incisions were given in complex fractures. P.O.P Splint was applied in functional position after negative suction insertion and closure.

Negative suction removed 24 to 48 hrs after operation. Stitches were removed on 11 to 13 days of operation and quadriceps exercises encouraged. Patients were followed up at 4 weeks interval, allowed partial weight bearing after seeing radiological union.
RESULTS
The present study was conducted in 50 patients including 45 male and 5 female patients.

Age Distribution: 5 in 2nd decade, 10 in 3rd decade, 10 in 4th decade, 15 in 5th decade and 10 cases over 6th decade.

Road traffic accident was mode of injury in 48 cases and assault in two cases. 14 cases out of 50 cases had associated Injuries; there was associated fracture femur of same side in 6 cases and of opposite side in two cases. Fracture both bones of leg of opposite side was in 4 cases and of same side in two cases. Most common fracture, according to A.O classification was, A3 type, followed by in decreasing order C2, A2, C1, C3, B1. Fracture was of closed type in 40 cases and of open type in 10 cases.

Three cases reported poor results. Of these, two presented with open fracture and the other one developed deep infection at a later stage. The results were evaluated according to the criteria given by Savoie et al. (1987) which is a modified version of rating system described by Hohl (1956).

CASE 1

Pre-operative

Just Post-operative

AFTER 4 WEEKS

AFTER 24 WEEKS
CASE 1
After 24 Weeks
Fractures of the tibial plateau make up 1% of all the fractures and 8% of fractures in the elderly. Published studies have shown that majority of the injuries affect the lateral tibial plateau (55-70%). Isolated medial plateau fracture occurs in 10-23% of the cases, while bicondylar lesion is found in 10-30% of reported cases. 

The spectrum of injuries to the tibial plateau is so variable that no single method has proven uniformly successful. Various treatment modalities of upper end tibial fractures are – 1) Conservative Management: including splint, cast & traction with early knee motion; indicated in Non-displaced, incomplete fracture or minimally displaced fractures, elderly osteoporotic patients, inexperience in surgical technique, medically unfit patient, spinal cord injury with fracture, open type IIIB fracture. 2) Operative Management includes – Cannulated Screw fixation, condylar plate with or without B.G, AO/ASIF Buttress plate (T/L) with or without BG, Arthroscopically assisted screw fixation & external fixator. These are indicated in open tibial fractures (External fixation done), tibial plateau fracture with acute compartment syndrome; tibial plateau fractures with acute vascular injury, displaced incongruous, unstable and mal-aligned tibial plateau fracture.

Now-a-days, operative management is the main line of treatment for upper end tibial fractures except in few conditions. ORIF allows, perfect fragments reduction and early joint movements, the goal of stable, painless joint with normal range of motion and function is achieved. As cannulated screw fixation with or without bone grafting is adopted for only lateral and medial condylar split fracture with or without articular depression. Also, condylar plate with or without BG can be applied for all type of upper end tibial fracture except that of comminuted type. But, Buttress Plate (T/L) has overcome other treatment modalities and has buttress effect, so also of value in osteoporotic bones.

In present study good to excellent results were obtained in 47 out of 50 cases of upper end tibial plateau fracture treated with T/L buttress plating and bone grafting wherever needed.

So, from this study it can be concluded that ORIF of fractures of upper end tibia using A.O principles is the treatment of choice for achieving good to excellent results with almost full range of motion with no residual instability at the knee joint. Over and above, the AO/ASIF Buttress plate (T/L) appears to be good, simple and effective method in treatment of upper end tibial fractures irrespective of type of fracture, degree of comminution, degree of displacement, articular incongruity, mode of injury and quality of bone.

REFERENCES

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