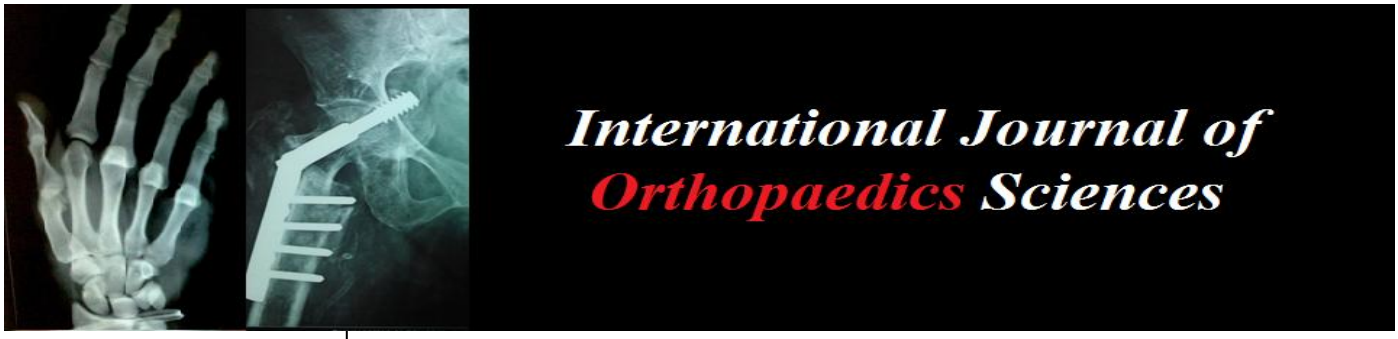

ISSN: 2395-1958
IJOS 2018; 4(2): 347-349

www.orthopaper.com
Received: 10-02-2018
Accepted: 13-03-2018

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A study of short term outcome of high energy tibia plateau fractures treated with bicondylar proximal tibia plating using modified rassmusen's score

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DOI: https://doi.org/10.22271/ortho.2018.v4.i2f.53

Abstract
Objective: This study focuses on short term outcome of bicondylar proximal tibia plating as a treatment of High energy tibia plateau fracture using Modified Rassmusen's score.
Introduction: High energy tibial plateau fractures remain a challenge to the most experienced orthopaedic surgeons, with the bicondylar type (schatzker type V)and the comminuted type(schatzker type VI)fractures being the most difficult to treat. The goals of treatment include satisfactory restoration of mechanical alignment, anatomical reduction of articular surface and stable fixation that allows early range of motion of knee.
Methodology: A cohort of 30 patients with high energy tibia plateau fractures, treated with bicondylar proximal tibia plating between Jan 2016 to Dec 2017 were analyzed for minimum of 6 months and final result was analyzed using Modified Rasmussen's score.
Results: 40% patients had excellent and 40% patients had good results. Assessment done using Modified Rassmusen's score.

Keywords: Bicondylar proximal tibia plating, modified rasmussen's score, schatzker classification

Introduction
High energy tibial plateau fractures remain a challenge to the most experienced orthopaedic surgeons, with the bicondylar type (schatzker type V)and the comminuted type (schatzker type VI) fractures being the most difficult to treat. The goals of treatment include satisfactory restoration of mechanical alignment, anatomical reduction of articular surface, and stable fixation that allows early range of motion of knee. As part of the continued development of biological friendly plating, the use of plates that allowed screws to be locked into the plate to create a fixed angle construct has been gaining popularity. Minimally invasive plate osteosynthesis using a locking plate has become an alternative treatment for proximal tibia fracture. When both condyles of proximal tibia are involved, buttressing or fixation of both the medial and lateral cortices has been indicated to prevent medial collapse and subsequent varus deformity.

Methodology
This study focuses on short term outcome of use of bicondylar proximal tibia plating as a treatment of High energy tibia plateau fracture using Modified Rassmusen's score. The observational prospective study was conducted at tertiary care hospital between Jan 2016 to Dec 2017. 30 patients with High energy tibia plateau fracture (Schatzker type V and VI), treated with bicondylar proximal tibia plating were enrolled in this study based on following inclusion and exclusion criteria.

Inclusion Criteria
All the fractures of the proximal tibia (schatzker type V and VI), with recent (<4 weeks) history of trauma.
Closed fractures, open grade I and open grade II fractures are included.

Exclusion Criteria

Pathological fractures
Fractures in children (< 18 years)
Old neglected fractures
Pregnant females
All open grade III fractures
Crush injuries
Previously operated Fractures
Fractures with existing or impending compartment syndrome

X-rays were taken and Fractures were classified according to Schatzker's classification. When needed a CT scan with or without 3D reconstruction was obtained. Preoperative work up including blood investigation, chest radiograph, ECG and pre anesthetic check up was done. Preoperative antibiotics were given as per hospital protocol. All patients were treated with bicondylar proximal tibia plates. Postoperative care includes antibiotic support and dressing was done. Depending on the post-operative fracture stability and pain tolerance of the patient, quadriceps strengthening exercises, knee and ankle mobilization exercises and non-weight bearing-crutch walking were started. Modified Rasmussen's score was applied to assess functional and radiological outcome.

Observation and Analysis

30 patients of Bicondylar proximal tibia fractures fixed using lateral proximal tibia hockey plate and medial buttress plating were included in this study.

Table 1: Age Distribution

S. No	Age Groups (in years)	No. of Cases	Percentage (%)
1.	0-20	0	0%
2.	21-40	12	40%
3.	41-60	12	40%
4.	61 and above	6	20%
	Total	30	100%

Table 2: Sex Ratio

Sex	No. of Cases	Percentage
Males	27	90%
Females	3	10%
Total	30	100%

Table 3: Mode of Injury

Mode of injury	No.of Cases	Percentage
RTA	24	80%
Fall from height	6	20%
Total patients	30	100%

Table 4: Results

Results	Clinical results	Radiological results
Excellent	12(40%)	12(40%)
Good	12(40%)	12(40%)
Fair	6(20%)	6(20%)
Poor	0	0
Total	30	30

Table 5: Complication

Complication	Patients	Percentage
Infection(Superficial)	3	10%
Infction(Deep)	3	10%
Knee joint stiffness	3	10%
Implant failure	0	0%
Varus deformity	3	10%
Limping	0	0%
Non union	0	0%
None	18	60%
Total	30	100%

Pre-operative X-ray

Post-operative X-ray

6 months follow-up X-ray

Discussion

In our study 80% fractures were associated with road traffic accidents and 20% fractures were associated with fall from height. All of them were treated using bicondylar proximal tibia plate. Average union time was 11.75 weeks. Modified Rasmussen's score showed, 12 excellent (40%), 12 good (40%) and 6 fair (20%) results. In our study, 30% patients could do squatting and sitting cross legged with ease, 40% patients with slight difficulty, 20% patients with moderate difficulty and 10% patients were unable.

Conclusion

Majority of patients were in age group of 20 to 50 years with RTA as common mode of injury. Very less major complications were recorded during follow up period and 80% patients had excellent and good results. Limitations of this study were small population (30 patients) and short term follow up (6 months) to conclude bicondylar proximal tibia plate is a good surgical option for the management for high energy tibia plateu fractures. However, osteosynthesis is dependent on the balance between achieving rigid fixation and preservation of the local biological environment and this balance may be compromised with dual plating.

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