

FUNCTIONAL AND RADIOLOGICAL OUTCOME OF BICONDYLARTIBIAL PLATEAU FRACTURES TREATED WITH SINGLE LATERAL 3.5MM PERIARTICULAR LOCKING PLATE: A RETROSPECTIVE STUDY

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Prasanna Baidoor¹, Santosh S Jeevanavar², Keshav Shenoy³, Vinod Makannavar¹, Abhishek Gumaste¹

¹ - Assistant Professor, Department of Orthopaedics, SDM College of Medical Sciences and Hospital, Sattur Dharwad, Karnataka, India.

² - Professor, Department of Orthopaedics, SDM College of Medical Sciences and Hospital, Sattur Dharwad, Karnataka, India

³ - Associate Professor, Department of Orthopaedics, SDM College of Medical Sciences and Hospital, Sattur Dharwad, Karnataka, India

Corresponding Author:

Dr. Santosh S Jeevanavar
Professor department of orthopaedics
SDM College of medical sciences and hospital
Manjushreenagar, sattur
Dharwad 580009
Karnataka
Email-drssj99@gmail.com

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Abstract:

Introduction: Bicondylartibial plateau fractures results from high energy injury and consists of 20% of all tibialplateau fractures. Treatment of bicondylartibial plateau fractures is challenging and still controversial. The standard approach which involves extensive dissection of medial and lateral column may lead to devascularisation of the fracture fragments, wound breakdown and infection. Locking plates acts as internal fixators with the locking screw creating a fixed angle construct and provide angular stability. With the use of lateral locking plate in selected bicondylar fractures medial plate can be avoided and reduce the medial soft tissue injury. Aim of this study is to determine the clinical, radiological and functional outcome of patients with bicondylartibial plateau fractures treated with single 3.5mm lateral locking plate.

Materials and methods: Between January 2009 to December 2015 all the patients operated for bicondylartibial plateau fractures in our tertiary care center were included in this study. Patients age less than 18 years, bicondylar fracture with displaced posteromedial fragment, Gustilo type 3 open fractures and patients with less than one year follow-up were excluded from the study. 24 patients with bicondylartibial plateau fractures who met all the criteria were included. All patients were operated in supine position through anterolateral approach for the proximal tibia and fracture fixed with

3.5mm periarticular proximal tibial lateral locking plate. Functional outcome was evaluated using new Oxford knee scoring system and the Hospital for Special Surgery knee score (HSS score).

Results: Average time of follow-up in our study is 19 months. In our study all patients achieved union in 14 to 42 weeks with an average time to union is 21.5 weeks. Two patients had intrarticular step-off more than 2mm in lateral condyle without any varus or valgus malalignment. 2 patients had varusmalalignment of 7 to 8 degree of MPTA on anteroposterior radiograph. One patient had loss of reduction and varus collapse at 3 months once he started weight bearing. As per the Oxford knee scoring system, 8 patients(33%) had excellent result and 16 patients had good result. The average HSS score was 82.6 (range 70 to 94).

Discussion: Effective management of bicondylartibial plateau fractures requires anatomical reduction and rigid fixation of articular segment and maintenance of limb alignment without causing much soft tissue

injury during the surgery. Moore TM et al. and Young MJ et al. have shown 23 to 88% of wound infection when dual plating was done through the single extensile approach. Gosling et al. reported immediate postoperative malreduction in 23% of cases using the LISS plating system. Barei et al. reported a 10% incidence of immediate malreduction after dual plating. In our study we have used single 3.5mm periarticular locking plate through which four locking screw can be placed in subchondral bone and may help to prevent loss of reduction. In our study one patient (4.2%) had loss of reduction. SaqibHasan et al. in their biomechanical study comparing 3.5mm plates with 4.5mm plate for bicondylartibial plateau fractures have shown no significant difference in both and advocated for low profile 3.5mm plates in these fractures

Conclusion: Present study shows bicondylartibial fractures without displaced posteromedial fragment can be treated with single 3.5mm periarticular lateral locking plate with minimal wound complication and acceptable result.

Key words: *Tibial plateau, fractures, locking plates*