

**Schatzker Type IV Tibial Plateau Fractures with Lateral Condylar Involvement:
A Subclassification Based on CT Morphology****Zhuo Ma, MD¹; Shi-Min Chang, PhD, MD¹**¹*Department of Orthopedic Surgery, Yangpu Hospital, Tongji University School of Medicine, Shanghai, Shanghai, CHINA*

Purpose: Schatzker type IV tibial plateau fractures with lateral condylar involvement are a complex and fracture-dislocation injury, known as type B in AO/OTA classification. The aim of this study is to propose a new subclassification of the fractures patterns based on the analysis of CT morphology.

Methods: We collected the CT images of 47 consecutive cases of Schatzker type IV tibial plateau fractures with lateral condylar involvement (bicondylar type B) in 47 patients who had been treated at our department from July 2009 to December 2015. There were 31 males and 16 females, from 21 to 65 years of age (average, 48 years). All fractures were closed injury. We divided the articular surface of the tibial plateau into 4 quadrants, including anteromedial, posteromedial, anterolateral, and posterolateral. We recorded the location of fracture, the type of fracture, and the orientation of fracture line according to the anatomical area of tibial plateau bicondyle and 4 quadrants.

Results: In the 47 Schatzker type IV tibial plateau fractures with lateral condylar involvement (bicondylar type B), the fracture line was mostly oblique in both coronal and sagittal plane (44 cases, 94%). The fracture in lateral tibial plateau was majorly in the posterolateral quadrant. Schatzker type IV tibial plateau fractures with lateral condylar involvement can be classified into the following 4 subtypes: (A) Total medial condyle fracture with partial lateral condyle as an entire fragment (3 cases, 6%). The fracture line was sagittally present in anterolateral and posterolateral quadrants. (B) Posteromedial plateau fracture with posterolateral quadrant (20 cases, 43%). The fracture line was coronally present in posteromedial and posterolateral quadrants. (C) Total or subtotal medial condyle fracture with posterolateral quadrant (16 cases, 34%). The fracture line was diagonally present in anteromedial, posteromedial, and posterolateral quadrants. (D) Comminuted medial condyle fracture with posterolateral quadrant (8 cases, 17%). The fracture line was multiaxially present in anteromedial, posteromedial, and posterolateral quadrants.

Conclusion: Schatzker type IV tibial plateau fractures with lateral condylar involvement (bicondylar type B) can be classified into 4 subtypes. Based on the new subclassification, complex Schatzker type IV tibial plateau fractures can be more thoroughly understood and reasonably treated. The surgeon can choose position, approach, and fixation.