## Bicondylar Tibial Plateau Fracture Dislocations with an Intact Anterolateral Cortical Rim: Prevalence, Fracture Characteristics, and Complications

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INTRODUCTION:

Bicondylar tibial plateau (BTP) fracture dislocations with an intact anterolateral (AL) cortical rim present a unique challenge due to posterolateral (PL) joint impaction. Strategies include medial-only, PL, or dual approaches with lateral corticotomy or osteotomy. Prior studies are limited to case series, and the prevalence of this fracture pattern is not known. The purpose of this study was to determine the prevalence of this pattern within a large cohort of BTP fractures and describe fracture characteristics and complication rates.

## METHODS:

All patients undergoing ORIF of a BTP fracture at two Level 1 trauma centers between 2010 and 2022 were identified. Pre-operative radiographs and CT scans were reviewed to identify partial articular fracture patterns with an intact AL rim and concomitant PL joint impaction. Posterior shearing injuries were excluded. Demographic, surgical and outcome variables were collected.

## RESULTS:

37 of 374 patients (10%) met inclusion criteria (average age 52, 57% female, 69% high-energy). Average PL depression was 10 mm, 43% had >50% lateral joint involvement, and 1 meniscal tear was repaired (2.7%). There was one pre-op peroneal nerve palsy and one anterior tibial artery injury with distal reconstitution. Single medial plating was performed for 26 (70%) fractures, dual medial plating for 7 (19%), and medial/lateral plating for 2 (5.4%). Fasciotomy for compartment syndrome was required in 2 patients (5.4%), deep infection occurred in 2 patients (5.4%), and there were no nonunions. Nine patients (24%) required reoperation: ROH (16%), I&D for infection (5.4%), MUA (2.4%), and TKA (2.4%). Average knee flexion at final follow-up was 123 degrees.

## DISCUSSION AND CONCLUSION:

This study is the first to our knowledge to describe prevalence, fracture characteristics, and complications after ORIF of BTP fracture dislocations with an intact anterolateral cortical rim. Prevalence of this pattern was 10% in this cohort and meniscal injuries may have been underestimated due to the high number of medial-only approaches. Future studies should focus on radiographic and long-term clinical outcomes to help guide treatment by evaluating the relative merits of different surgical strategies.