

## Complex Tibial Plateau Fracture: What New in Surgical Approach?

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Complex tibial plateau fracture management remains clinically challenging. These fractures are usually described as Schatzker Type V and VI or as a C type injury when using the AO/Orthopaedic Trauma Association classification. Bilateral dual plating through dual incisions is usually recommended as the definite fixation for this kind of fracture. Recently, several authors have noted computed tomography (CT)-based three-dimensional consideration of the fracture pattern (Three-column classification) was important in the treatment of tibial plateau fractures. We could choose anterolateral and posterolateral approach (no fibular osteotomy) to treat the lateral and posterolateral tibial plateau fracture (two-column fracture). Through one incision, we could manage the lateral and posterolateral plateau fracture. Posterolateral approach was used to buttress posterior displacement fragment and no complication of fibular osteotomy such as non-union. Anterolateral approach was used to ORIF for lateral plateau fracture. We could choose anteromedial approach to treat the medial and posteromedial tibial plateau fracture (two-column fracture). Through one incision, we could manage the medial and posteromedial plateau fracture. We can use a “three-column fixation” technique through combined approaches: the anterolateral and the posterior approaches by a special “floating position” was designed to perform the surgery, which was based on a lateral decubitus, and the lower leg was rotated to a prone position when the posterior approach to the tibial plateau was performed.

## Arthroscopy-assisted Surgery for Tibial Plateau Fracture: When and How?

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Management of fractures of the tibial plateau can be challenging for orthopaedic surgeons. Traditional treatment methods include casting, skeletal traction, or ORIF. Arthroscopy is accepted as a valuable adjunct in the treatment of some tibial plateau fractures. Arthroscopy may offer the advantages of more rapid recovery, reduced pain, early full range-of-motion, and more complete and functional recovery. The additional advantages include accurate fracture reduction without extensive open exposure, no need for meniscal detachment and repair as compared with open treatment requiring arthrotomy. Besides, the arthroscopy allows for evacuation of hemoarthrosis and any fracture debris. Now, arthroscopic reduction and internal fixation (ARIF) of tibial plateau fractures is the developing state-of-the-art.

Most of the tibial plateau fracture patterns are suitable for ARIF depending on the experience of the surgeons, including Schatzker types I to IV as well as tibial intercondylar eminence avulsions. More complex or higher-energy injury patterns (Schatzker types V or VI) may not be amenable for arthroscopic treatment, although some have attempted such treatment.

The patient was put on supine position with a tourniquet. The C-arm and arthroscopy are placed on the opposite site of operated leg with the flat plate of C-arm under the table. Usually, the arthroscopic examination and evacuation was done first. With the leg in figure of four position, we used anteromedial portal for viewing and anterolateral portal for working. Sometimes, we need to retract meniscus for better visualization of depressed fragments which underlying the meniscus. After lateral skin incision, cortical window was made for elevating depressed fragments and bone graft. The reduction of joint surface was assessed by arthroscopy and may assisted by C-arm.

The published outcome studies describe the results of arthroscopic treatment that are comparable to ORIF with less morbidities and complications. However, these studies suffer from extreme susceptibility bias. Thereafter, a more rigorous prospective studies is required. In my hands, ARIF of selected tibial plateau fractures allows achievement of anatomic reduction and rigid internal fixation with less morbidity than with ORIF and it has the advantage of superior visualization of the entire joint. We recommend ARIF for type I~IV fractures and consideration of selected type V and VI.