



## POSTEROMEDIAL APPROACH FOR ONE MONTH OLD ISOLATED POSTEROMEDIAL TIBIAL COLUMN FRACTURE IN A 44 YEAR OLD MALE

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### KEYWORDS :

Stabilizing posterior column tibial plateau fractures is widely acknowledged as crucial for maintaining a well-aligned joint and reducing the risk of surgical failure. Insufficient reduction or stabilization has been linked to increased surgical risks. The significance of the posterior column, particularly in cases of posterior shear injuries, is increasingly acknowledged. Restoring the mechanical axis of the knee is identified as the foremost prognostic factor in treating tibial plateau fractures. While discussions often focus on coronal alignment, restoring sagittal plane mechanical alignment is equally vital. When dealing with anterior translation of the distal fragment along with posterior sag of the femur and a posterior plateau fragment, optimal treatment involves posterior reduction and buttress plate fixation. Hence, approaches facilitating access to these fragments are essential for achieving proper joint alignment and stability.

There are several surgical methods available for reducing and stabilizing these fragments. One option is the posteromedial approach in the prone position. Another approach is the sloppy lateral or supine position, which enables access to the anterior and anterolateral plateau while still providing access to the posterior column. However, if the posterior fracture line extends too far posteriorly or laterally, achieving reduction and stabilization from a supine position can pose challenges. The prone approach offers access from the posteromedial to the posterolateral regions of the tibial plateau. It allows for separate plating of the posteromedial and posterolateral fragments, ensuring safe and effective fixation with direct visualization. This method serves as a valuable addition to a surgeon's repertoire. The case involves a 44-year-old male who experienced a postero-medial column shear type tibial plateau fracture following a collision with a motor vehicle. Initially, the patient received nonoperative treatment. However, after one month, the patient reported ongoing knee pain and difficulty bearing weight. Physical examination showed healed abrasion over anterior aspect of knee and leg with no evidence of anterior and posterior drawer movement, but there was an observed increase in varus laxity. A computed tomography scan confirmed the presence of an ununited posteromedial tibial plateau fracture fragment. Consequently, the patient was deemed suitable for open reduction and Internal fixation using buttress plate

The patient was intubated while lying on the stretcher. A non-sterile tourniquet is placed around the thigh before positioning the patient prone on well-padded chest rolls atop a radiolucent flattop table. The patient is securely strapped to the bed to facilitate safe rotation. Foam positioners are used to elevate the operative leg under the knee and thigh before draping the limb. Maintaining unimpeded knee extension is essential to assist with fracture fragment reduction.

A vertical posteromedial incision is initiated over the proximal tibia, extending from the popliteal crease and angling towards the midline superiorly, reaching the medial border of the gastrocnemius muscle distally. During superficial dissection, the knee is slightly flexed to relieve tension on the gastrocnemius. Subcutaneous dissection proceeds down to the gastrocnemius fascia, with caution taken to avoid damaging the small saphenous vein and saphenous nerve. The interval between the posterior border of the gastrocnemius and the semimembranosus tendon is carefully developed to access the posteromedial proximal tibia. The medial head of the gastrocnemius is mobilized from the posteromedial aspect of the tibia. The popliteus

muscle belly is then lifted off the posterior tibia subperiosteally to safeguard the popliteal neurovascular bundle from inadvertent injury. Dissection of the posterior tibia extends from the joint line proximally to the lateral border of the tibia. Care is taken to avoid excessive distal and lateral dissection to prevent damage to the posterior tibial recurrent artery. The medial collateral ligament, located anteriorly, is protected. Access to articular impaction can be achieved through the posterior window, posterior arthrotomy at the posteromedial joint line, or longitudinal splitting of the medial collateral ligament with arthrotomy performed deep to the longitudinal split. The location of the arthrotomy depends on where the fracture line exits the tibial plateau.

Reduction of the posterior column fragment is performed with the knee in full extension. Towel bumps may be placed under the knee to achieve this. Various reduction tools aid in achieving anatomical alignment, often involving the use of an elevator or osteotome to leverage the fragments back into position. Anatomic reduction is provisionally fixed using K-wires.

A precontoured buttress plate and a push-pull device are utilized to achieve compression with the plate. Screws are drilled using standard techniques. Depending on bone quality, bone loss, and the potential for over-compression, a decision is made to use a locked screw proximally. In cases of better bone quality, a nonlocked lag screw may be preferred. Nonlocked screws are placed distally to enhance the buttress effect of the plate.

Autogenous callus extracted from the fracture site is applied to the nonunion site and packed into the bone gap to fill the void and assist in altering the biological environment at the nonunion site. Following reduction, the knee undergoes examination through a range of motion and varus/valgus stresses.

Bony instability is addressed with further reduction and stabilization, while soft tissue instability may be managed with repair, reconstruction, or bracing/immobilization. Postoperatively, the patient receives antibiotics and venous thromboembolism prophylaxis as part of the treatment plan. Post operatively pt was kept nil weight bearing and bed side knee rom was started.

### Clinical pics

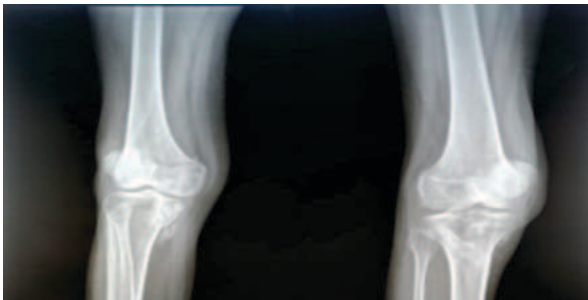




Preop x-rays



Oblique views



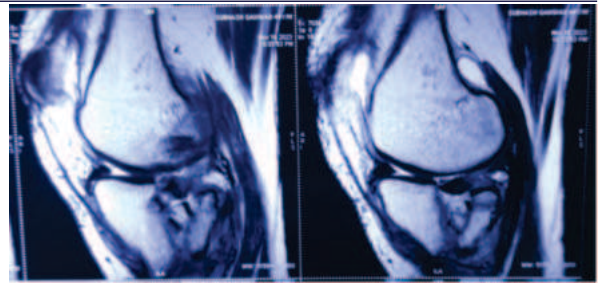
Ct pics(coronal)



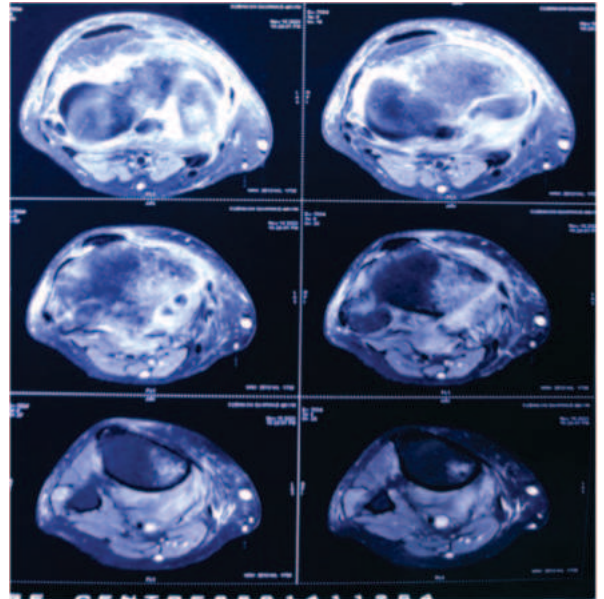
Ct pics sagittal



Mri pics (sagittal)



Mri pics (axial)



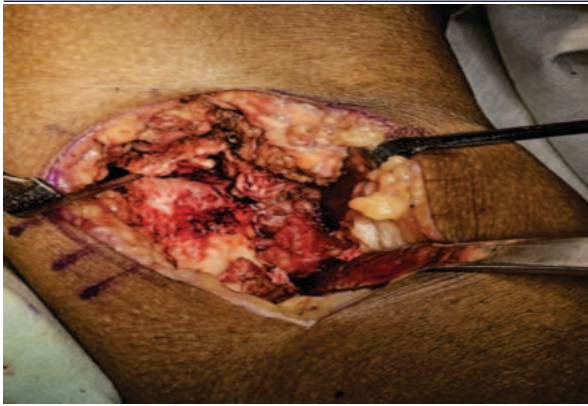
Intraop pics prone position with postermedial incision with skewing towards midline



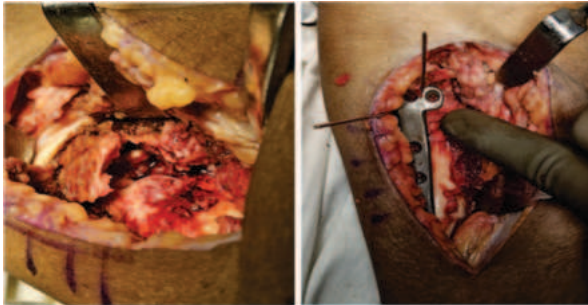
Superficial and deep dissection done with fracture site exposed







Exposure of the fractured segment and clearing of callus



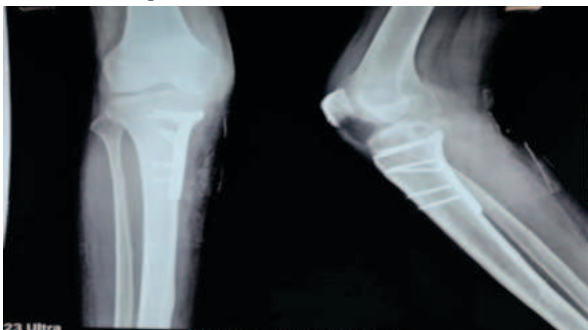
Applying posteromedial buttress plate after filling the fractured area with callus



Immediate post op



1month follow up



#### REFERENCES

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