



Bicondylar Tibial Plateau Fractures
When do I need a medial plate?

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Tibial Plateau Fractures

- Mechanism:
 - Axial load + varus/valgus stress
- Age:
 - Bimodal: 4th decade (males), 7th decade (females)

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Schatzker Classification

- I split, lateral plateau
- II split-depression, lateral plateau
- III central depression, lateral plateau
- IV split +/- depression, medial plateau
- V bicondylar fracture
- VI plateau fracture with separation of the metaphysis and diaphysis

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Treatment Options

- Initial
 - Acute ORIF if swelling, soft-tissue injury permits
 - More commonly possible in Schatzker V's
 - Knee-spanning external fixation
 - +/- percutaneous or limited internal fixation, depending upon fracture pattern

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Treatment Options

- Definitive
 - ORIF
 - Lateral locked plating alone
 - Dual plating
 - Ringed fixator
 - Severe soft tissue injury
 - ? Compartment syndrome
 - IMN
 - Minimal joint involvement

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Treatment Options

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Treatment Options: Lateral Plating

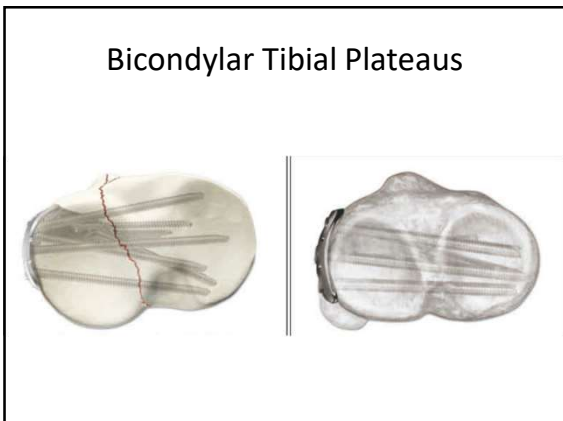
- Advent of locked plating
- Anatomically-contoured plates
- Submuscular insertion guides
- Fixed-angle fixation from lateral approach only
- Problem?

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Treatment Options: Dual Plating

- Type, location and displacement of medial fracture helps determine need for medial approach/plating
 - Degree of displacement
 - Need for open reduction
 - ? Comminution
 - Posteromedial shear
- Lateral plate designs differ
 - Posteromedial fragment may not be captured
 - Hanging fragment on “end of diving board” not ideal

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Treatment Options: Dual Plating

- What about “Dead Bone Sandwich”?
 - Bad results due to approach, not fixation
 - Utilitarian midline approach used to facilitate later TKA
 - Single midline incision bad due to need for extensive soft-tissue stripping
 - Even bad plateaus uncommonly need TKA
 - By the time they do, previous incisions no longer a factor
 - Dual, fragment-specific approaches preferred (postero-medial, anterolateral) with minimal stripping

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Bicondylar Plateaus: Dual Plating

- When?
 - Is there a posteromedial fragment?
 - Is there displacement of medial joint fragment?
 - If not displaced, will lateral implant capture and stabilize it adequately?
 - Axial CT important
 - Know your implants

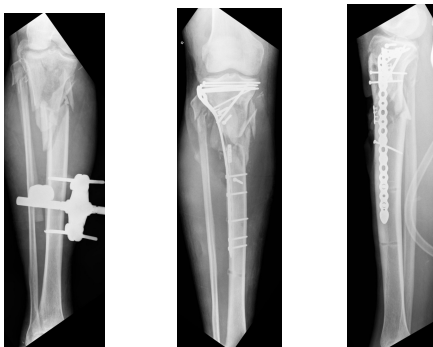
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Bicondylar Plateaus: Lateral Plating

- Segmental comminution of both lateral and medial columns
 - Postero-medial shear rarely seen in this pattern
 - Bridge plating of both columns may be advantageous
 - Must be able to restore articular alignment

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Bicondylar Plateaus: Lateral Plating

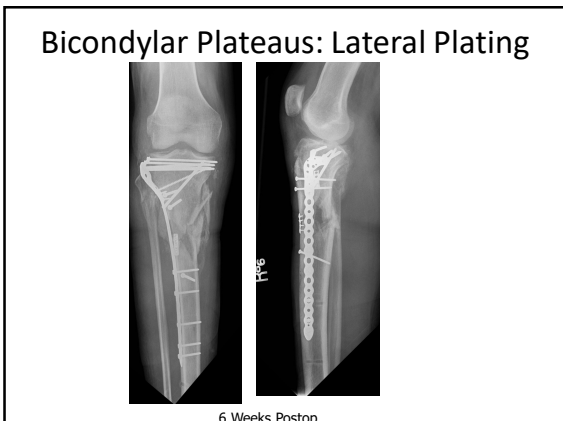


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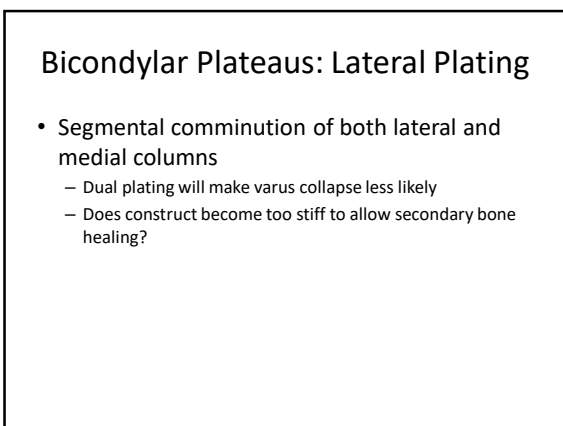
Bicondylar Plateaus: Lateral Plating

- Segmental comminution of both lateral and medial columns
 - No postero-medial fragment
 - Bridge-plating construct (“extramedullary nail”)

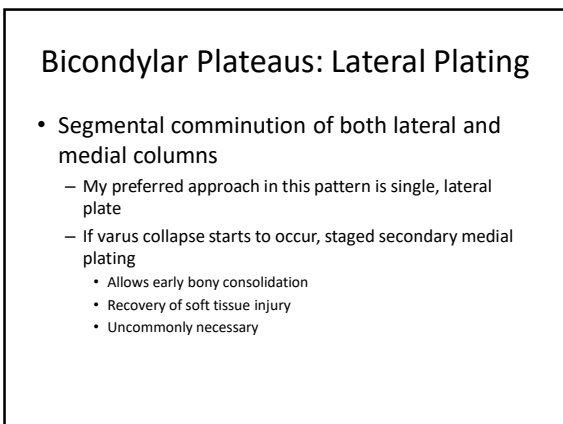
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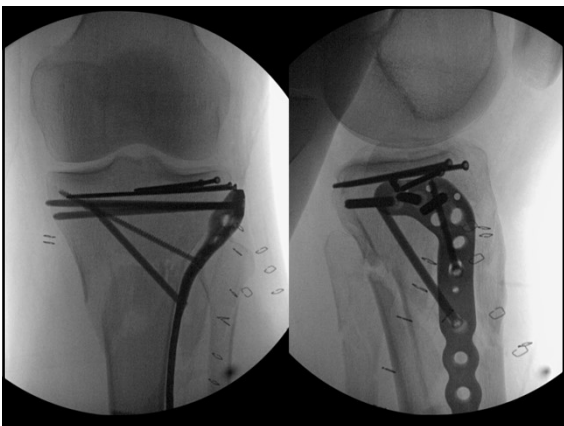
Bicondylar Plateaus: Lateral Plating Failure

- 33 yo male
- MVC
- Bicondylar comminution
- Minimal joint involvement

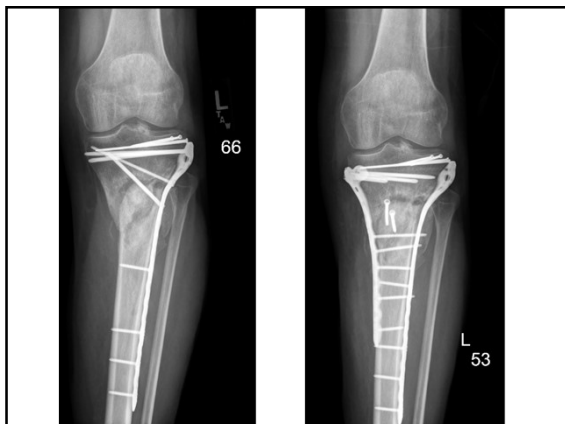
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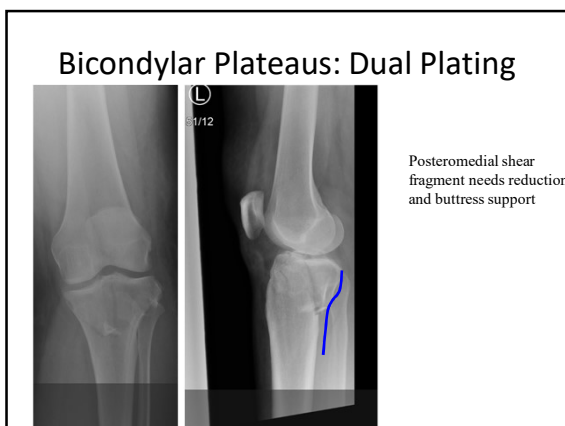
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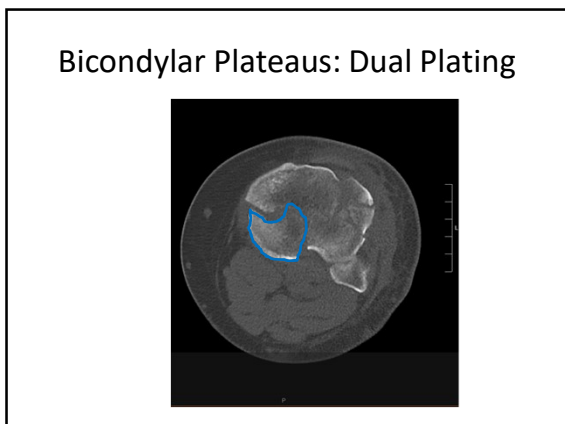
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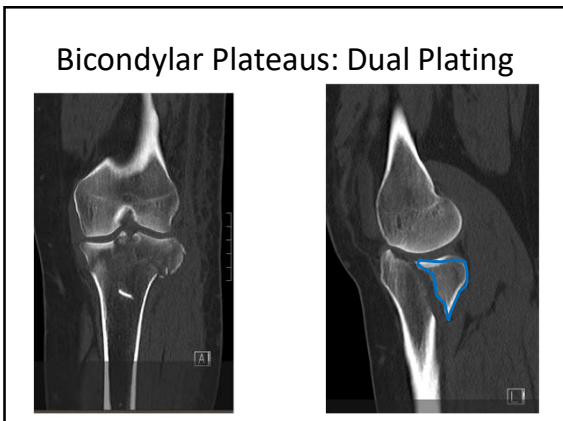
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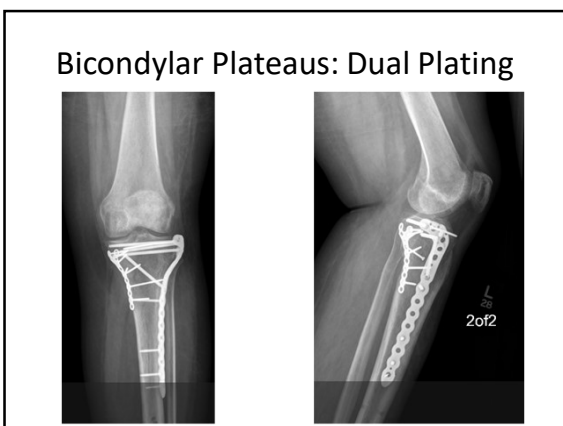
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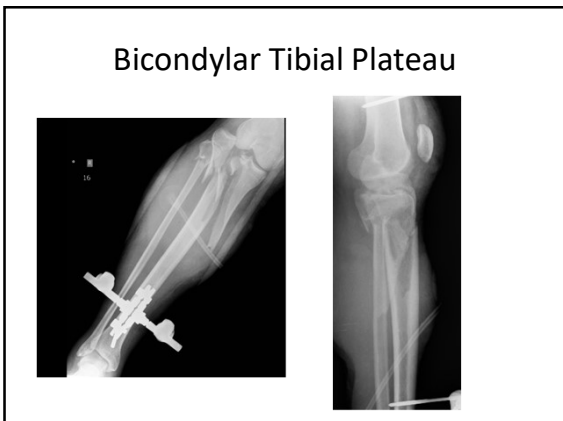


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Bicondylar Plateau: Alternative Means of Medial Support

- 40 year old male MCA
- Transferred from outside hospital after fasciotomies and spanning ex-fix

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Bicondylar Tibial Plateau

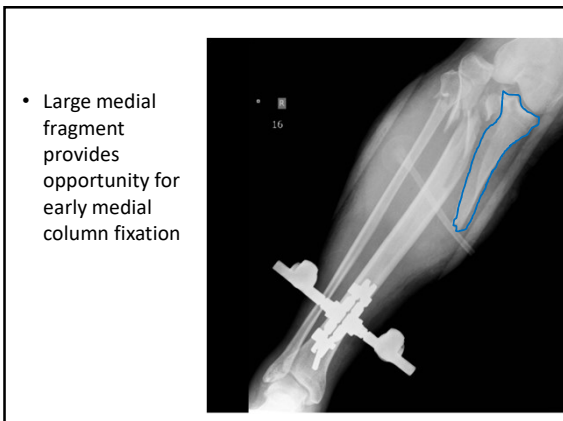
- Still short, subluxated in frame
- Fasciotomies with vacs in place

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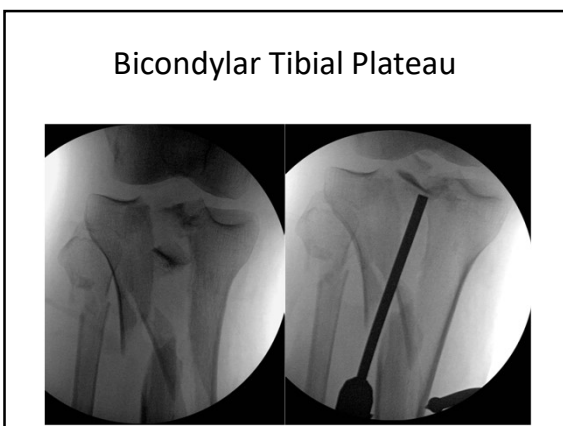
Bicondylar Tibial Plateau

- Taken to OR for revision ex-fix
- I&D fasciotomy wounds
- Minimal internal fixation

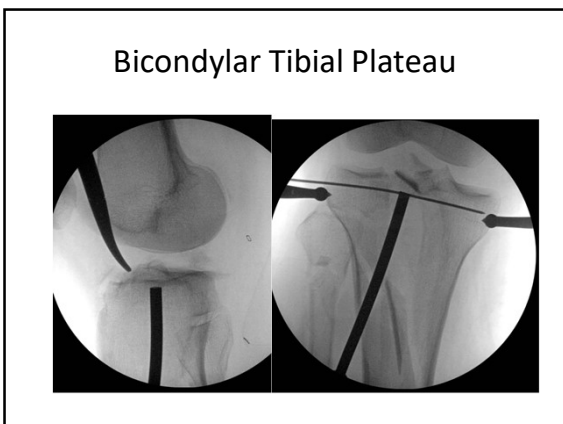
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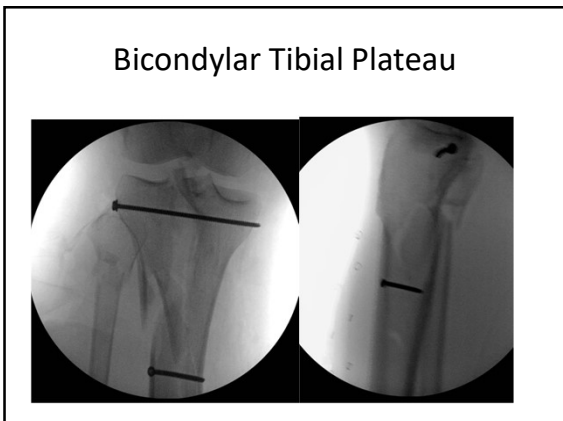
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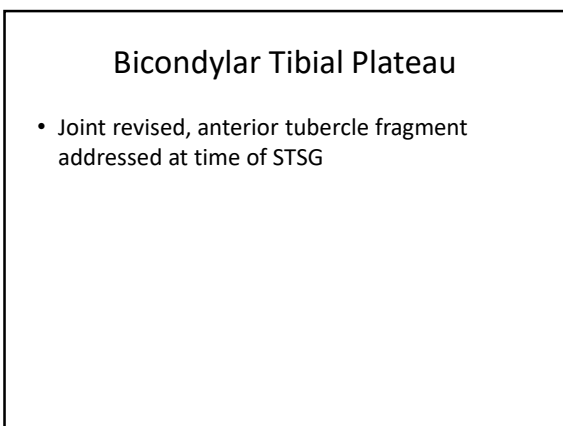
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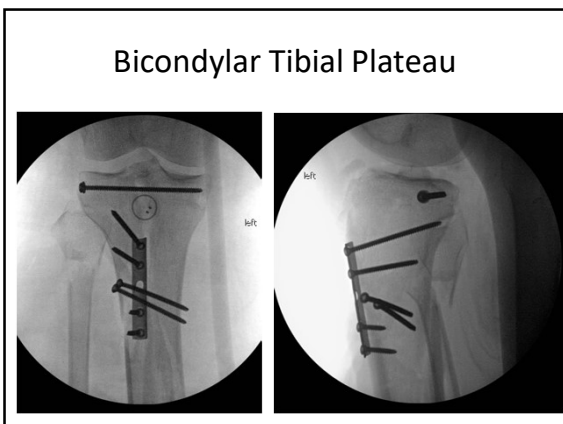
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Bicondylar Tibial Plateau

- When skin graft matured, brought back for definitive ORIF (2 months after original presentation)
- External fixator removed
- Manipulation under anesthesia

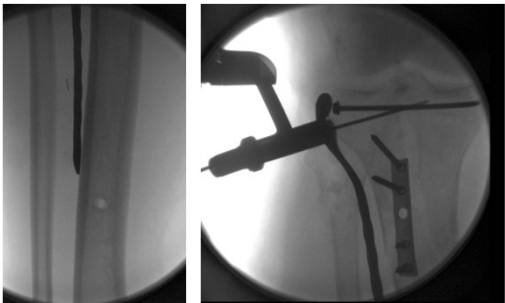
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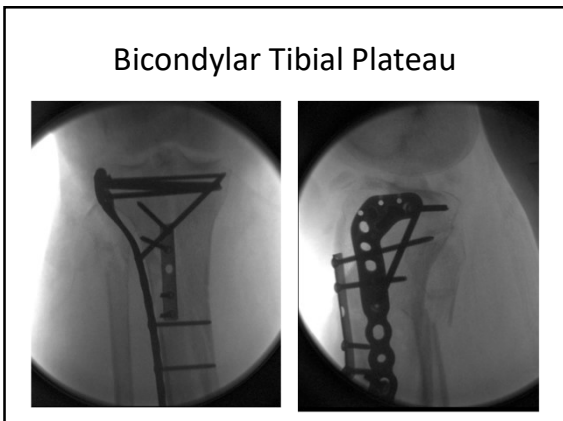


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Bicondylar Tibial Plateau



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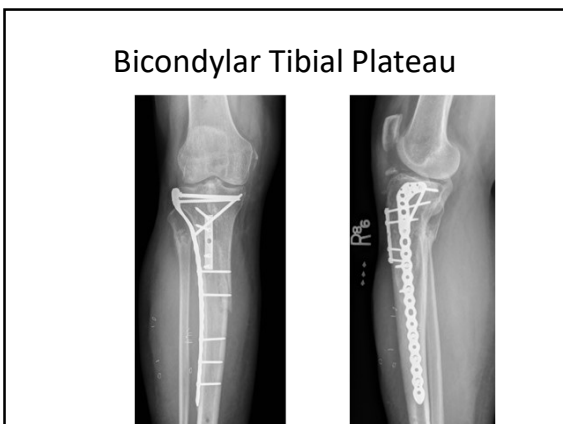


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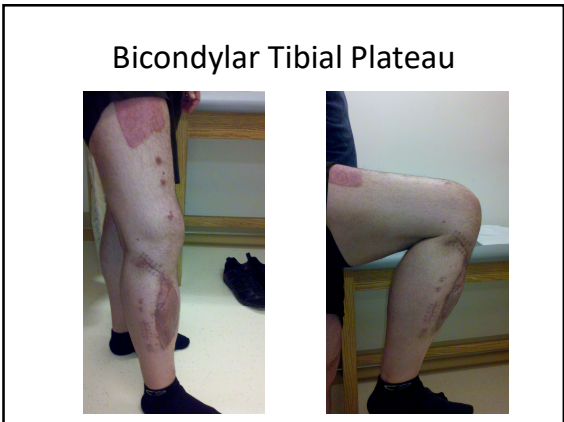
Bicondylar Tibial Plateau

- 10 months post injury
- Full wt-bearing
- Back at work
- Pain-free
- Early lag screw fixation of large medial metaphyseal fragment enhanced effectiveness of spanning frame, avoided need for medial plate

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