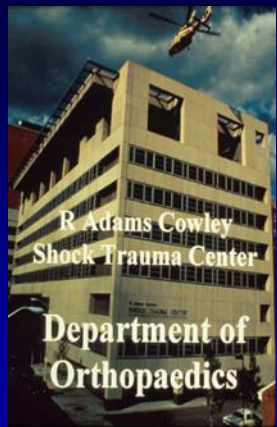


Bicondylar Tibial Plateau Fractures

Marcus F. Sciadini, MD



Tibial Plateau Fractures

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

Physical Exam

- Skin
 - open?
 - closed / contusion
- Compartment syndrome?
- Vascular
- Nerve

Complex Tibial Plateau Fractures Associated Injuries

- 31% compartment syndrome
- 31% vascular injuries
- 23% peroneal nerve injuries

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

Schatzker V Bicondylar fracture



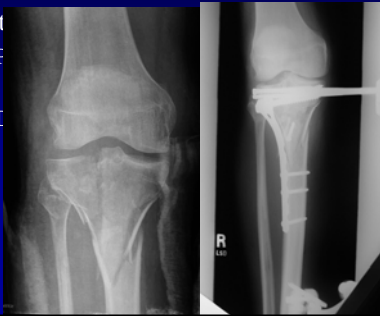
Schatzker VI Bicondylar with separation of the metaphysis and diaphysis

- High energy injuries!
- Beware soft-tissue injury
- Compartment syndrome
- Often spanning external fixation and delayed ORIF



Treatment Options

- Ext
- F
- I



Bicondylar Plateaus: Treatment Options

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

Bicondylar Plateaus: Treatment Options

- Medial column joint injury needs to be REDUCED before fixation
 - Often requires open reduction
- If relying on lateral plate, fixation has to actually capture medial fragment
 - Posteromedial fragment often missed
 - Buttress from medial side most mechanically advantageous
 - Hanging fragment on “end of diving board” not ideal

Bicondylar Tibial Plateaus



Bicondylar Plateaus: Treatment Options

- Dual plating?
 - What about “Dead Bone Sandwich”?
- Bad results due to approach, not fixation
- Utilitarian midline approach used to facilitate later TKA

Bicondylar Plateaus: Treatment Options

- Even bad plateaus uncommonly need TKA
- By the time they do, previous incisions no longer a factor
- Single midline incision bad due to need for extensive soft-tissue stripping
- Dual, fragment-specific approaches preferred (postero-medial, anterolateral) with minimal stripping

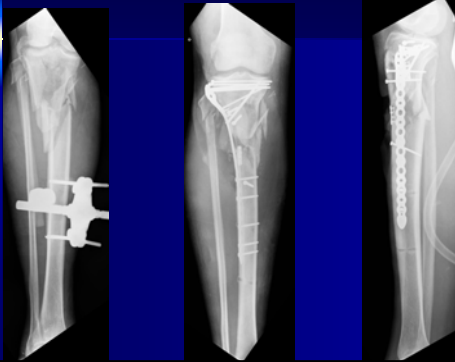
Bicondylar Plateaus: Dual Plating

- 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

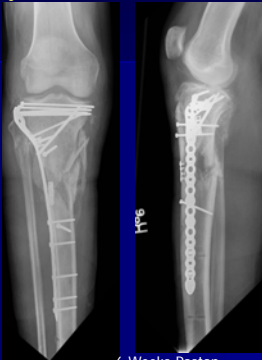
Bicondylar Plateaus: Lateral Plating

- Segmental comminution of both lateral and medial columns
 - Bridge plating of both may be advantageous
 - Must be able to restore articular alignment

Bicondylar Plateaus: Lateral Plating



Bicondylar Plateaus: Lateral Plating



•Without posteromedial fragment, bridge plating from lateral side with submuscular technique and fixed-angle device, reliable healing with callus and no varus collapse can be achieved

•6 Weeks Postop

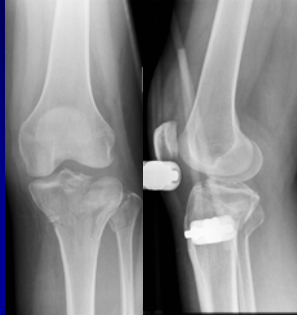
Bicondylar Plateaus: Dual Plating



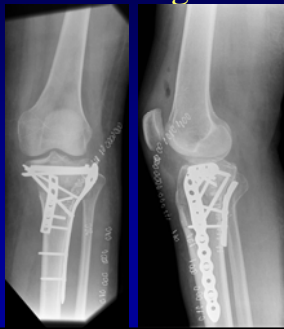
•Posteromedial shear fragment needs reduction and buttress support

EFT 71

Bicondylar Plateaus: Dual Plating



Bicondylar Plateaus: Dual Plating



Bicondylar Plateau: Alternative Means of Medial Support

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

Bicondylar Tibial Plateau



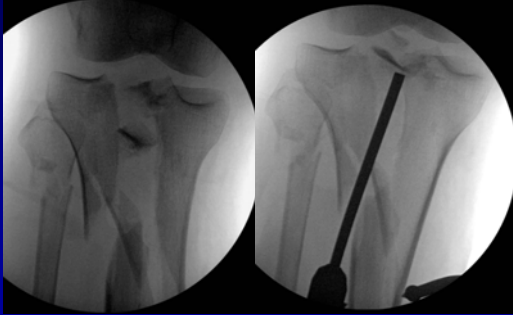
Bicondylar Tibial Plateau

- What they did right:
 - Pins well out of zone of definitive fixation
- What they did wrong:
 - Didn't reduce the fracture!
 - Applying the ex-fix is not enough
 - Need to distract across joint and fracture

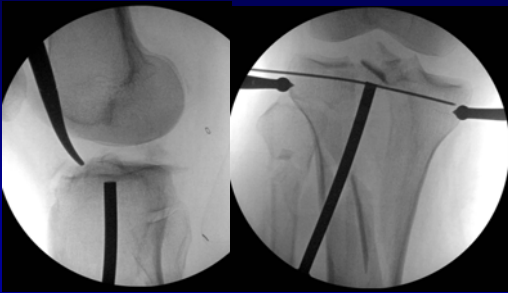
Bicondylar Tibial Plateau

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

Bicondylar Tibial Plateau



Bicondylar Tibial Plateau



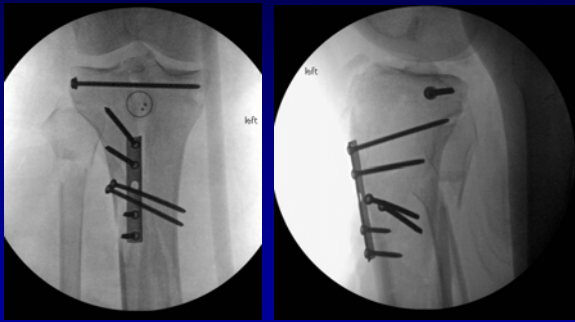
Bicondylar Tibial Plateau



Bicondylar Tibial Plateau

- Large medial metaphyseal fragment allows for lag screw fixation from lateral approach
- Reducible and fixable without medial approach...two key requirements

Bicondylar Tibial Plateau



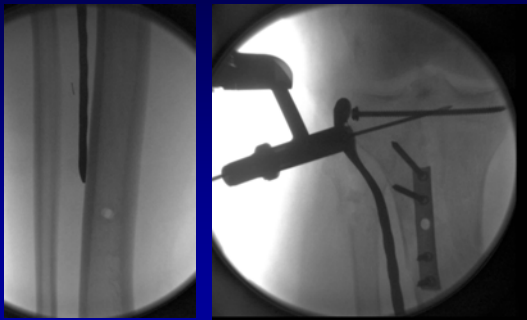
Bicondylar Tibial Plateau

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

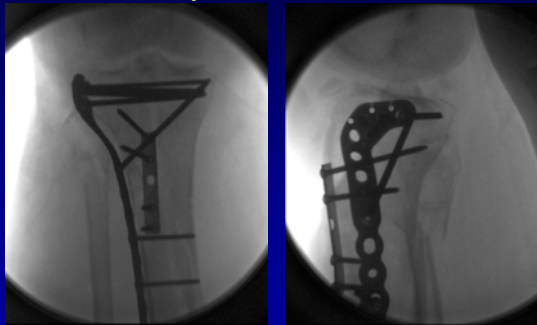
Bicondylar Tibial Plateau



Bicondylar Tibial Plateau



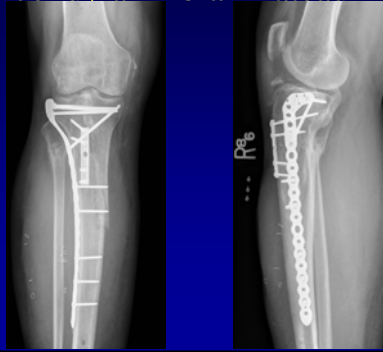
Bicondylar Tibial Plateau



Bicondylar Tibial Plateau

- 10 months post injury
- Full wt-bearing
- Back at work
- Pain-free

Bicondylar Tibial Plateau



Bicondylar Tibial Plateau



THANK YOU