

# Coronal / Posterior Fractures of Tibial Condyle



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**Dr. Rahul A. Damle**

MS, DNB, AFAOA (Australia)

Jehangir Hospital

Ratna Hopital

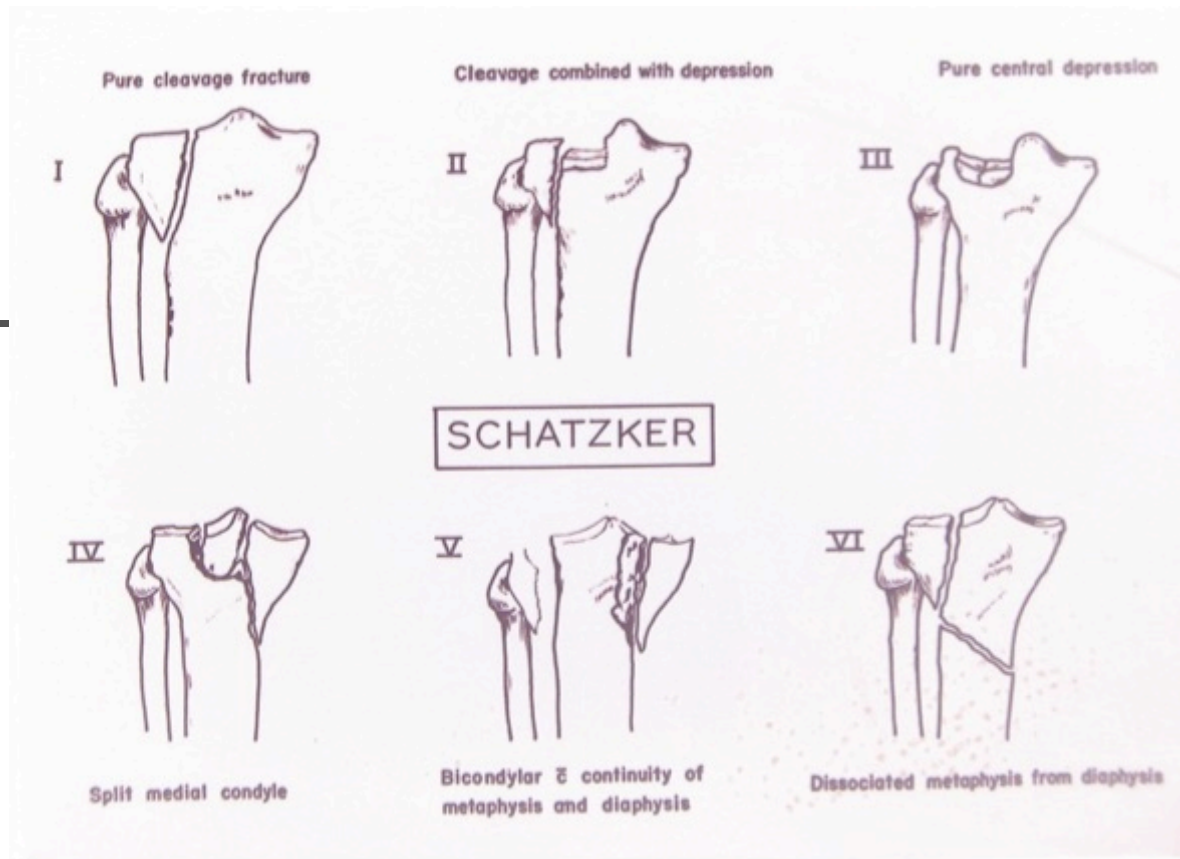
Joshi Hospital



# Introduction

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- High energy Frs
- Great challenge
- Concomitant Ligamentous injury
- Lifelong pain & disability
- Early & premature OA



- However, the Schatzker classification just limits to morphological assessment in **sagittal plane** and cannot be used in coronal fractures of posterior condyles

# Understand the fracture

- AO Classification
- Schatzker classification
- **CT / 3-D construct**

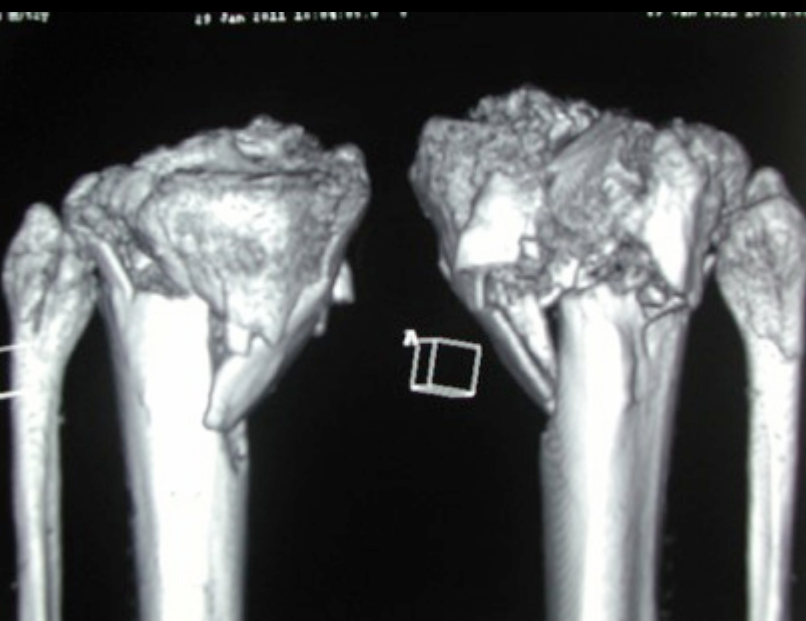


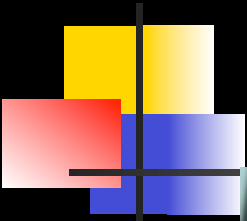


# Primary First-Aid

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- Preop Treatment is centred on Soft tissue management
- Crepe
- Closed reduction under GA / Slab
- Joint spanning Ex Fix / Skeletal Traction
- Elevation

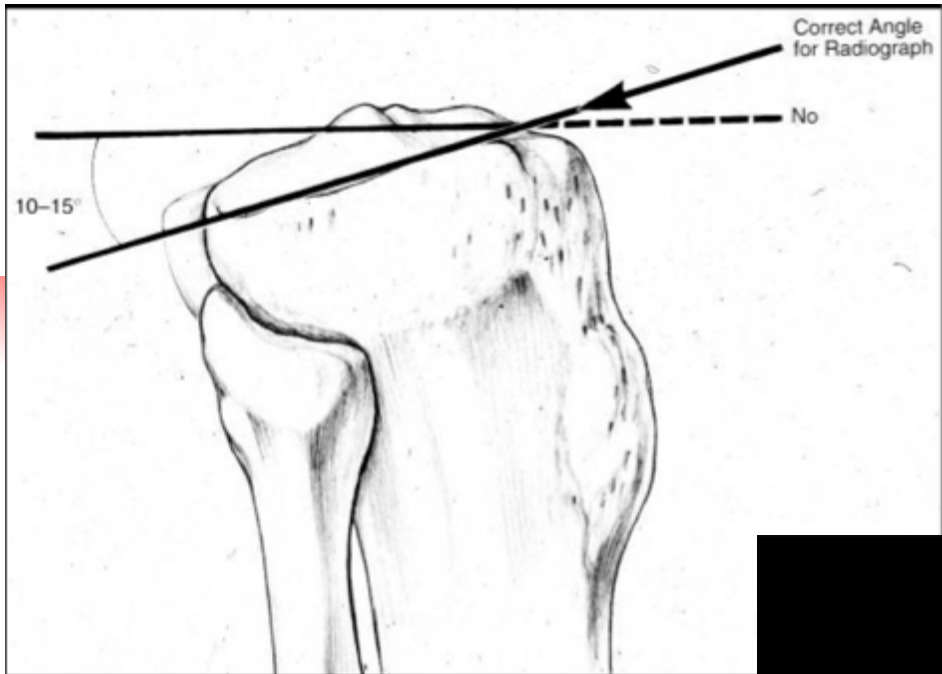












## Plateau Tilt View

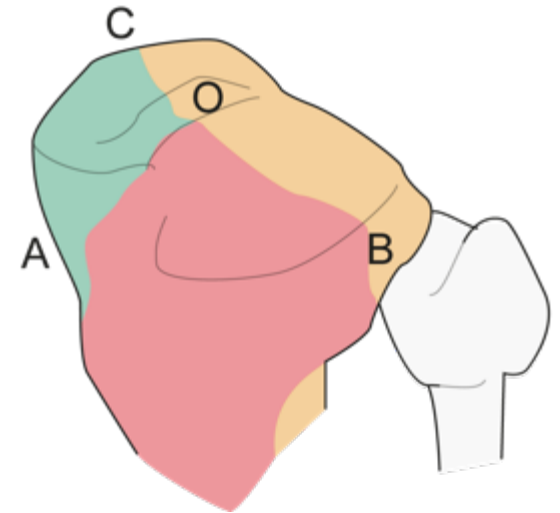
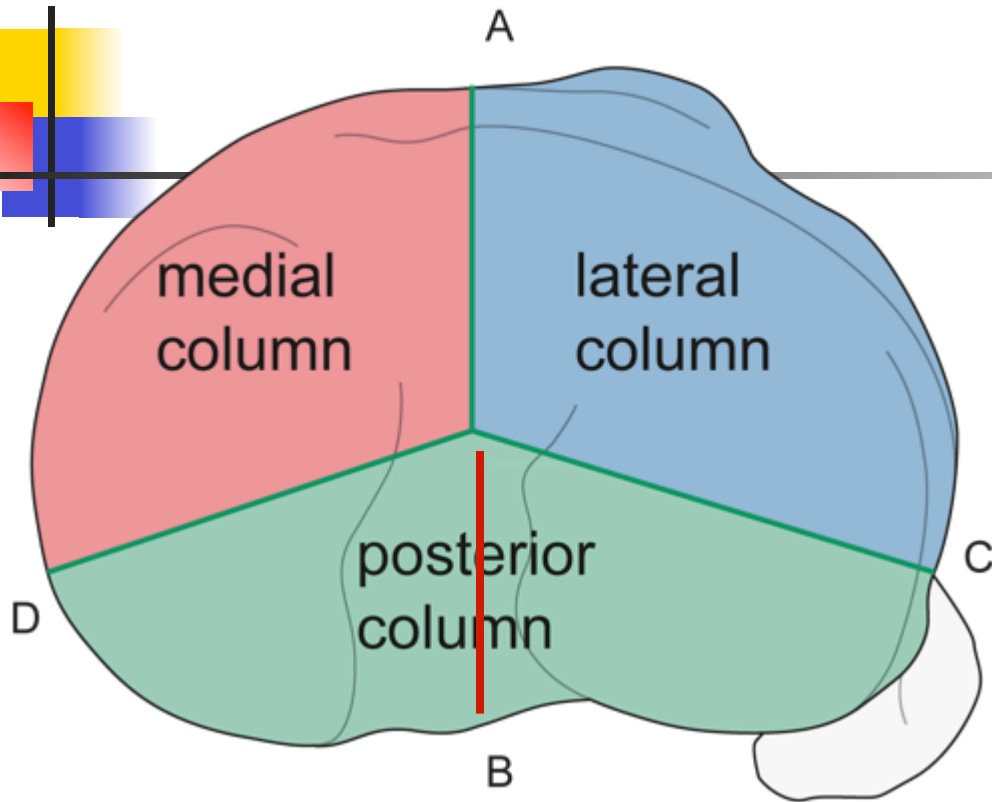


Standard AP View



"Plateau Tilt" View

# 3-Column concept



**Luo CF, Sun H, Zhang B, et al.**

Three-column fixation for complex tibial plateau fractures.

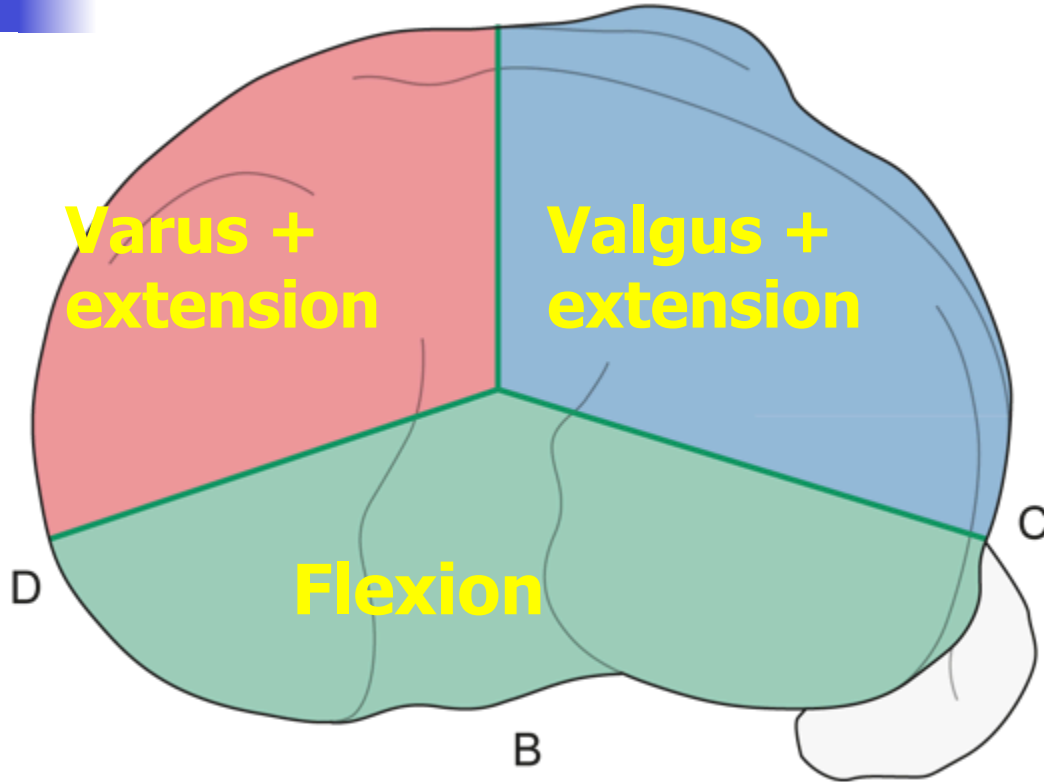
*J Orthop Trauma.* 2010 Nov

# A new way of thinking

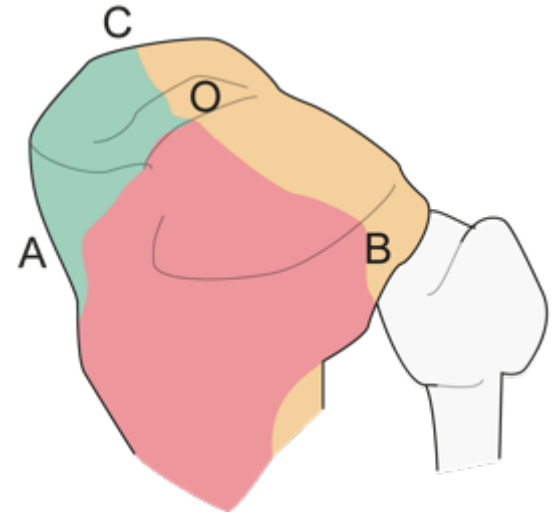
medial column

A

lateral column



posterior column



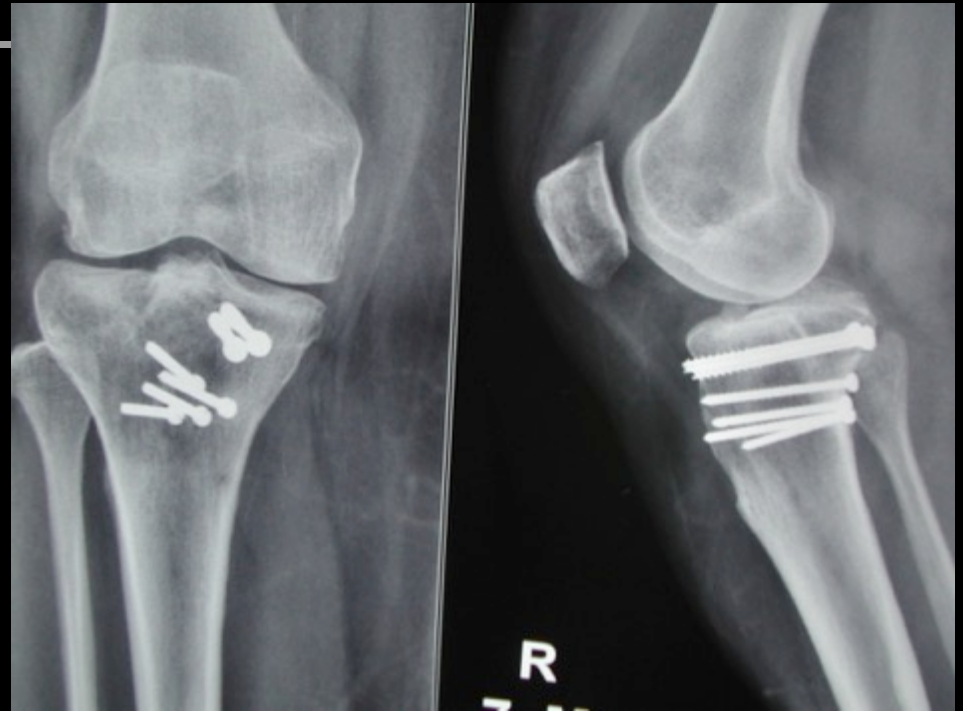
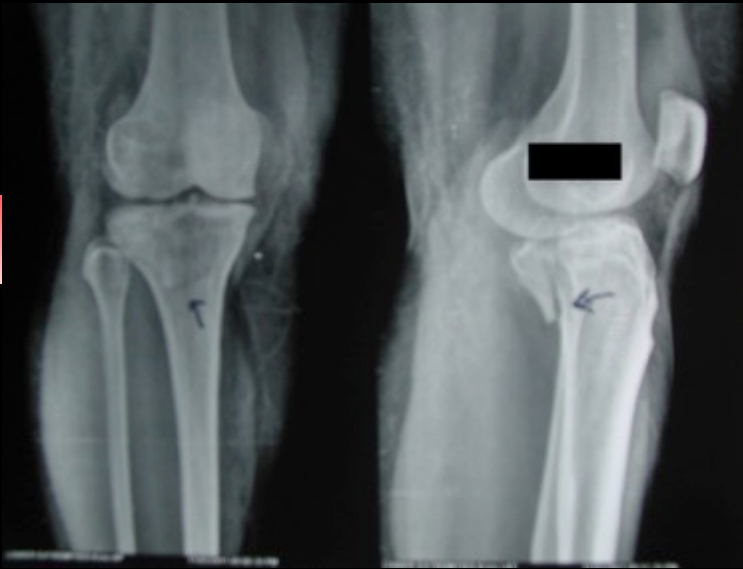
**Morphology + injury mechanism**



# Principles of Posterior fixation

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- Post fragments can be fixed with an A-P screw. However, inadequate stability will not allow for early mobilisation due to fear of re-displacement
- Value of PM & PL approaches, is in direct anatomic reduction & stabilising with anti-glide plates
- ST Injury anterior
- Posterior ST thick & rich in blood supply
- Combined approaches PM & AL, PL & AL



**Avoid !!**

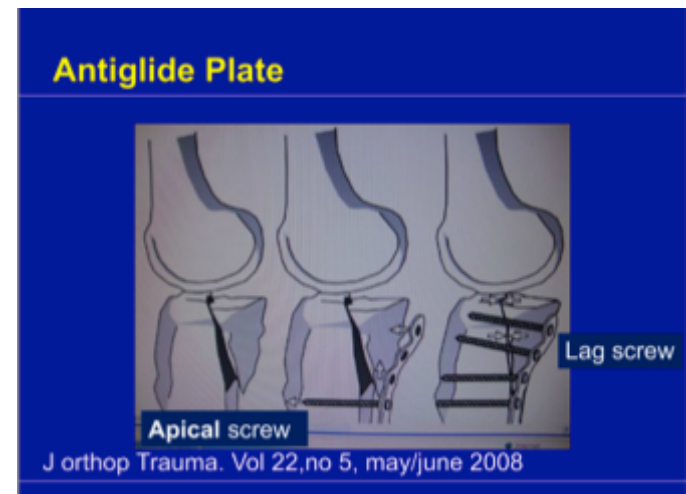
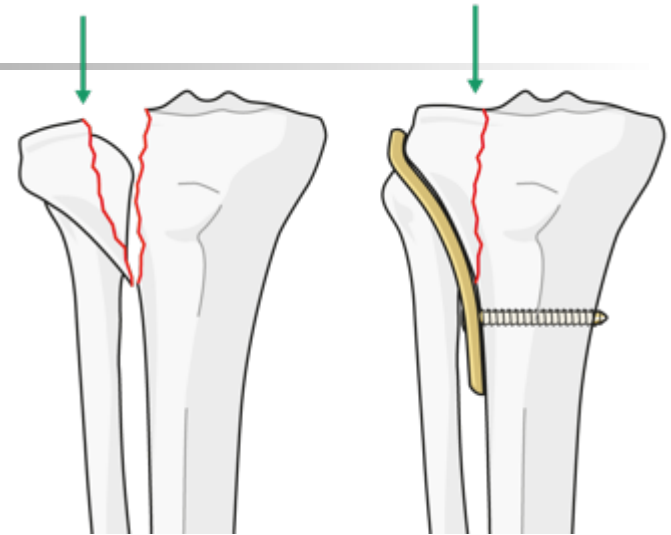




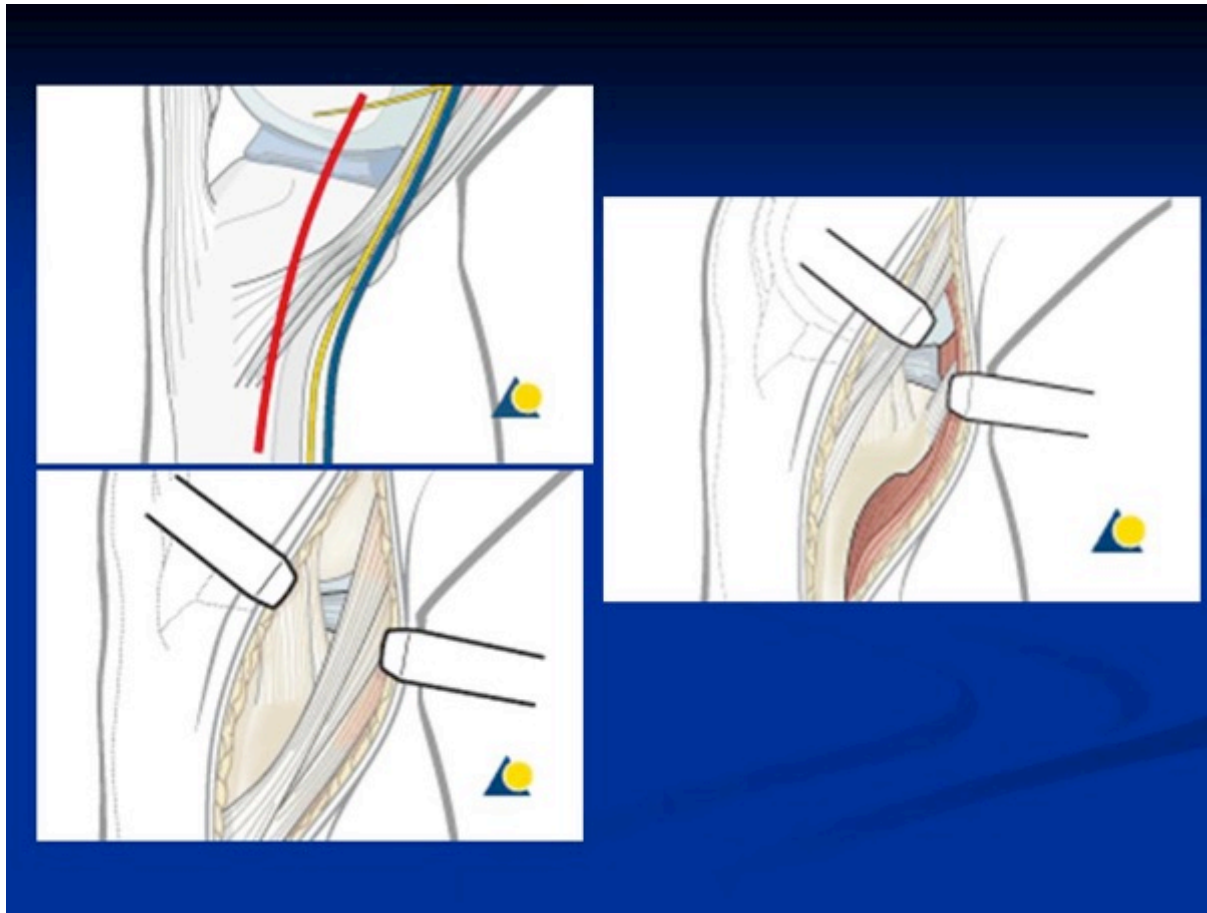


# Principle for plate fixation

- Buttress fixation is preferred for column fractures
- Main buttress plate is chosen according to the **injury mechanism**



# Postero-medial Approach





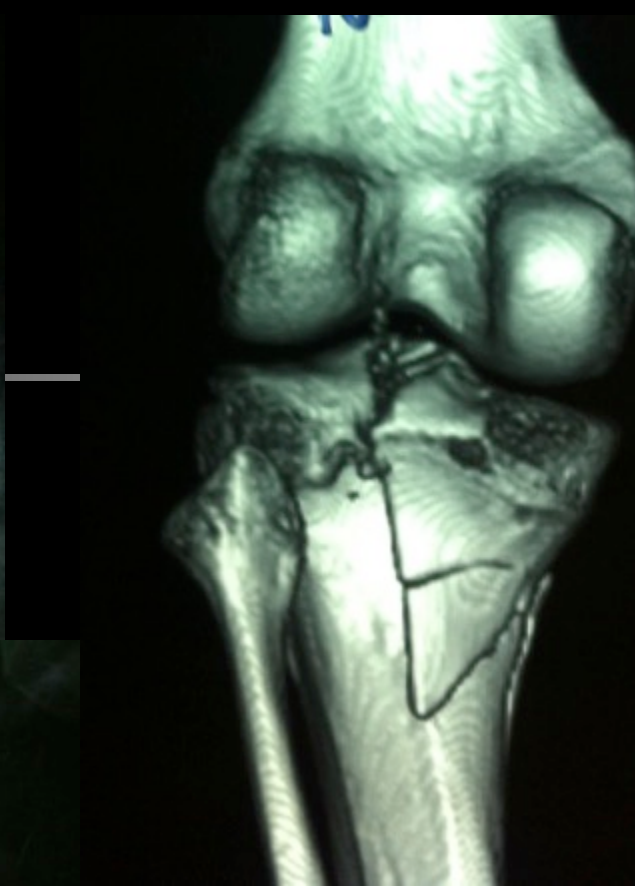
MR AJIT SHETTY  
64 19732 M/47Y  
1.0 3  
MR  
mm  
.10

APOLLO CT SCAN, PUNE  
Philips Brilliance 64  
20 Dec 2010 12:04:50.0  
120kV, 301mA  
SC 204.0 mm  
Z 1.10

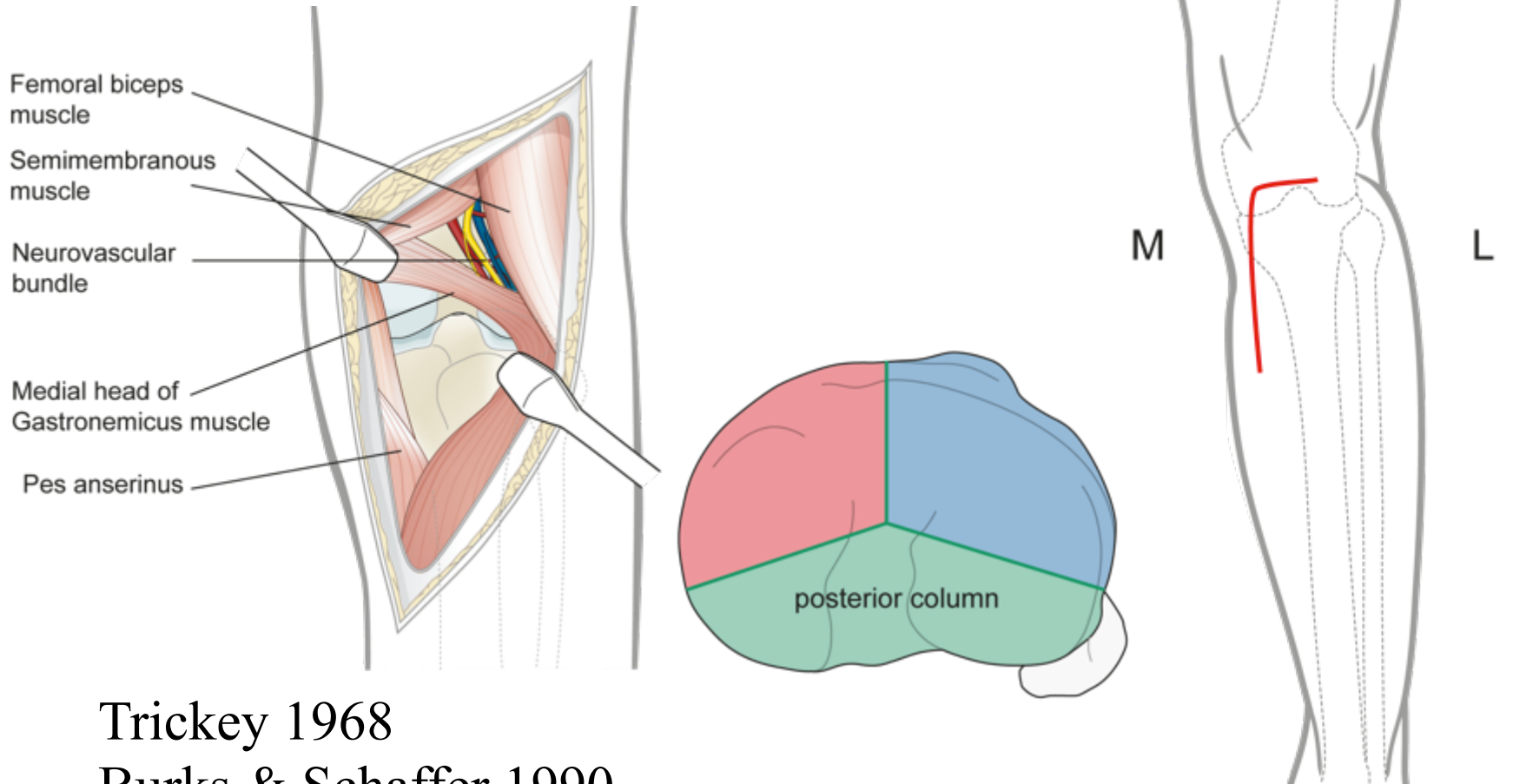






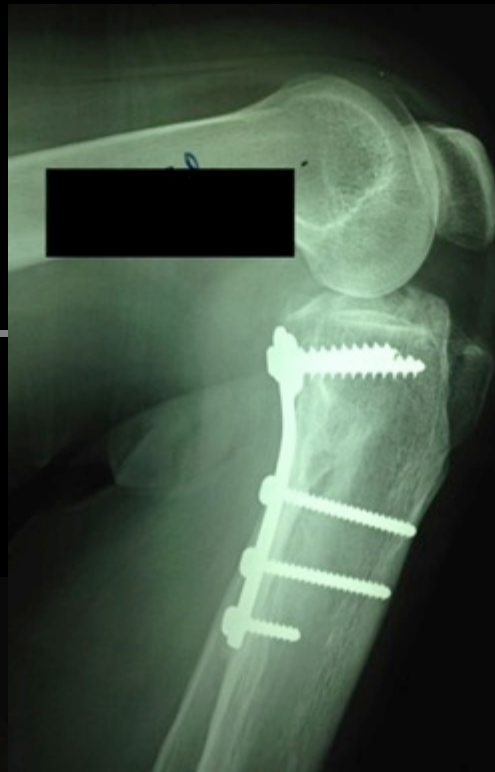


# Posterior column fracture



Trickey 1968

Burks & Schaffer 1990







AP  
Scan 64 20310 F/10y  
11:37:42.0 3  
120kV, 200mA  
SC 350.0 mm  
I 1.10



AP  
SCAN, SUNE SURSNI RAJE  
Philips Brilliance 64 20310 F/10y  
11:37:42.0 3



M. SUNE SURSNI RAJE  
Scan 64 20310 F/10y  
11:37:42.0 3  
120kV, 200mA  
SC 350.0 mm  
I 1.10  
Z 1.10

APOLLO CT SCAN, SUNE SURSNI RAJE  
Philips Brilliance 64 20310 F/10y  
11:37:42.0 3  
120kV, 200mA  
SC 350.0 mm  
SW 0.90 mm  
I 1.10  
IZ 5.00

APOLLO CT SCAN, SUNE SURSNI RAJE  
Philips Brilliance 64 20310 F/10y  
11:37:42.0 3  
120kV, 200mA  
SC 350.0 mm  
SW 0.90 mm  
I 1.10  
IZ 5.00





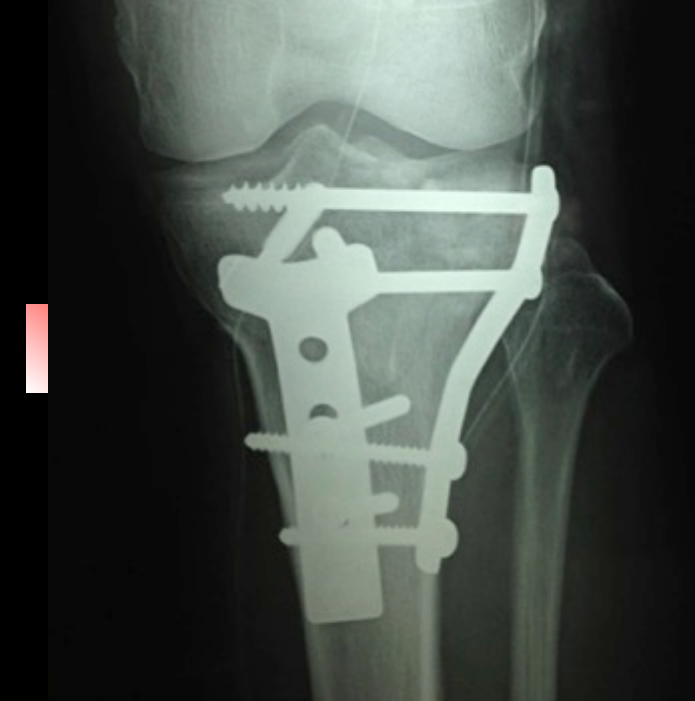












# Posterolateral Condyle Frs

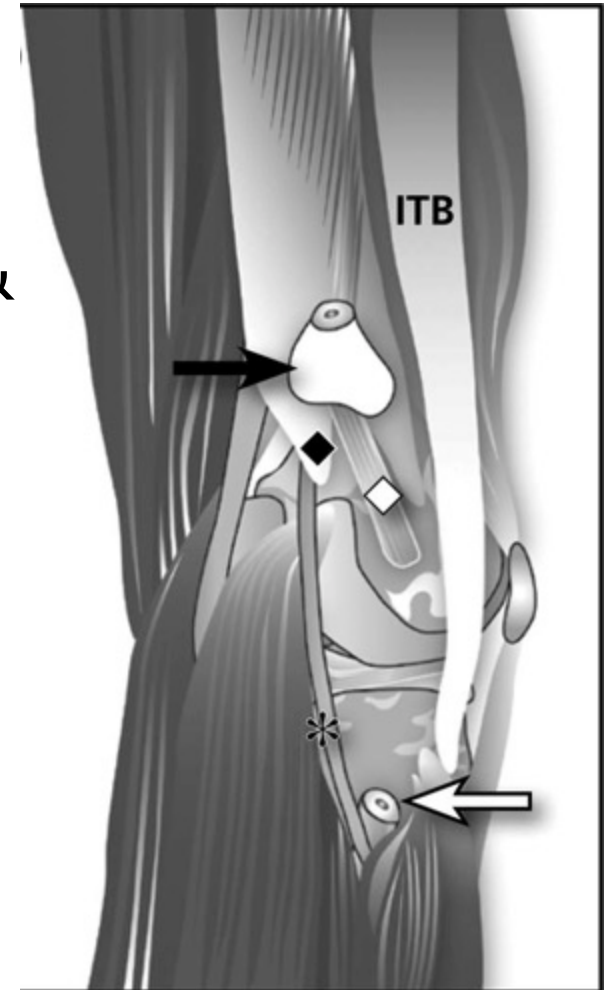
- 7% of all tibial condyle Frs
- Fragments covered by fibular head & ligaments in the popliteus corner

- **Lobenhoffer approach :**

Fibular osteotomy & detachment of  
Joint capsule & menisco-tibial  
ligaments

Good exposure

Extensive trauma to PL corner





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- New Posterolat approach without Fibular osteotomy : Frosch, Balcarek et al

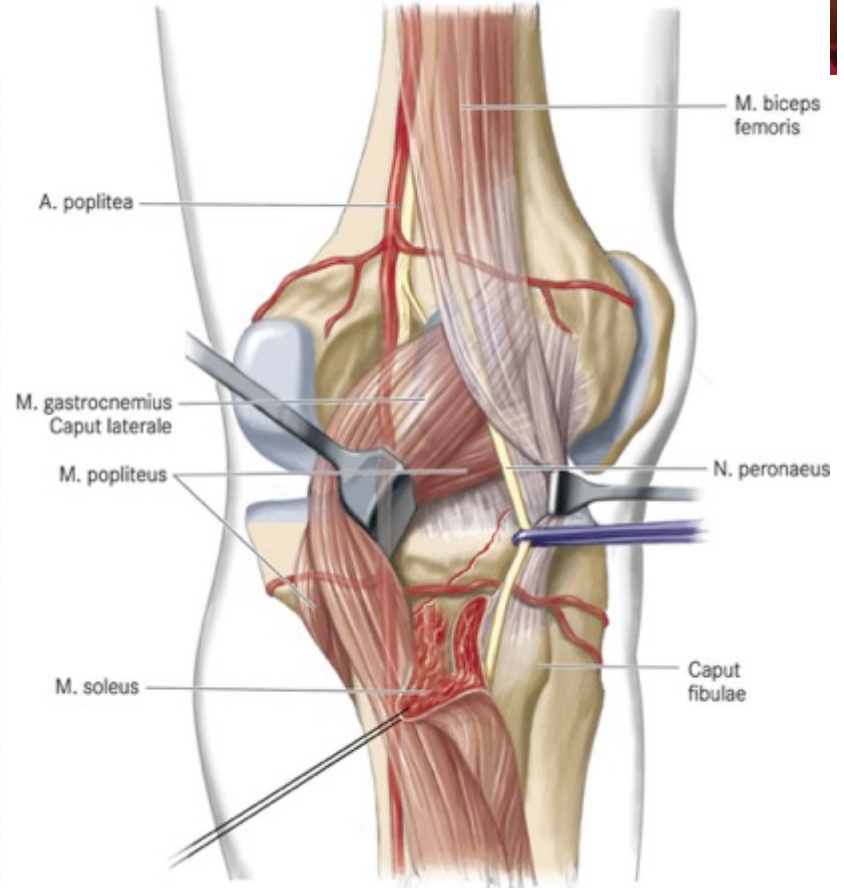
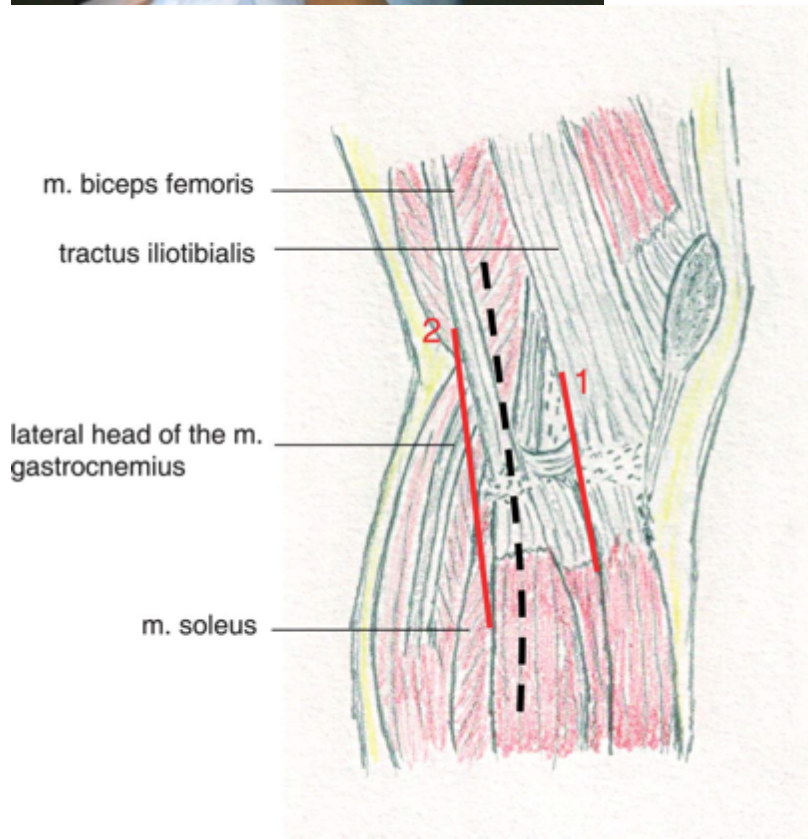
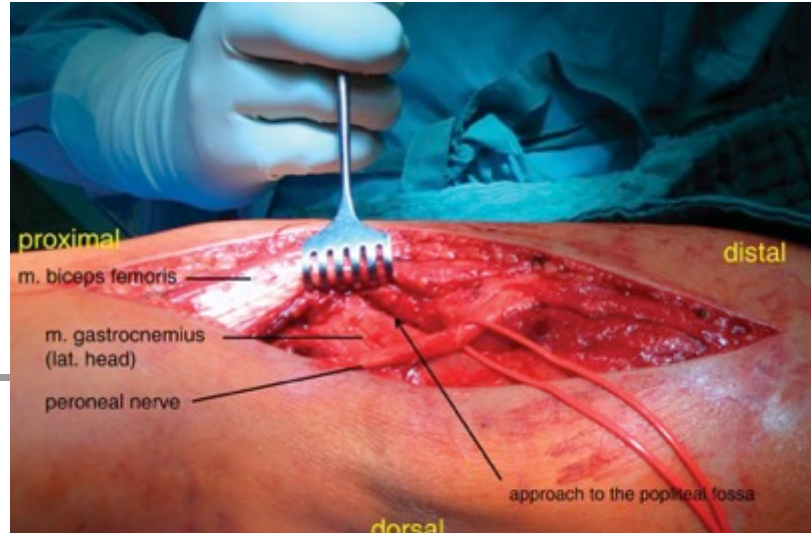
(J Orthop Trauma 2010;24:515–520)

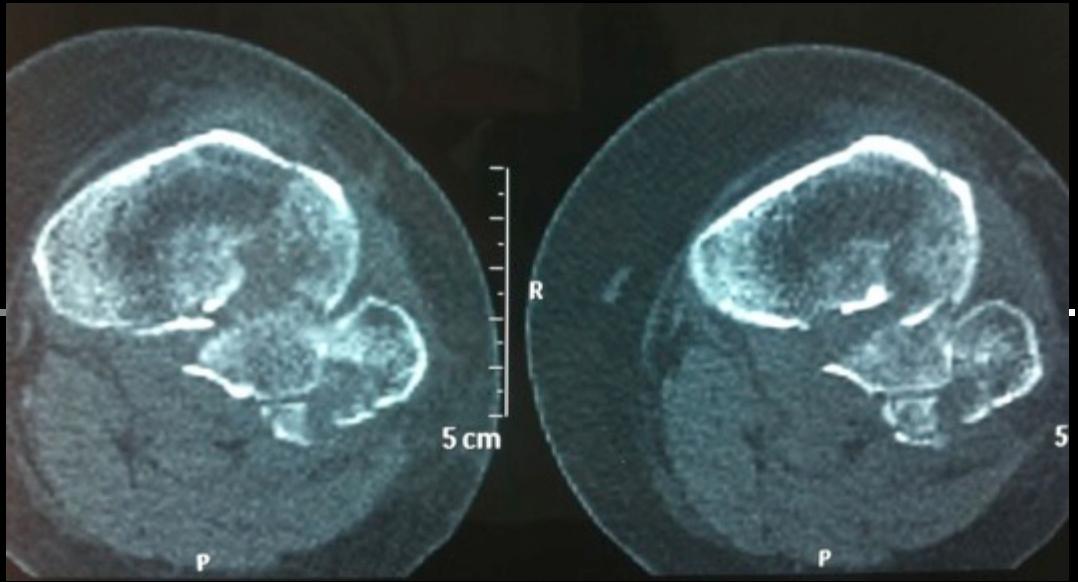
Lateral Position

Combined PL approach & Lateral arthrotomy

2 windows through same incision

Need to dissect CPN











# Take-home message

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- Fully understanding the fracture is essential for decision making and definitive fixation
- Approach selection and fixation should take into account the soft tissue, mechanism of injury, and 3-D morphology
- 3-Column classification provides a new way of thinking for the treatment of tibial plateau fractures
- Restoration of joint stability by stable fixation & appropriate soft-tissue reconstruction
- Early active mobilisation



# Poor Outcomes :

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- Poor articular reduction (step off  $> 3$  mm)
- Condylar widening ( $> 5$  mm)
- Varus collapse
- Valgus  $> 5$
- Inadequate fixation of the coronal plane Frs
- Bone / Cartilage defects
- Meniscectomy
- Elderly Porotic patients

Tornetta et al AAOS 2012