

Pre operative Planning & Per operative Control




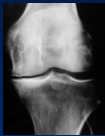
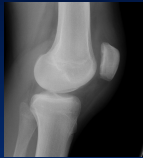
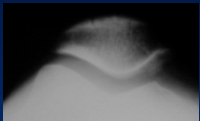

François Kelberine, Jean Philippe Vivona
Aix en Provence



Radiographs



- AP & schuss
- Long film standing alignment
- Stress x rays (valgus/varus)
- Lateral 30° (condyles overlap)
- Axial view 30°




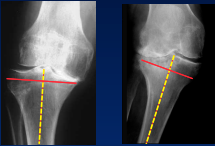
AP views

- Amount of wear
- Deformity (neutral rotation)
- 2^{ary} collateral ligament distension

Coronal tibial cut

- Perpendicular / mechanical axis (neutral rot)
 - Mechanical ≠ anatomical ?
 - Diaphysis morphology (IM & EM guides)
- Minimal resection (spurs not included)
- Large resection
 - symmetrical cut = stem?
 - Augment or bone graft

Coronal femoral cut (distal)

- Perpendicular to mechanical axis (laxity in extension)
- Femur deformity ++
- Entrance point of IM guide
- Combined osteomy?
- Dysplasia or wear
 - Augment?

Stress views / Arthritis

- Correction of wear = realignment
- Uncomplete reduction = retraction, spurs
- Opening of convexity = laxity

AP views

- Mechanical axis
 - Tibia, femur, global
- Entrance points of IM guides
- Extra articular / Intra articular
 - Constrain of TKA
 - Augmentation
 - Soft tissue procedure

Lateral view

- Femur (condyles overlap)
- AP sizing
 - Oversized = stiffness
 - Undersized
 - Ant resection = notch
 - Post resection = instability
- IM guide entrance point
- Posterior spurs

Lateral view

- ✓Tibial Slope
 - ✓IM guide entrance point
 - ✓Partial correction?
 - ✓Augment?
- ✓Patellar shape
- ✓Patellar high
- ✓TT osteotomy?

Axial view

- ✓Patellar wear
 - ✓Wear
 - ✓Spurs
- ✓Remaining bone stock
- ✓Keep intact, resurfacing, inlay

Goal = Strategy

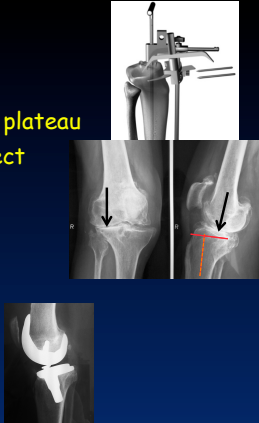
- ✓Chose the type of implant (constrain)
- ✓Chose the technique
 - ✓Cuts
 - ✓Ligaments balance
 - ✓Positioning of implants
- ✓Envision per operative difficulties
- ✓Anticipate the expectations

Tibial cut

- Enlarged drill hole
- IM will get in easier
- Double check with
 - tibial tuberosity, ankle, 2nd meta
 - Combined EM


Tibial cut

- Minimal resection
 - From intact or arthritic plateau
 - Deeper part of the defect
- Secure slope
 - Ant spurs resection
 - Entrance point
 - NO ANT SLOPE




Femoral cut

- ML landmarks easy spurs resection
- Distal cut
 - Tibia dependant or not
- Enlarge drill IM guide



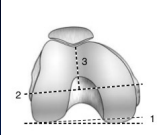
Femoral cut

- Ant et post cuts are linked
- Balanced resection
 - Too post = laxity in flexion
 - Too ant = cortical notch (lateral view)
- Anterior parallel to posterior one
- And should be parallel to patellar cut
- Rotation of implants



Femoral cut : rotation ?

- To protect patella kinematic



- Post condyle with 3° ER (Insall)
- Asymetric post cut (Laskin)
- Trans epicondylar axis (Berger)
- Trochlear groove (Whiteside)

Rotational alignment

Berger Clin Orthop 1998, Barrak Clin Orthop 2001

- External rotation of both femoral and tibial components
- Lateralization of the trochlea and medialization of tibial tubercle

Rotational alignment

- 3° ER especially in valgus deformity
- Cover the lateral plateau and pivot to align with anterior bony edge of the medial one
- Medial border of patellar tendon (patella reduced)
- Check/ROM

*Hepistein & Ranawat Current Opinion Orthop 2008
Ikeuchi JBJS 2007*

Patella Cut

- Avoid asymmetric cut ++
- Avoid too thick or too thin
- Below the lateral subchondral bone
- Palpation of the ant cortex
 - Remaining bone

Center the patella

- From sup to inf
- From med to lat
 - spurs resection first
- Don't overhang
- Medial location optimizes tracking
- Resect lateral facet if needed

Stability of component

- Bone stock
- Inlay if not enough
- Microperforations/sclerotic bone



Take home messages

- ✓ Make a preoperative planning!
- ✓ Allows to anticipate difficulties you will face anyway
- ✓ Enlarge drill guides
- ✓ Patella +++ : anterior reference

