

TKA after malunion

M Bonnin. *Centre Orthopédique Santy. Lyon France*



Active woman 89 years old

Right Knee



Left Knee



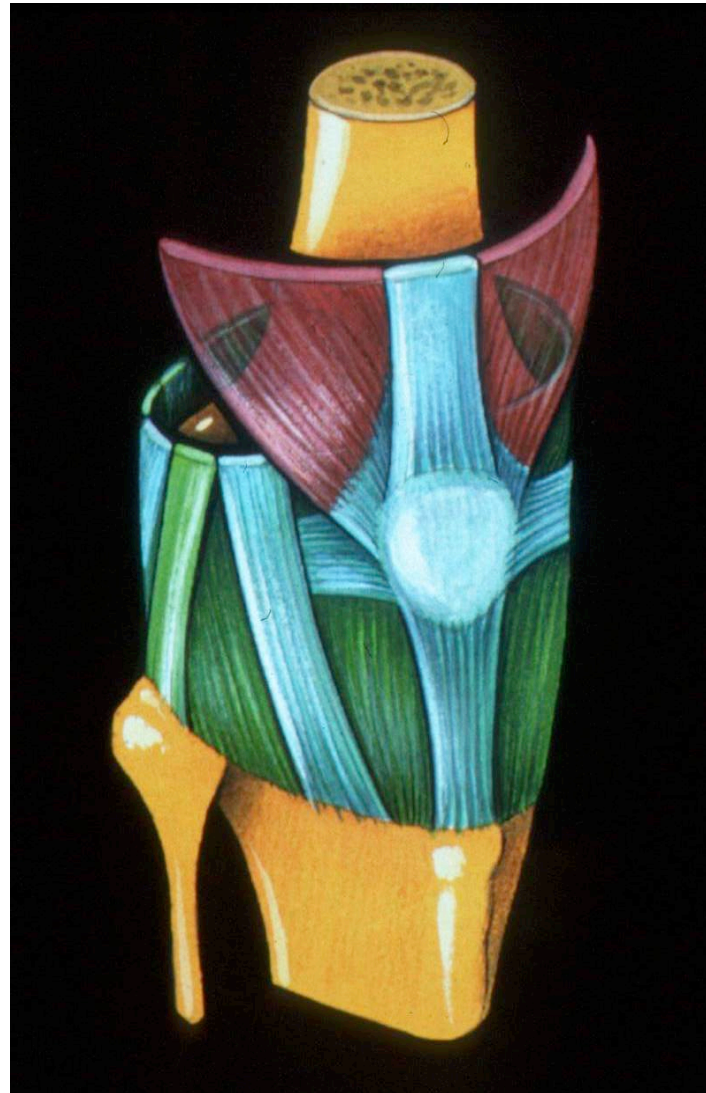
- ✓ Born 04 Dec 1924
- ✓ Gun shot during World War II (1942)
- ✓ Open fracture left femur
- ✓ 2 years in hospital
- ✓ She survived



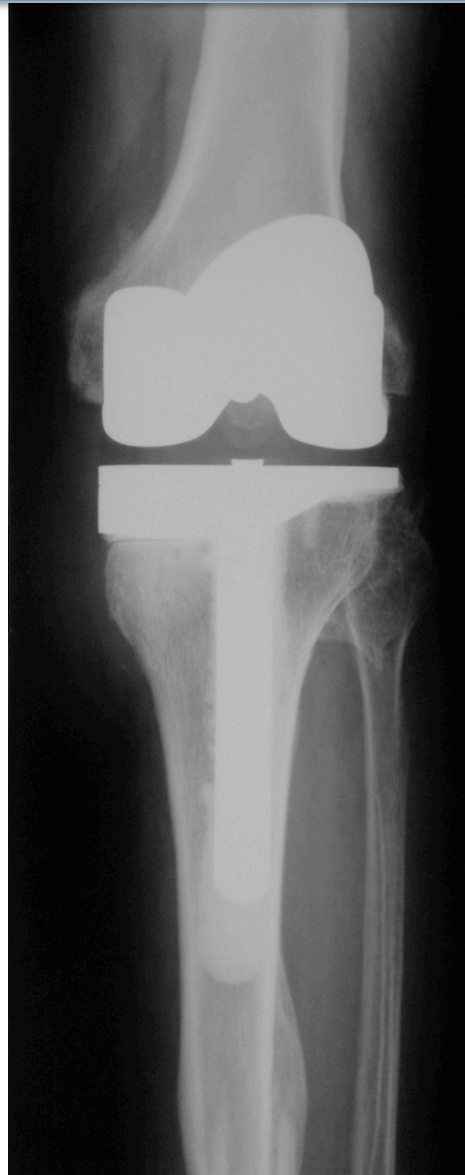
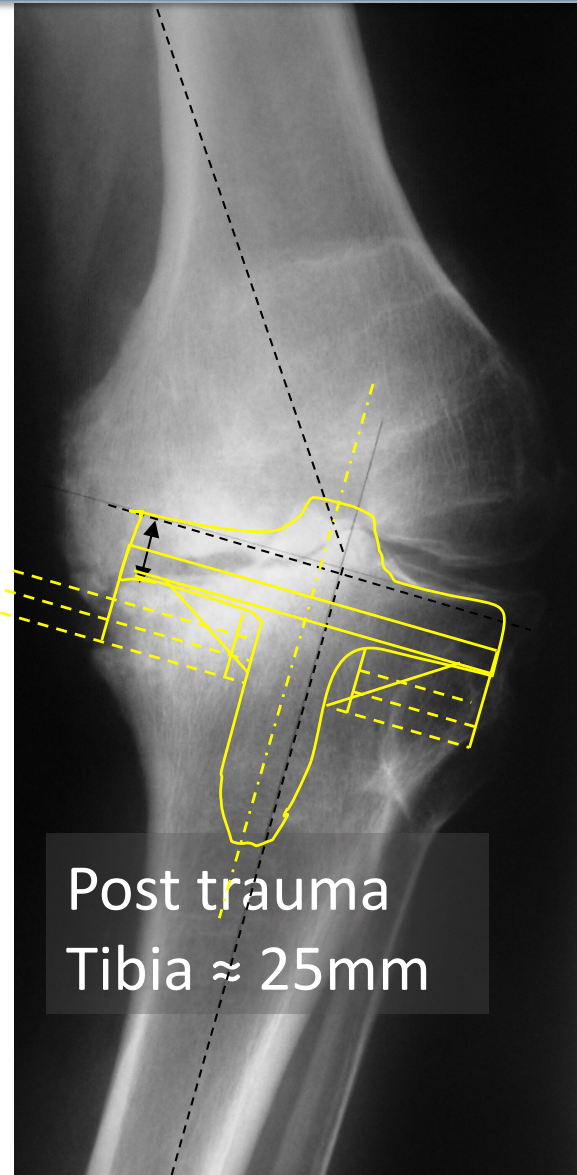


TKA after malunion: where is the deformity?

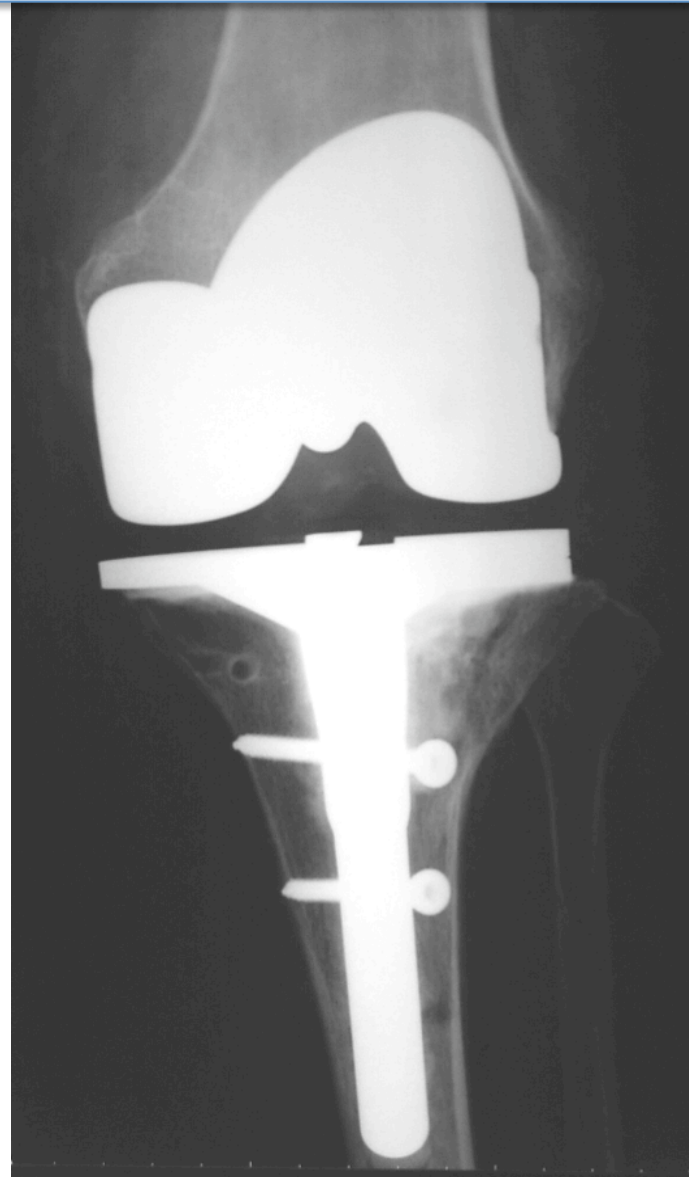
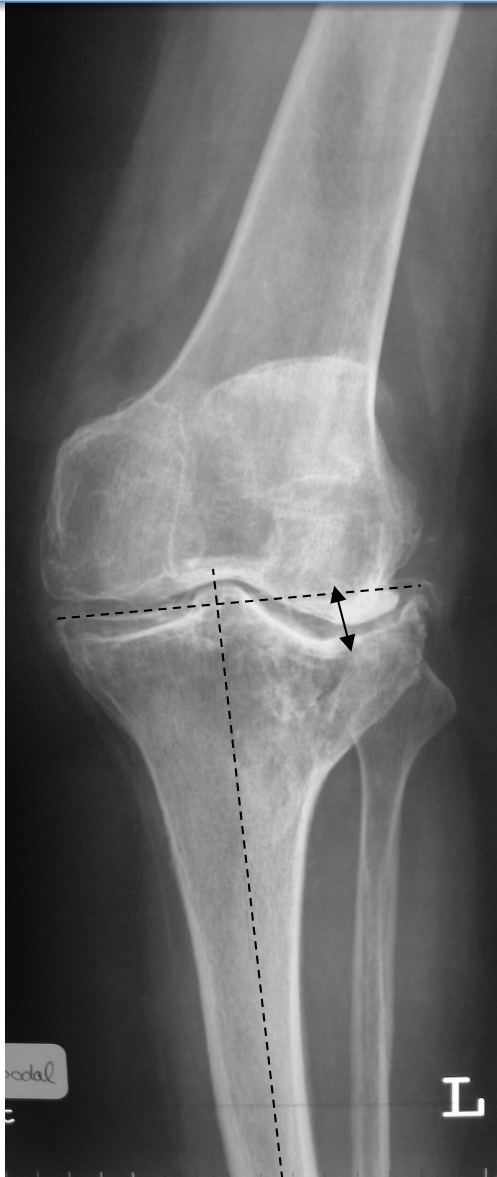
- Intra @
- Extra @



Intra articular deformity: easy correction

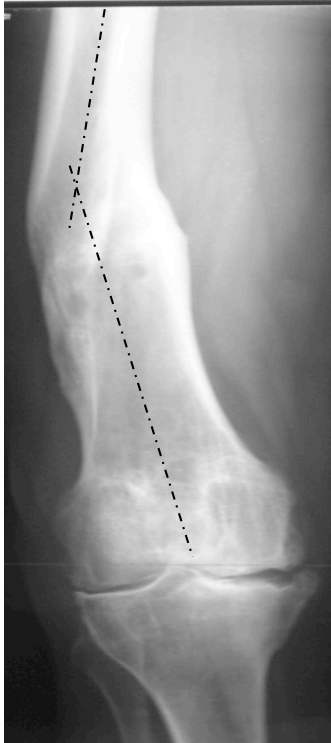


Intra articular deformity

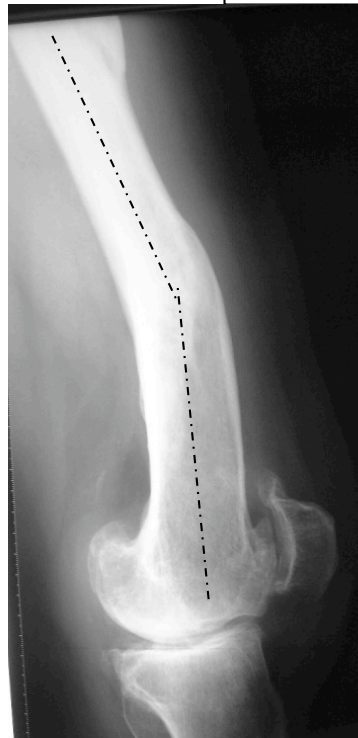


Extra-articular deformity: difficult strategy

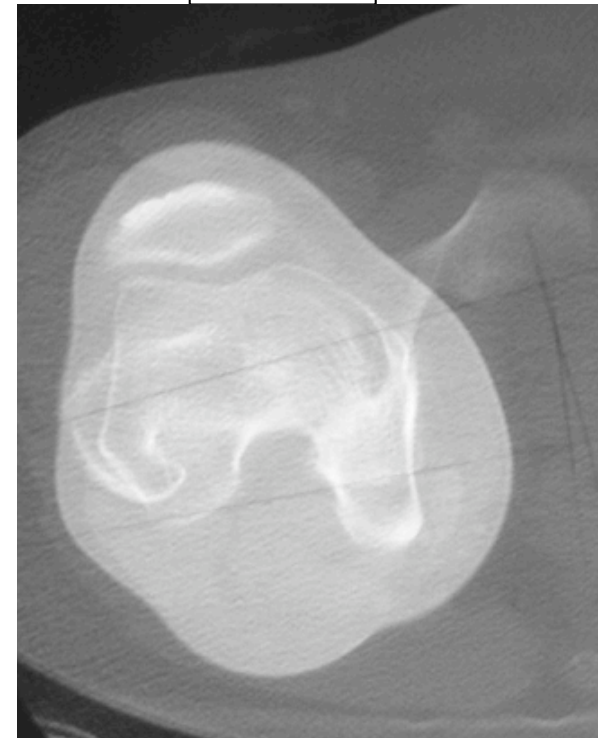
Coronal



Sagittal



Axial



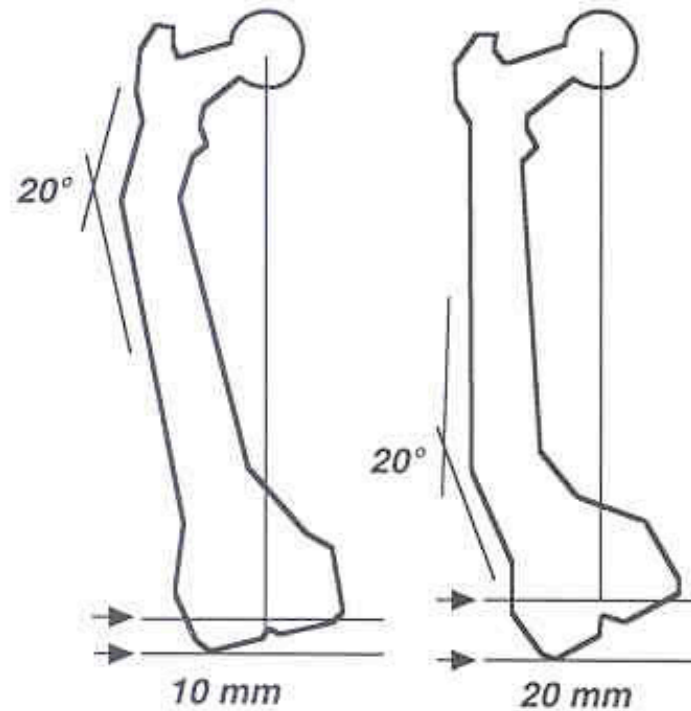
Can we correct the deformity with the TKA?

Femur: Asymmetric distal cut

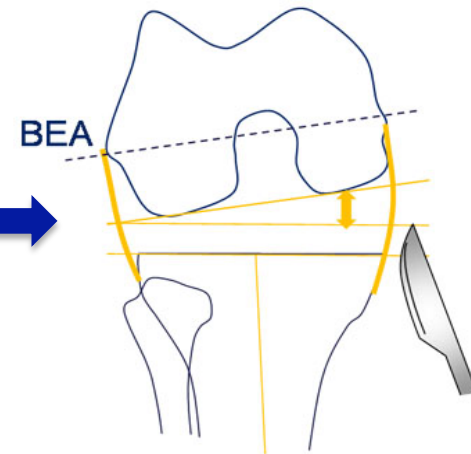
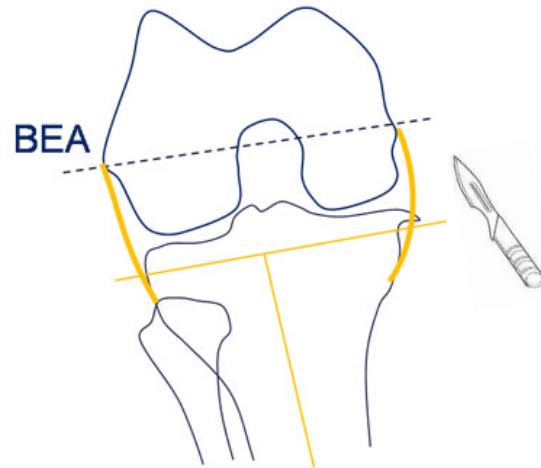
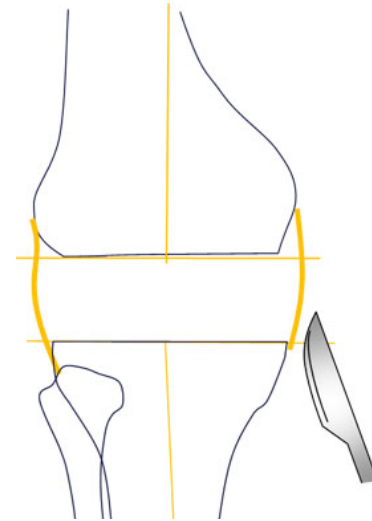
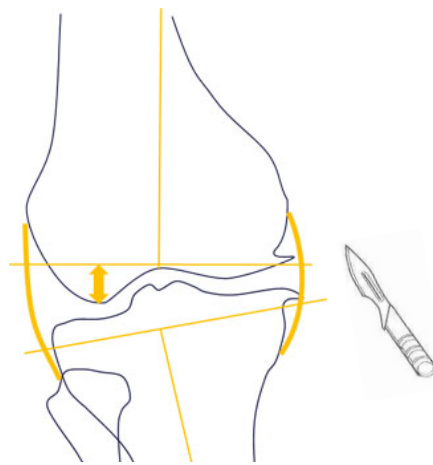
Wolff. Corr 1991



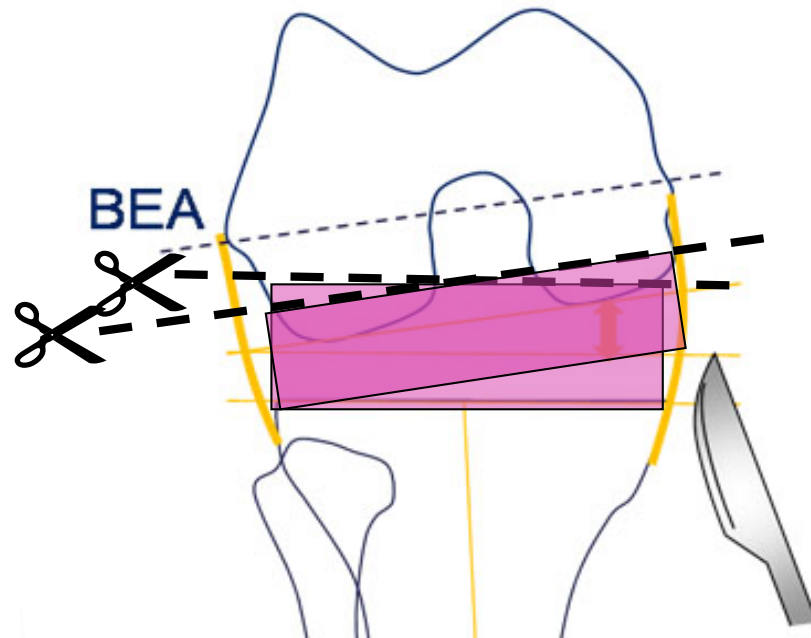
- ☞ Influenced by:
 - ✓ angle of deformity
 - ✓ proximity with the knee



Femur: Lateral laxity → Medial release



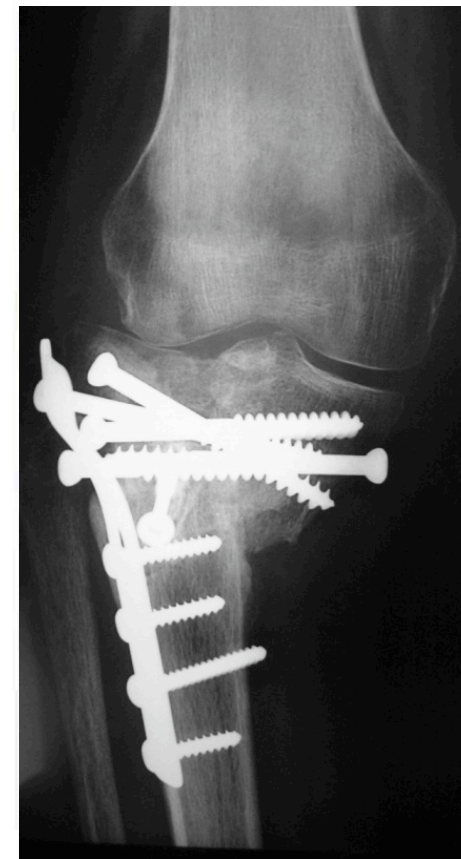
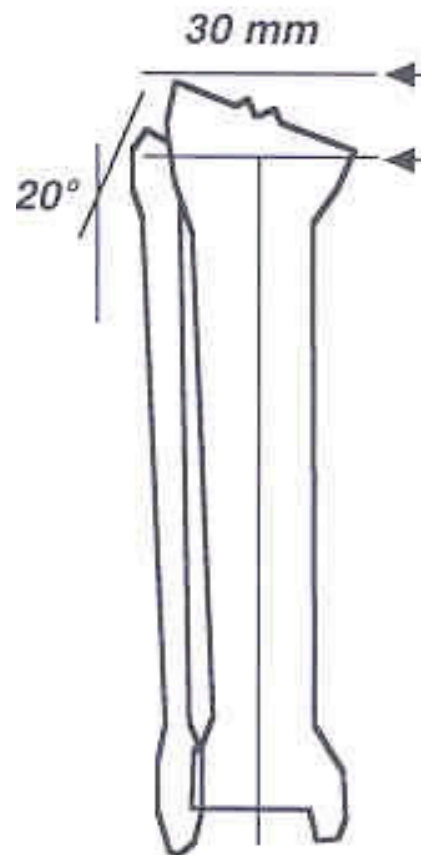
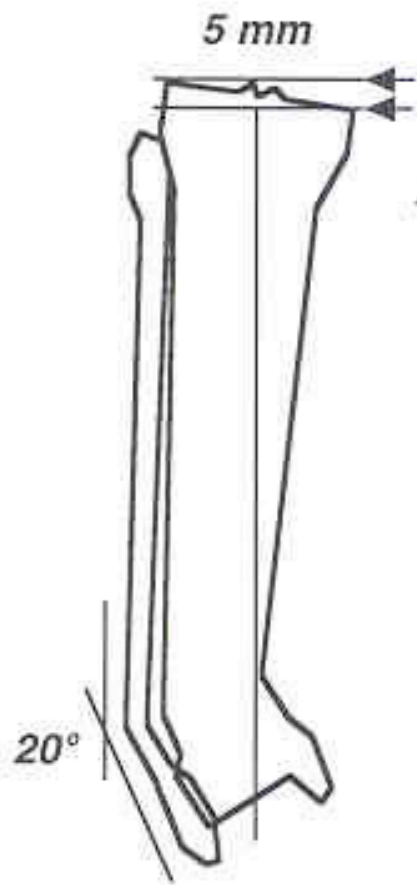
👉 Risk of flexion instability or malrotation



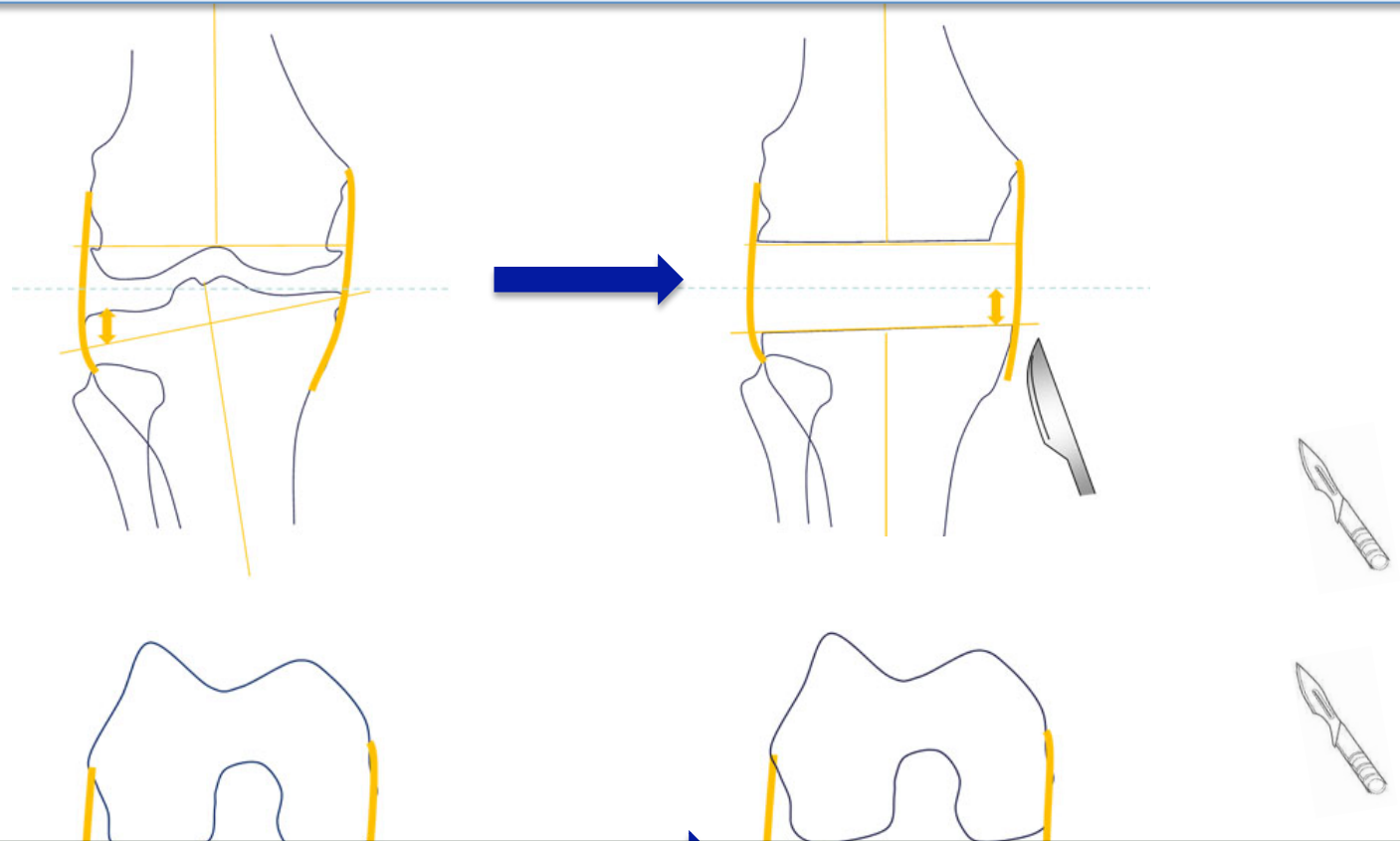
FEMUR: Accept residual varus

Tibia: Lateral laxity → Medial release

☞ Asymmetric bone cuts

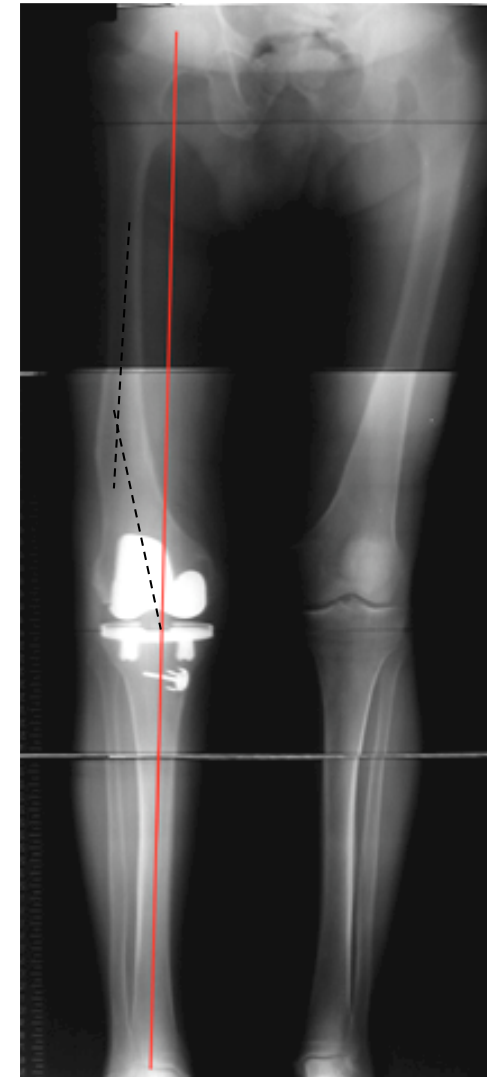
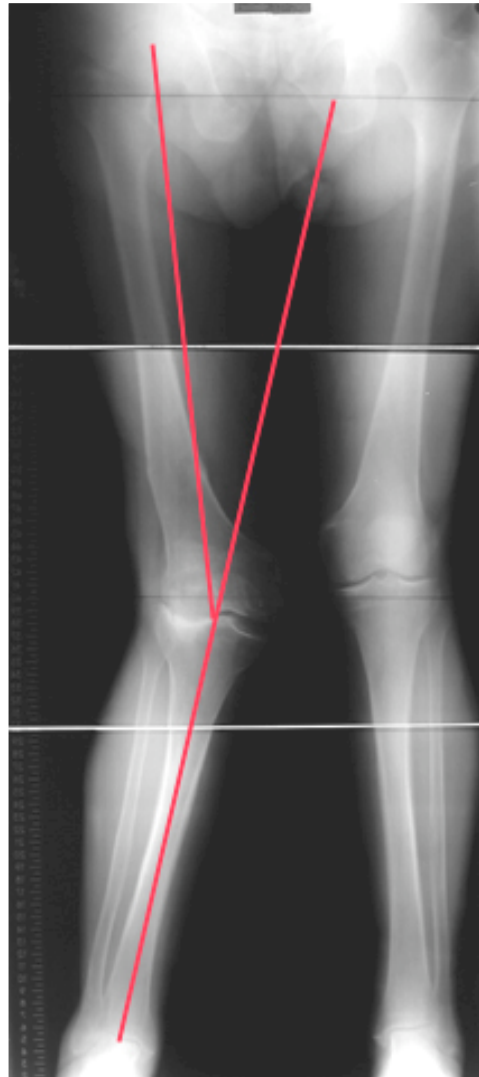


☞ Same effect in flexion & extension



TIBIA: lig balancing easy

Realignment with the TKA



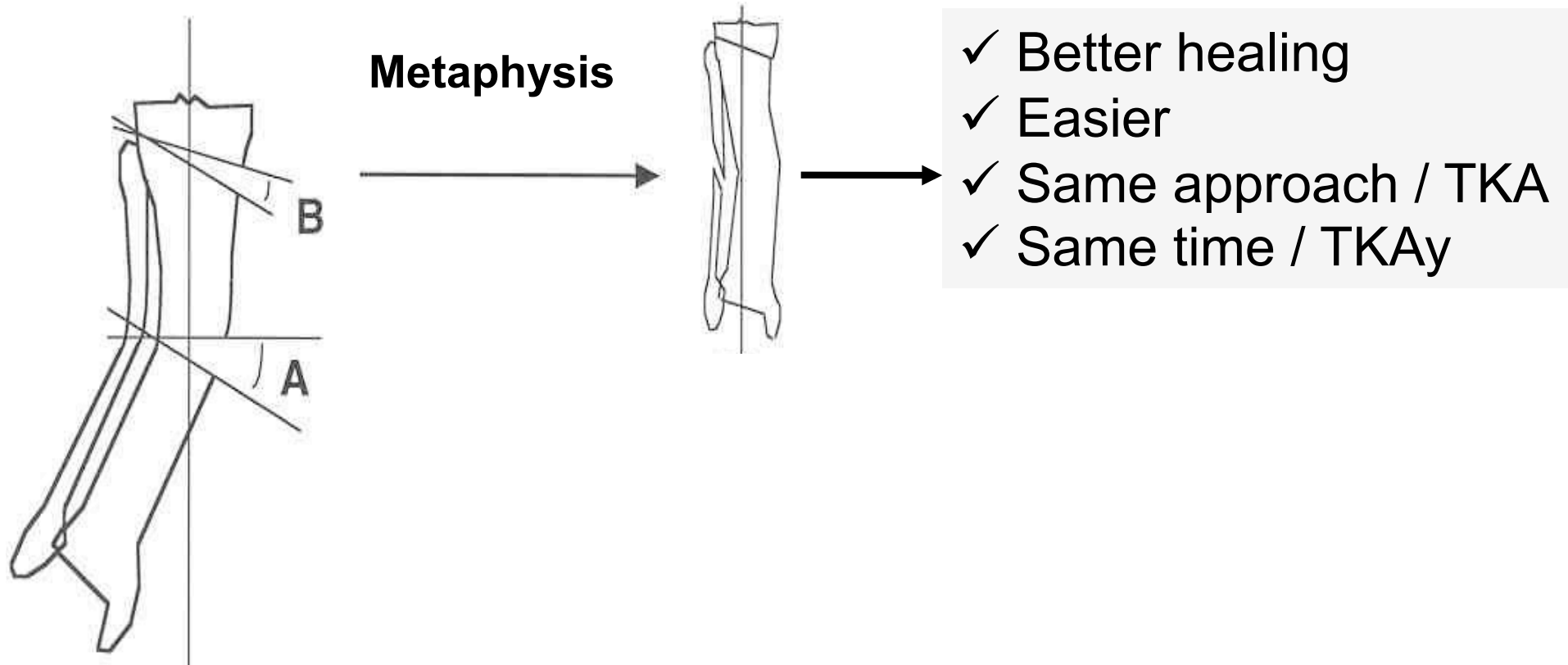
Realignment with the TKA



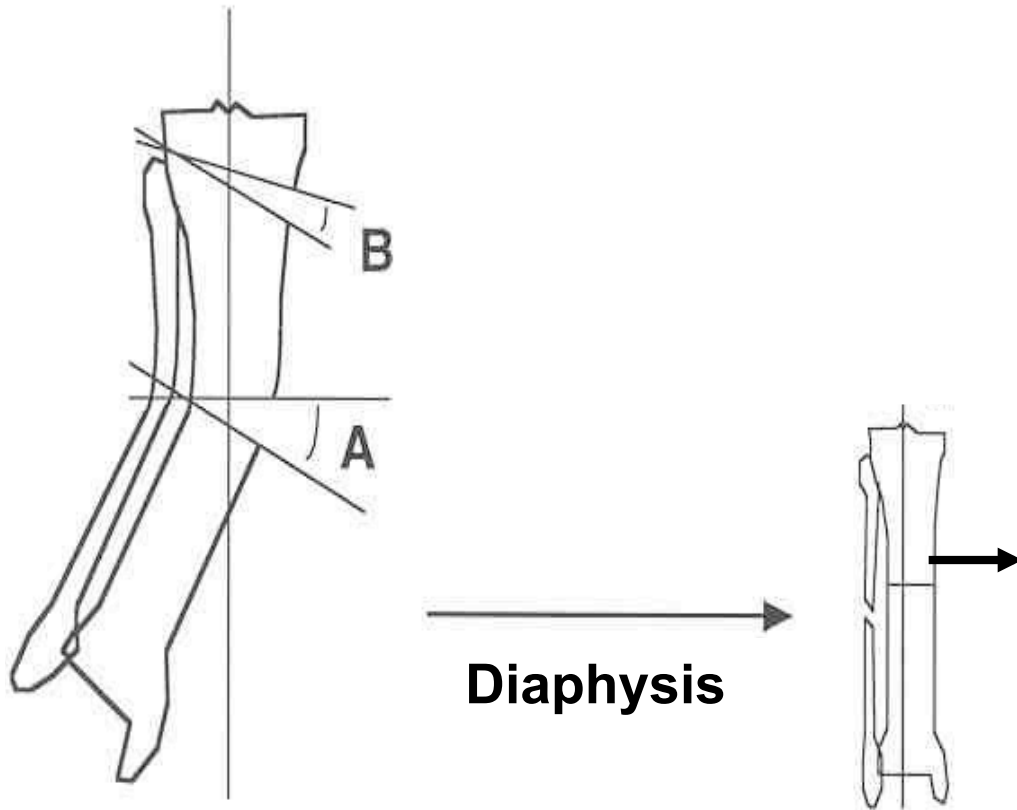
Realignment with the TKA



Which indication for TKA + osteotomy?



Which indication for TKA + osteotomy?



- ✓ Rotation deformity
- ✓ No residual deformity

Case #1

Mr GUI.

- birth: 09/12/1927
- May 1999: PFP+ HTO (Opening wedge)
- Dec 1999: Infection: Drainage, plate removal
- Feb 2000: New HTO (Opening wedge with autograft)
- Major residual pain
- Collapse in the osteotomy



Tumefaction



Indication?

1. HTO
2. TKA
3. HTO + TKA (simultaneous)
4. HTO + TKA (staged)



Indication?

4. HTO + TKA (staged)



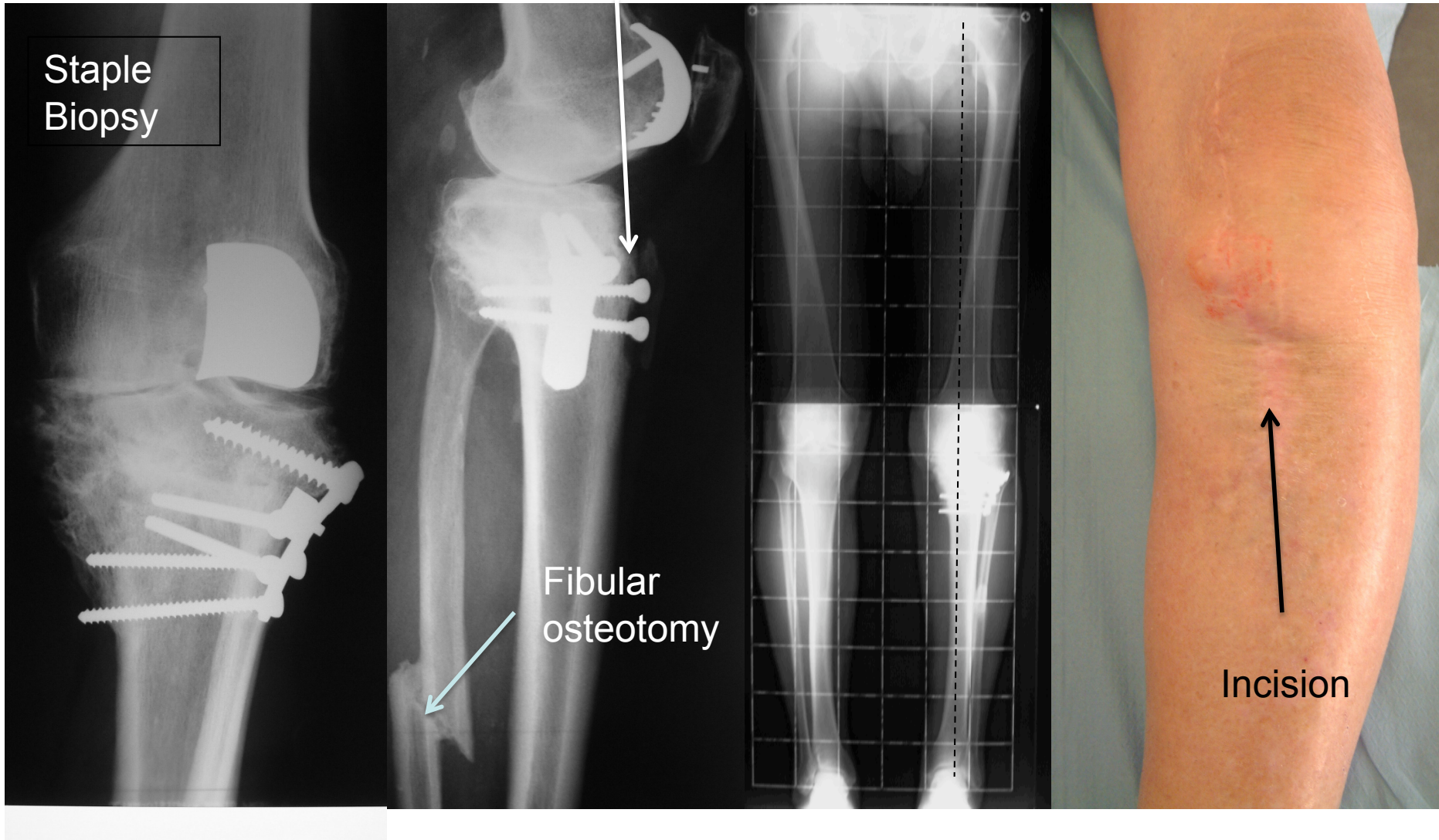
First step: HTO Closing Wedge

Ost TT

Staple
Biopsy

Fibular
osteotomy

Incision



2nd step: TKA



Osteotomy of ATT
3 screws



- PS
- Cemented

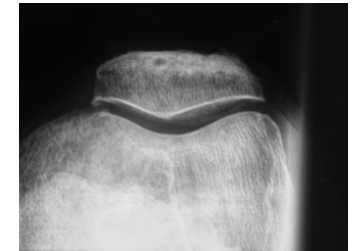
Longer tibial stem

Case #2

- Mr V.
- Birth: 21 06 1925
- Fracture at 6 months
- Epiphysiodesis
- Valgus deformity



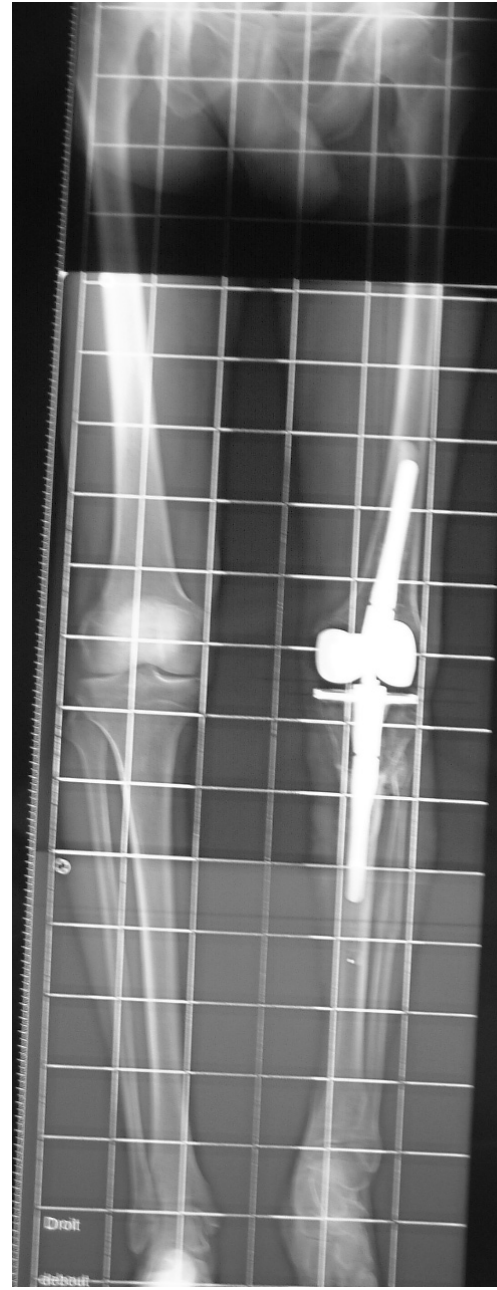
- Which constraint in TKA?
- HTO?
- If HTO: proximal or distal / ATT
- If HTO one step or two steps?



TKA + HTO

1. Osteotomy fibula mid $\frac{1}{3}$
2. Tibial osteotomy distal / ATT
3. Fixation with plate
4. TKA
5. Bone grafts





Case #3

- Mrs GA 58 years old
- Very active (Bicycle, Ski, jogging)
- Bicycle accident
- Fracture tibial plateaus left knee



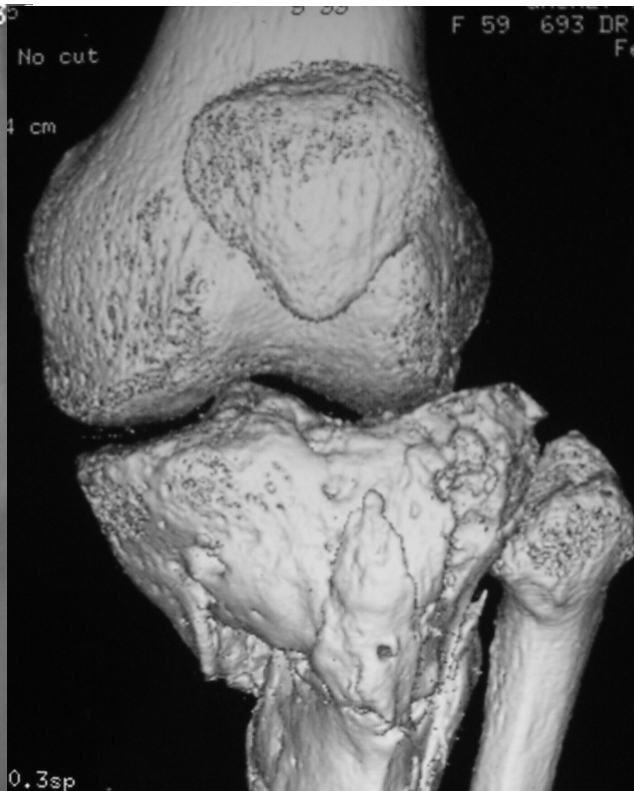


Fixation with plate



Plate removal





OPTIONS??

1. Corrective osteotomy
2. TKA
3. UKA + HTO
4. TKA + HTO one or two steps
5. Constrained TKA + HTO one step



- Previous skin incision AL
- Osteotomy. ATT
- OW osteotomy
- Auto graft
- PS TKA
- Long stem



Case #4

- ✓ Mr Ana.. 58 y
- ✓ Fc distal tibia (left) in 1958
- ✓ Malunion distal $\frac{1}{4}$ tibia
- ✓ Bilateral medial OA
- ✓ Closing wedge HTO 10 y ago: failure
- ✓ Painful Left knee + left Ankle







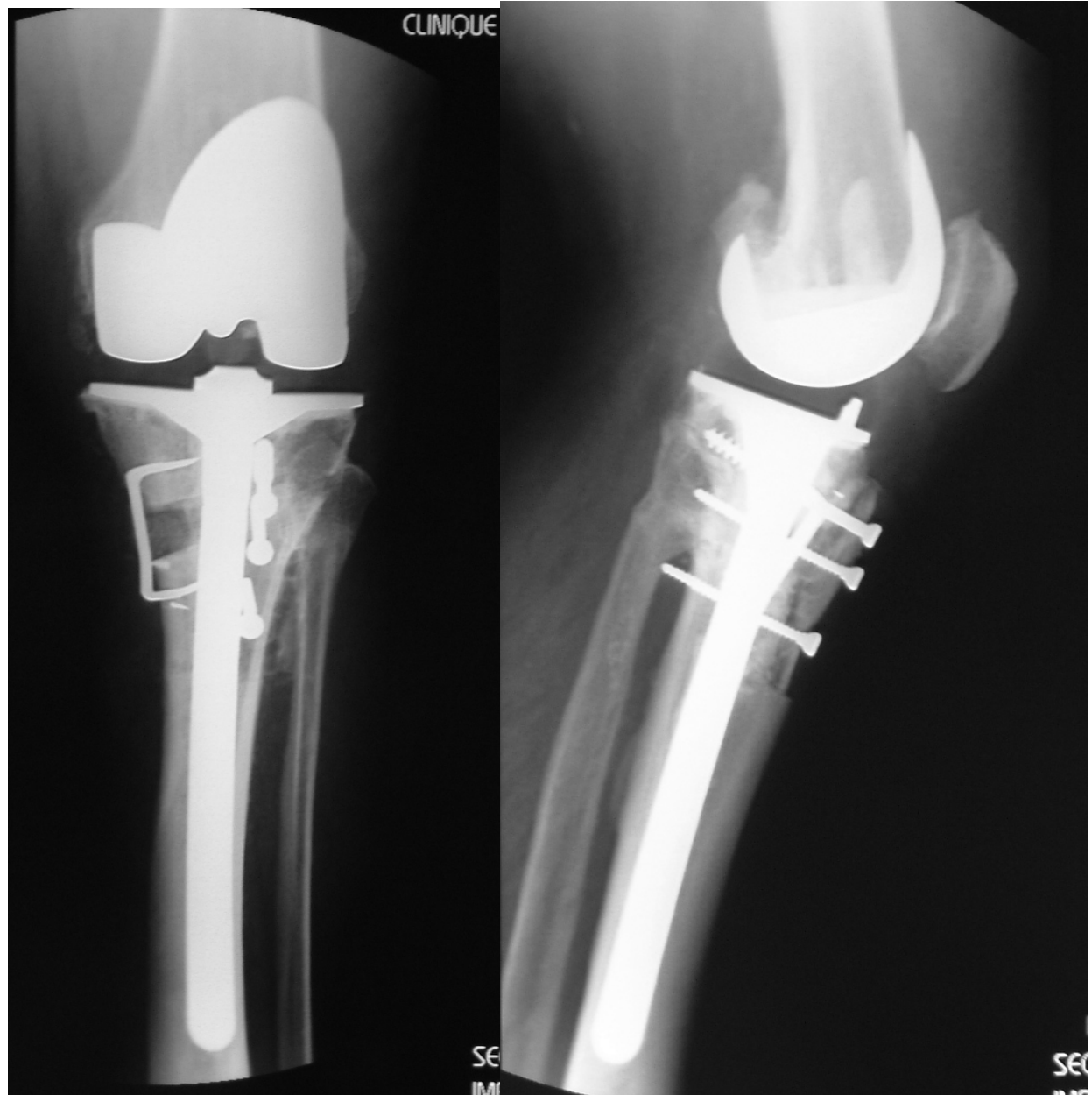
Technique on the knee??

1. HTO?
2. TKA?
3. HTO + TKA one step?
4. HTO + TKA two steps?
5. Rotating Hinge TKA?
6. UKA + HTO?



Knee: HTO + TKA simultaneous

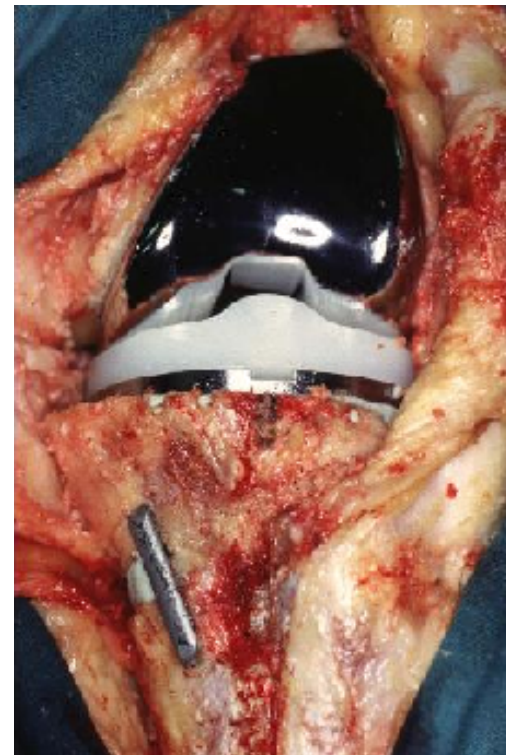
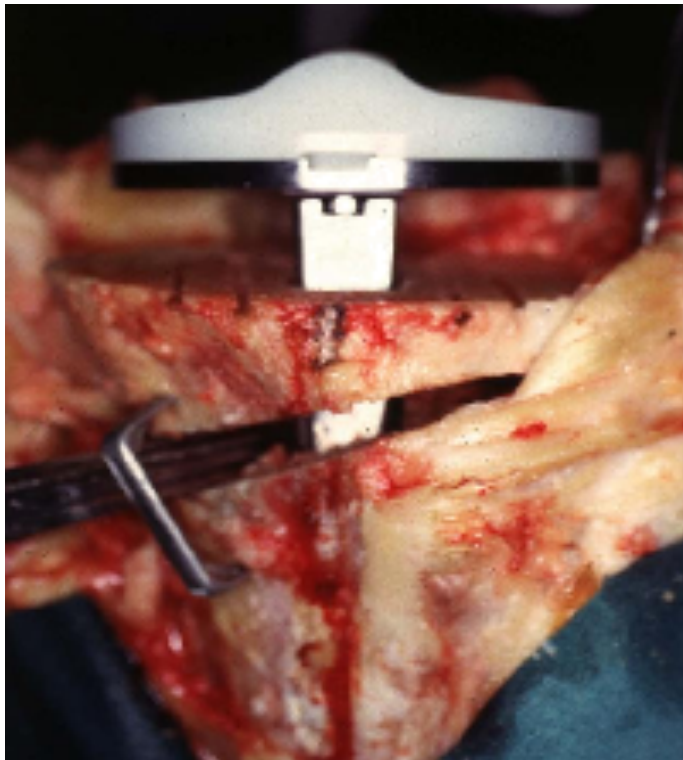
- ✓ PS
- ✓ Cemented
- ✓ Ost ATT
- ✓ Auto graft
- ✓ Long stem



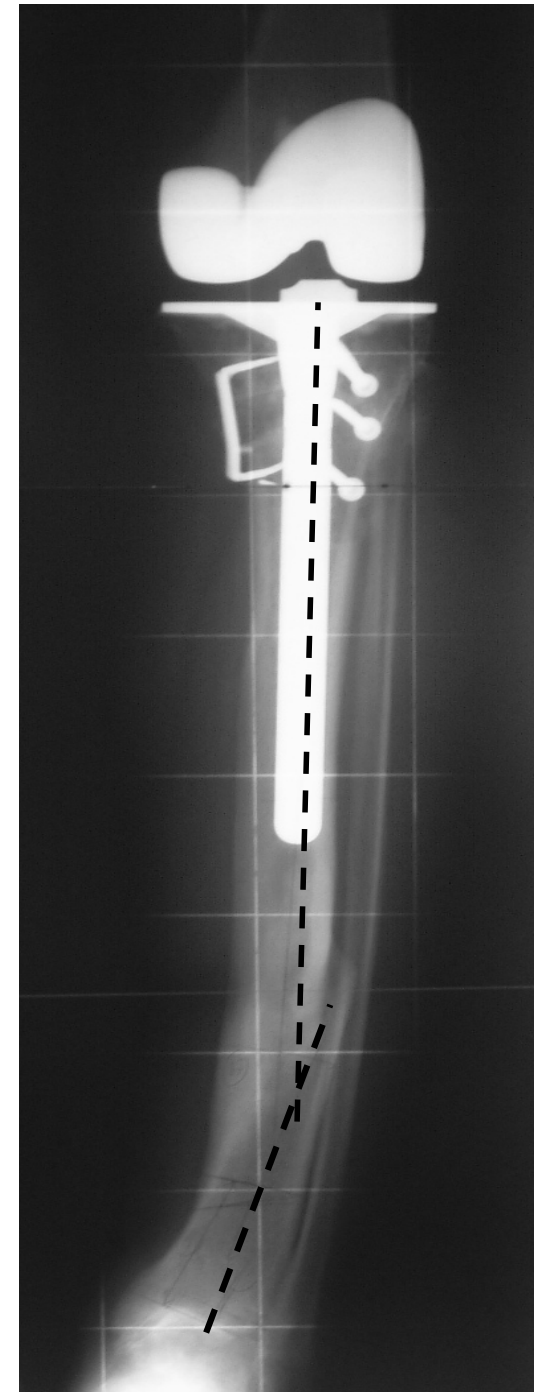
One stage procedure

Neyret & al. Int Orthop. 2014

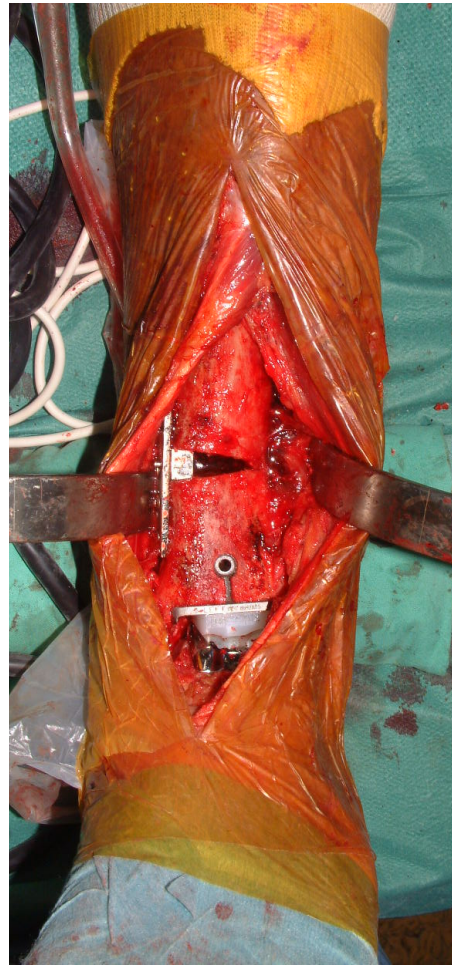
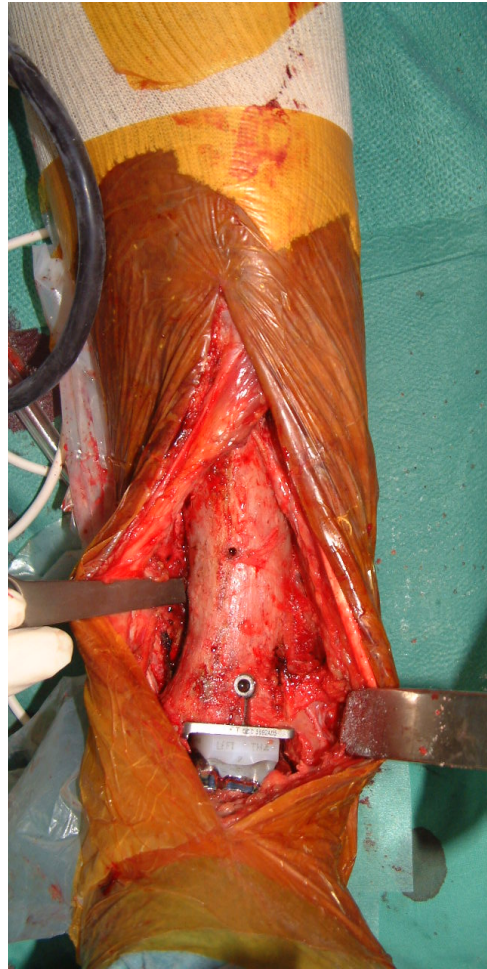
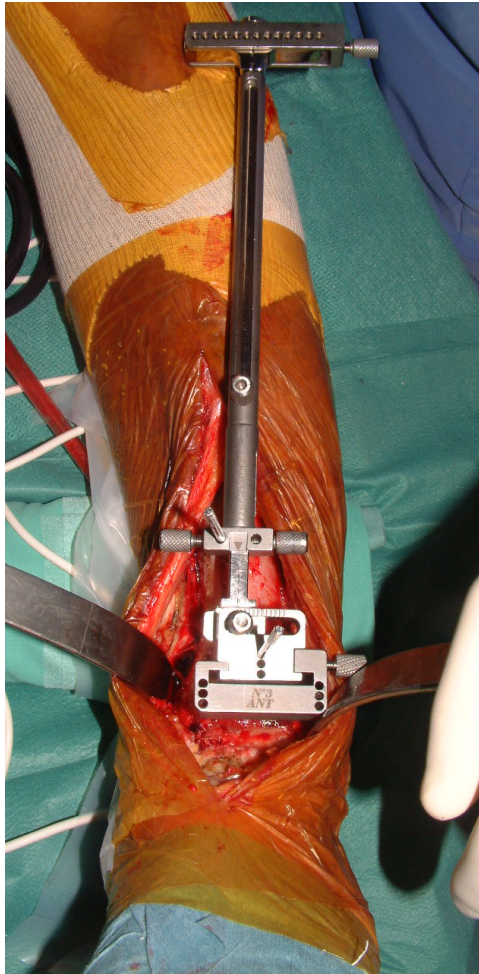
1. Femoro tibial dislocation
2. IM guide
3. Osteotomy
4. Opening → joint line orthogonal
5. Proximal tibial cut

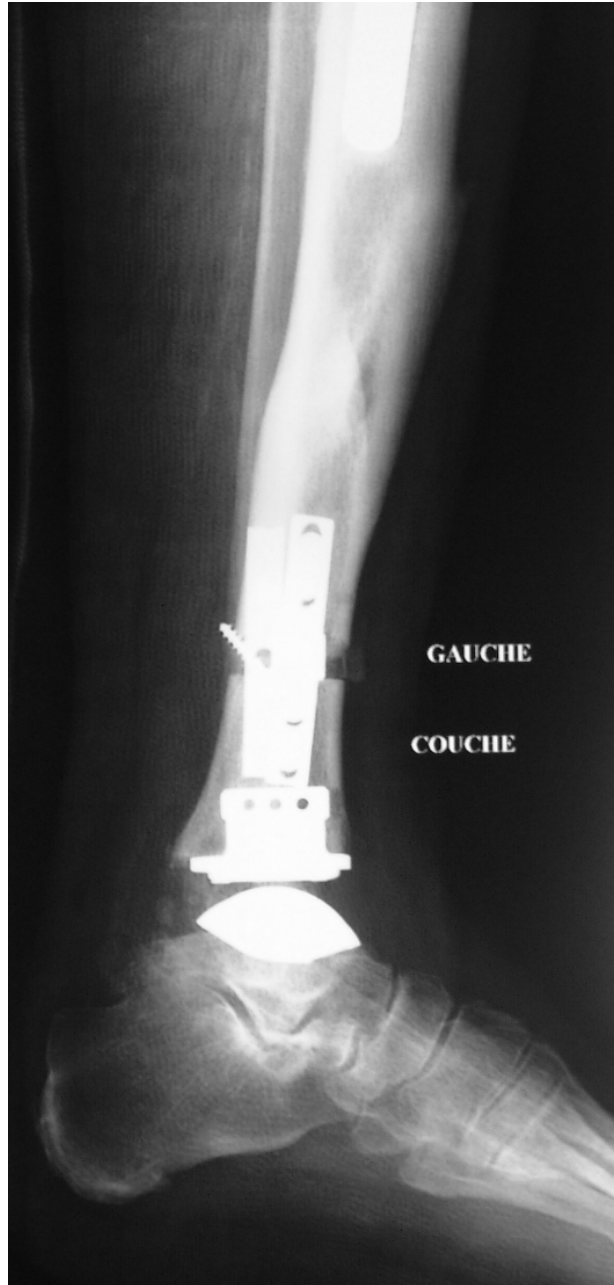


Good result for the knee
Come back for the ankle joint

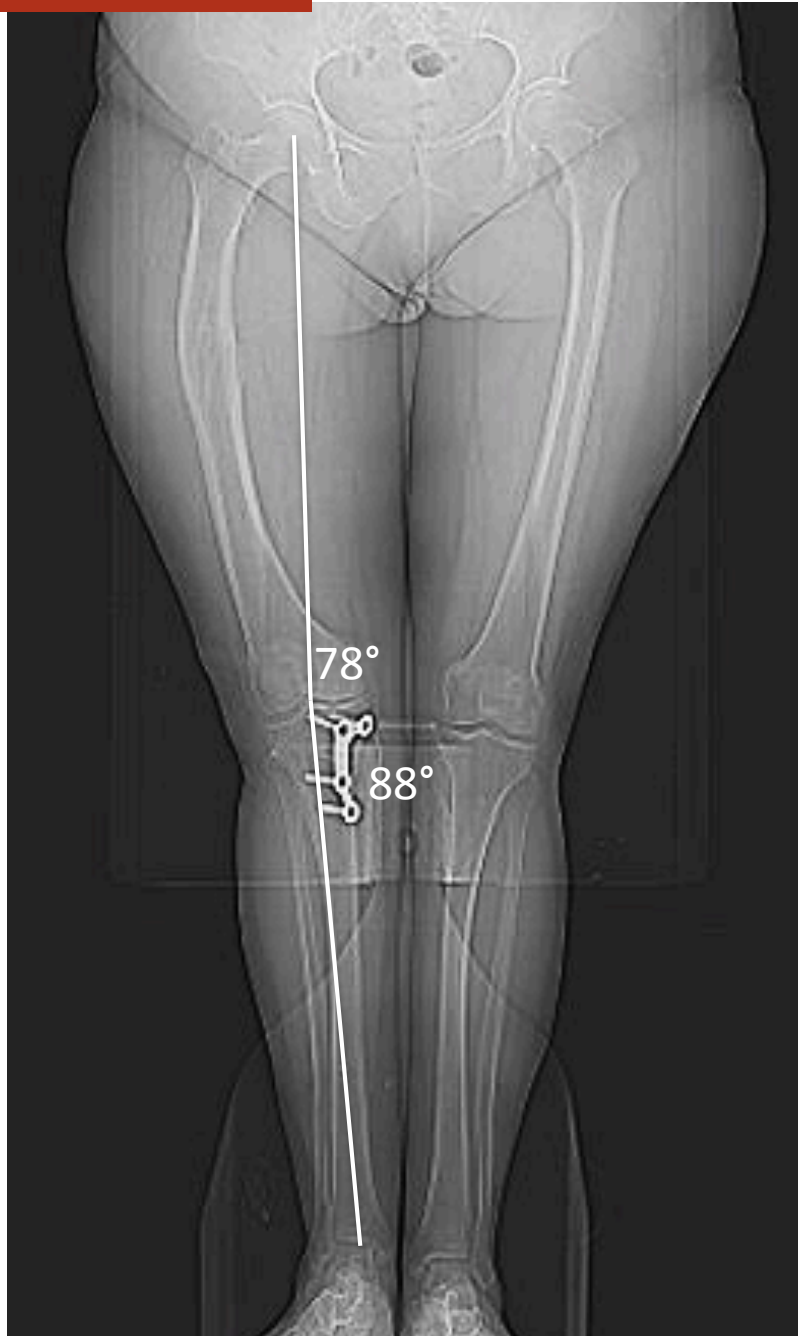


TAA + opening wedge SMO + auto graft

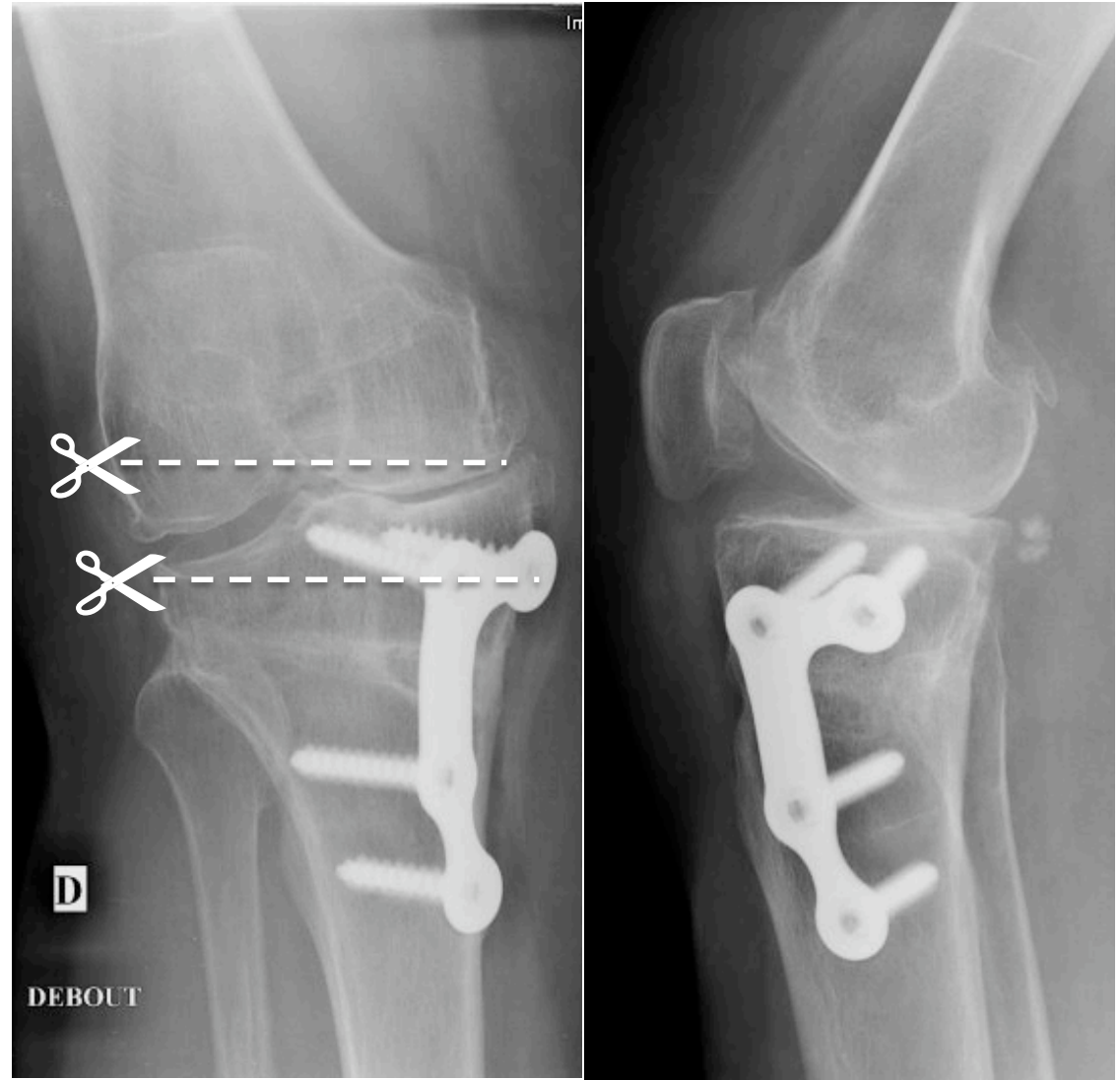




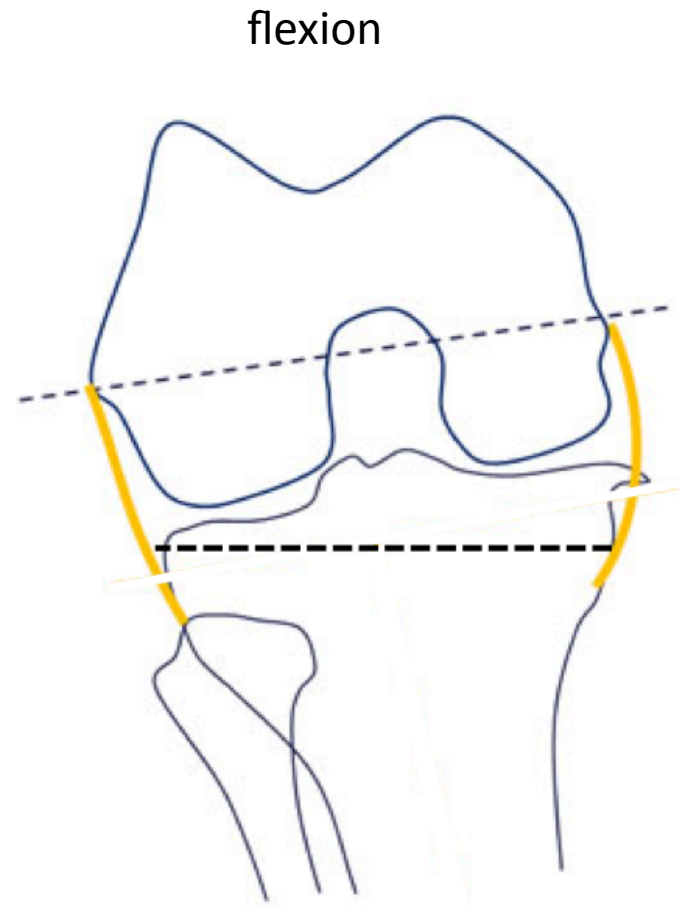
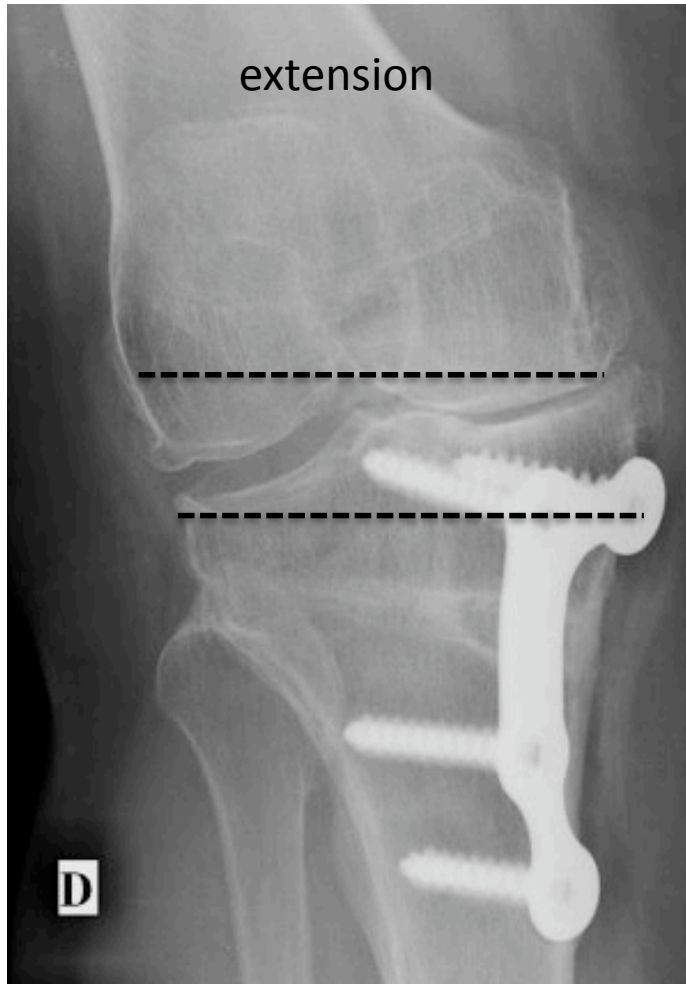
Case #5



Femur Varus+ Tibia Valgus



Extension: compensated asymmetry. No lig^t release
Flexion: medial instability



Femur Varus+ Tibia Valgus

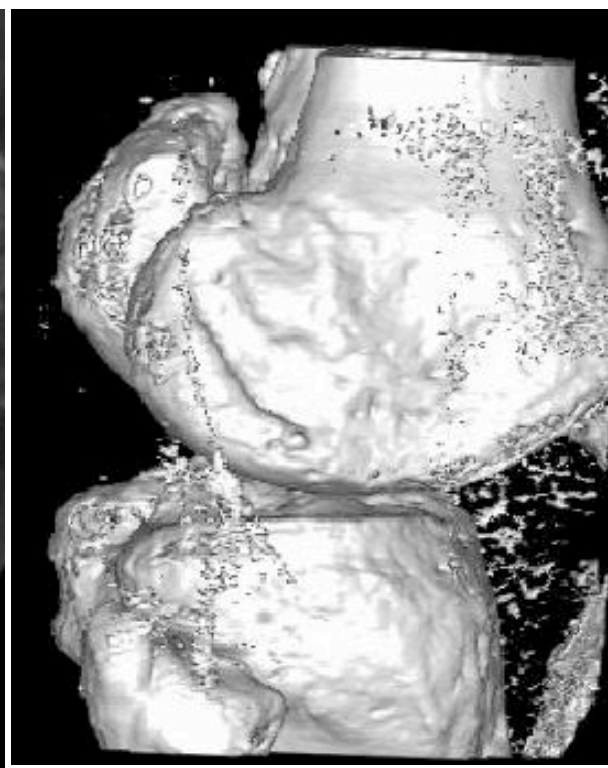
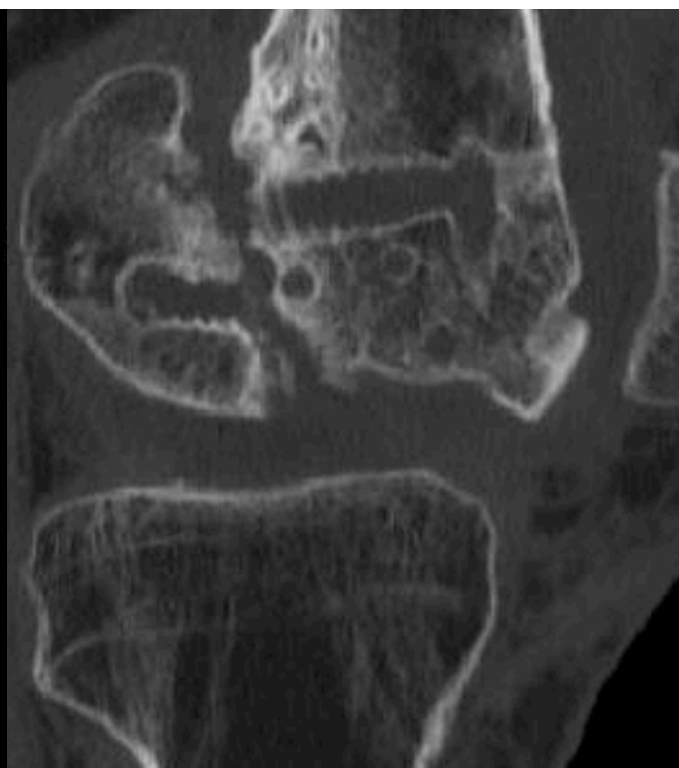


Case #3

- Mr Sad. Serge (47 y)
- Car Accident
- Fc medial condyle. Non union
- Revision
- Infection. Successfully treated
- 2 crutches + full leg hinged brace
- Medial laxity



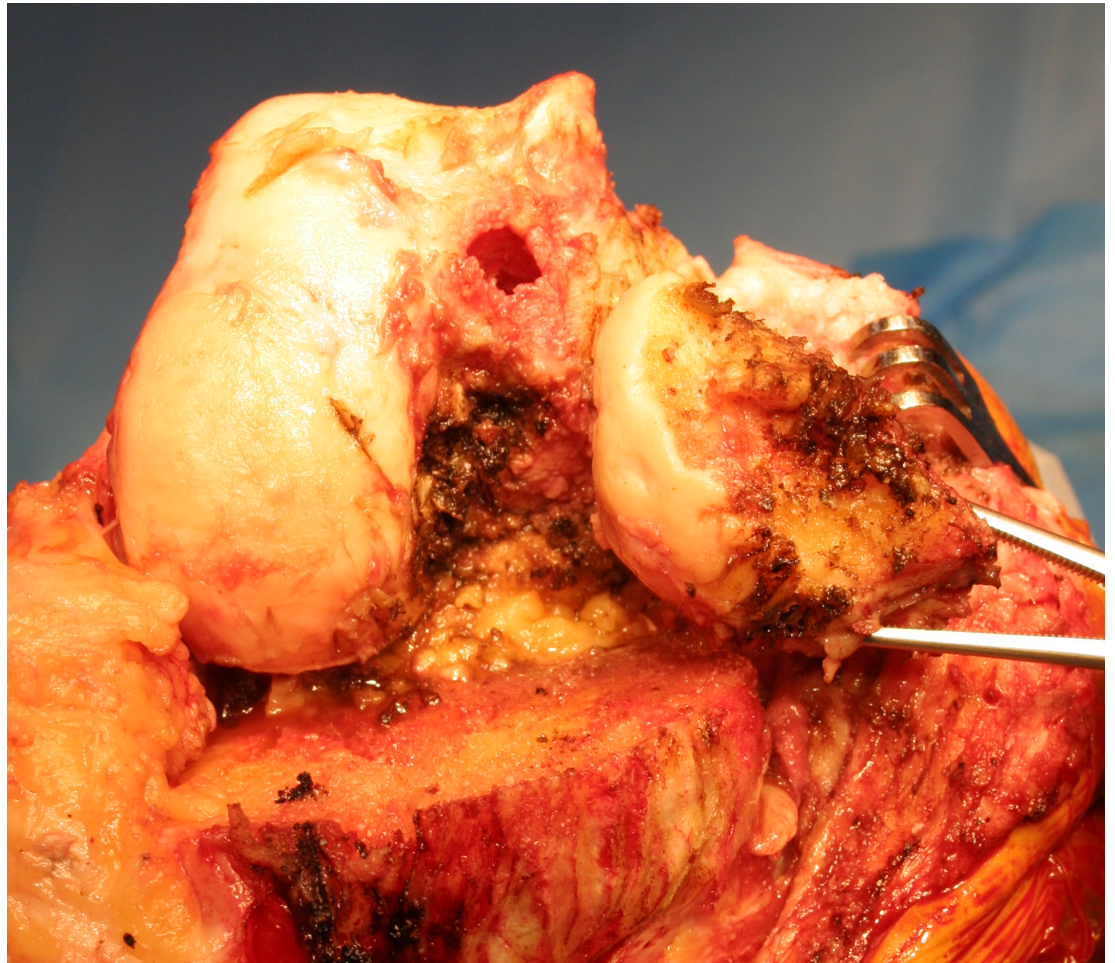
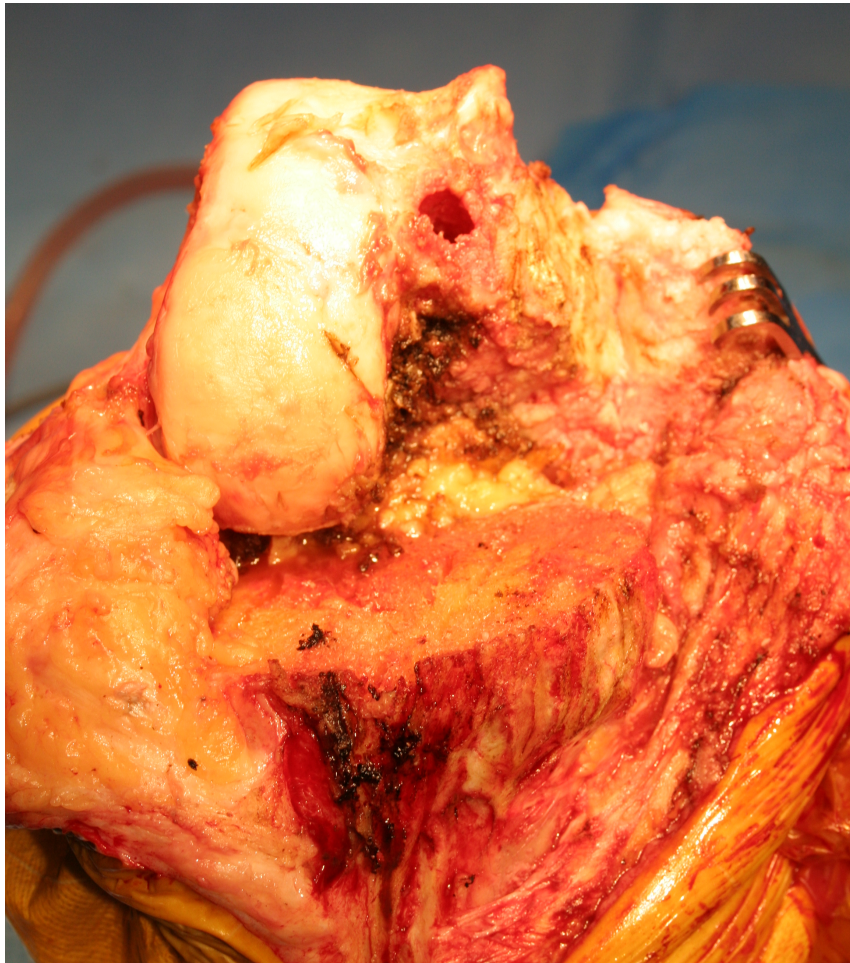


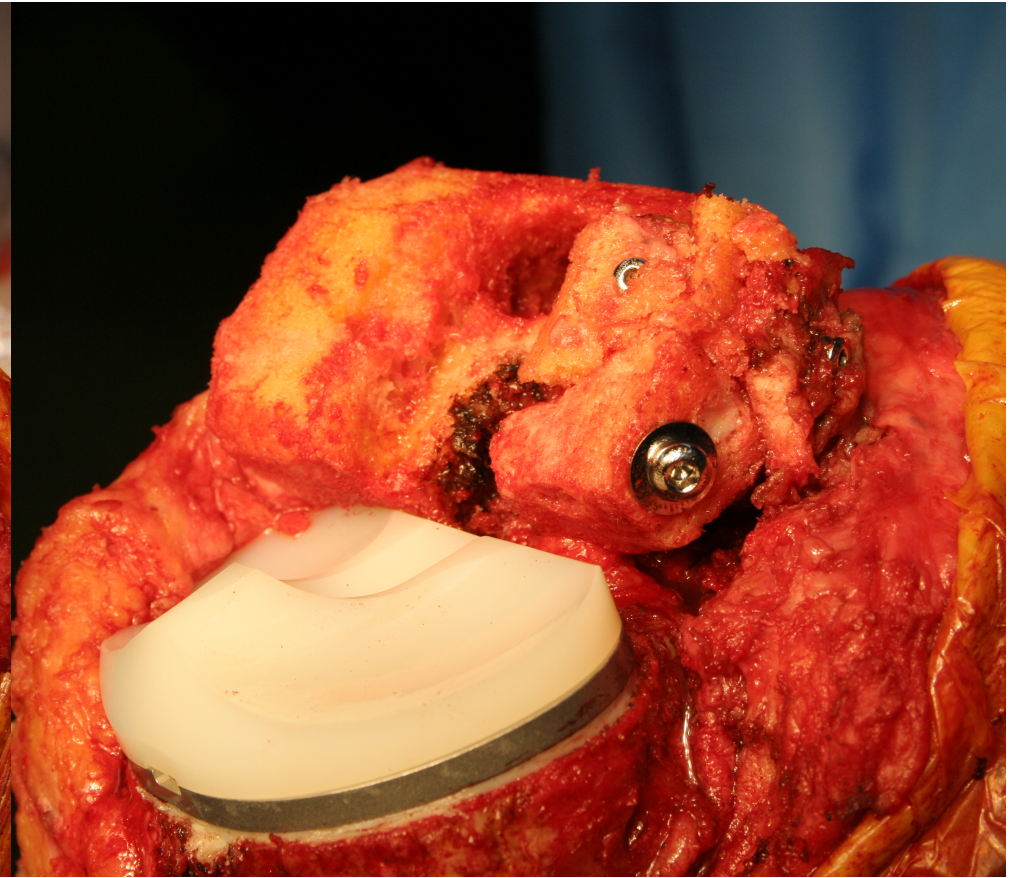
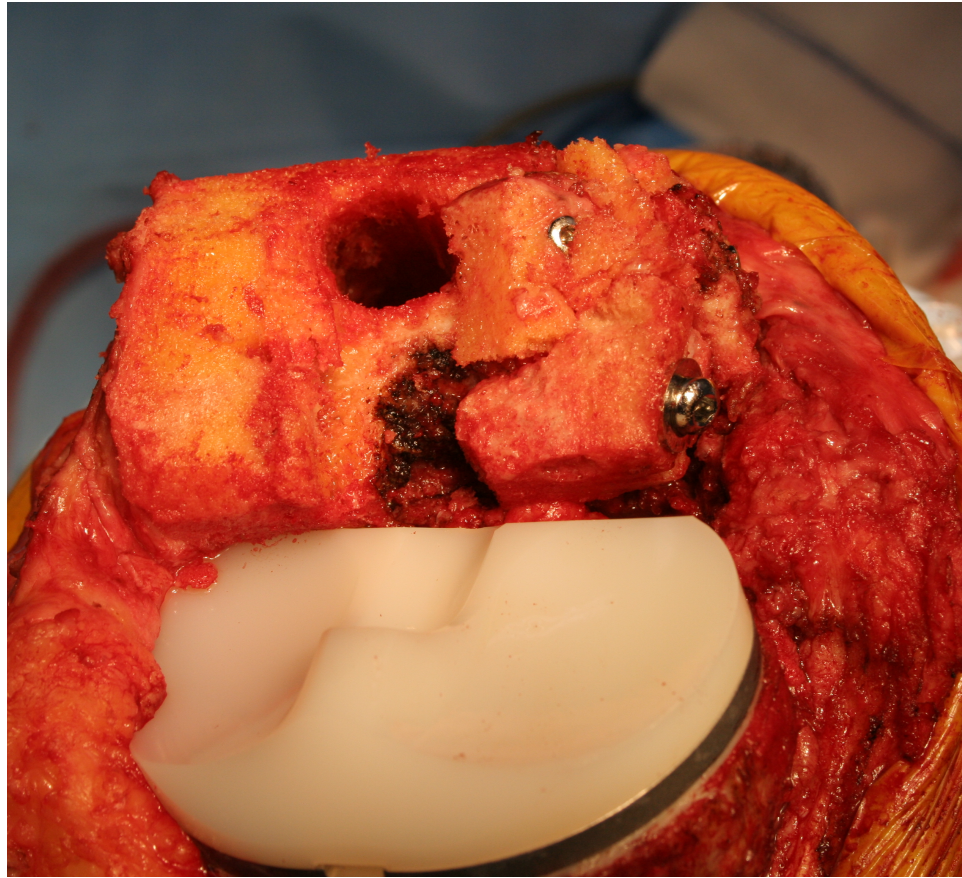


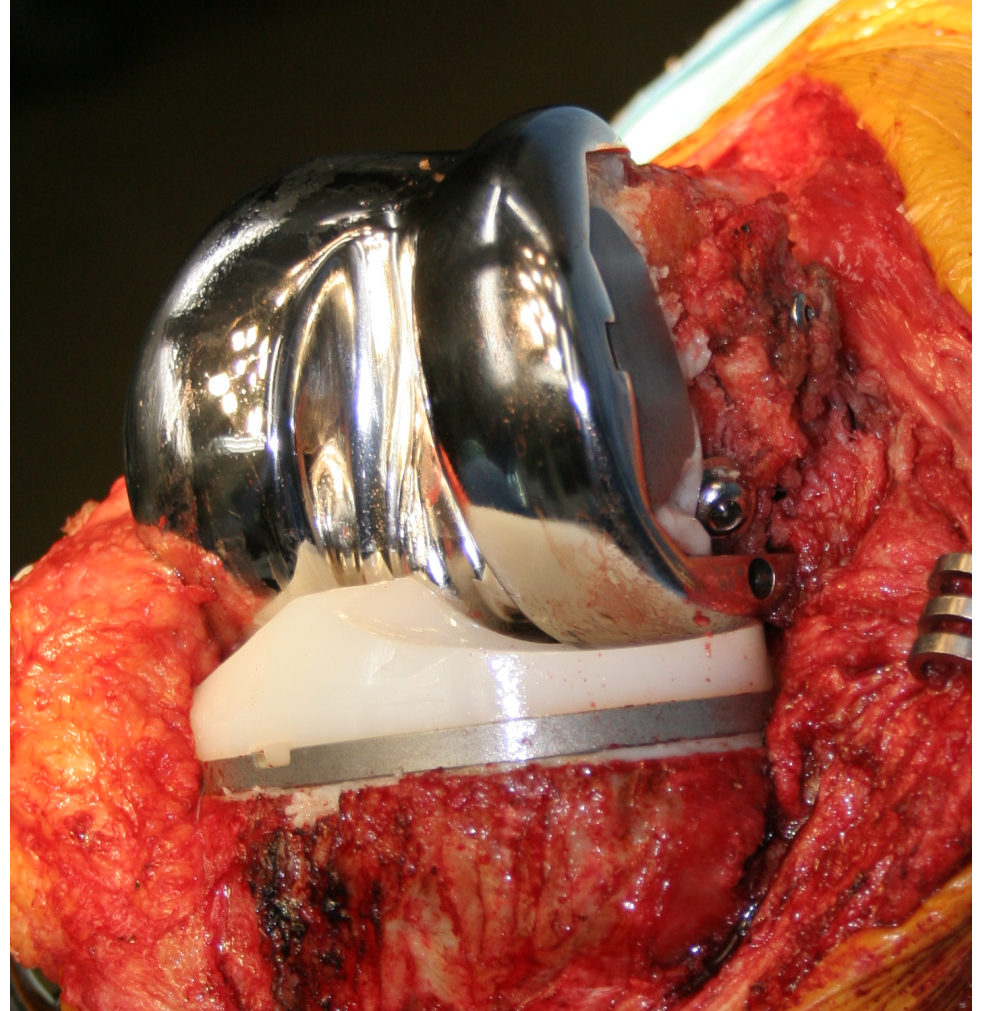
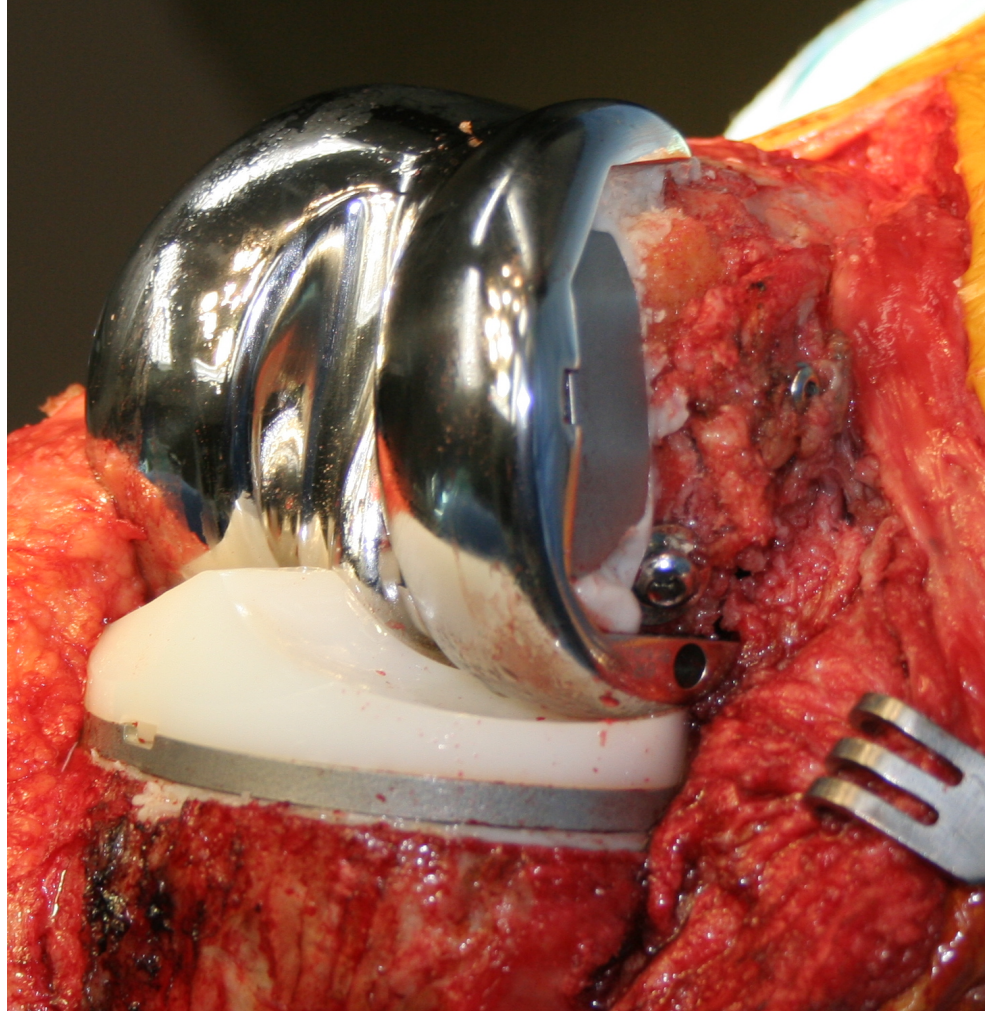
OPTIONS??

1. Fixation of medial condyle
2. Allograft medial condyle
3. HTO
4. UKA + graft
5. TKA + graft









- PS TKA
- Cemented
- Auto graft
- 1 distal block
- Back to active work
- Normal life



Conclusion

- Analyse the patient's history
- Analyse the global deformity
- Be prepared to technical difficulties
- TKA is the « art of anticipating »



Thank you

Toutes les photos de LYON ! <http://www.Lyon-Photos.com>