Patella in TKA

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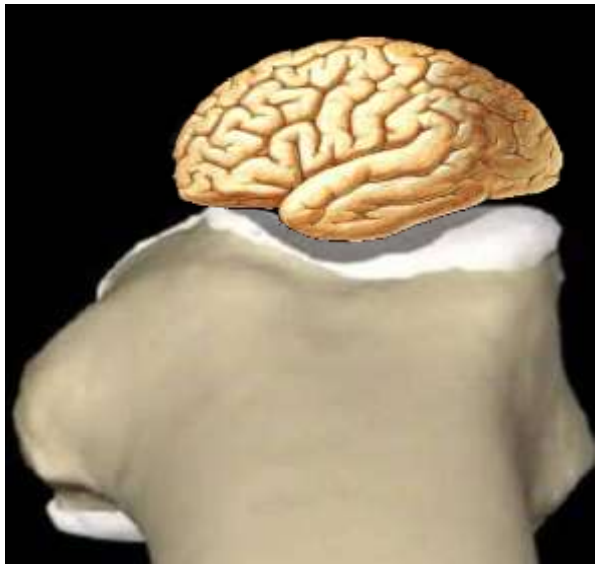
Key Points

- Anterior knee pain
- Malrotation & maltracking
- Risk factors maltracking
- Proper surgical technique
- Replacing or not ?

Anterior Knee Pain & TKA

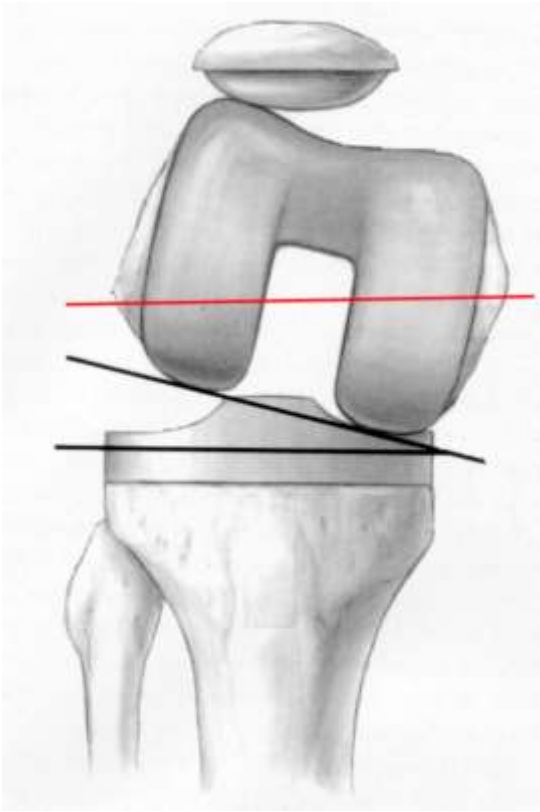
- Up to 30 % anterior knee pain
- Source of pain
  - ⇨ patella ?
  - ⇨ maltracking
  - ⇨ soft tissue overload
- Rotational malalignment main cause patella maltracking



Seitlinger & Hofmann, Orthopäde 2010

Causes Anterior Knee Pain

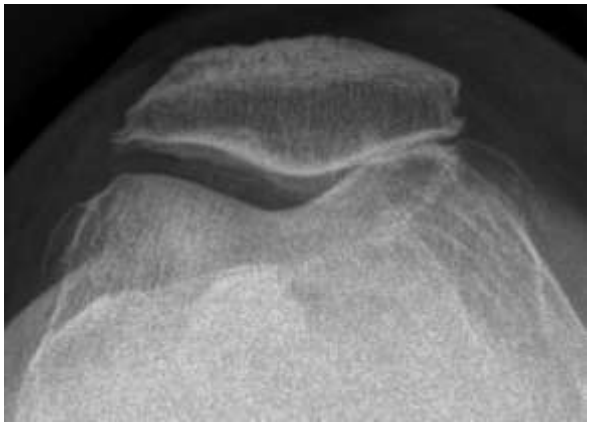
- Malrotation tibia & femur
  ⇨ most important factor patella maltracking
- Unbalanced soft tissues
- Patella baja
- Anterior overstuffing
- Design



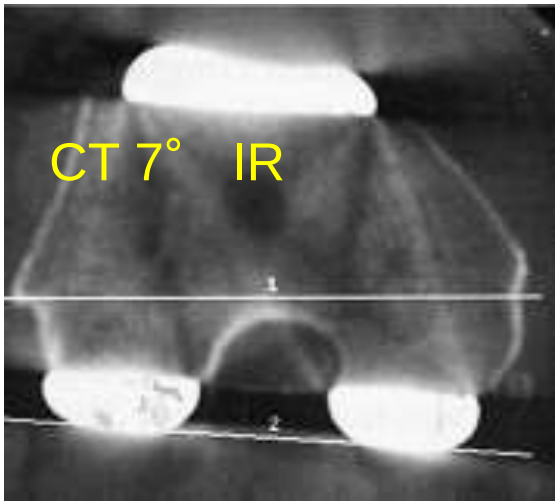
Berger et al, COOR 1998
Hofmann et al, Orthopäde, 2003
Pietsch & Hofmann, KSSTA 2011

Malrotation Definition

- Maltorsion
  - ➡ 15% TKA patients
  - ➡ patella maltracking
  - ➡ identify before & correct during surgery



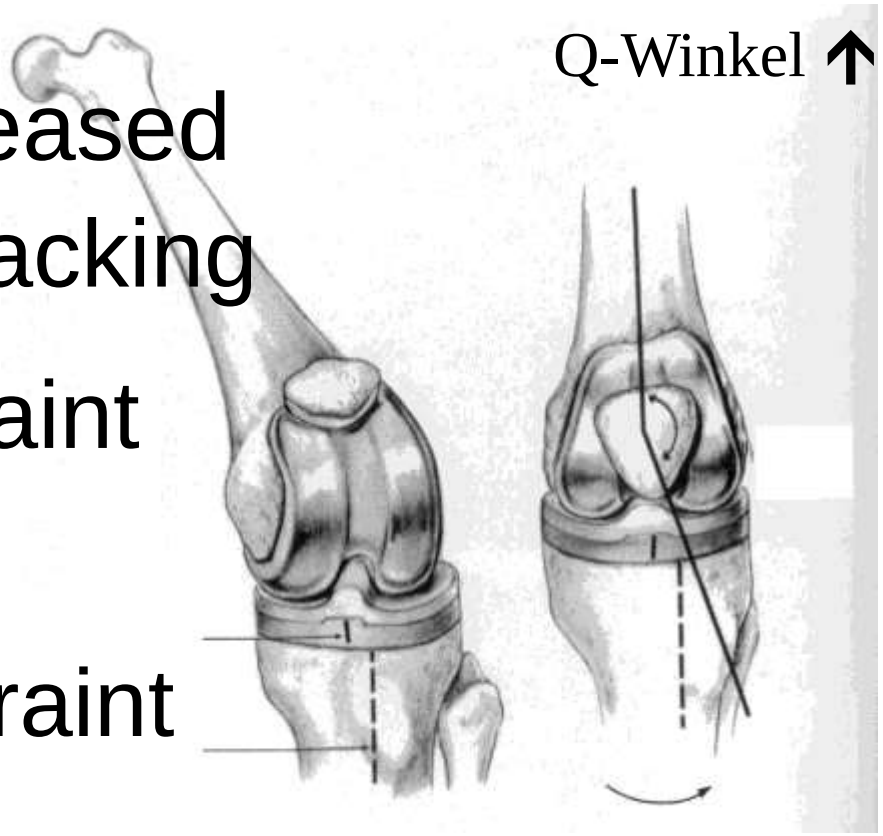
- Malrotation
  - ➡ axial malalignment
  - ➡ femur and/or tibia



Hofmann et al, Surg Tech Knee 2011

Biomechanics IR Malrotation Tibia

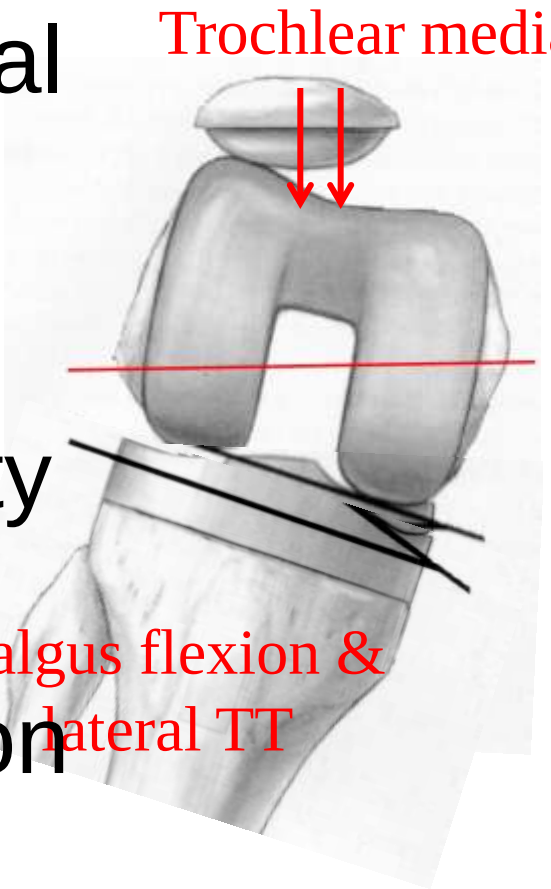
- Tibia tubercle ER
  - ⇨ Q-angle increased
  - ⇨ Patella maltracking
- 0-60° low constraint
  - ⇨ dislocation
- > 60° high constraint
  - ⇨ pain



Rand et al., Technique of TKA, 1990
Seitlinger & Hofmann, Orhtopäde 2011

Biomechanics IR Malrotation Femur

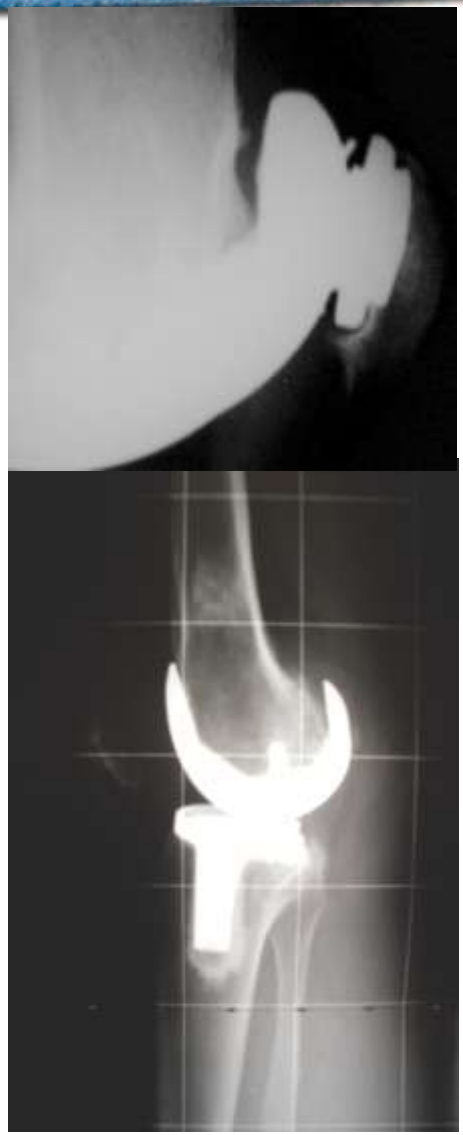
- Anterior femur & flexion
  - ⇨ Trochlea groove medial
  - ⇨ increase TT-TG
- Posterior femur & flexion
  - ⇨ lateral flexion instability
- Flexion under loading
  - ⇨ valgus deformity flexion
  - ⇨ lateralization TT



Hofmann & Romero et al, Orthopäde 2003

Risk Factors Surgical Technique

- Femoral component
  - internal & valgus
  - flexed & anterior position
- Tibia
  - internal malrotation
- Patella
  - too thick
  - baja (relative or absolute)

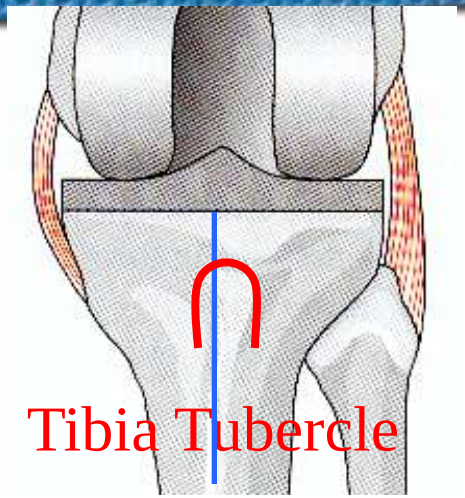


Lee J Knee Surg 2004

Brick Clin Orthop 1988

Technique Tibia Rotation

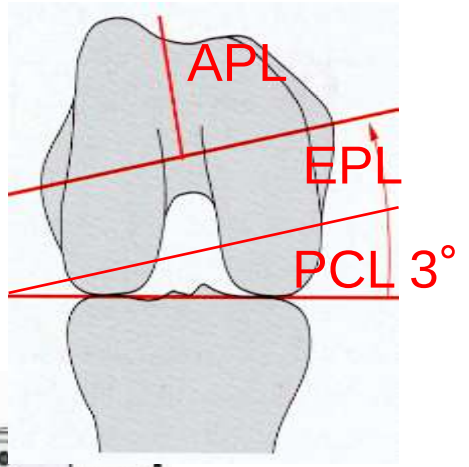
- Prepare TT & anterior crest
- Torsonal deformity ?
- Functional landmark
  - ⇨ TT
- Anatomical landmark
  - ⇨ curve on curve
- Best coverage but no overhang

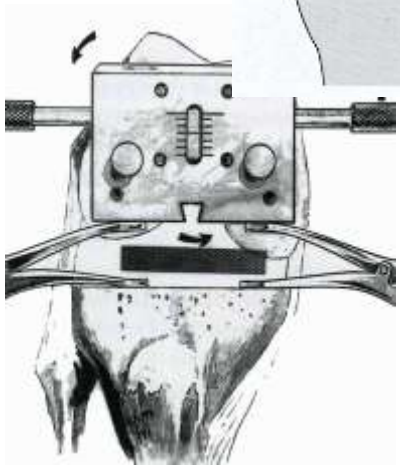


Akagi et al Clin Orthop 2004
Rossi et al, KSSTA 2011

Technique Femur Rotation

- „Femur first“ or „measured resection“
  - ⇨ bony landmarks
- „Tibia first“ or „balanced gap“
  - ⇨ balanced soft tissues
- Both have limitations
- “Extension gap first”
  - ⇨ solid compromise

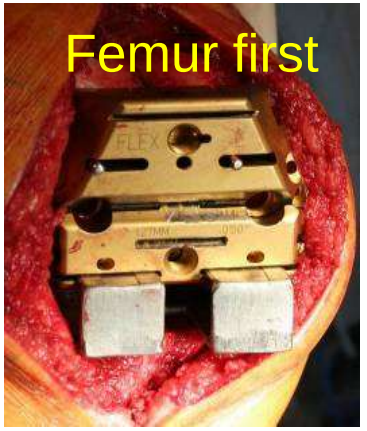




Hofmann et al, Tech Knee Surg 2011

“Extension gap first” technique

- Distal femur and tibia cut
- Balance extension gap
- Femur Rotation controlled
  - ⇨ 3 bony landmarks
  - ⇨ balanced soft tissues
- Combines both philosophies



Hofmann et al, Tech Knee Surg 2011

Technique proper Replacing

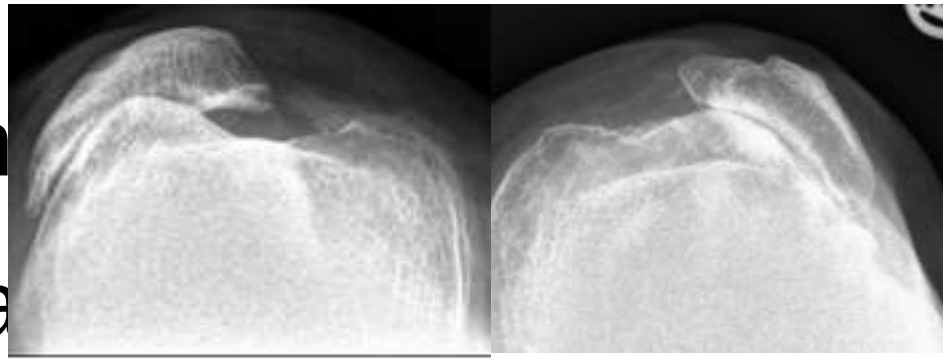
- Bone cuts
  ± 2 mm (min 10 mm)
- Same thickness
  as before
- Position PE
  medial &
  cranial or distal
- Position Femur
  3-4mm lateral

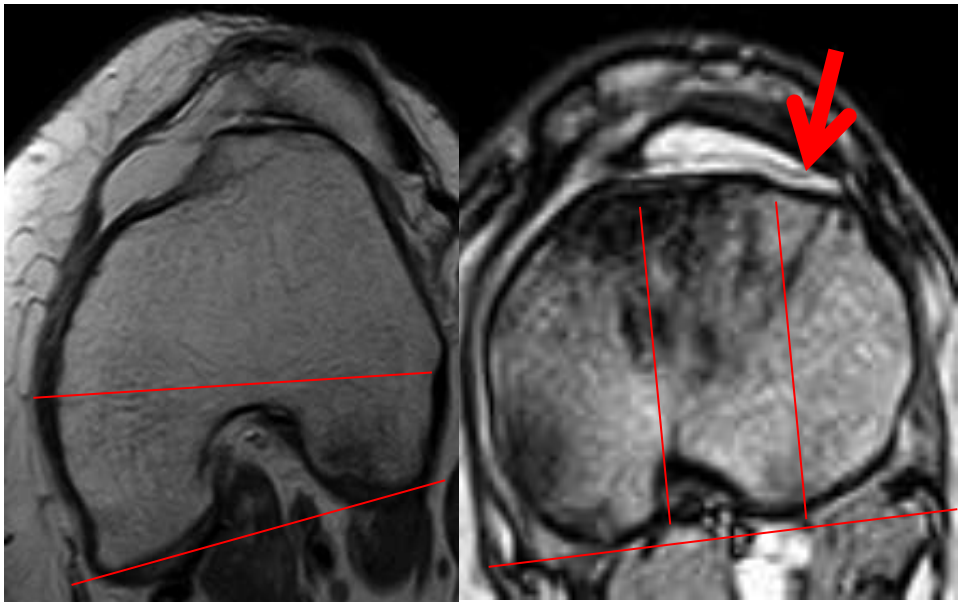
perfect patella tracking

Lee J Surg Knee 2004

Case Maltorsion & Maltracking

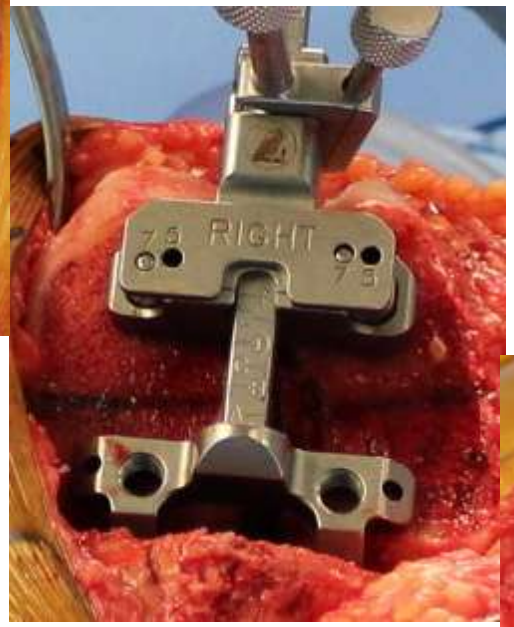
- Female 56
  bilat sub/dislocation
- Varus 1° & minima
  tibiofemoral OA
- Rotational profile
  dysplasia C
  PCA 7° ER
  TT-PC 38 mm

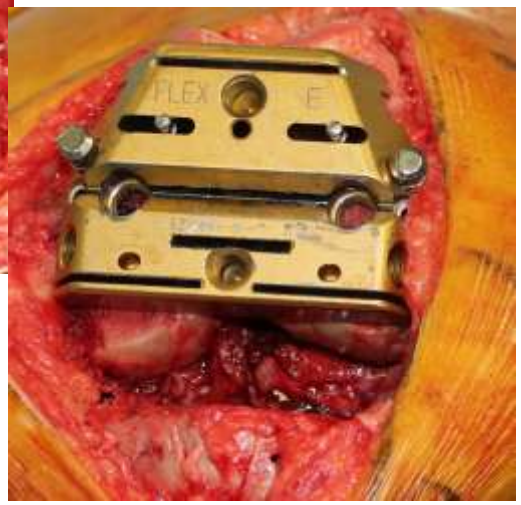




Seitlinger & Hofmann, J Am Sports Med 2011

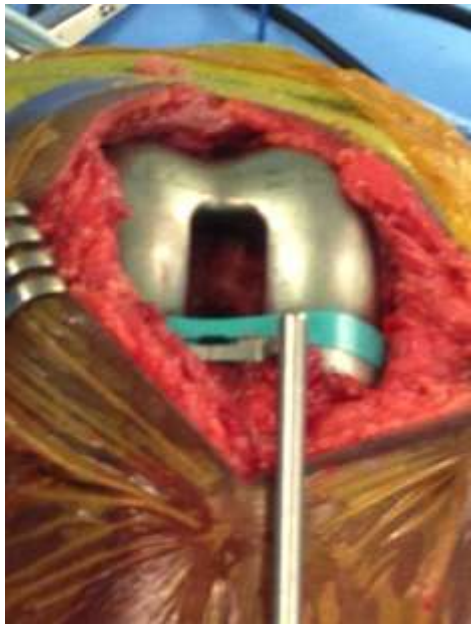
Technique Femur





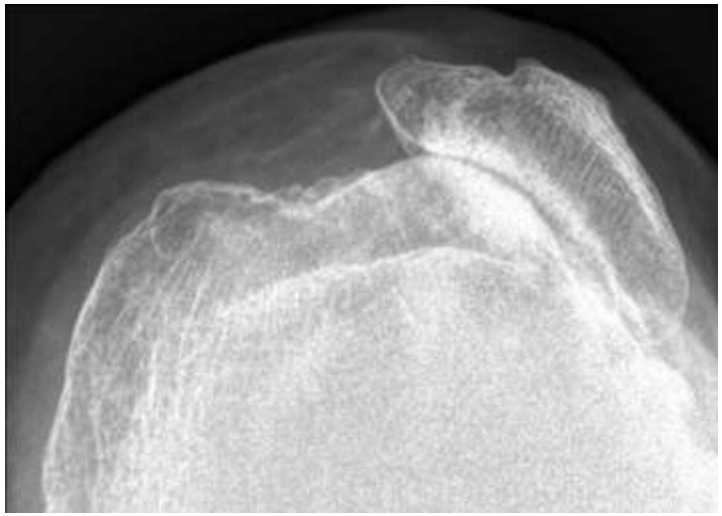
Hofmann et al, Surg Tech Knee 2011

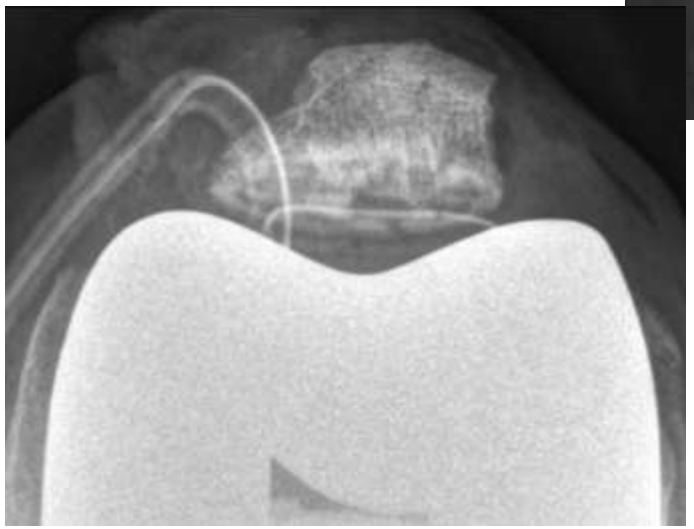
Technique Tibia



Hofmann et al, Surg Tech Knee 2011

Radiographic Outcome

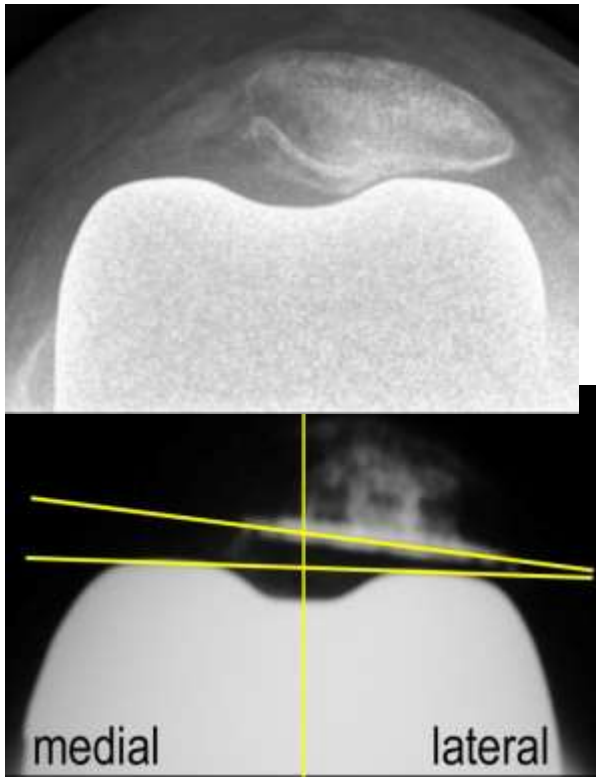




Clinical Result 6 months post TKA

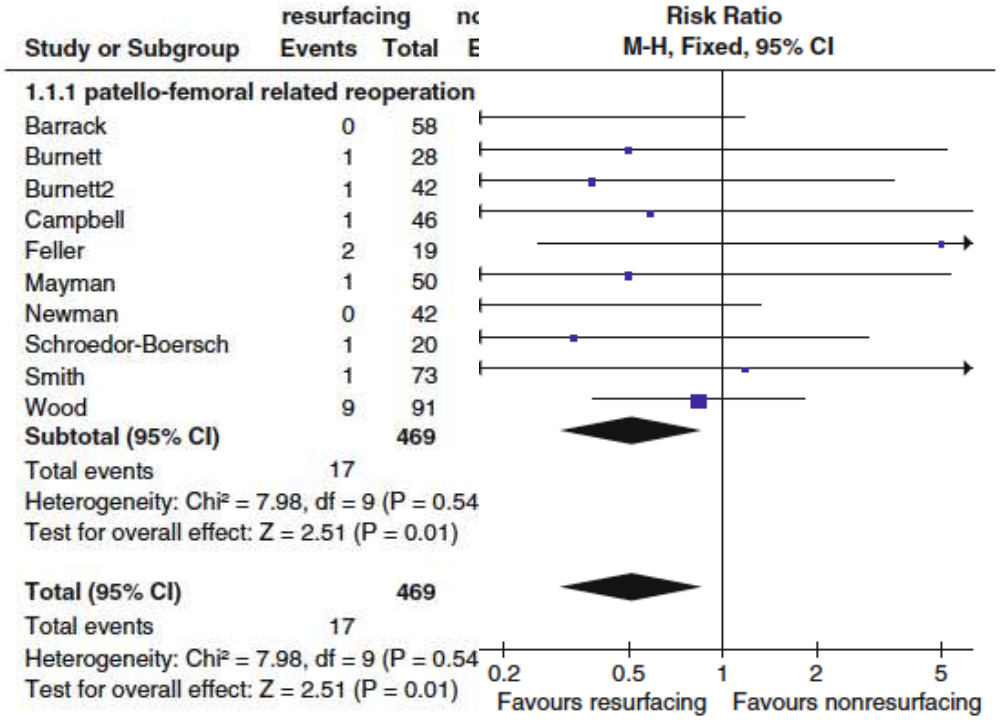
Controversy Patella Resurfacing

- Bourne et al. 1995
  no resurfacing better (100 Pat)
- Waters et al. 2004
  resurfacing better (474)
- Burnett et al. 2004
  both equal (90 Pat)



Meta Analysis

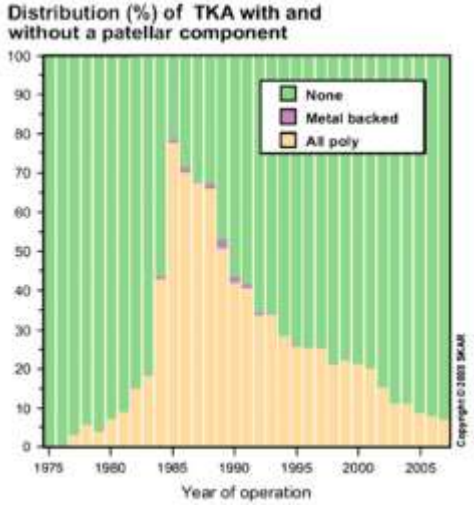
- 10 RCT with 1003 pat
- High quality report
- RR 4% higher
- No difference
  - ⇨ Ant knee pain
  - ⇨ KSS
  - ⇨ Function

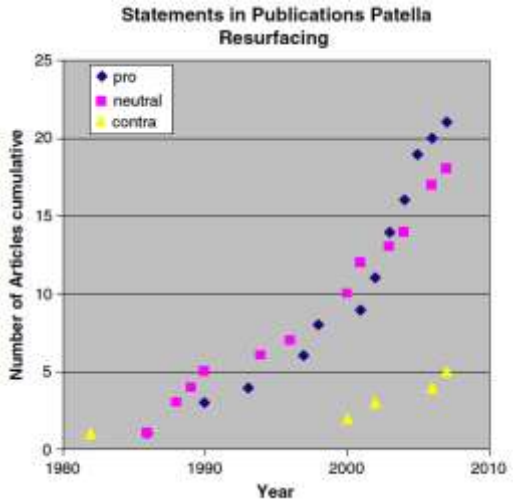


Fu et al, KSSTA 2011

Replacing Patella or Not ?

- Still controversial topic
  - ⇨ US vs Europe
- No difference 10 years
  - ⇨ Meta & registers
- Higher revision rate
  - ⇨ Bias & results ?
- Problem
  - ⇨ not patella





Labek et al, Eur Orthop Traum 2010

Summary Concept Patella

- Main cause anterior knee pain
  - ⇨ rotational malalignment
- Save technique rotational alignment
  - ⇨ Extension gap first
  - ⇨ TT & curve on curve
- Proper technique replacement
- Replacing or not
  - ⇨ philosophy
  - ⇨ no clinical difference