

Patella in TKA



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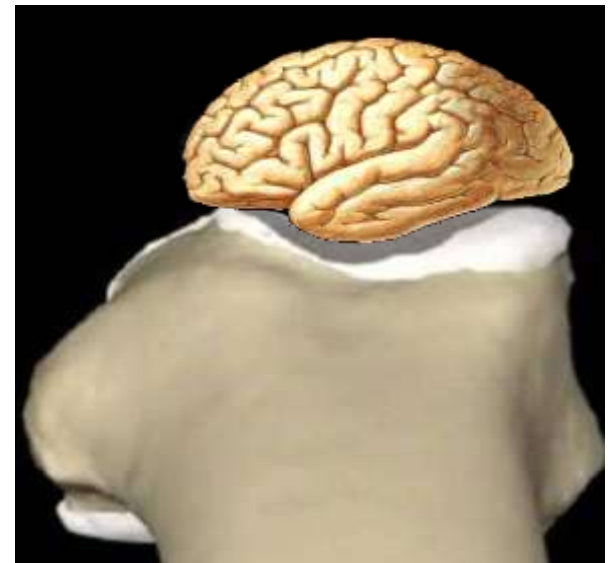
Key Points

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



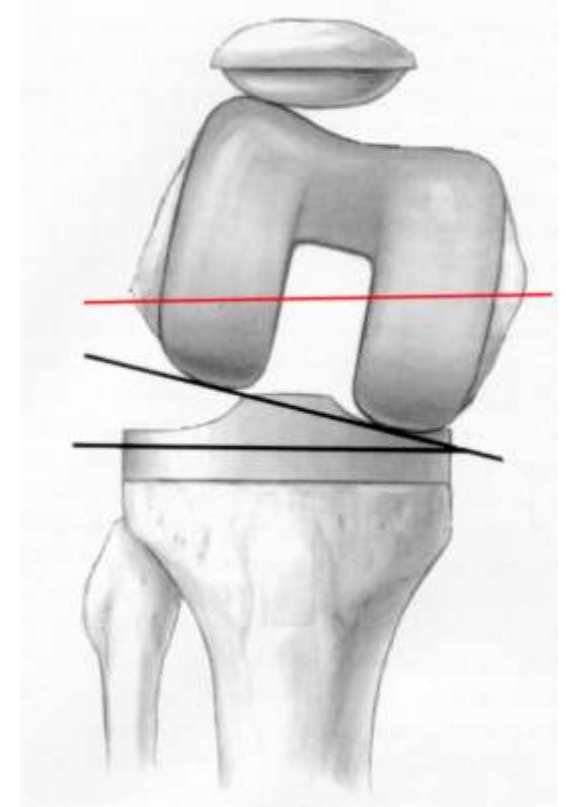
Anterior Knee Pain & TKA

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



Causes Anterior Knee Pain

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



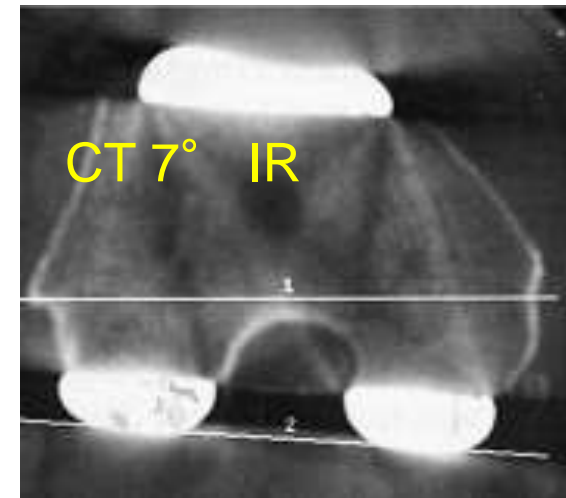
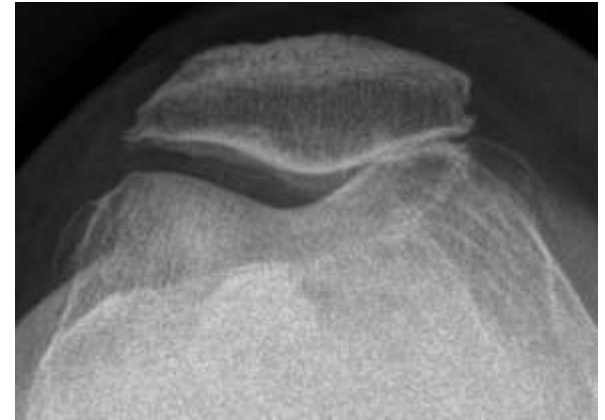
Berger et al, COOR 1998

Hofmann et al, Orthopäde, 2003

Pietsch & Hofmann, KSSTA 2011

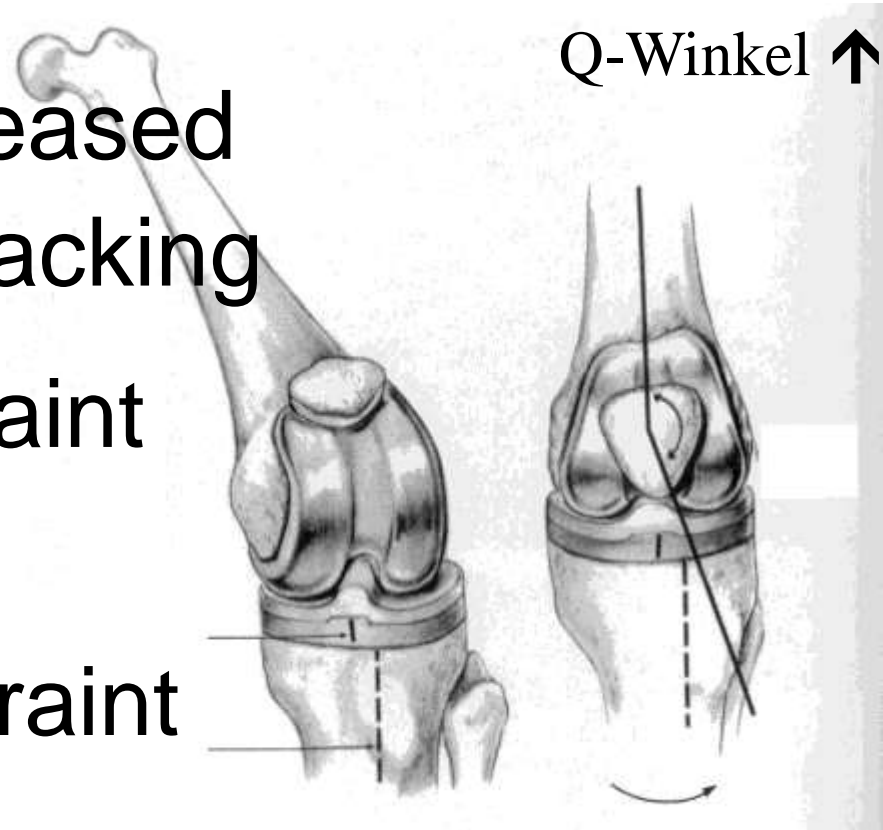
Malrotation Definition

- Maltorsion
 - ➔ 15% TKA patients
 - ➔ patella maltracking
 - ➔ identify before & correct during surgery
- Malrotation
 - ➔ axial malalignment
 - ➔ femur and/or tibia



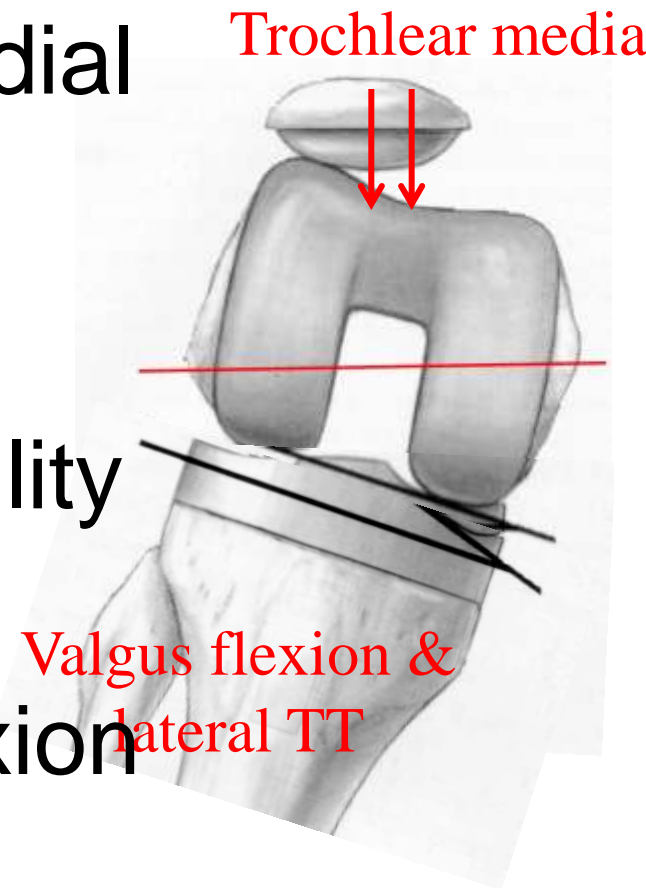
Biomechanics IR Malrotation Tibia

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



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

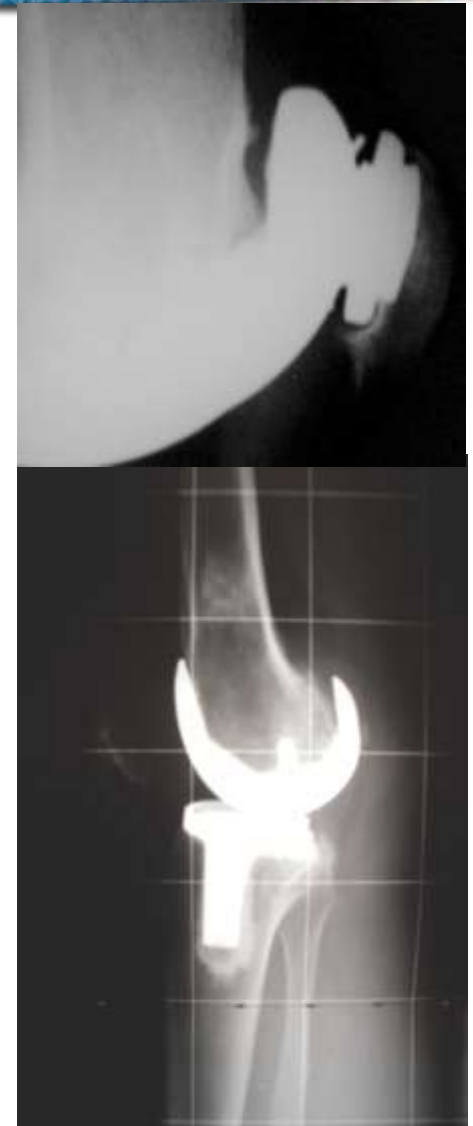


Risk Factors Surgical Technique

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

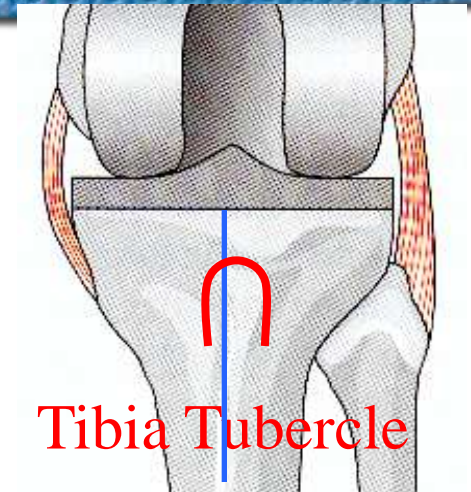
Lee J Knee Surg 2004

Brick Clin Orthop 1988



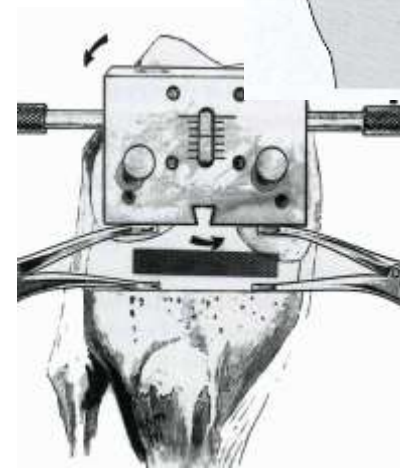
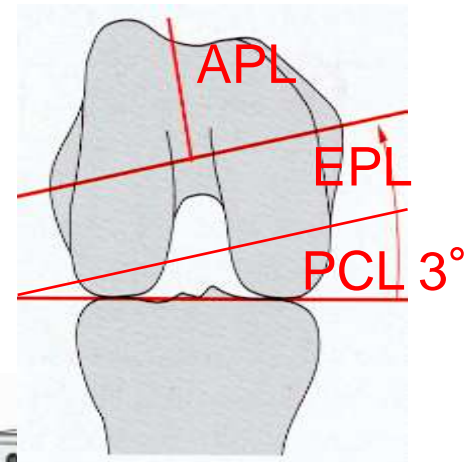
Technique Tibia Rotation

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



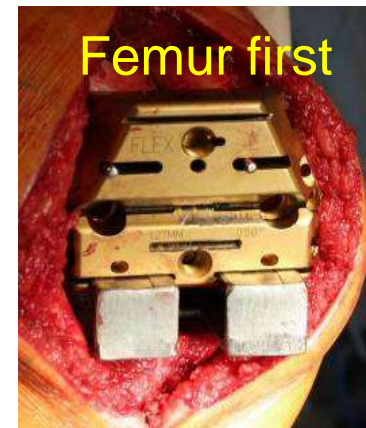
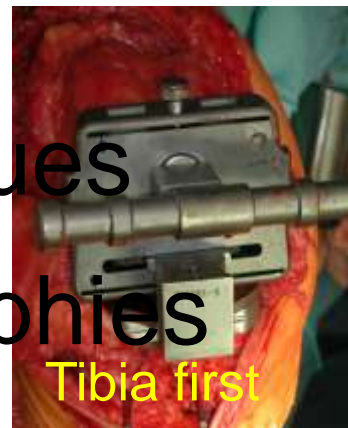
Technique Femur Rotation

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



“Extension gap first” technique

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



Technique proper Replacing

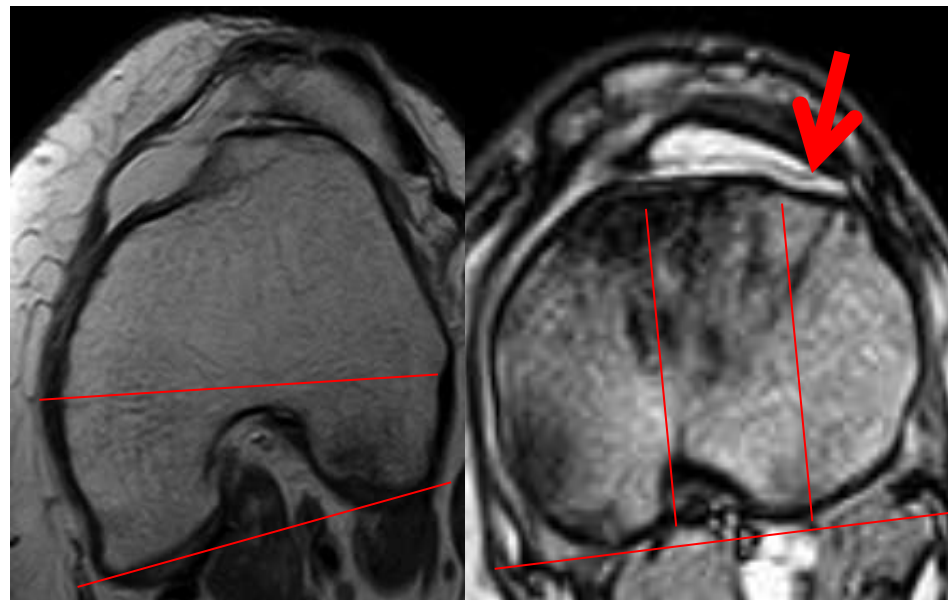
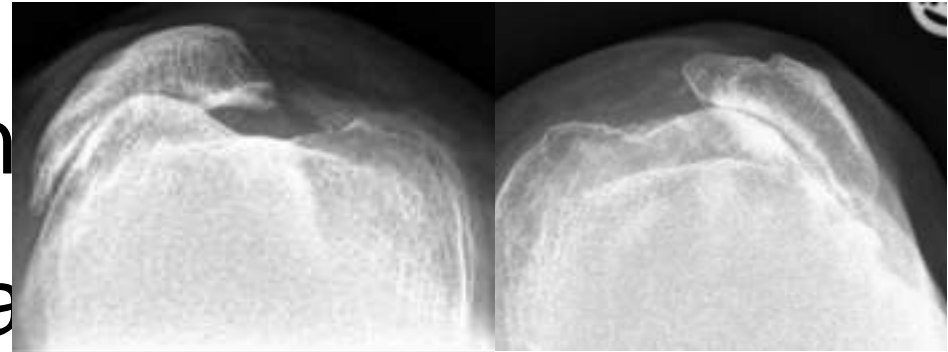
- Bone cuts
 ± 2 mm (min 10 mm)
- Same thickness
 as before
- Position PE
 medial &
 cranial or distal
- Position Femur
 3-4mm lateral



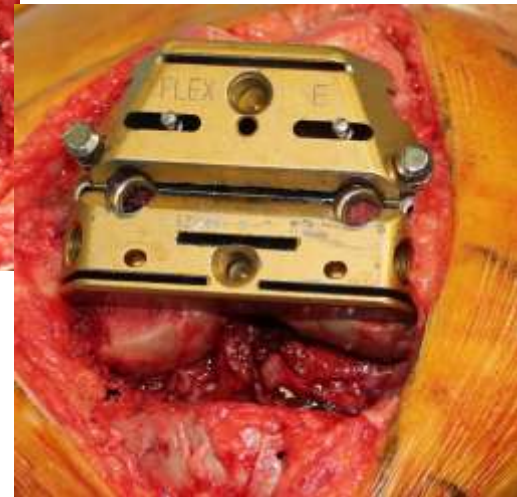
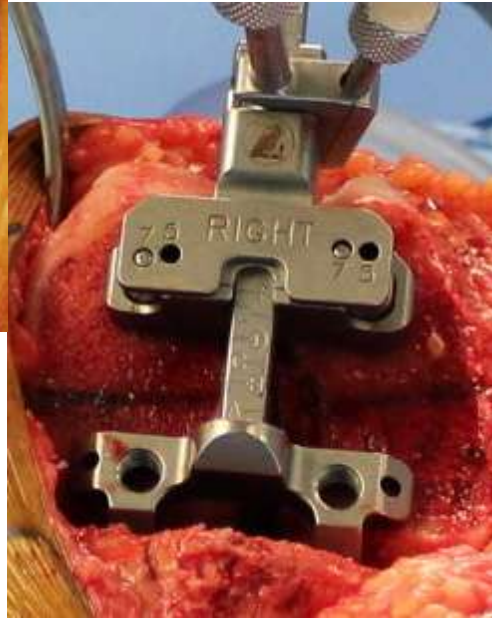
perfect patella tracking

Case Maltorsion & Maltracking

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



Technique Femur

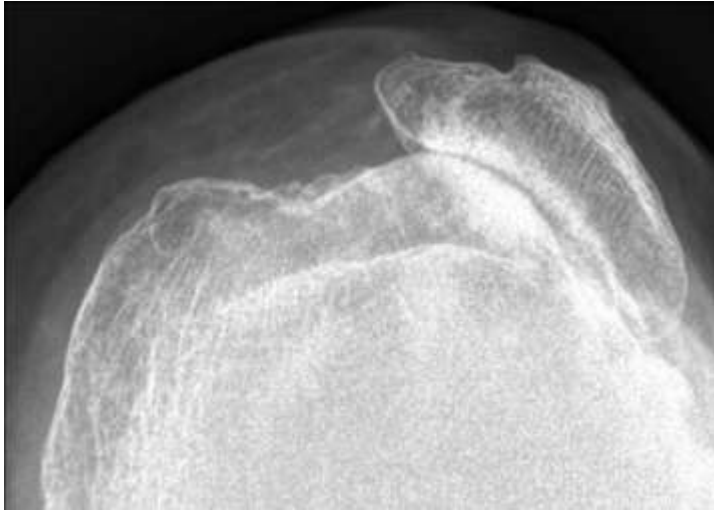


Hofmann et al, Surg Tech Knee 2011

Technique Tibia



Radiographic Outcome

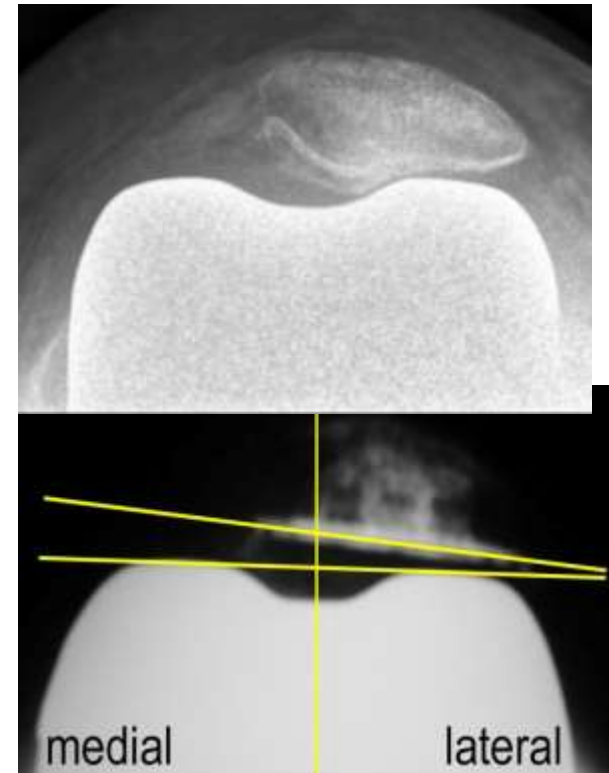


Clinical Result 6 months post TKA



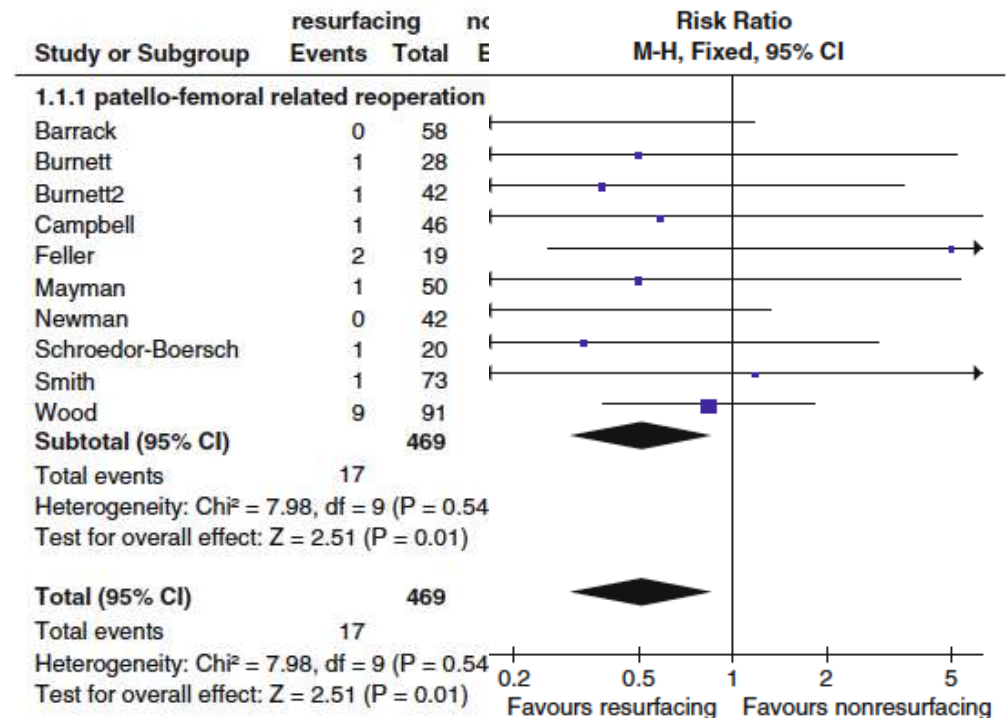
Controversy Patella Resurfacing

- 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

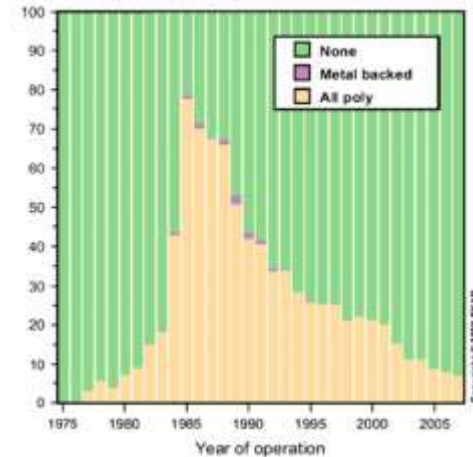
- 10 RCT with 1003 pat
- High quality report
- RR 4% higher
- No difference
 - ⇒ Ant knee pain
 - ⇒ KSS
 - ⇒ Function



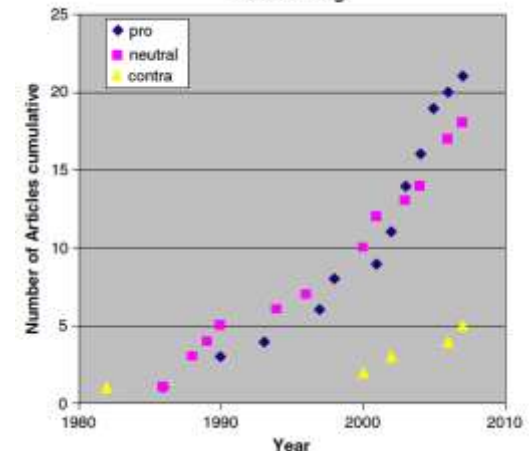
Replacing Patella or Not ?

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

Distribution (%) of TKA with and without a patellar component



Statements in Publications Patella Resurfacing



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

