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graph TD; A[PF pain syndrome] --> B[Pain is not a diagnosis]; B --> C[Identify a cause of pain]; C --> D[Without an anatomical abnormality: conservative treatment];
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PF pain syndrome


Pain is not a diagnosis

Identify a cause of pain

Without an anatomical abnormality:  
conservative treatment

# literature

- > 56 factors possibly associated with AKP  
(Teige et al Orthop Clin N Am 2008)
- “Literature may leave us confused and lost”




## Clinical findings

A diagram illustrating the relationship between Maltracking / instability and PF pain. It features two large, overlapping arrows pointing in opposite directions. The left arrow is light gray and points left, containing the text "Maltracking / instability". The right arrow is dark gray and points right, containing the text "PF pain". The arrows overlap in the center, suggesting a bidirectional relationship between the two clinical findings.

## Diagnose = Per exclusionem

- Patella dislocation
- Patellofemoral arthritis
- Tendinosis patella or Q tendon / Apexitis
- M. Osgood Schlatter- M. Sinding Larssen
- Plica / neuroma
- Meniscopathie



# Anatomical Abnormality

Increased trochlea tuberosity distance	Patella alta	Trochlea dysplasia
Medial Patellofemoral ligament (MPFL) insufficiency	Rotational lower limb deformity	

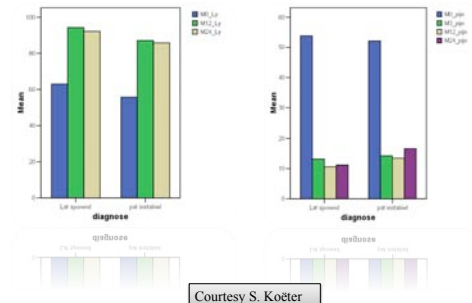
Do these factors cause AKP without objective PF instability?

### Increased TTD $\pm$ patella alta

- Koëter JBJS 2007
- 30 pts at 2 y FU, good clinical results in all patients
- Tibial Tubercle Transfer : medialisation  $\pm$  distalisation



### Results



### Operation technique

- Distal fixation with a bicortical drill  
– With patella alta also distalize



Courtesy S. Koëter

### Operation technique

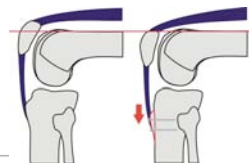
- Flexion of the knee: **self centering** of tuberosity by resting position patella between femur condyles



Courtesy S. Koëter

### Patella alta

- No literature on isolated distalisation
- Increase PF pressure?
- Tuberosity transfer usually combined with medialisation



### Prospective studies Trochleoplasty

- Several authors report on satisfactory results
- Mainly PF instability
- Verdonk KSSTA 2005 / Donell 2006 / Koeter KSSTA 2007 / Utting 2008 / Schottle 2005 / van Knoch 2006



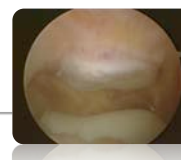
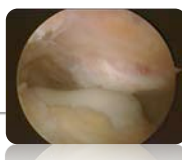
## MPFL

- 20 degrees or more Patellar Tilt on the axial CT indicates medial insufficiency
- No bone abnormalities



## Medial Reconstruction

- Smith et al KSSTA 2007, systematic review
- 8 papers assessing 186 MPFL reconstructions finally included for review
- Most papers are regarding PF instability!



## Congenital rotational lower limb deformity

- Physical examination (recurvatum / valgus / rotational def.)
- Radiological work-up (standard x-ray / CT)
- Normal values CT scan :
  - Femoral anteversion (15.6 (±6.7) (retrotorsion < 0 degrees, antetorsion > 30 degrees)
  - Tibia ext. version (23.5(±5.1) (internal torsion < 10 degrees, external torsion > 35 degrees)
- Also measuring TTD



V Heerwaarden et al: Surgical Techniques in Orthopaedics and Traumatology 55-575, 2003

## Results

- Little knowledge in literature
- Server et al (Int Orthop 1996), 35 rotational OT in PF subluxation: 88.5 % good/excellent at 4y, 83 % pain relief, 5% residual PF subluxation
- Current results of our own group: 18 ptns / 23 prox tibial derotational OT, are prospectively analysed, similar results at short FU.

## Conclusions

Treat AKP conservatively

Clinical examination extremely important

Standard X-ray, CT or MRI evaluation is needed when significant pain persists

Operative treatment only in anatomical abnormality

Outcome (short term) of operative treatment?

## Discussion

Little knowledge longterm results / biomechanical changes induced

Abnormal anatomic findings are often subtle and combinations of pathology are quite common

Treatment of all abnormalities seems logical from a biomechanical standpoint but excessive from the surgical morbidity standpoint

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