Knie artrose
Operatieve behandelingsstrategieën

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What if ...
Cartilage degradation progresses and non-surgical interventions have failed

Treatment options
- Arthroscopic lavage and debridement
- Arthrocare (multi-electrode therapy)
- Laser
- Correction osteotomy
- Arthroplasty
  - Uni-compartmental
  - Patella resurfacing
  - Total knee arthroplasty
- Arthrodesis
Arthroscopic lavage & debridement

- Conflicting evidence
  - 68% good results 2-6 y follow up
  - W. Jackson, J. Arthroscopy, 1997
- Lavage alone also improves pain and function
- Grade I & II more effective than III & IV
- Lavage affect?:
  - MMP’s / Cytokines

Lavage & debridement placebo effect?


- 180 patients
  - Group I: lavage with 10 L of fluid
  - Group II: lavage and debridement
  - Group III: placebo = only stab wounds
  - Stratification for OA severity
- Results at 2 year follow up
  - At 2 weeks placebo was best (minor trauma)
  - No difference at 2 year follow up II
- Current consensus: no indication for arthroscopic lavage

Thermal treatment

Bipolar radiofrequency based device

Spahn et al, Knee surg sport treat arthrosc, 2008

- RF vs debridement, Blinded, 1 year FU
- Grade III MFC
- Results:
  - Significantly lower VAS scores
  - Significant higher KOOS scores
  - Possible stabilising effect on cartilage

- Short FU ➔ Vitality chondrocytes?
Laser treatment

- Very limited evidence
- May play a role in articular cartilage stimulation
- DNA synthesis
- Proteoglycan synthesis
- Known to work in
  - Menisectomy
  - Synovectomy
  - Removing scar tissue
- Experimental!
- Possible detrimental thermal effect?

Osteotomy

- Change mechanical axis and load in the knee
- Valgus osteotomy in men best
- Pain relief and restoration of function:
  - 80-90% at 5 years
  - 50-65% at 10 years
- Valgus osteotomy should result in slight overcorrection

Osteotomy indications

- Varus knee with
  - mild to moderate medial OA and medial cartilage defects
  - medial meniscal transplantation
  - associated instability (ACL, PCL, PLC) with (postero-)lateral thrust
- ↓ Age
- ↓ Activity level
- Male > Females
- ↓ BMI
Osteotomy contra-indications

- Extreme deformities
- ROM deficit (At least P/E 110/10/0)
- Ligamentous instability... Although:
  - ↑ posterior slope ↓ anterior instability
  - ↓ anterior slope ↓ posterior instability
- Severe lateral or tri-compartmental OA
- Inflammatory arthritis
- Severe osteoporosis

Osteotomy

- Proximal tibia or distal femur?
- Full wedge, partial wedge, dome shape?
- Opening or closing wedge?
  - e.g. varus OT in varus thrust (PCL, PLC)
- Limitations in correction angle?
- Method of fixation?
- Plaster?

High Tibial Osteotomy (closing wedge)
Arthrodesis

Salvage procedure or first choice in young patients?

Indications:
- TKA contra-indicated:
- Young, high activity level / intensive labor
- Painful ankylosis after infection
- Deformities in paralytic conditions

Secondary complaints
- Adjacent joints
- Muscle atrophy

Arthrodesis

Techniques:
- Intra-medullary fixation
- External fixator
- Plate fixation

Conversion to TKA cumbersome:
- High incidence of complications (53%-67%)
- Skin necrosis
- Rupture of the quadriceps
- Residual extensor lag
- Postoperative stiffness
Prosthetic replacement

**Indication for operation**

- pain at rest
- pain during night
- walking distance ↓
- bi/tri-compartmental OA
- impending social isolation
- progressive deformity
- progressive contracture
- progressive instability
- Ineffective conservative treatment modalities

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**Total knee arthroplasty**

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**TKA = soft tissue surgery**

- Fexion → slope tibias, varus rotation femur component and posteromedial release
varus deformity en TKA

![Image of knee radiographs]

Total knee arthroplasty

- Most important is soft tissue balancing
  - Dynamic balancing of collaterals is physiologic process
- Neutral alignment
- Collateral stability
- Flexion and extension gaps
- Patellofemoral joint
- Overstuffing

Short term complications TKA

1. Extension deficit
2. Extension deficit
3. Extension deficit
4. Woundhealing (previous operations)
5. Infection
6. Decubitus ipsi-contralateral
7. Peroneal nerve damage
Mid / long term complications TKA

- Infection
- Mal-alignement
  - edge loading
- Contracture
- Arthrofibrosis
- Hoffa fat pad impingement
- Wear / delamination of PE
- Dislocation (e.g. mobile bearing)
- Prosthesis loosening (septic/ a-septic)

The stiff TKA

- overstuffing (patellofemoral)
- flexion/extension gaps
- CRPS type I
- biologic scar formation
- post-op haemarthrosis: evacuate
- pre-existing?
- manipulate 6-12 weeks, after 12 weeks no changes!

patellar malalignement / clunk

- Frequent cause of anterior knee pain after TKA
- Q-angle, valgus deformity
- patellar malpositioning
- lateral release
- tibial tuberosity transposition
- malrotation femoral component
choice of implant

total? hemi? patellofemoral?
patella resurfacing?
cruciate retaining?
mobile bearing? back-side wear
high flex design?
primary revision prosthesis?
rotating hinge prosthesis?

Unicompartmental knee

renewed development
(3rd G)
- “key hole” surgery

choice of patient

ideal indication: anteromedial OA
requirements:
- intact ligaments
- intact lateral compartment
- malalignment passively correctable
- < 15° varus
- < 15° flexion deformity, flexion > 110°
hemi-arthroplasty

contra-indications hemi

lateral OA
inflammatory arthritis
unstable knee (ACL)
relative contra-indication:
- PF osteoarthritis
- age and activity level
- overweight

patellofemoral prosthesis
choice of implant?

conclusions

The universal solution to degeneration of cartilage not available
some treatments work, some don’t
muscle condition must not be underestimated
key issues:
- Patient versus treatment selection
- Axial alignment
- Stability