Post-TKR
Arthroscopic Arthrolysis

Introduction
Stiffness after TKR is a common problem
Affects the patient’s ability to perform ADL
Does not have a well-defined treatment algorithm

Knee Flexion Requirements
• 83º to climb stairs foot over foot
• 93º to sit in a chair without using one’s hands
• 106º tying one’s shoes while seated

What is Stiffness after a TKR?
• Limited ROM that affects a patient’s ability to perform activities of daily living
• 2006 Yercan et al. defined the stiff knee as one that flexed < 95º and had a flexion contracture of 10º

Causes of stiffness
MULTIFACTORIAL
- Infection
- Poor component positioning or syzing
- Inadequate soft tissue balancing
- Aseptic loosenig
- Complex regional pain syndrome

Arthrofibrosis
- Excessive scarring within the knee due to fibrocartilaginous metaplasia
  - Increased interstitial fibrosis
  - Formation of dense intra-articular adhesions
    - Isolated infrapatellar adhesions
    - Diffuse (suprapatellar pouch, medial and lateral gutters, and posterior capsule)
New insights

• TGF-beta1 is a potent inducer of arthrofibrosis

• BMP-2 is overexpressed and its concentrations are consequently higher in patients suffering from arthrofibrosis after TKA.


Pfitzner et al. Increased BMP expression in arthrofibrosis after TKA. KSSTA 2011

Therapeutic options

• Physical therapy (PT)
• MUA
• Arthroscopic Arthrolysis
• Open débridement
• Revision surgery

Therapeutic options

• Physical therapy (PT)
• MUA
• Arthroscopic Arthrolysis
• Open débridement
• Revision surgery

Arthroscopic Arthrolysis

Principles

– Selective breaking of the adhesions inside the knee
– Gentle manipulation
– Postoperative regional pain blockade
  * (postop analgesia will have an effect on motion after TKR)
– Physical therapy (CPM) started immediately (in-patient)

Arthroscopic Arthrolysis

Surgical Technique

- Suprapatellar pouch release
- Reestablish the medial and lateral gutters
- Release the patella
- Resect any remaining meniscal tissue
- Resect anterior compartment
- Release posterior capsule

Surgical Technique

Arthroscopic Arthrolysis

Patient position

Arthroscopic Arthrolysis

Surgical Technique

Patient position
Arthroscopic Arthrolysis
Surgical Technique

Portals
- Antero-lateral
  - To visualize and evaluate the location and type of fibrosis
  - The following portals are created under direct vision
  - Sometimes difficult due to extensive scar tissue
  - Use as many portals as needed

Arthroscopic Arthrolysis
Surgical Technique

- Suprapatellar pouch
  - Release of fibrous bands
  - Opening obliterated superior recess
  - Until the dimensions of the original pouch are re-established
    (or until fibres of articularis genu muscle are seen)

Arthroscopic Arthrolysis
Surgical Technique

- Anterior Compartment
  - Sometimes difficult (tight patella) to get in the suprapatellar pouch
    then start in anterior compartment or use suprapatellar portals

Arthroscopic Arthrolysis
Surgical Technique

- Reestablish the medial and lateral gutters
  - Particularly the medial one to free the MCL

Arthroscopic Arthrolysis
Surgical Technique

- Release the patella
  - If it is lateralized
    - Lateral release
  - If it is tight but centralized
    - Medial and lateral release
Suprapatellar pouch

Arthroscopic Arthrolisis Surgical Technique
- Resect any remaining meniscal tissue

Pseudomeniscus
Onset of pain may represent an impinging pseudomeniscus (usually localized posteromedial or posterolateral)


Arthroscopic Arthrolisis Surgical Technique
- Resect anterior compartment & intercondylar notch
  - Cyclops lesions, etc... till the knee can be fully extended
  - If CR implant – release the PCL

Arthroscopic Arthrolisis Surgical Technique
- Resect anterior compartment & intercondylar notch
  - If PS implant – the results are less effective

INTERVAL RELEASE
- to free the Hoffa pad and patellar tendon
If flexion contracture persist

Treatment of the final 10º of extension can still be unsuccessful. If so, consider posterior capsulotomy as it is technically feasible arthroscopically.

Arthroscopic Arthrolisis
Surgical Technique

- Release the posterior capsule
  - Need for posterior medial and lateral portals (Kim approach)

Surgical Technique

- Resect the impinging tissue from the back of the polyethylene

Results

- Generally good (in terms of motion and pain)
  - Jerosch et al. KSSTA 2007
  - Arbuthnot et al. KSSTA 2010

- Not reliable for severely stiff knees
  - Yercan et al. Knee 2006

- No major complications have been reported
  - There is an important risk of instrument breakage and abrasion or scratching of the polyethylene or the components of the prosthesis

- Technically difficult and requires a significant amount of experience

Arthroscopic Arthrolisis

AA in the stiff TKR

- The gains in ROM after MUA and AA (with or without MUA) are similar
- Open arthrolysis seems to have inferior gains in ROM
- AA combined with MUA still is useful 1 year after the index TKA.
Our protocol

• Arthrofibrotic knee (ROM 0/10/90°) before 3 months after index surgery \(\rightarrow\) MUA

• Arthrofibrotic knee between 3 and 9 months after TKR \(\rightarrow\) Arthroscopic Arthrolysis

• If a cause (infection, malpositioning or syzing of the components, inadequate soft tissue balancing, aseptic loosening, etc...) is suspected \(\rightarrow\) TKA revision

Conclusions

Arthrofibrosis after TKR

- Arthroscopic Arthrolysis is reproducible and safe

- AA may have greater success

Conclusions

Stiff TKR

- The results of revision TKR have the lowest incidence of failure or recurrence

- Therefore, a revision gives the best chances of gaining motion

Thank you

jmonlleau@santpau.cat