Preop stiff knee: which expectations
Soft tissue release

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www.chirurgie-arthrose.com
We can not release all the soft tissue
Etiology

« Where the hand of the man already put his foot »

Post-traumatic
Post-osteotomoy
Historical arthritis

Secondary arthritis
hemophilia, rhumatoid arthritis
TKA Basic

“Just enough but not too much”

- Mobility
- Stability
- Alignment
- Fixation

Contrains
Best compromise
Augment and stem
Goals

Spaces
Articular line
Stability

distal
posterior
tibia
distal
tibia
distal
tibia
Goals?

Articular line
Patellar position
AP and Sky-line
1: Lack of flexion and soft tissue « Anterior»

Quad
Patellar tendon
The peel in total knee revision: exposure in the difficult knee.

Lavernia C, Contreras JS, Alcerro JC.
2. Lack of extension and soft tissue « Posterior »

Capsule
Muscles => Genu valgum
Solutions
Time and 3 tools

Lamina spreader
Osteotom
Rugine
Wath can we expect after fracture?

Limited gain
Not shy but modest

Total knee replacement following intra-articular malunion.

PMID: 21872547 [PubMed - in process]
Related citations

Multicentric retrospective study
Post-traumatic arthritis
Intra-articular malunion
74 TKA
Surgical technique

Specific action for the stiffness

- **Bone: 12% (10/74)**
  - 7 distal femoral cut
  - 2 on tibial cut
  - 1 tibial slope

- **Soft tissues: 22% (16/74)**
  - 6 posterior arthrolysis
  - 6 lateral retinaculum section
  - 2 MCL release and one lateral
  - 1 Judet
Complications

23/74 => 31% :

Avulsion of patellar tendon: 4 cases
Infections: 4 cases
Stiffness: 5 cases
Instability: 1 case
Aseptic loosening: 1 case
Clinical results IKS Knee and Function scores

<table>
<thead>
<tr>
<th>Genou</th>
<th>Fonction</th>
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<tbody>
<tr>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>25</td>
<td>52</td>
</tr>
<tr>
<td>85</td>
<td>66</td>
</tr>
</tbody>
</table>
Which expectation after infection

- 57 TKA staphylococcus infection
- Minimum five years
- Age: $71 \pm$ years
- 26.3% multiple surgeries (mean 3.53)
- Multiple risk factors +++
Functionnal results

Knee Society score
- Knee : 56.3
- Function : 50.3

KOOS

| SF 12 MCS | 56.7 |
| SF 12 PCS | 36.5 |
Aseptic Revision

The Peel in Total Knee Revision
Exposure in the Difficult Knee

Carlos Lavernia MD, Juan Salvador Contreras MD,
Jose Carlos Alcerro MD

<table>
<thead>
<tr>
<th>WOMAC</th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>40.24 ± 2.71</td>
<td>10.3 ± 1.61</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Pain</td>
<td>10.54 ± 0.593</td>
<td>2.13 ± 0.434</td>
<td>≤ 0.0001</td>
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<tr>
<td>Stiffness</td>
<td>3.16 ± 0.281</td>
<td>0.63 ± 0.174</td>
<td>≤ 0.0001</td>
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<tr>
<td>Total</td>
<td>53.9 ± 2.31</td>
<td>13.1 ± 2.11</td>
<td>≤ 0.0001</td>
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</tbody>
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<table>
<thead>
<tr>
<th>ROM (°)</th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee active extension</td>
<td>9.84 ± 1.88</td>
<td>3.5 ± 1.46</td>
<td>0.002</td>
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<tr>
<td>Knee passive extension</td>
<td>6.4 ± 1.54</td>
<td>1.24 ± 0.569</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Knee active flexion</td>
<td>89.56 ± 2.71</td>
<td>99.56 ± 2.34</td>
<td>0.001</td>
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<tr>
<td>Knee passive flexion</td>
<td>95.37 ± 2.87</td>
<td>108.79 ± 2.06</td>
<td>≤ 0.0001</td>
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<tr>
<td>Flexion contracture</td>
<td>6.3 ± 1.52</td>
<td>0.92 ± 0.458</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Extensor lag</td>
<td>3.49 ± 1.06</td>
<td>2.59 ± 1.37</td>
<td>0.5</td>
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</tbody>
</table>
The Stiff Total Knee
Arthroplasty: A Contemporary Approach

Mark W. Pagnano, MD, and Sebastien Parratte, MD
Results of Revision TKA for Stiffness

- Modest gains in ROM and function

- 17-30 degree improvement in arc of motion

- Most knees still cannot flex > 90 degrees

References:
- Kim et al. JBJS 86A, 2004
- Mont et al. CORR 446, 2006
- Keeney et al. CORR 440, 2005
- Ries et al. CORR 380, 2000
- Williams et al. CORR 331, 1996
- Haidukewych et al. J Arthroplasty 20, 2005
- Christenson et al. J Arthroplasty 17, 2002
Step 1

Implant? => Release

- Stability
- Alignement
- Wear

Pr. J.M. Aubaniac, 1972
Reductibility?
Step 2 => Approach

1) Anterior midline incision

2) Subvastus arthrotomy

3) Lateral parapatellar Arthrotomy if required
Subvastus Arthrotomy: « follow the yellow ligne »
Approach

Subvastus + work in extension and then flexion
Exposure

Notch soft tissue
Release
Cut everything
Cuts remains essential
After the cuts

- Posterior release
Go behind the tibia as well if required
TKA Revision:
Work in extension
Sometimes limited options
Extensive release
Rotating hinge
Extensive release

As previously described by Windsor and Insall [31], extensive skin incision was performed in all cases. Every attempt was made to incorporate any previous incisional scar. The extension of any existing skin incision was performed, avoiding large lateral based flaps (Fig. 1).

Standard medial parapatellar arthrotomy was performed in all cases. Fibrous adhesions in the medial and lateral gutters were lysed using a combination of sharp, blunt, and cautery dissection until the suprapatellar pouch along with the gutters were fully developed and the patella could be safely displaced laterally. The polyethylene insert was generally removed at this point to facilitate mobilization of the bones and to help relax the soft tissues circumferentially. The leg was gently flexed and a sharp subperiosteal dissection was begun at the distal origin of the medial collateral ligament. We modified the previously described technique to include dissection with an electric cautery using a rake retractor or manual tension to pull on the ligament capsular flap. The medial collateral ligament was elevated until the distal femur and the proximal tibia could be mobilized and the proper exposure achieved (Fig. 2A–B).

This skeletonization was performed as extensively as necessary. A bone hook was placed in the prosthetic intercondylar notch to pull on the distal femur superiorly to expose and liberate the posterior capsule and fibrous tissues from the back of the femur as well. Manual tension was utilized in the posterior femur to avoid damaging the neurovascular structures; a Cobb elevator was not utilized in the posterior femoral area. The tibia could also be skeletonized in a similar manner, beginning on the medial side. External rotation of the tibial shaft and subperiosteal elevation in a single sleeve containing the medial soft tissues up to the insertion of the pes anserinus distally and beyond the insertion of the deep medial collateral ligament and the semimembranosus tendon posteriorly was performed if required. After completing the reconstruction, the oscillating saw was gently used in a “brushlike fashion” to remove the surface layer of fibrous tissue and cortical bone on the origin and insertion of ligaments (Fig. 3).

A TC-3 or a constrained condylar knee (CCK)-type device was used in most reconstructions. A lateral release was sometimes required to improve patellar tracking at this point. The implants utilized were CCK in 61 cases: NexGen CCK (Zimmer, Inc, Warsaw, IN) (57); AMK CCK (DePuy, Warsaw, IN) (two cases); and Profix CCK (Smith and Nephew, London, UK) (two cases). Hinged knees were used in 32 cases: NexGen Rotating Hinge.
Conclusion

• Not shy but modest and prepared to the worst

• Frontal, sagittal and axial release

• Soft tissues ↔ implant choice

• Stability is also a key factor
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- Chirurgie de la hanche et du genou assistée par ordinateur...
- Pourquoi une prothèse totale de genou adaptée au sexe féminin?...
- Prothèses de hanche et de genou : moins de 3% de transfusion.

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