Complication of Meniscal Surgery

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Definition

• A surgical complication may be defined as an untoward event that occurs during the perioperative period as a result of a surgical procedure that causes patient morbidity and adversely affects patient outcome.

• ≠ An incident may be defined as an untoward event that is recognized during the perioperative period and is acted upon and addressed to avoid any adverse effects or morbidity to the patient.
Outlines

- Overall complications
- Non specific complications
  - Infection, thromboembolic, vascular and neurologic
- Procedure-specific complications
  - Setup, Instrumentation, Meniscectomy
  - Meniscal repair
  - Allografts
Overall complications

- Complications of knee arthroscopy: **8.2%**

- Complications specifically attributed to meniscal surgery have been reported to range from **1.7%** for menisectomy and **1.29%** for meniscal repair in a prospective multicenter series documenting the outcomes of 8741 knee arthroscopies performed by “experienced” arthroscopists.

- Partial medial menisectomy: **12.5%** Partial lateral menisectomy **8.5%**.

- Meniscal repair: overall complication rate of **18%** (19% for medial repairs and 13% for lateral repairs).

Sources:


Overall complications

- Wide range of numbers may: variety of factors including the timing of specific publications related to novel ever expanding arthroscopic methods and newly introduced techniques as well as the precise definition of the specific complications.

<table>
<thead>
<tr>
<th>Meniscal Surgery Morbidity: Incidents (Minor)</th>
<th>Meniscal Surgery Morbidity: Complications (Major)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broken Retrieved Instrumentation</td>
<td>Broken Retained Instrumentation</td>
</tr>
<tr>
<td>Superficial Portal Drainage</td>
<td>Infection/Sepsis</td>
</tr>
<tr>
<td>Swelling</td>
<td>Thrombophlebitis</td>
</tr>
<tr>
<td>Ecchymoses</td>
<td>Pulmonary Embolism</td>
</tr>
<tr>
<td>Venous Injury</td>
<td>Arterial Injury</td>
</tr>
<tr>
<td>Postoperative Stiffness</td>
<td>Compartment Syndrome</td>
</tr>
<tr>
<td>Device Breakage (Retrieved)</td>
<td>Postoperative Hematoma</td>
</tr>
<tr>
<td>Postoperative Synovitis</td>
<td>Arthrofibrosis</td>
</tr>
<tr>
<td>Superficial Chondral Scuffing</td>
<td>Fixator/Device Extrusion</td>
</tr>
<tr>
<td>Portal/Incisional Hypesthesia</td>
<td>Polymer-Induced Hypertrophic Synovitis</td>
</tr>
<tr>
<td>Transient Saphenous Nerve Irritation</td>
<td>Full-Thickness Chondral Abrasion</td>
</tr>
<tr>
<td>Transient Tourniquet-induced Neuropathy</td>
<td>Thermal-Induced Osteonecrosis</td>
</tr>
<tr>
<td>Transient Fixator-Induced Soft Tissue Inflammation</td>
<td>Saphenous/Peroneal Neuropathy</td>
</tr>
<tr>
<td></td>
<td>Entrapment/Puncture/ Transection</td>
</tr>
<tr>
<td></td>
<td>Painful Neuroma</td>
</tr>
<tr>
<td></td>
<td>Complex Regional Pain Syndromes</td>
</tr>
</tbody>
</table>
Non specific complications
Infection complications

- From **0.42%** in 1 published series of 4256 patients to **0.23%** in a study of 4000 patients.

- Increased risk has been noted in cases associated with an extended operative time, extended tourniquet time, multiple concurrently performed procedures, and history of prior surgeries and in cases in which intraarticular intraoperative corticosteroids were used.


Infection complications

- Prophylactic intravenous antibiotic?
  - if implant (including bioabsorbable device)?
  - if open incision is made (meniscal repair implant or device and/or arthroscopic assisted incision (ie, meniscal allograft transplantation)?)
Thromboembolic complications

- Deep Veinous Thrombosis (DVT) and Pulmonar Emboly (PE) are uncommon.

- DVT incidence from 1.2% to 4.9% (Symptomatic, Venography, Ultrasonography)

- Risk for PE increase if: age greater than 50 years, tourniquet time greater than 60 minutes, history of malignancy, congestive heart failure, prolonged bed rest, and obesity.

- No clear consensus on the indications for a specific thromboembolic prophylaxis protocol when considering the cost versus benefit. Author’s preferred protocol to routinely prescribe pharmacologic DVT prophylaxis (usually low dose aspirin) for meniscal surgery.
Vascular complications

• 0.54% to 1%

• Penetrating vascular injury,... pseudoaneurysm and arteriovenous fistulae.

• In a survey of 118,590 arthroscopic procedures, 6 cases (0.005%) of popliteal artery injury were identified, although 4 of the 6 cases went on to amputation.


Vascular complications

- Prompt repair within 6 to 8 hours to avoid extremity compromise!!

- Proximity of the posterior horn of the lateral meniscus and posterior capsule to the popliteal artery just lateral to midline.

- Meniscal repair
  - Capture of all exiting repair needles
  - Use of contralateral portals to direct meniscal repair
  - Length of an inserted meniscal fixator implant
Neurologic complications

• Direct nerve injury and penetration or laceration

• Nerve compression, entrapment, and tethering with neuropraxia either from use of an arthroscopic fluid pump, leg holder, lateral post, or tourniquet

• Overall incidence of neurologic injuries following knee arthroscopy: from 0.059% to 2%.

(Meniscus Repair)
Neurologic complications

- **Medial meniscal** repairs can result in saphenous neuropathy and reports of saphenous neuropraxia occurring in up to 43% of cases repairs to the medial meniscus have been published. Dissection, retraction, implant compression or suture entrapment —-> Severe unrelenting pain, dysesthesia and resultant dysfunction.

- **Lateral meniscal** repairs: injury to the peroneal nerve —-> greater potential for a significant postoperative morbidity including motor dysfunction and an associated foot drop.
Neurologic complications

• Prevention:
  • Medial: additional approach, visualisation
  • Lateral: Deflecting retractor placed anterior to the lateral gastrocnemius muscle with the knee in 90°
Procedure-specific complications
Setup

- The overall anesthesia complication rate for arthroscopy in general has been reported to represent 3.7% of all complications.

- Arthropump: Fluid extravasation and compartment syndrome with an overall complication rate of 1.4% from fluid extravasation.

- No more chemical reaction.
Instrumentation

- Equipment failure in 2.9% of cases. Instrument breakage: 0.3%.

- Handheld arthroscopic instruments, motorized shaver blades, radio frequency devices or laser assisted technology

  - \(\rightarrow\) Chondral injury

  - \(\rightarrow\) Heat induced injury
Meniscectomy

- Cases of osteonecrosis have been described after partial meniscectomy and several reports have been published describing osteonecrosis in which no heat producing instrumentation was used and attributed to altered load distribution following meniscal resection.


—> Patient selection
Meniscus repair

- Overall complications: up to 19%
Meniscus repair: Inside-Out

• Safe **directions** and safe **area**

• **Accessory incisions** should be made before the passing needles are advanced

• **Medial side:** Knee close to extension. This tends to move the saphenous neuromuscular bundle anteriorly and away from the incision

• **Lateral side,** the needles should be passed with the knee in 90° of flexion, which tends to place the peroneal nerve posteriorly and away from the accessory incision. And popliteal retractor (Tablespoon ++)

![Image of medical equipment]
Meniscus repair: outside-In

- Outside–in meniscal repair techniques have been described and advocated by several authors.
- 3% complications.
- Soft tissue inflammation can occur and especially can be noted over the mid third of the medial meniscal which is closely adherent to the MCL. Even if extended resorption suture is used, the bulk of the suture knot can result in subcutaneous prominence and irritation that tends to resolve over 4 to 9 months.


Meniscus repair: All-Inside: Implants

• Purpose: carrying out less invasive surgical methods, easier procedures, posterior access and less complication?

• 1990s: Numerous implant fixator devices

• Different implant geometry, size, polymer composition and resorption profile.
Meniscus repair: All-Inside: Implants

- Description of full thickness chondral injury presumably secondary to implant abrasion against adjacent articular cartilage surfaces.

Meniscus repair: All-Inside: Suture-based devices

- New generation of meniscal repair devices
Allografts

- Cases of meniscal graft tearing, displacement, shrinkage, and infection have been described.
- Few cases of overt immune rejection
- Potential disease transmission
Postoperative complications

- Hemarthrosis
- Persistent pain
- Swelling
- Physiotherapy issues
- Time to return to sport
Conclusion

- Not “No Problem Surgery”!
- 8.2% complications (4.8% severe)

Fausse bénignité de l’arthroscopie

- 3,8% per-opératoires
- 17,5% post-opératoires