Surgical approaches to the knee

Medial Parapatellar Approach

Excellent exposure of all three compartments.
Simply, universal and extensible.
Can be applied to almost any deformity, especially with the ability to add a quadriceps snip.

There has been a recent emphasis on minimally invasive and muscle sparing approaches in knee surgery.

Medial Arthrotomy. Options

• MEDIAL
• MIDVASTUS
• SUBVASTUS

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**Anatomical Points of Interest**

- Infrapatellar branch of the Saphenous nerve

**MEDIAL SURGICAL APPROACHES**

**Saphenous Nerve Infrapatellar Branch**

**Bony Landmarks**

- TA - Adductor Tubercle
- LPFM - Medial Epicondyle
- GMM - Medial Gastrocnemius Tubercle

**MEDIAL SURGICAL APPROACHES**

**Vastus Medialis ANATOMY**

- Two portions
  - Vastus Medialis Longus
  - Vastus Medialis Obliquus (VMO)

- VMO fibers run in an oblique direction and so limit lateral patellar motion

**MEDIAL SURGICAL APPROACHES**

**Medial Retinaculum**

**Medial PatelloFemoral Ligament**

**Medial PatelloTibial Ligament** (white arrows)

- Has been described as an alternative to traditional approaches which involve a large arthrotomy with partial division of the quadriceps mechanism.
- The most common application of this approach is in TKR, particularly when using a MIS.

**SUBVASTUS APPROACH**
Subvastus (Southern) approach for primary total knee arthroplasty
Hofmann AA et al.
Clin Orthop. 1991

Once the Medial retinaculum is transected, the extensor mechanism can be mobilized...

Introduce by Hofman as an alternative approach to the knee.
The attachment of the quadriceps tendon and upper patellar bone is left intact.
It is the only approach to preserve the entire extensor mechanism.

Release deep fibres of the MCL for better exposure
Remove part of the fat pad

Release synovial

Poor and unpredictable exposure and difficult with eversion of the patella.
Contraindications include obesity, especially combined with a short femur; heavy, muscular thighs; revision TKA.

SUBVASTUS vs MEDIAL PARAPATELLAR

ANY difference?
MIDVASTUS

It runs between the fibers of VML and VMO

Advantages are similar to subvastus approach.

The disadvantage of the midvastus approach compared with the median parapatellar approach is some difficulty with full exposure of the joint.

MIDVASTUS APPROACH

MIDVASTUS vs SUBVASTUS

Some surgeons believe that the subvastus approach completely avoids damage to the quadriceps mechanism and therefore would be associated with improved muscle function when compared with midvastus.

In this prospective study no substantive differences have been found between the two approaches.

Mini Medial Approaches

Advantages / disadvantages

Subvastus approach

- Intact extensor mechanism
- Decreasing pain
- More limited (MIS)
- Need for large medial and lateral skin flaps
- Postoperative hematoma

Midvastus approach

- Preserve genicular articular blood supply to the patella
- Contraindicated in limited preoperative flexion
- Postoperative hematoma

Violation of the descending genicular artery

The safest distance for splitting the VM during medial parapatellar arthroscopy is 15 mm from the superior pole of the patella due to the course of the descending genicular artery.

Extensor Mechanism

The incidence of patellar tendon avulsion has been reported to range from 0.17% to 1.4% in primary TKR.

- Probably significantly higher in complicated cases, particularly in revision arthroplasty.
Extended Approaches
Objectives
• In some cases an extended approach might be needed
• Achieving wide exposure while protecting the extensor mechanism
• Proximal or distal

Extended Approaches
Proximal exposures
• Coonse-Adams
• Quad Snip
• Quadplasty

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Proximal Exposures
Problems
- ↓ range of motion
- delay starting resistance exercises
- provokes an extensor lag

Extended Approaches
Distal exposures
• Tubercle Osteotomy
Surgical Technique

Tibial Tubercle Osteotomy

- adequate osteotomy segment including the entire insertion of the patella tendon (6cm)
- the lateral periosteal hinge is maintained and adds to the stability of the construct
- a minimum of 3 wire sutures are passed medially through drill holes to secure the osteotomy segment


Advantages

- bone to bone fixation
- permits early rehabilitation
- restores quadriceps excursion and strength


Complications

- If all the TT has been avulsed, a stronger fixation will be preferred

To sum up

- Sub and Midvastus approaches provide excellent exposure and allows quicker advancement in rehab after TKR
- Particularly useful when using MIS
- TT osteotomy may be useful in revision cases to avoid extending ext mechanism injuries

Both exposures have a learning curve

Thank You!!!

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