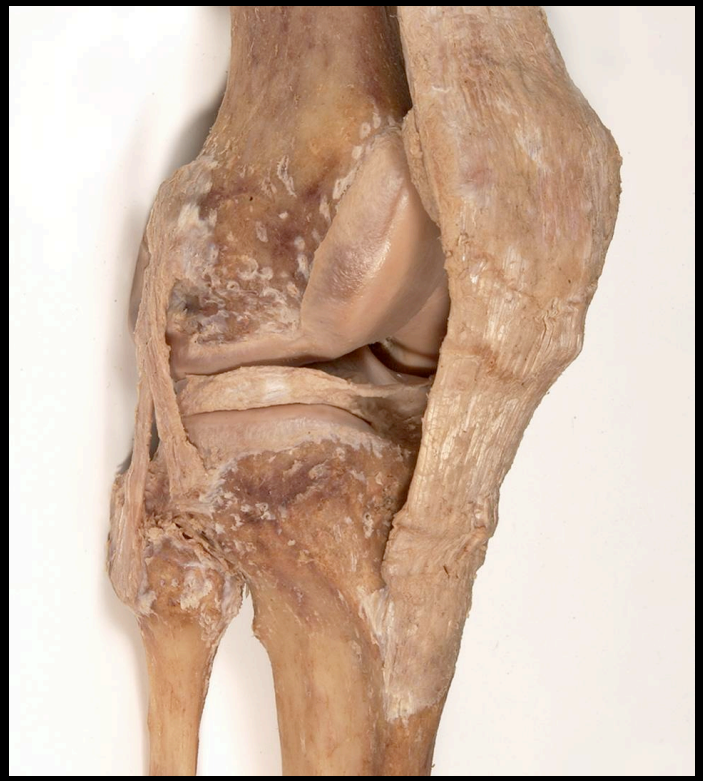
Extensor Mechanism in TKR

Influence of Approach

Andrew Toms

Summary

- Many Approaches
  (Personal choice)
- Little evidence
  (Multifactorial)
- Don't lose sight of main objective
  (Fashion)



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What is the main objective?

Pain free fully fun asts >10 years

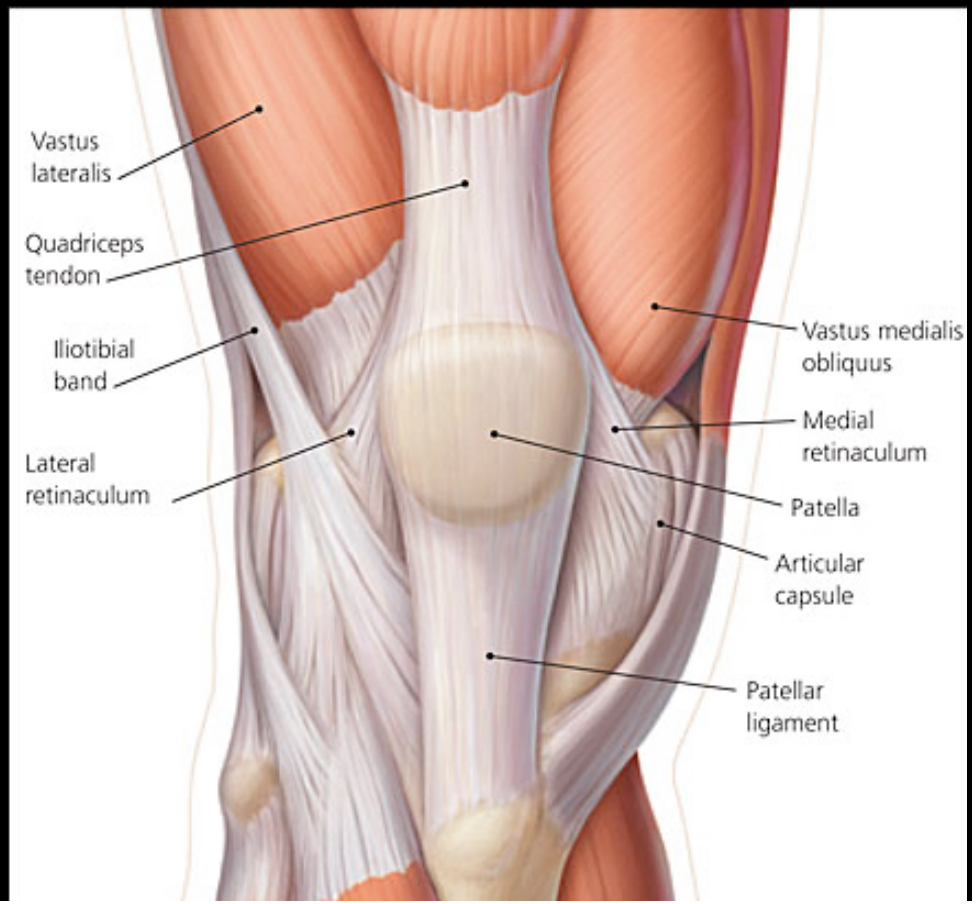
That's it.

Don't forget.

Very hard to inser nt
thru a 5cm incisio

Surgical Approaches

- Medial Parapatellar
- Mid Vastus
- Sub Vastus
- Lateral Parapatellar
- MIS



Side Issue

Beware the idea sold directly to Patients

For example:

Look out for innovations that are motivated by industry and sales

Motivated by

Industry and

Sales

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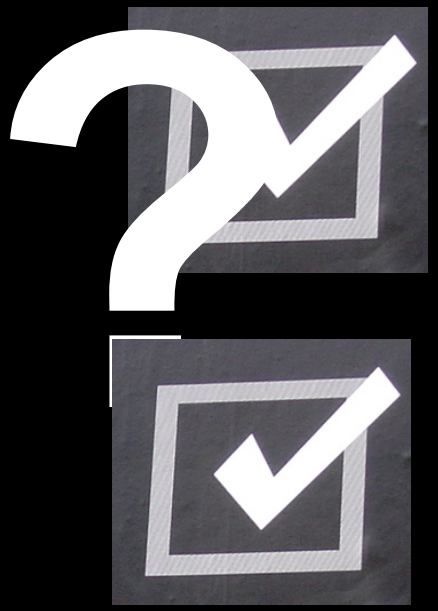
Minimally Invasive Knee



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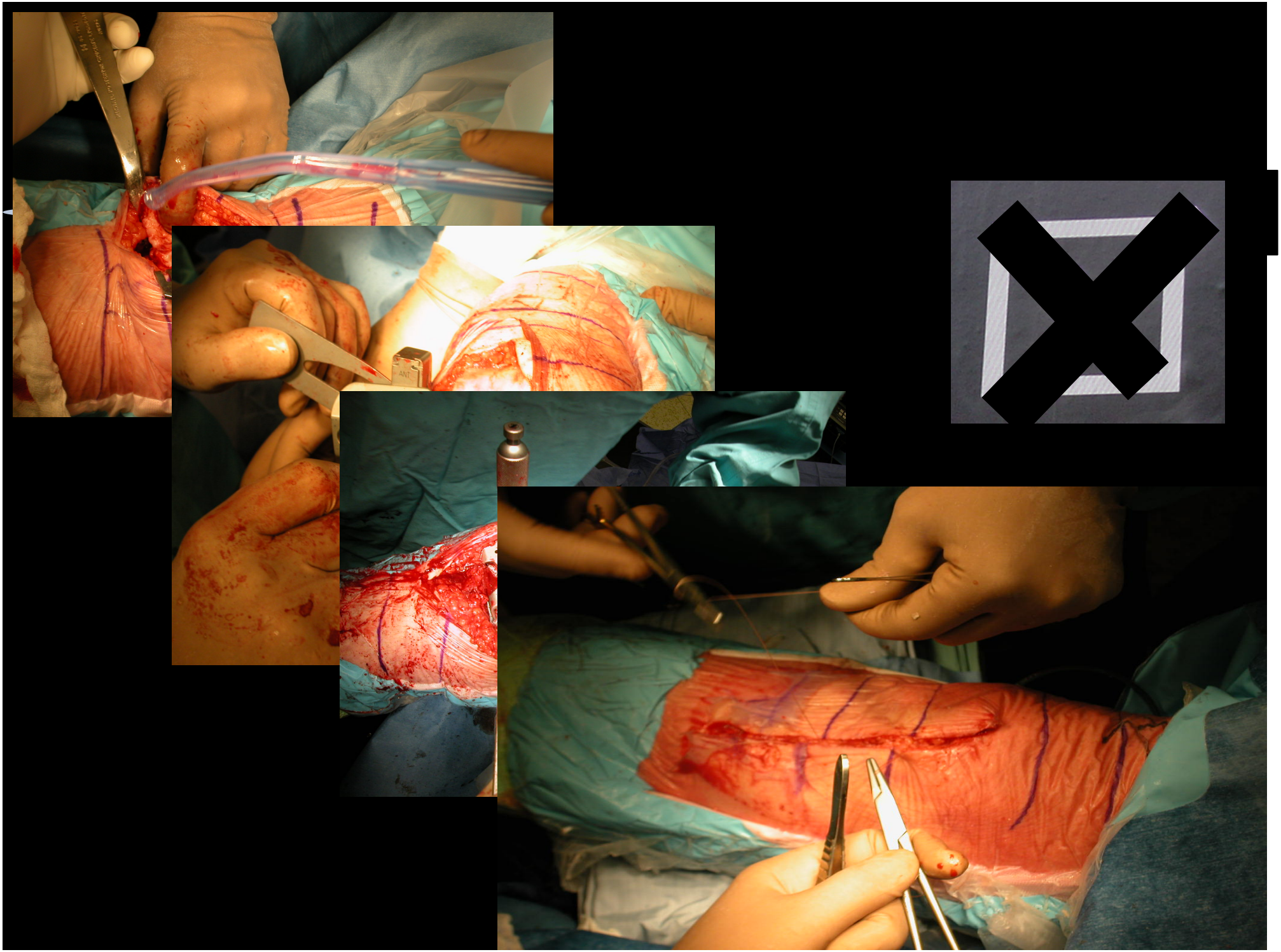
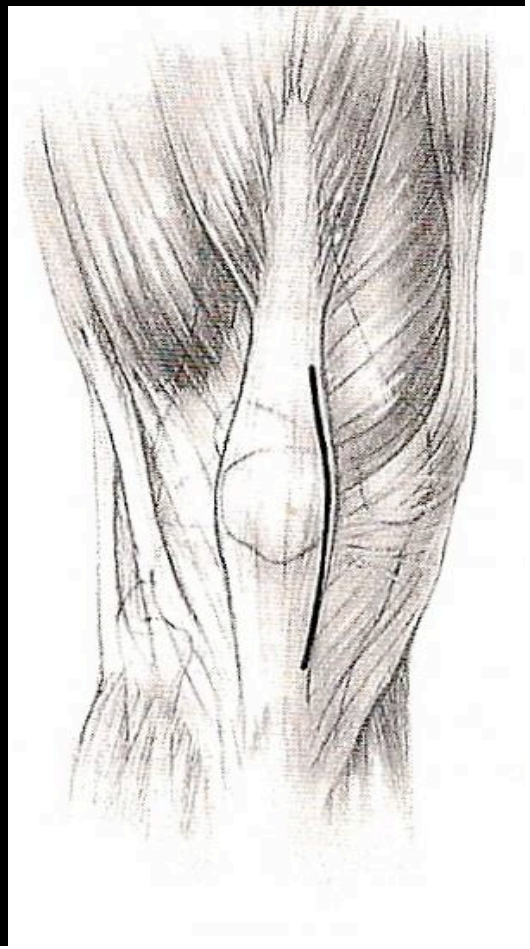
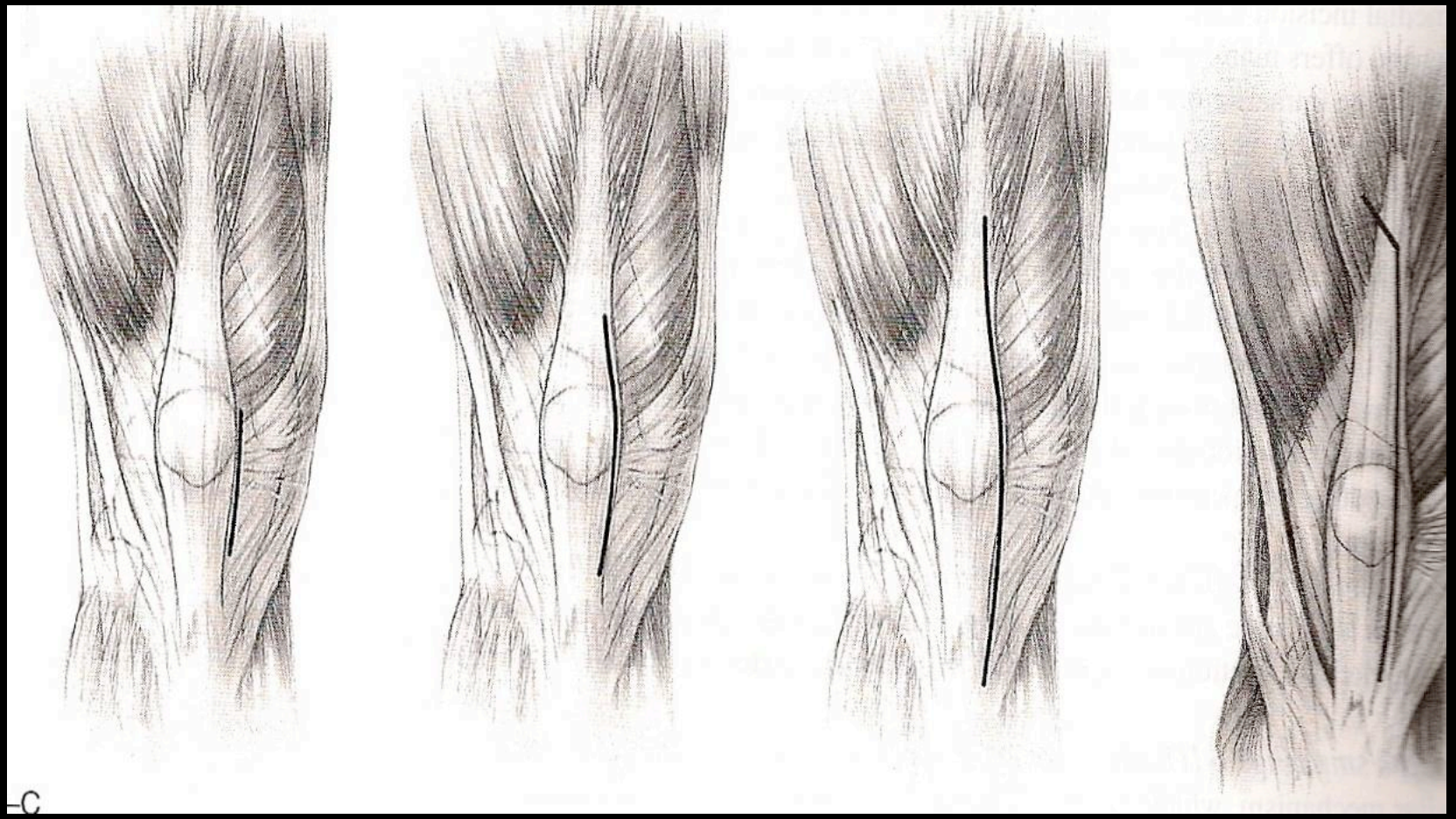


Surgical Approaches

- Medial Parapatellar
- Mid Vastus
- Sub Vastus
- Lateral Parapatellar
- MIS ✖



Effect on Extensor Mechanism



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Effect on Extensor Mechanism

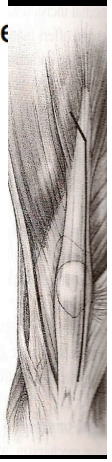
- Literature Mid Vastus

J Arthroplasty. 2010 Sep;25(6 Suppl):5-11, 11.e1. doi: 10.1016/j.arth.2010.04.003. Epub 2010 Jun 11.

Mini-midvastus vs standard medial parapatellar approach: a prospective, randomized, double-

standard approach were observed for stride length, stance time, pain Visual analog scale, or knee range of motion. The mini-midvastus approach has limited benefit compared to the standard approach for TKA.

The purpose of this study was to determine whether the mini-midvastus approach to total knee arthroplasty (TKA) results in differences in quadriceps muscle strength as well as previously cited advantages in a double blind prospective randomized trial. Twenty-seven patients (54 TKAs) scheduled for bilateral TKA were randomized to undergo mini-midvastus approach on one knee and standard approach on the other. Incision lengths were the same. Postoperative strength was determined by isokinetic and isometric peak torque testing. Range of motion, pain Visual analog scale, side-preference, and gait analysis were assessed preoperatively and postoperatively. The only significant difference in strength testing was increased isokinetic and isometric extension torque at 3 weeks postoperatively for the mini-midvastus approach. No differences between the mini-midvastus and standard approach were observed for stride length, stance time, pain Visual analog scale, or knee range of motion. The mini-midvastus approach has limited benefit compared to the standard approach for TKA.



Effect on Extensor Mechanism

- Literature Meta-analysis Mini Midvastus

PLoS One. 2014 May 20;9(5):e95311. doi: 10.1371/journal.pone.0095311. eCollection 2014.

Minimally invasive midvastus versus standard parapatellar approach in total knee arthroplasty: a meta-analysis of randomized controlled trials.

Xu SZ[1], Lin XJ[1], Tong X[1], Wang XW[1].

Author information

Abstract

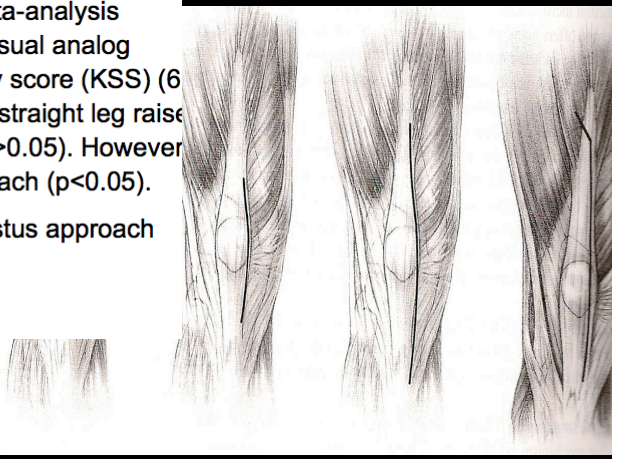
OBJECTIVE: Minimally invasive midvastus approach (mini-midvastus) has been widely used in total knee arthroplasty (TKA). However, the clinical effects still remains controversial. This meta-analysis was based on randomized controlled trials (RCTs) aiming to quantitatively analyze the clinical efficacy of mini-midvastus versus standard parapatellar approach in TKA.

METHODS: This meta-analysis was performed according to the PRISMA guidelines. A literature search for the eligible RCTs was carried out in the databases of PubMed, the Cochrane library, EMBASE and Web of Science. Two independent reviewers independently completed the study selection, data extraction, and the assessment of methodological quality. Meta-analysis was conducted by the RevMan 5.2 software.

RESULTS: A total of 18 RCTs (937 patients with 1093 TKAs) published from 2007 to 2013 were included. The meta-analysis suggested that the mini-midvastus approach significantly improved knee range of motion (ROM) and decreased visual analog score (VAS) at postoperative 1-2 weeks ($p<0.05$), and there were no statistical differences in terms of knee society score (KSS) (6 weeks to 1 year), VAS (6 weeks to 6 months), ROM (6 weeks to 6 months), lateral retinacular release, blood loss, straight leg raise hospital stay and postoperative complications between the mini-midvastus and standard parapatellar approach ($p>0.05$). However the operative time was significantly longer when performing the mini-midvastus group than the parapartellar approach ($p<0.05$).

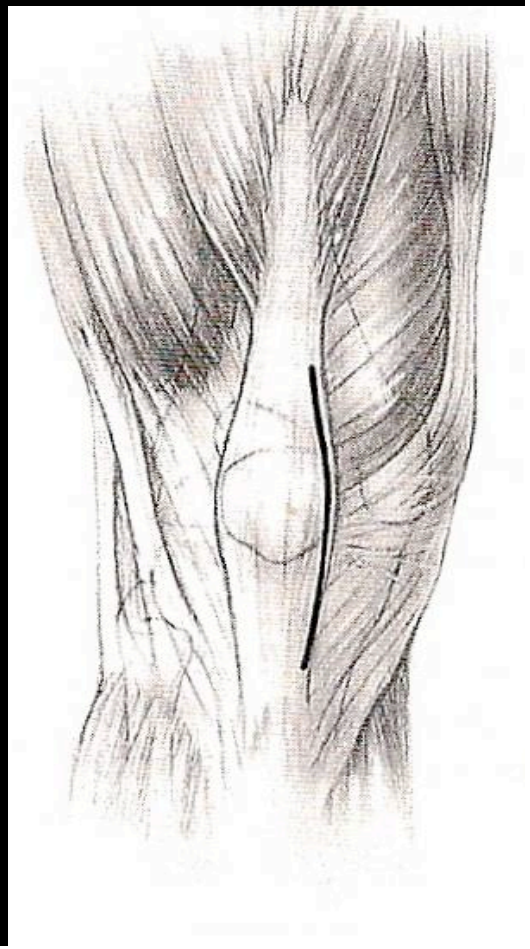
CONCLUSION: This meta-analysis found that compared with the standard parapatellar approach, the mini-midvastus approach had early advantages in the VAS and ROM, but had the disadvantage in the operative time.

LEVEL OF EVIDENCE: Therapeutic study Level I.



Surgical Approaches

- Medial Parapatellar
- Mid Vastus ✗
- Sub Vastus
- Lateral Parapatellar
- MIS ✗



Effect on Extensor Mechanism

- Literature Sub-vastus

J Arthroplasty. 2014 Jan;29(1):33-6. doi: 10.1016/j.arth.2013.03.021. Epub 2013 Apr 29.

Postoperative pain and contracture following total knee arthroplasty comparing parapatellar and subvastus approaches.

Curtin B[1], Yakkanti M, Malkani A.

Author information

Abstract

The purpose of this study was to see if subvastus approach would decrease incidence of postoperative contracture and pain following TKA compared to standard parapatellar approach. Retrospective review of 546 patients in Group A undergoing TKA using parapatellar approach were compared to 255 patients in Group B undergoing subvastus approach. No statistically significant differences regarding OR time, blood loss, BMI, or LOS. Total of 23 (4%) manipulations under anesthesia for contracture in Group A compared to 6 (2%) in Group B ($p>0.05$). Postoperative pain scores at 6 weeks was greater in Group A, $p<0.05$. We feel that a subvastus approach minimizes trauma to the extensor mechanism, and therefore decreases the incidence of postoperative pain following TKA.

Effect on Extensor Mechanism

- Literature Meta-analysis Mini Midvastus Subvastus and medial Parapatellar

J Arthroplasty. 2014 Dec;29(12):2298-304. doi: 10.1016/j.arth.2013.10.023. Epub 2013 Oct 28.

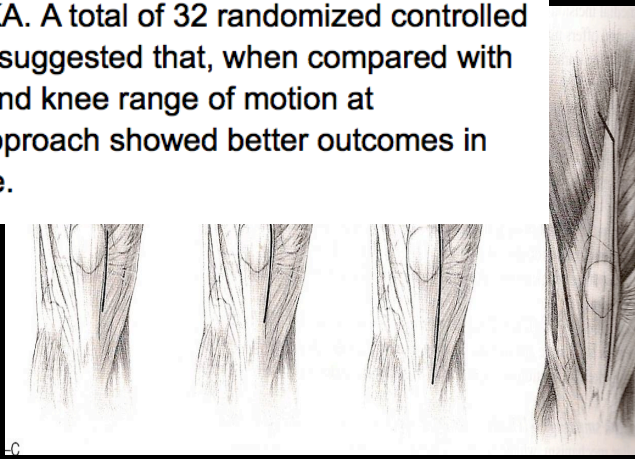
Surgical approaches in total knee arthroplasty: a meta-analysis comparing the midvastus and subvastus to the medial peripatellar approach.

Liu HW[1], Gu WD[2], Xu NW[2], Sun JY[1].

Author information

Abstract

Subvastus, midvastus and medial parapatellar approaches are the most popular approaches in total knee arthroplasty (TKA). However, the superior approach in TKA still remains controversial. We therefore conducted a meta-analysis to quantitatively compare the midvastus and subvastus approaches to the medial parapatellar approach in TKA. A total of 32 randomized controlled trials (RCTs) with 2451 TKAs in 2129 patients were included in this study. The meta-analysis suggested that, when compared with the medial parapatellar approach, the midvastus approach showed better outcomes in pain and knee range of motion at postoperative 1-2weeks but also was associated with longer operative time; the subvastus approach showed better outcomes in knee range of motion at postoperative 1week, straight leg raise and lateral retinacular release.



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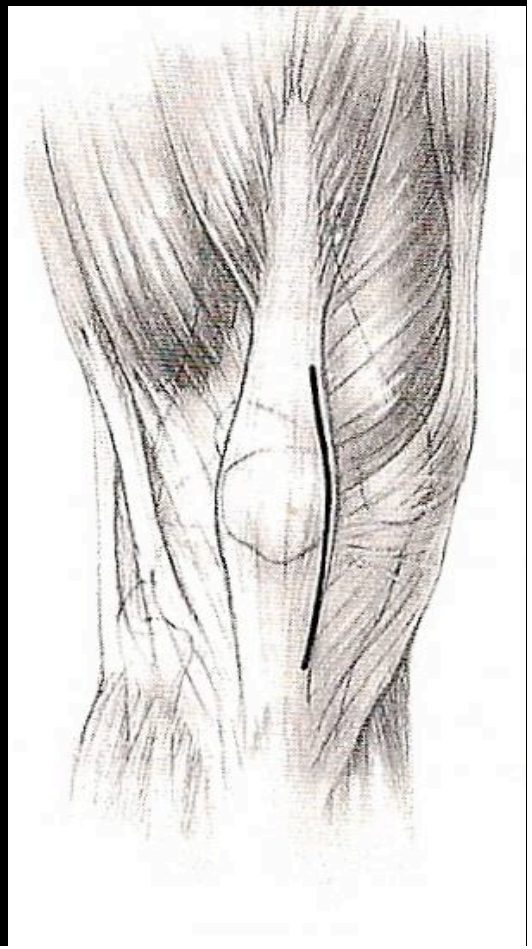

Lateral Parapatellar approach

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Lateral Parapatellar approach

Anatomical Considerations

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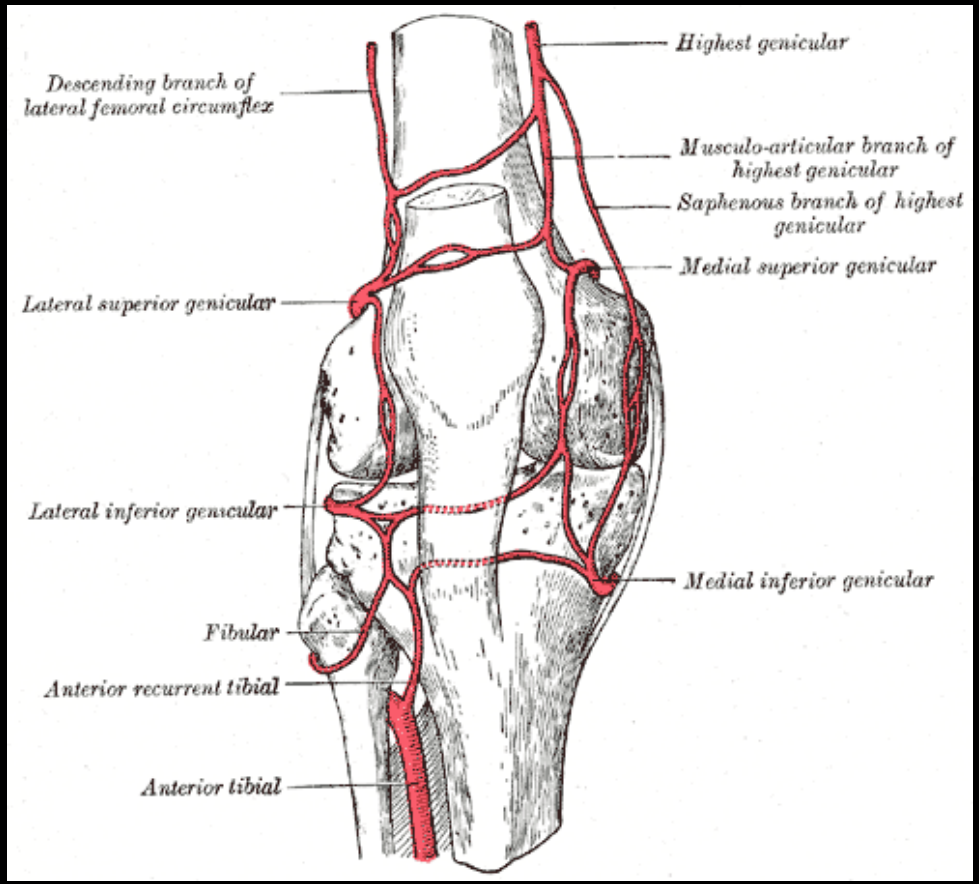
Lateral Parapatellar approach

Anatomical Considerations



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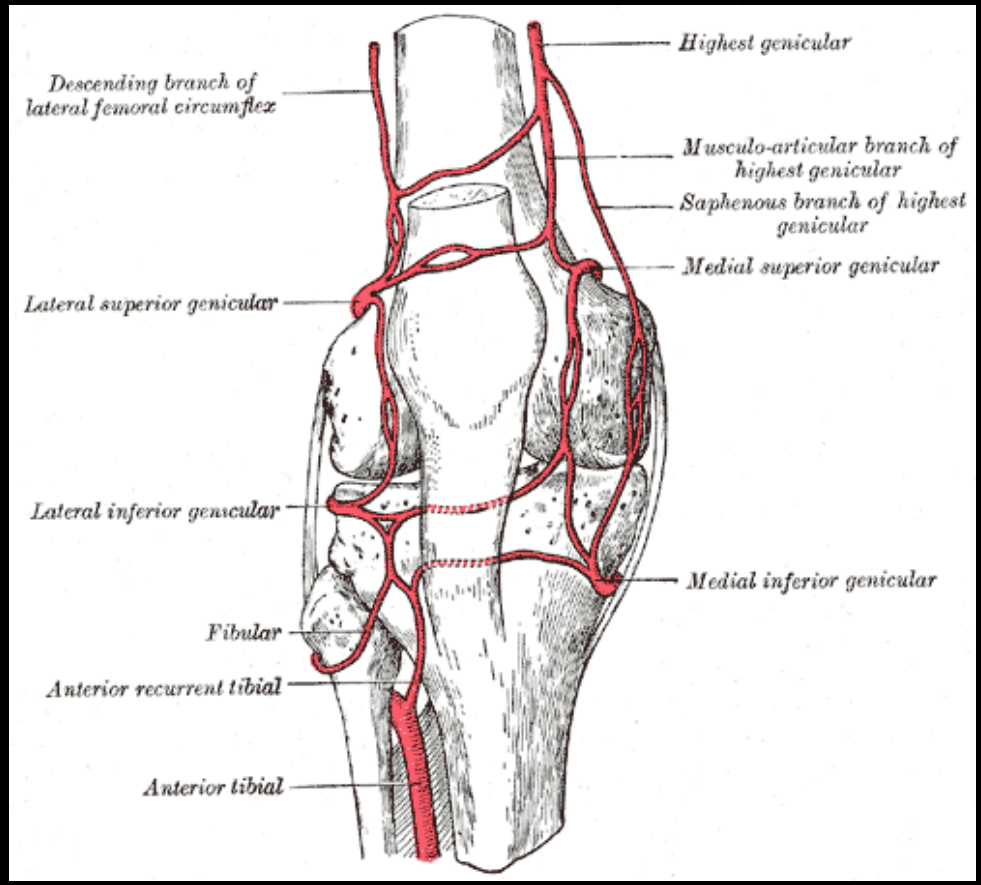
Lateral Parapatellar approach

Anatomical Considerations



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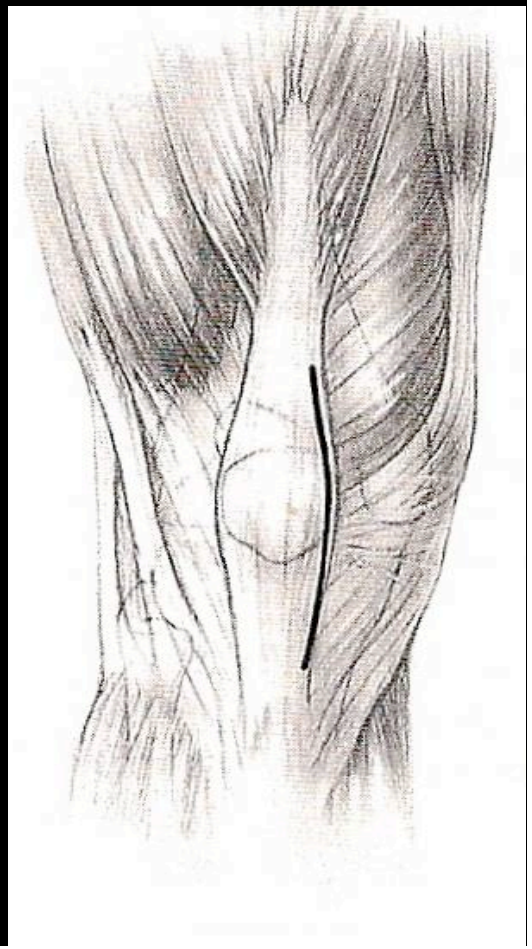

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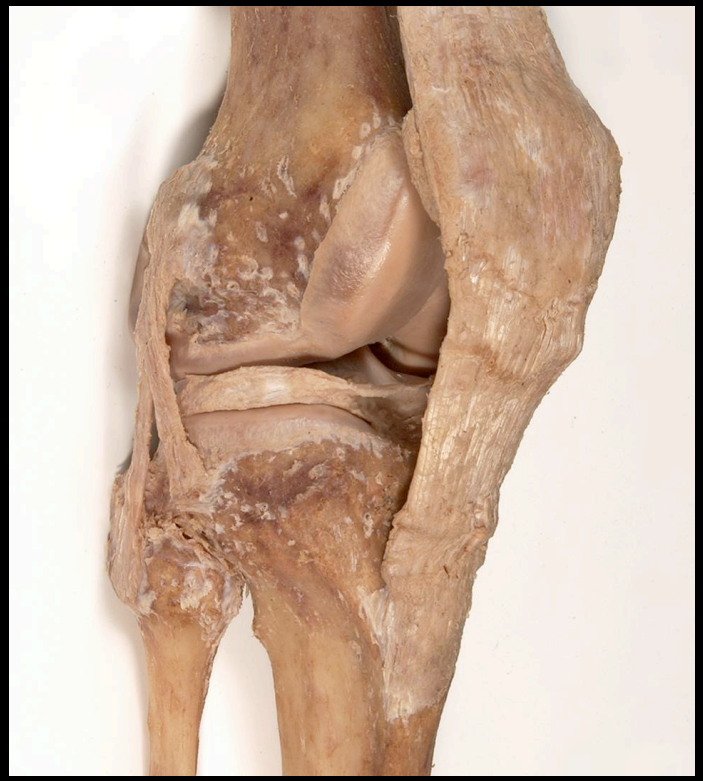

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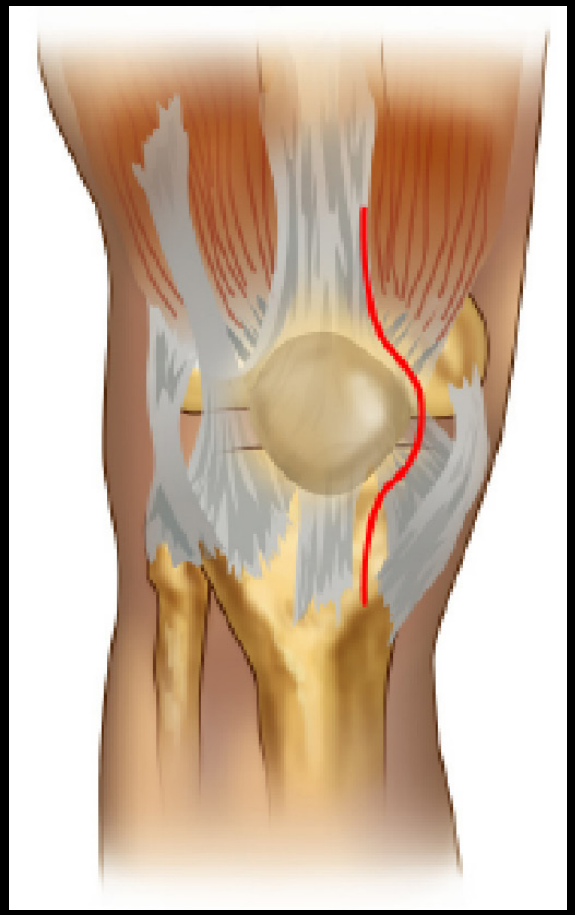
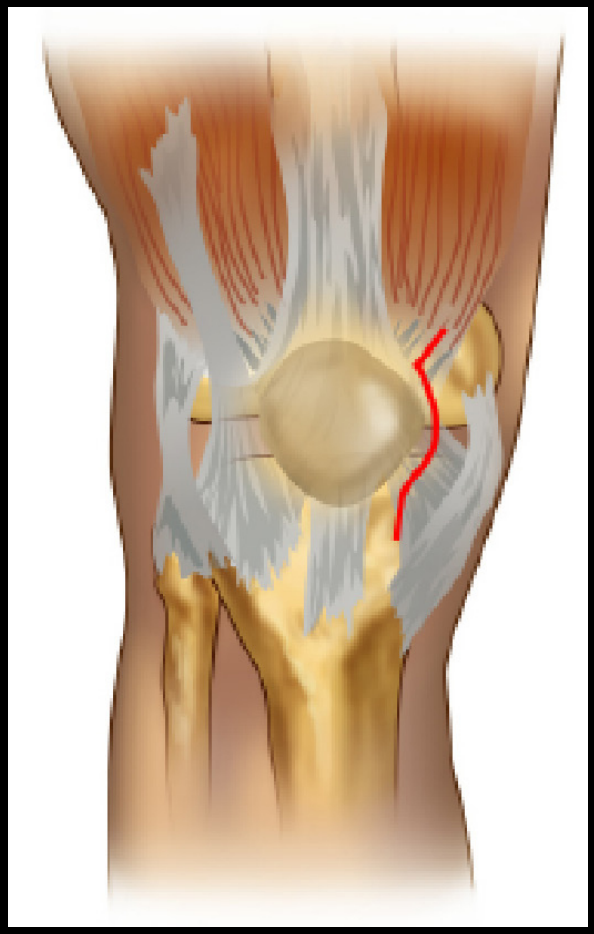
Approaches: Your Choice

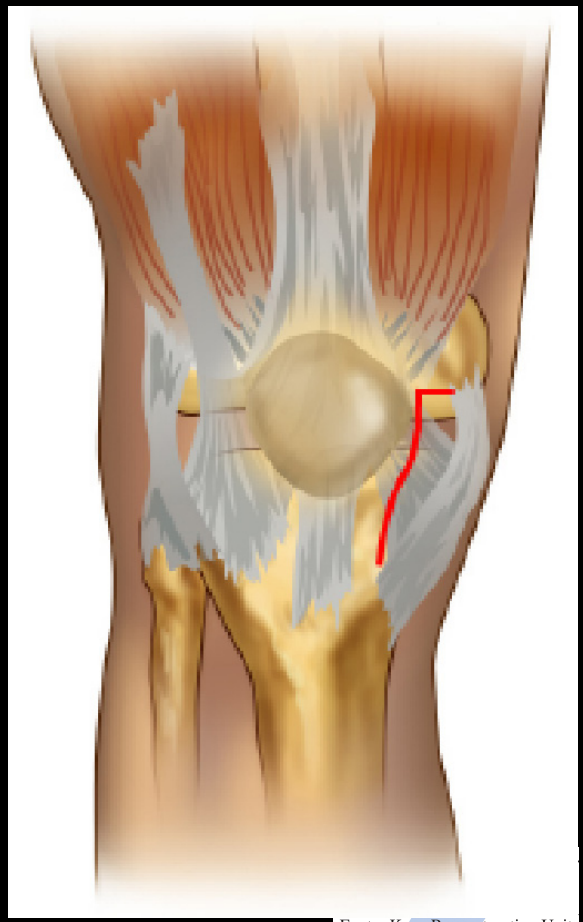
Medial



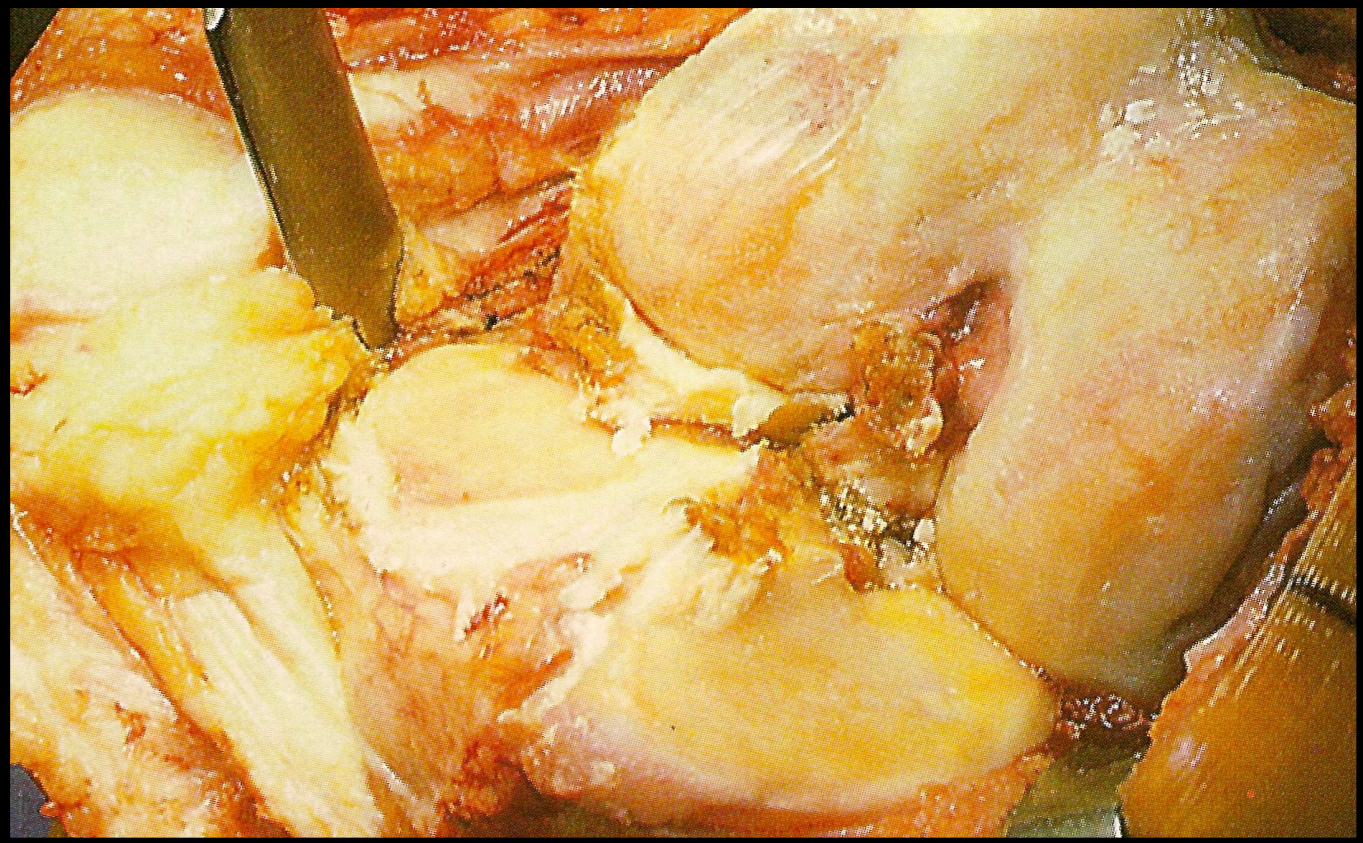
Mid



Sub-vastus



MIS – No Thank You. BUT…



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Summary

- Anatomical considerations
- The Workhorse
- Lateral parapatellar approach
- Limitations of limited incision

Thank You