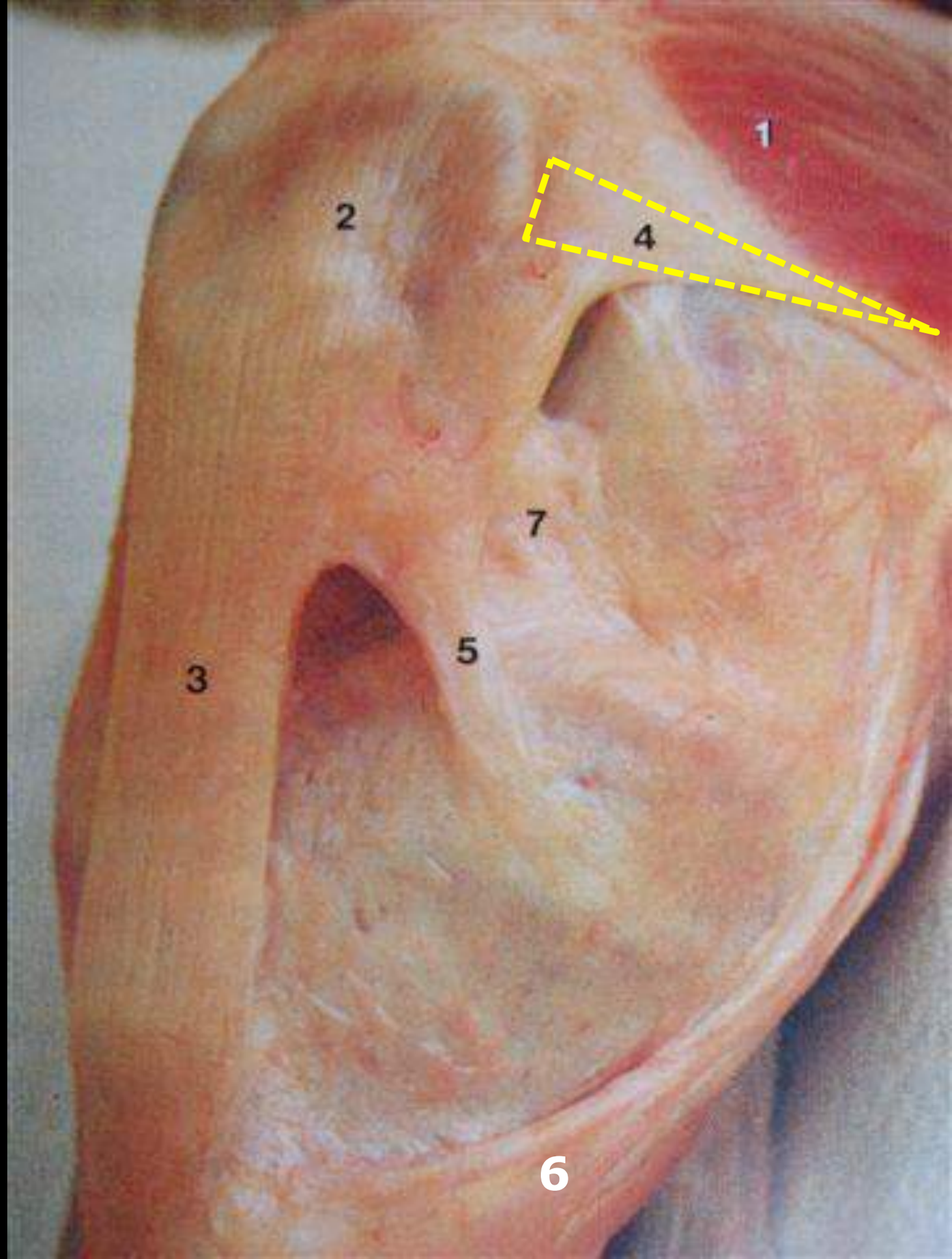
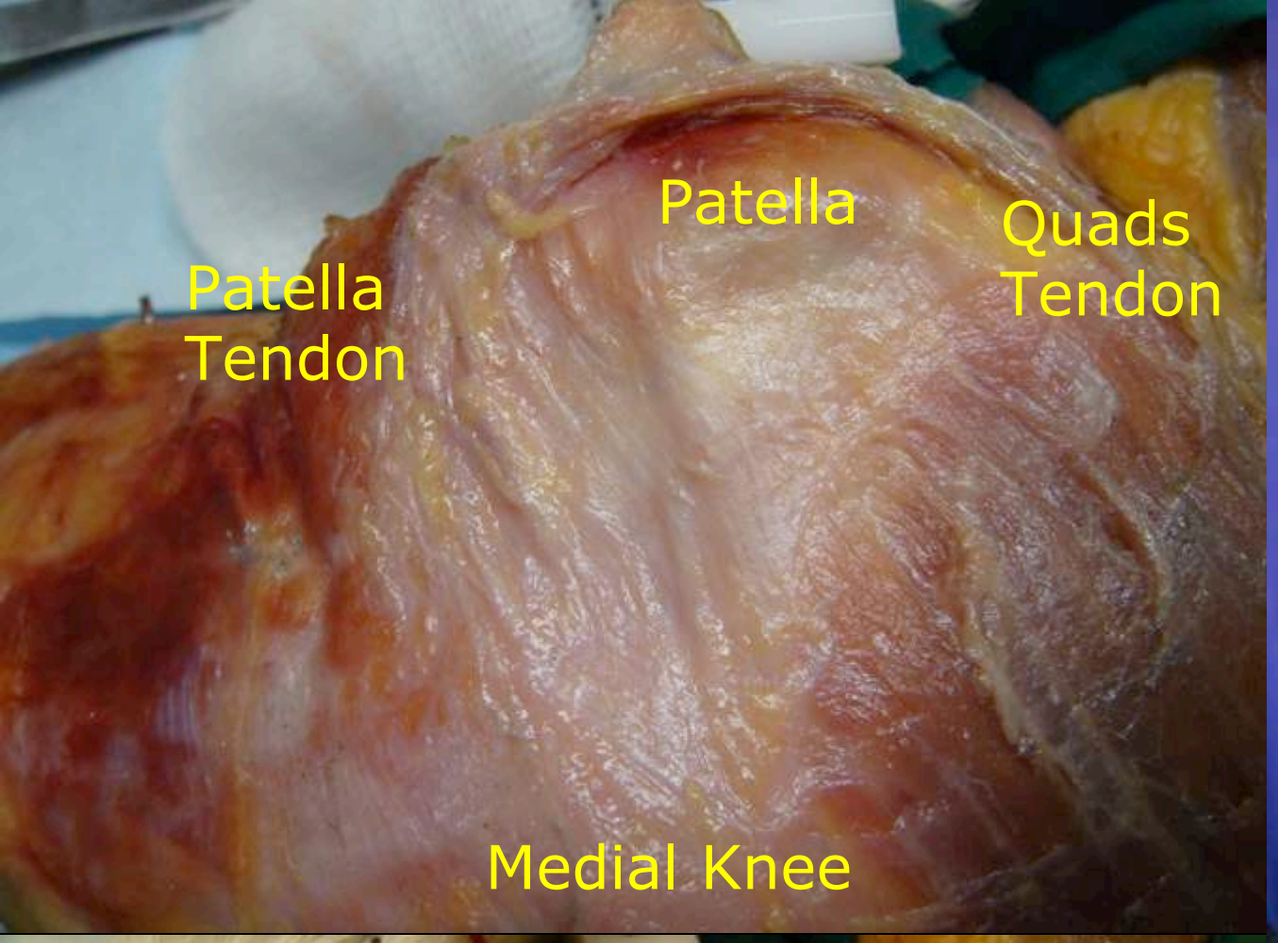
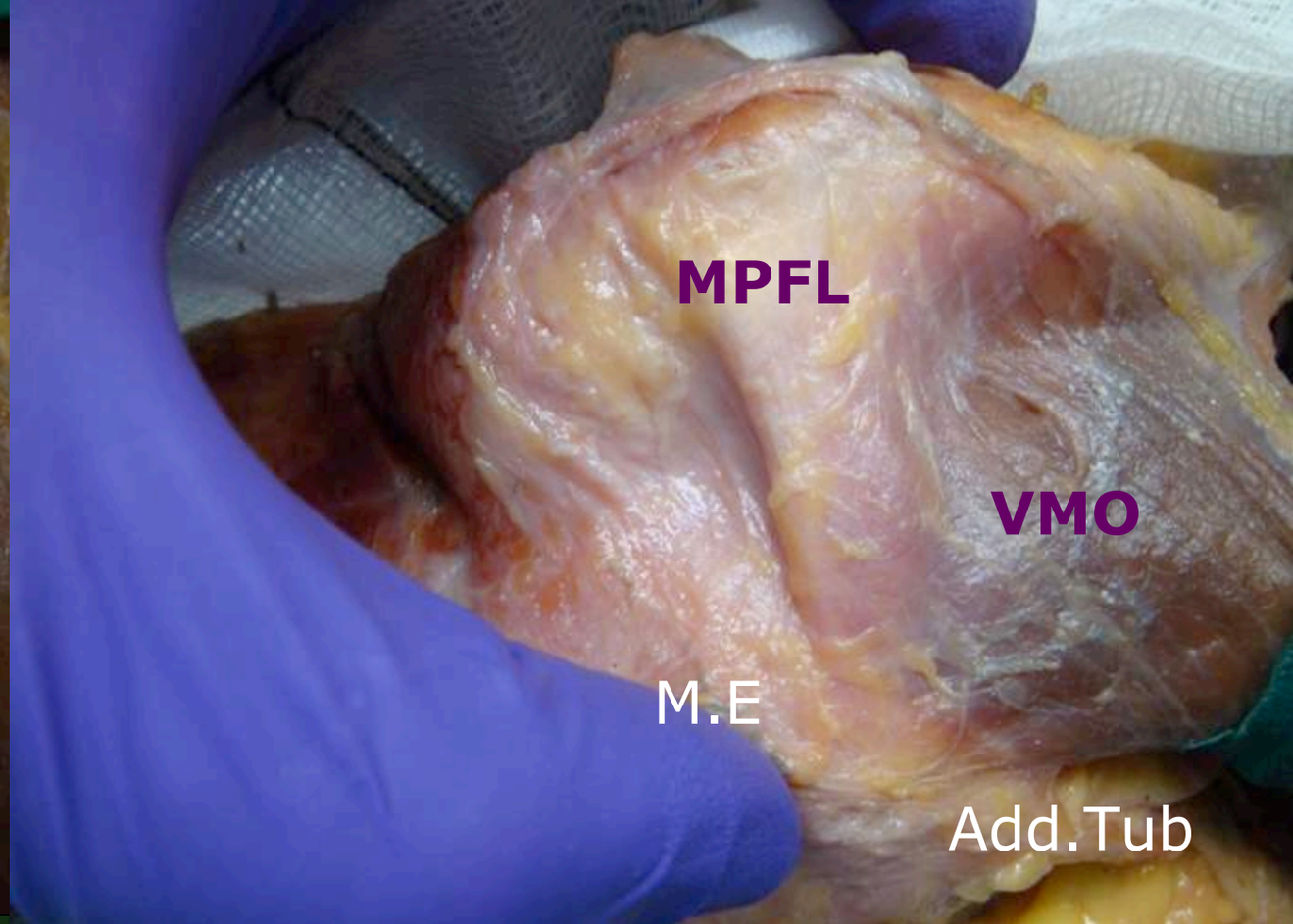
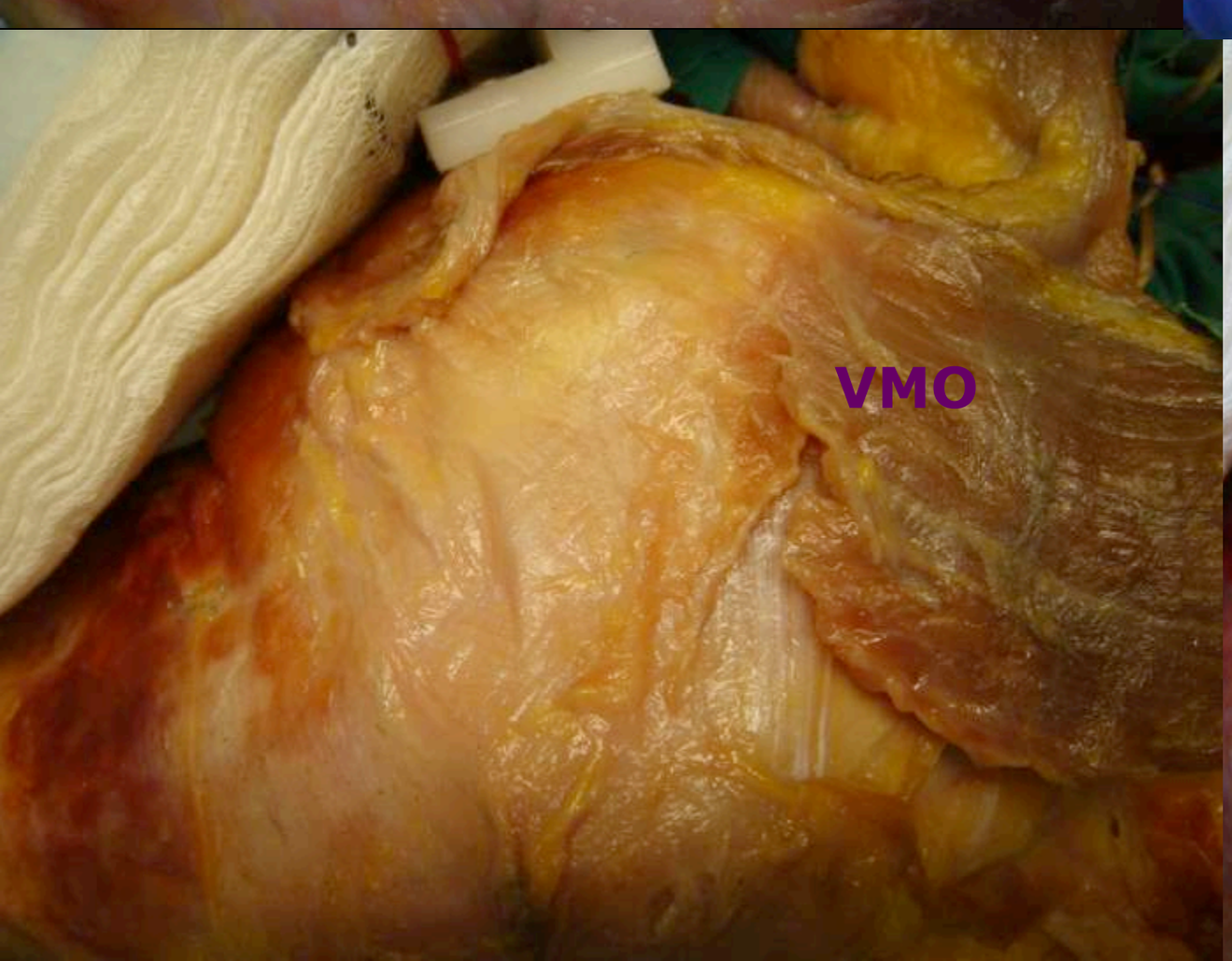
Medial Knee Anatomy

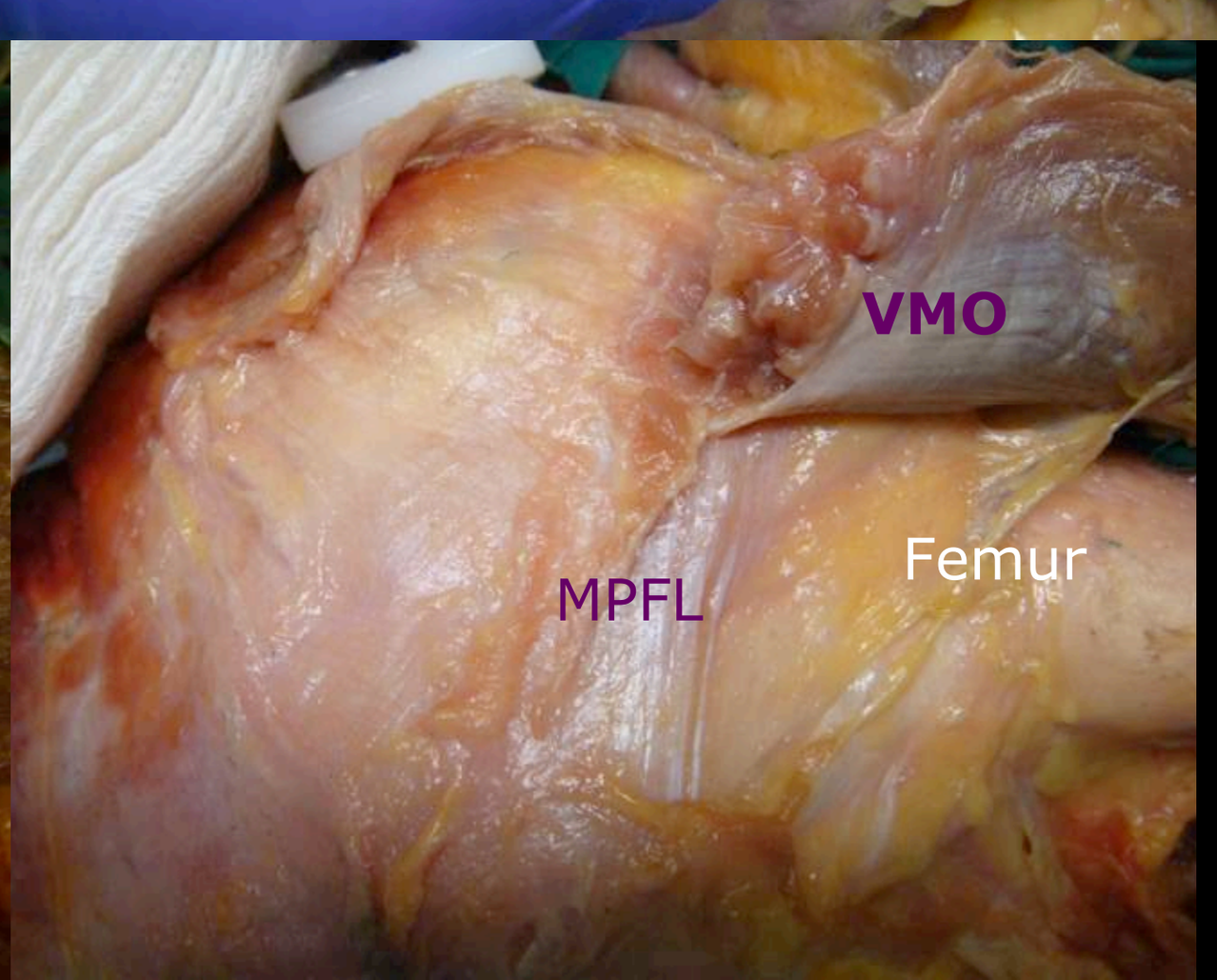
1. VMO
2. Patella
3. Patella Lig
4. **MPFL**
5. Med P. tibial Lig
6. Pes anserinus
7. Fat Pad




Patella
Patella Tendon
Quads Tendon
Medial Knee


MPFL
VMO
M.E
Add.Tub


VMO


VMO
MPFL
Femur

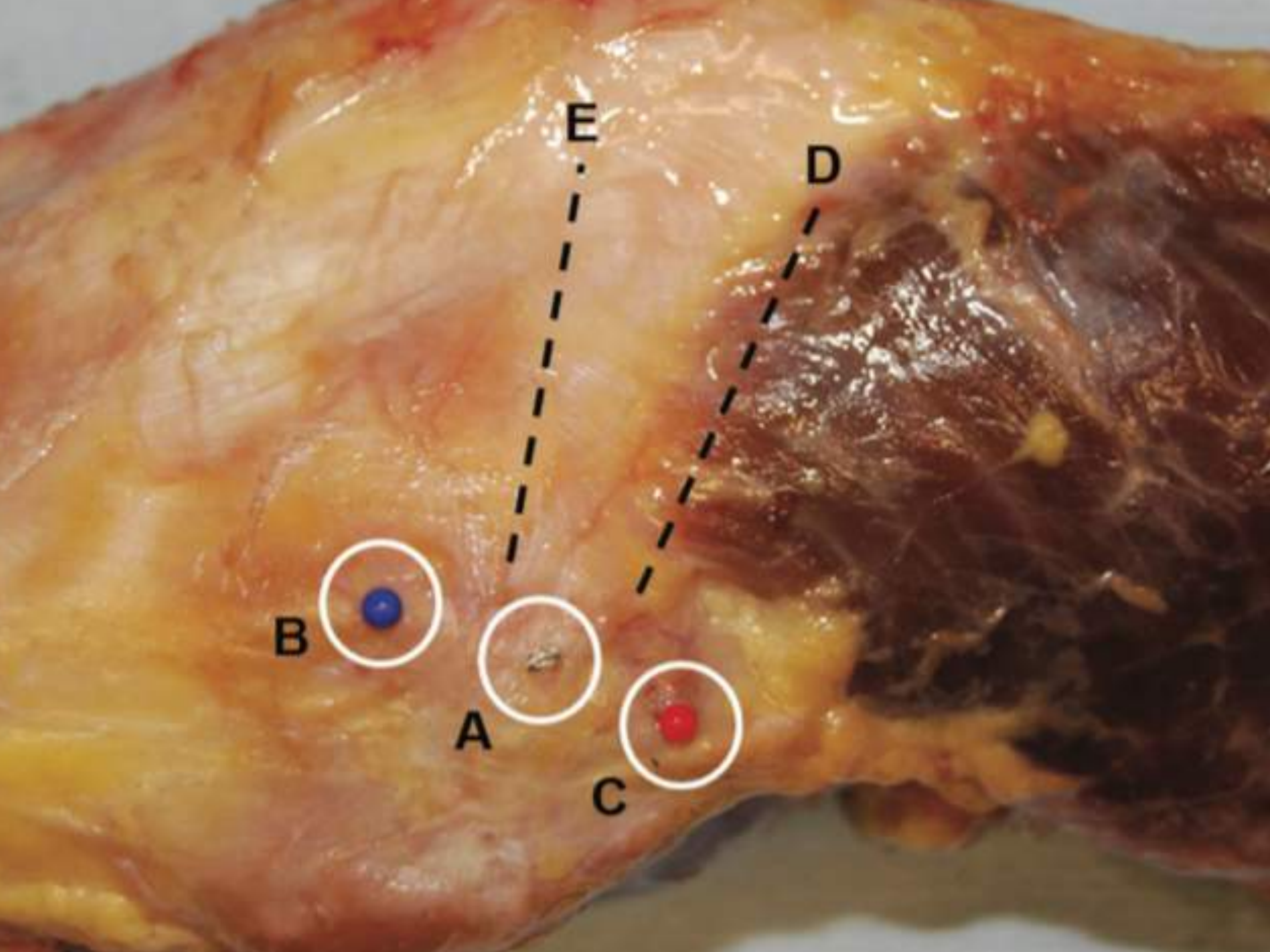
The Medial Patellofemoral Ligament

Location of Femoral Attachment and Length Change Patterns Resulting From Anatomic and Nonanatomic Attachments

Joanna M. Stephen,* MSc, Punyawang Lumpaopong,* MSc, David J. Deehan,† MS, FRCS, Deiary Kader,‡ FRCS, and Andrew A. Amis,*§|| PhD, DSc(Eng)
Investigation performed at Imperial College London, London, United Kingdom

Results: The femoral attachment point, taking the anterior-posterior medial femoral condyle diameter to be 100%, was identified 40% from the posterior, 50% from the distal, and 60% from the anterior border of the medial femoral condyle. This point was most isometric, with a mean maximal length change to the central patellar attachment of 2.1 mm from 0° to 110° of knee flexion. The proximal femoral attachment resulted in up to 6.4 mm mean lengthening and the distal attachment up to 9.1 mm mean shortening through 0° to 110° of knee flexion, resulting in a significantly nonisometric graft ($P < .05$).

Conclusion: We report the anatomic femoral and patellar MPFL graft attachments, with confirmation of the reproducibility of their location and resulting kinematic behavior. Nonanatomic attachments caused significant loss of isometry.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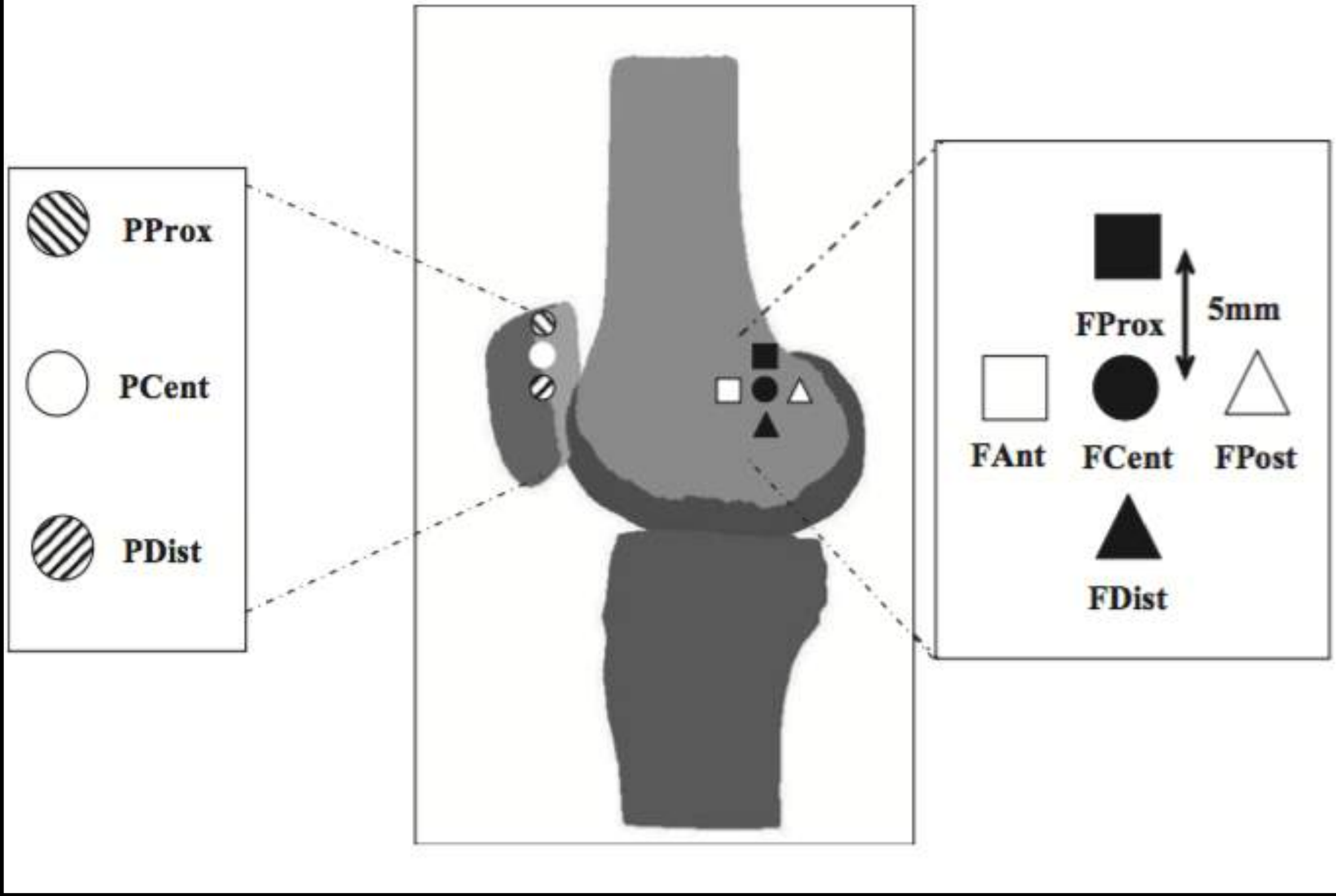
B
A
C


PProx
PCent
PDist
FProx
5mm
FAnt
FCent
FPost
FDist

The Medial Patellofemoral Ligament

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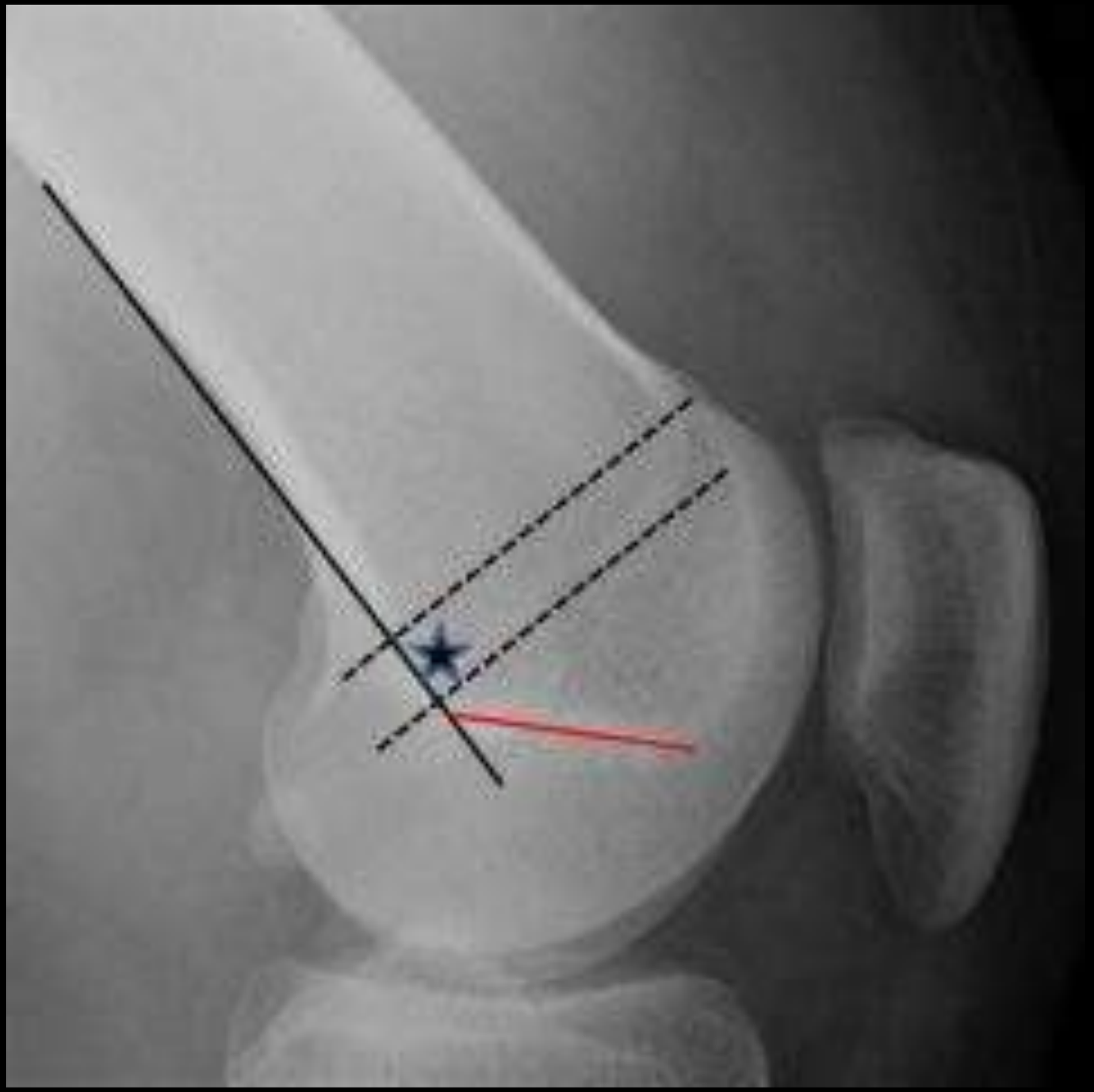
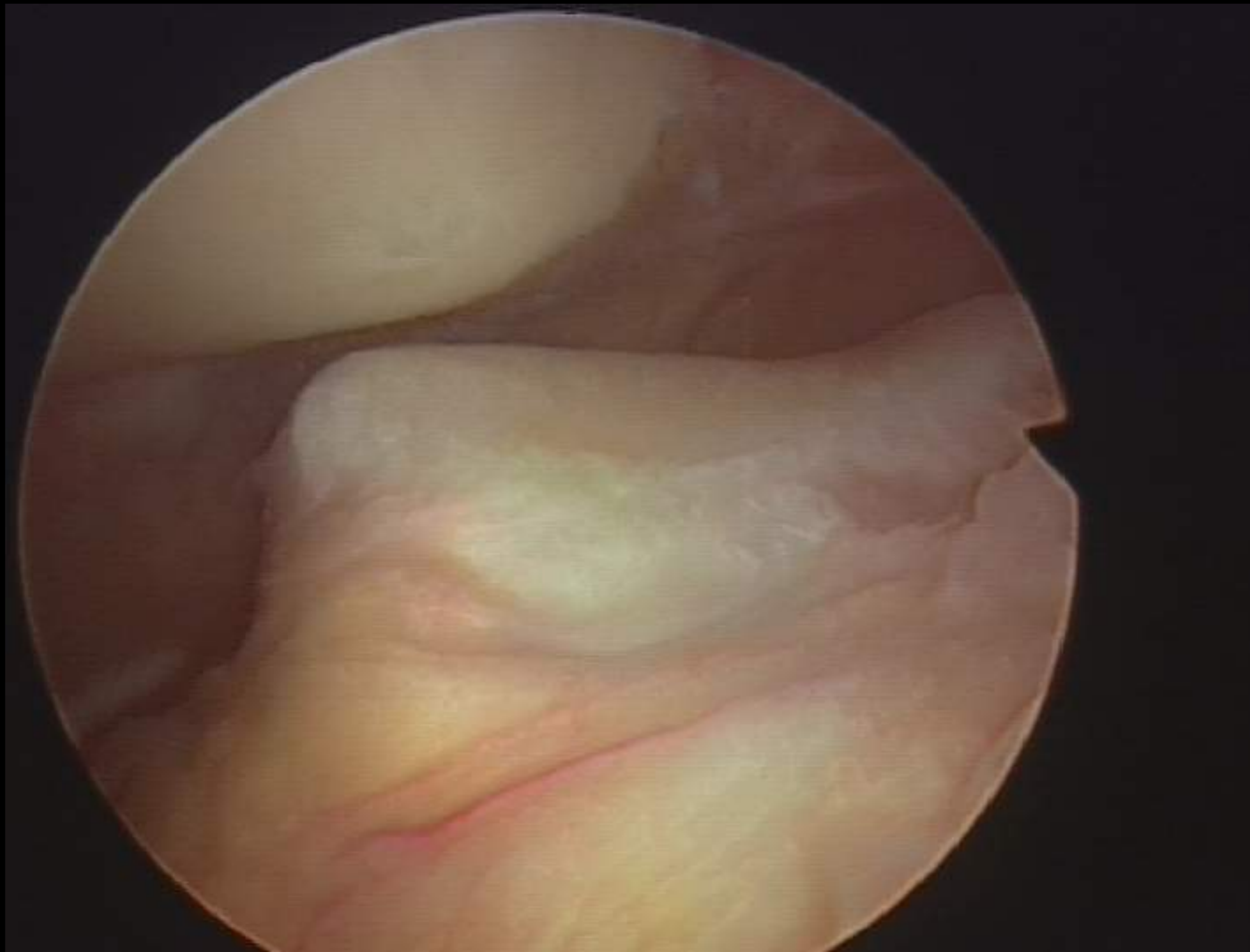
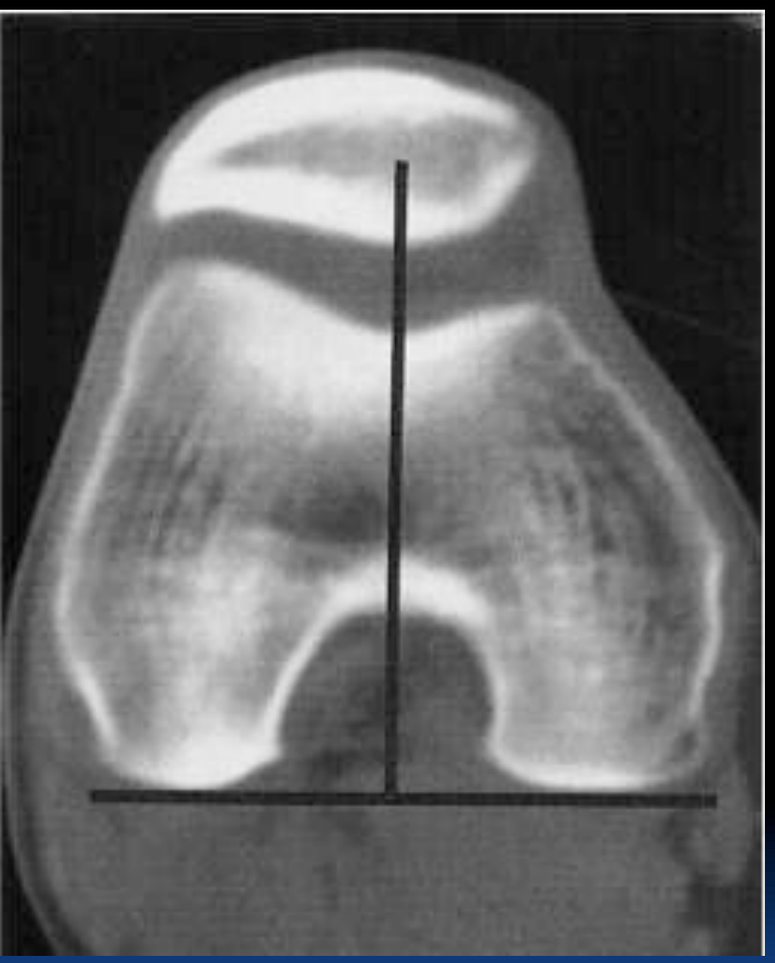
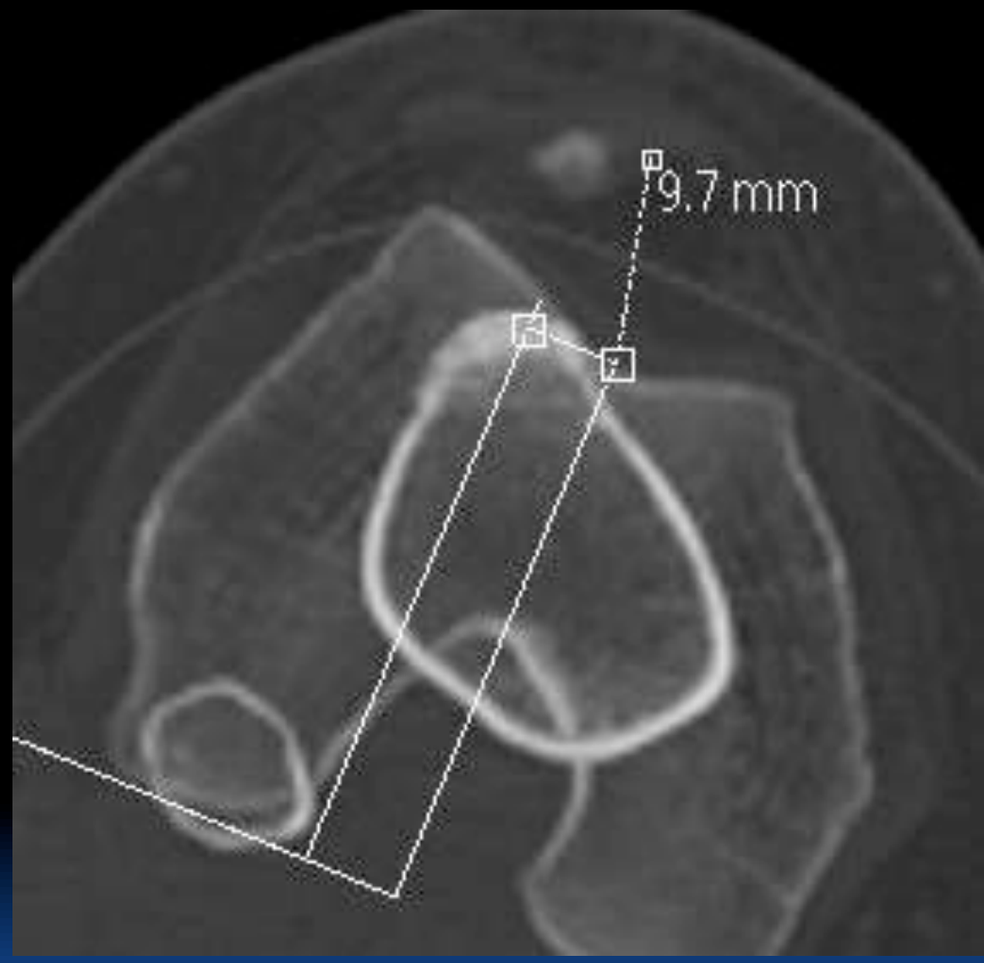




True Q angle, Measurement of the Tibial Tuberosity-Trochlear Groove (TT/TG) distance

Normally TT/TG = 2-9 mm
pathologic measure is > 19 mm





TT:TG Original paper 1978

Rev Chir Orthop Reparatrice Appar Mot. 1978 Jul-Aug;64(5):423-8.

[The measurement of the tibial tuberosity. Patella groove distanced technique and results (author's transl)].

[Article in French]

Goutallier D, Bernageau J, Lecudonnec B.

Abstract

The line between the summit of the tibial tuberosity and the bottom of the trochlea groove as seen on a radiograph taken with the knee in 30 degrees of flexion and neutral rotation is indicative of the valgus position of the quadriceps mechanism at the moment of engatement of the patella in the groove. The authors stress the technical requirements to obtain the radiograph which permits this measurement. Measurement of a group of normal knees and of two groups of knees presenting with known patello-femoral pathology (lateral patello-femoral arthrosis and current dislocation of the patella) are given. In the study of distrubance of the patello-femoral articulation, this measurement provides information of theoretical and therapeutic interest.

Original paper on TTTG (GOUTALLIER)

- **Group 1: n= 16, group of over 65 year olds with normal clinical/ radiographic pathology**
- **Group 2: n= 30, group of under 65 year olds suffering PFJ osteoarthritis**
- **Group 3: n= 24, group under 65 year olds with other PFJ pathology: (dislocating patellae)**

How useful is TT:TG

- **Large variation in normal value (patient size and height)**
- **Poor interrater reliability 3-5mm measurement error**
  - **Trochlea ?deepest point of**
  - **Tib Tub bony landmark vs Central point of PT attachment ↑4mm**
- **What condition?**
  - **Flexion or extension**
  - **Weight bearing ↓ 5mm**
- **MRI or CT measurement**

KSSTA 2014

Knee Surg Sports Traumatol Arthrosc. 2014 Mar 21. [Epub ahead of print]

Is tibial tuberosity-trochlear groove distance an appropriate measure for the identification of knees with patellar instability?

Caplan N[1], Lees D, Newby M, Ewen A, Jackson R, St Clair Gibson A, Kader D.

⊕ Author information

Abstract

PURPOSE: Tibial tuberosity-trochlear groove distance (TT-TG) has been regarded as a useful tool for establishing therapeutic choices for patellar instability. Recently, it has been shown that TT-TG negatively correlated with the quadriceps angle, suggesting that if used individually, neither provide a valid measure of tween both knees in patients with unilat isive element in the management decis

METHODS: Sixty-t st patella clinic for recurrent unilateral erwent bilateral long leg computed tomc bial TT-TG in symptomatic and asymptomatic knees in the same individual was compared statistically.

RESULTS: Mean TT-TG distance in the symptomatic knee was 16.9 (±4.9) mm, compared to 15.6 (±5.6) mm in the asymptomatic knee. Tibial TT-TG was not significantly different between stable and unstable knees (n.s.).

CONCLUSIONS: The lack of difference in TT-TG distance between stable and unstable knees suggests that TT-TG distance alone may not be a decisive element in establishing therapeutic choices for patellar instability. It should, therefore, be interpreted with caution during clinical evaluations. LEVEL OF EVIDENCE: II.

Not a decisive element in establishing therapeutic choices for instability

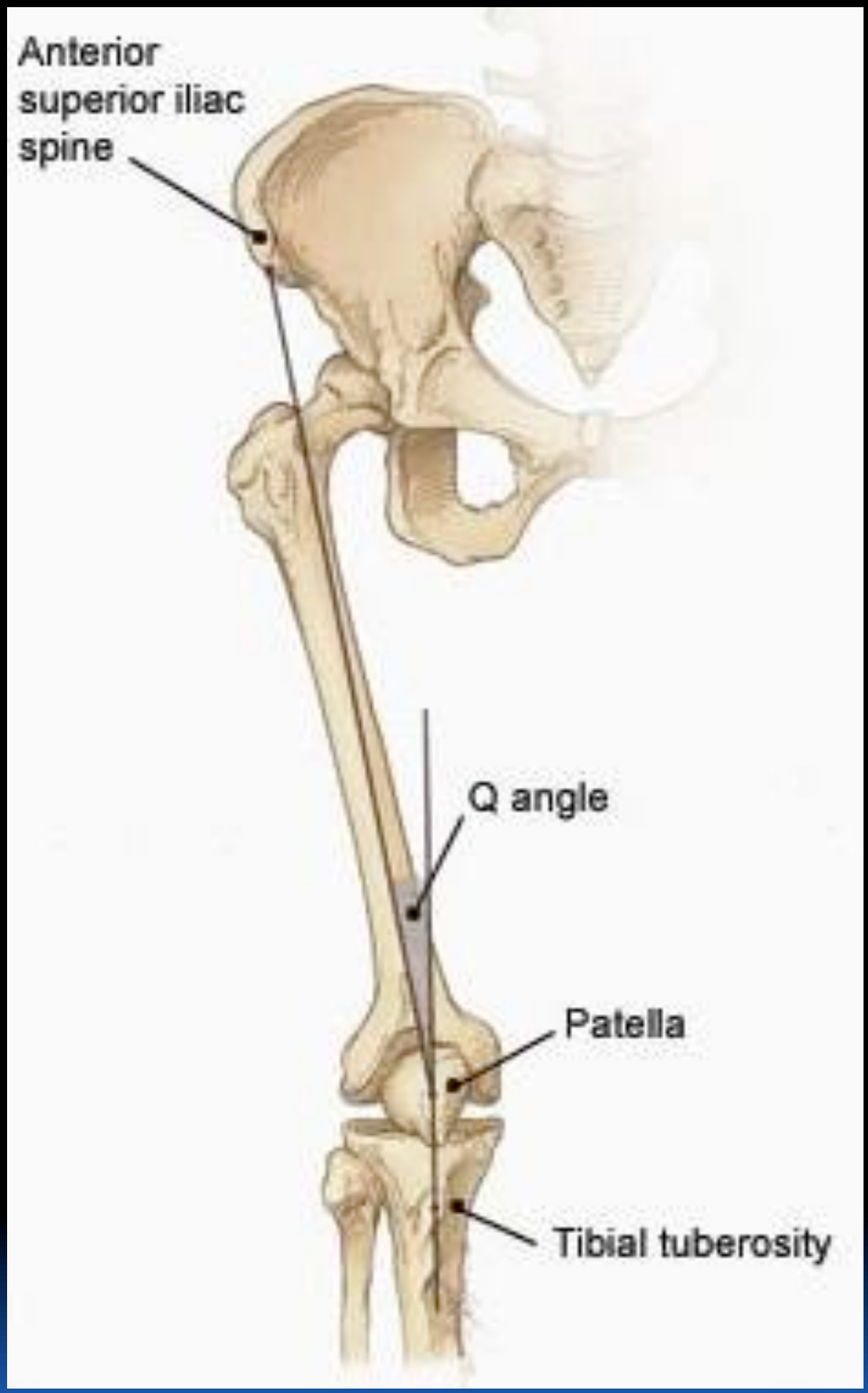
Q- Angle

Many potential problems

- **Crude measure**

- **How it is measured?**
  - **Flexion, Extension**
  - **Standing, Sitting, Supine**
  - **Muscle relaxed/tense**

- **No standard method**



KSSTA 2012

Knee Surg Sports Traumatol Arthrosc. 2012 Jan 26. [Epub ahead of print]

The relationship between quadriceps angle and tibial tuberosity-trochlear groove distance in patients with patellar instability.

Cooney AD, Kazi Z, Caplan N, Newby M, St Clair Gibson A, Kader DF.

Queen Elizabeth Hospital, Gateshead, Tyne and Wear, NE9 6SX, UK, adcooney@doctors.org.uk.

Abstract

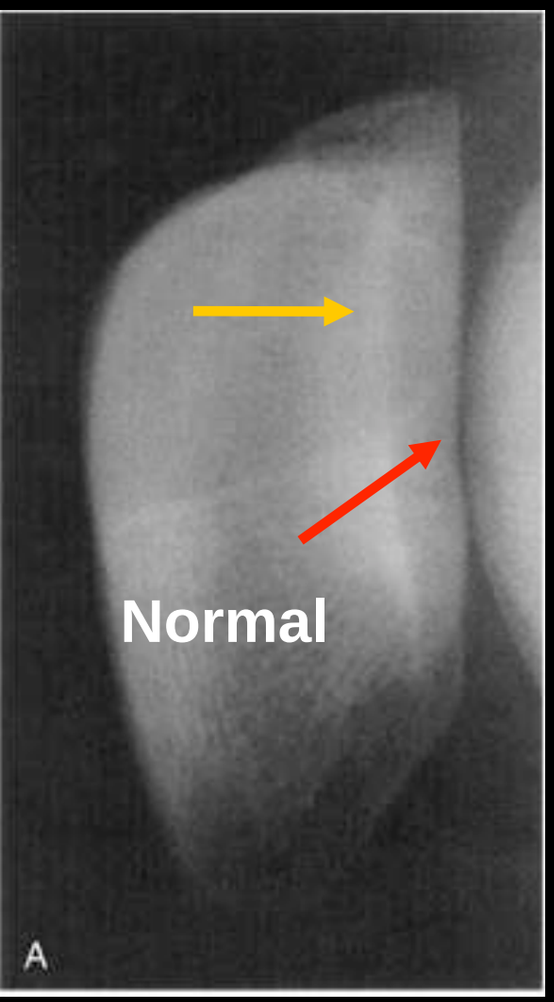
PURPOSE: The quadriceps angle (Q-angle) represents the angle between the vector of action of the quadriceps and the patellar tendon. An increased Q-angle has been associated with an increased risk of patellar instability, although there is disagreement on its reliability and validity as it is affected by the position of the limb and contraction of the quadriceps. Tibial tuberosity-trochlear groove distance (TT-TG) is ascertained by axial CT scanning, with an increased value associated with patellar instability. This study aimed to determine whether the Q-angle correlates with the TT-TG distance in patients with patellar instability.

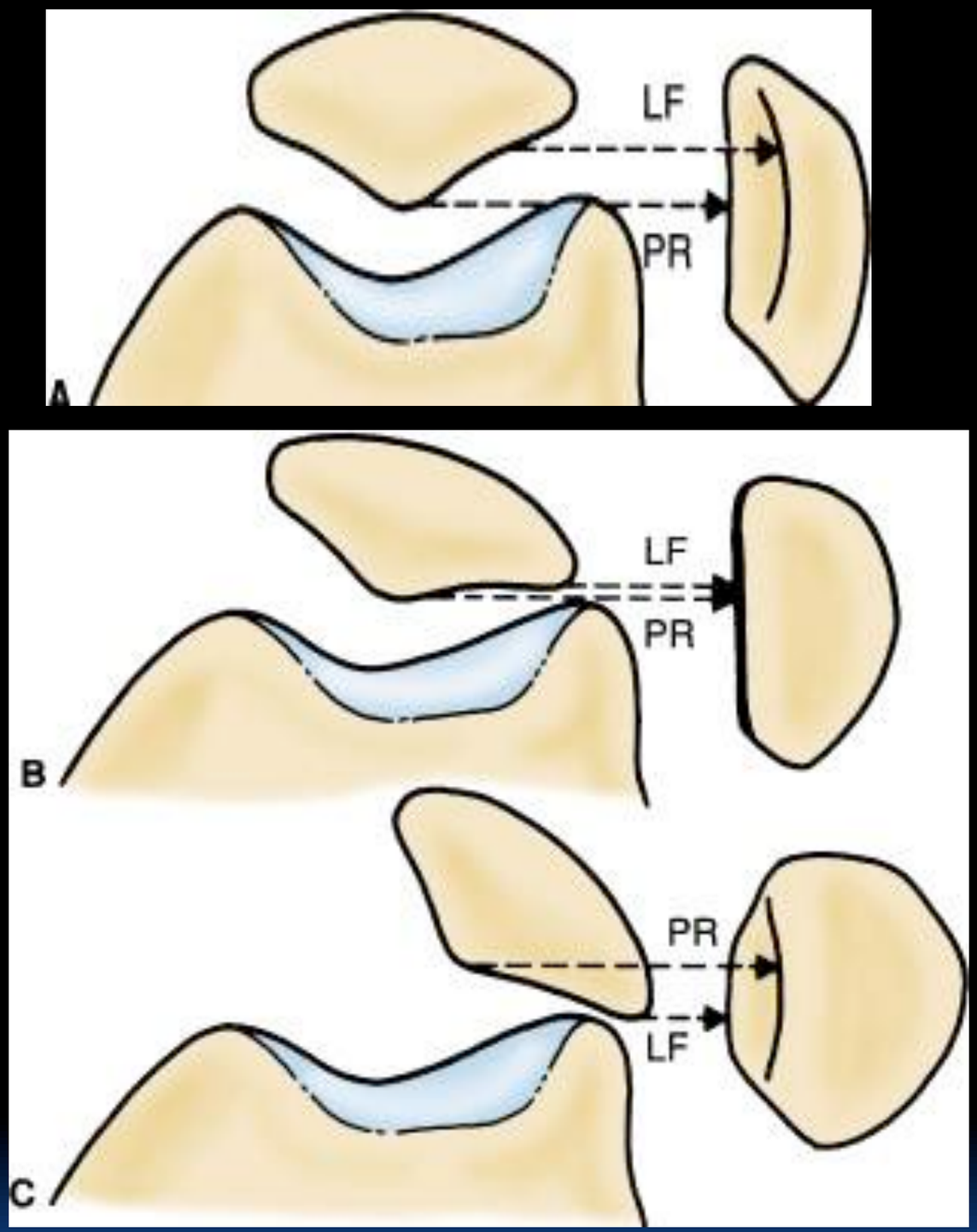
METHODS: Q-angles were measured in 34 knees that had previously undergone CT scanning for assessment of patellar instability. Measurements were made with the patient supine, the knee extended and the lower limbs in neutral rotation with the quadriceps relaxed and contracted. TT-TG distance was measured on CT scanning in an identical position.

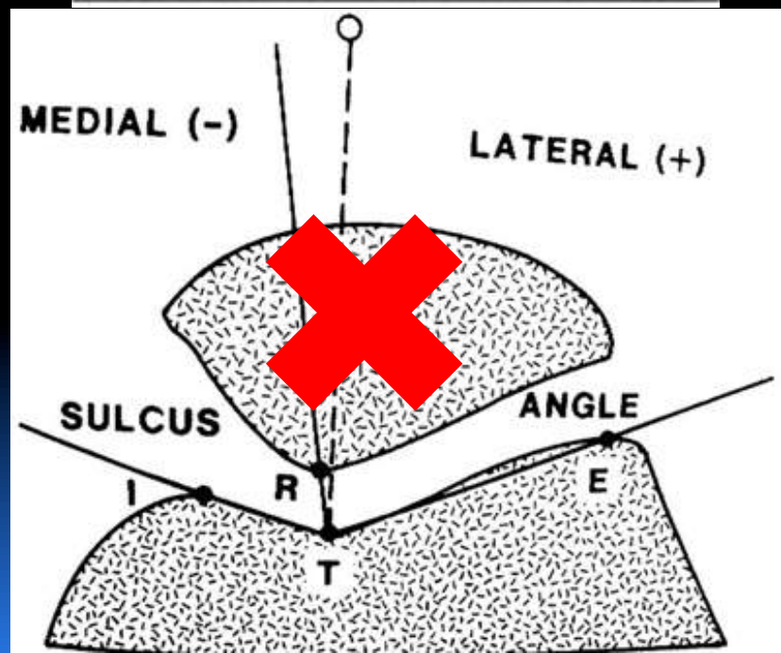
RESULTS: Of the 34 knees measured, 24 had symptoms of patellar instability, and 10 were normal. A significant negative correlation between relaxed Q-angle and TT-TG in all knees was demonstrated ($p = 0.028$). In symptomatic knees, contracted Q-angle also demonstrated a significant negative correlation with TT-TG ($p = 0.037$).

CONCLUSIONS: If TT-TG distance is regarded as the gold standard measurement, Q-angle is not a reliable indicator of patellar instability. There is a clear need to develop methods to more fully

Patellar ridge (PR) and the Lateral facet(LF).







POSTGRAD ORTH Delary Kader

Nail-Patella Syndrome

Hereditary osteo-onychodysplasia (HOOD synd)

Nail dysplasia, Patellar hypoplasia or aplasia, and Nephropathy

- **Autosomal dominant genetic disorder Ch9**
- **Lean body build**
- **Patellar affected in 90% of pts, patellar aplasia in 20%.**
- **Elbows: limited pronation, supination, extension**
- **Subluxation of the radial head may occur**
- **General hyperextension of the joints can be present.**
- **Exostoses ("iliac horns") 80% of patients**
- **Kidney failure and teeth weakness**
- **Family with Hood Nephropathy --- Child risk ¼**

Rel X Ray Exp: 154

RR7 Blaydon Clinic

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[13/11/

SIEMENS FI

Rel X Ray Exp: 132

Queen Elizabeth Hospital
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Queen Elizabeth Hospital
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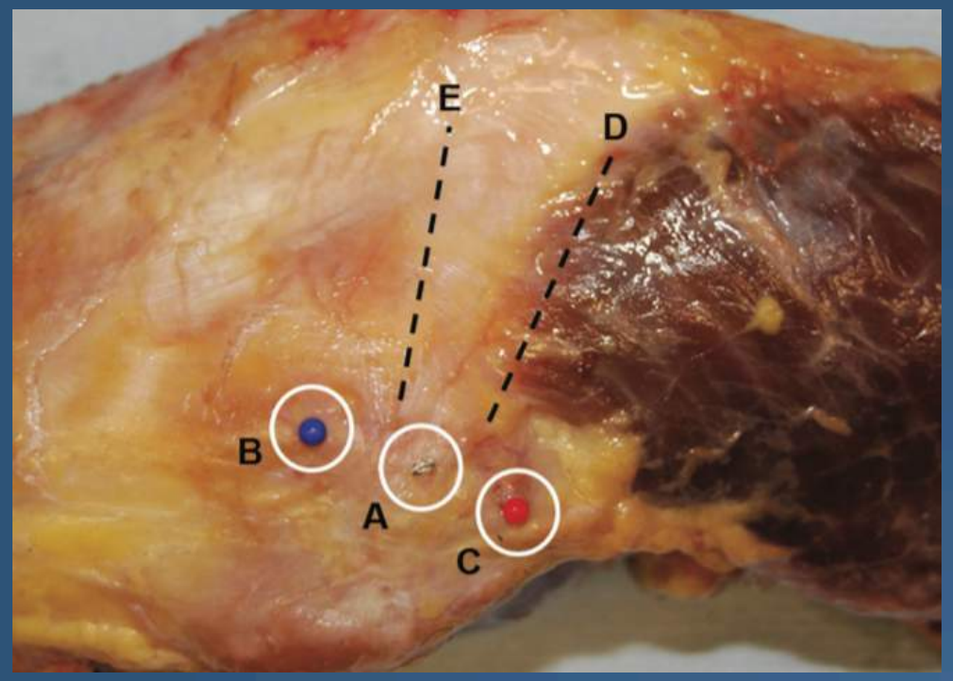
Thank You



David Elson
Consultant Orthopaedic Surgeon
QEH, Gateshead