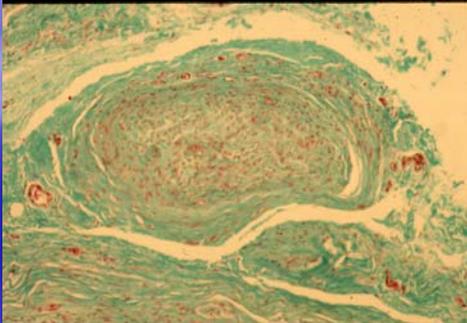


# Concepts in Patellofemoral Pain

John Fulkerson

# Think soft tissue first



Retinacular changes

(Fulkerson et al, Clin Orthop 197:  
196-205, 1985)

Neurokinins elaborated in  
retinaculum (Sanchis Alfonso et  
al, AJSM 26: 703-709, 1998)

Substance P in the anterior knee  
(Witonski, Knee Surg Sports  
Traumatol 7: 177-183, 1999)

?Excessive laxity?

?contracture?

# Multidirectional PF instability

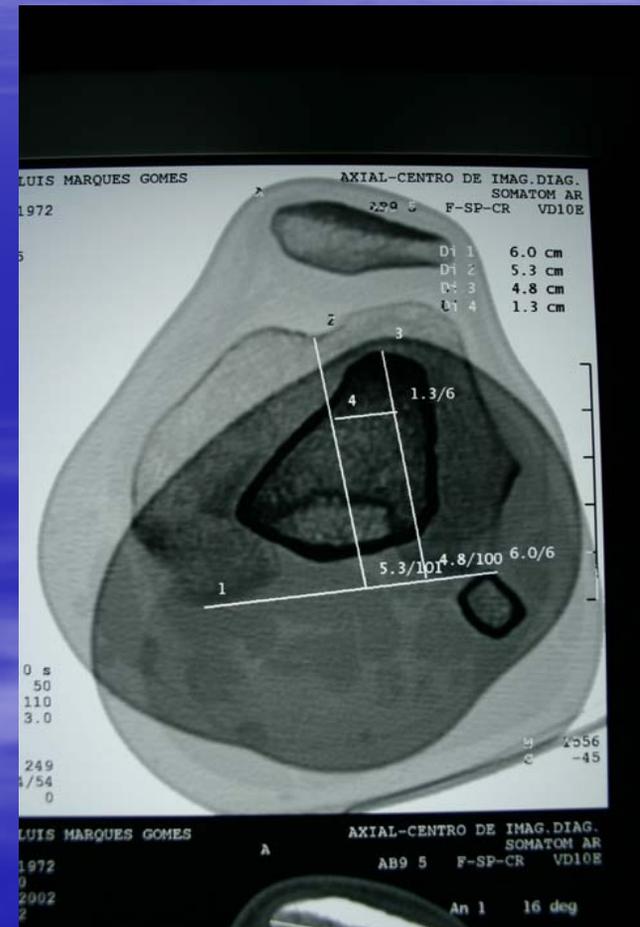
- Recently we have found patients with medial and lateral instability -sometimes after peripatellar release in the face of underlying ligamentous laxity and shallow trochlea
- Some patients who experience medial and lateral instability need medial and lateral reconstruction. This may be iatrogenic in some cases.
- You will elicit this with provocative testing
- Nature of the pain is hard to define
- LIKE MDI of the shoulder!!!!!!
- Could soft tissue fatigue/overload cause this type of pain?
- Taking out the slack relieves the pain- like shoulder MDI!

# Lower extremity balance



# Relationship of tibial tubercle to trochlear groove

- Superimposed CT images (Neyret, Lyon, France) is best indicator
- >15 mm suggests pathological increase of lateral tracking vector
- Not usually necessary, but helps in tough cases



# Concept

- Imbalance leads to chronic low grade stress increase on focal articular surfaces (focal overload-recurrent- to subchondral bone), pain, and eventual articular breakdown
- Laxity or instability causes chronic recurrent capsular/retinacular nociceptive overload and resulting elaboration of cytokines, substance P and chronic pain!!

# What we do and why it (sometimes) works

- Stabilize with PT and decrease aberrant forces by improving core stability and strength support
- Stabilize with braces- reducing aberrant motion and overuse/ recurrent stress
- Surgically stabilize and shift, reduce or remove articular load permanently

# Why it sometimes doesn't work

- Failing to properly identify and treat the cause (eg doing a lateral release in someone who is already too loose makes him/her looser!)
- Overloading an already damaged, vulnerable articular surface (medial reconstruction too tight in a patient with medial facet damage from instability)
- Iatrogenically produced tissue damage or overload

# Conclusions

- Overuse or cyclical overload of retinacular or subchondral areas may explain the unusual and sometimes ill defined nature of anterior knee pain in some patients (Dye theory of envelope of load acceptance)
- Consider the similarities of PF pain and multidirectional shoulder instability pain in patients with hyperlaxity
- Patellofemoral imbalance (malalignment) may cause pain by virtue of cyclical retinacular and subchondral overload. Such abnormal stress may eventually lead to articular breakdown, but this may not be evident in the early stages
- Physical therapy, bracing and surgery can all be effective in treating PF pain when properly implemented for the right reasons
- Failures of treatment are usually related to inaccurate appraisal of the cause of pain