



Stiff Knee

after

Medial Compartment Injury

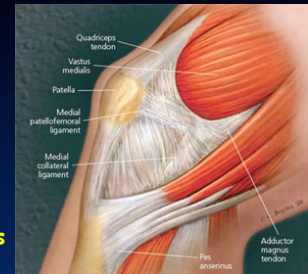
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Anatomy

- ✓ Joint excluded
- ✓ MCL
- ✓ MPFL
- ✓ Hamstring tendons



Biomechanics

- ✓ MCL near isometric :
 - ✓ sMCL 2 bundles, dMCL 2 parts
 - ✓ Slack > mid flexion 30°/50°
 - ✓ Length variation of bundles 2% to 5%

Post parts of MCL decrease with flexion ($p < 0,05$)
Ant part of dMCL increase

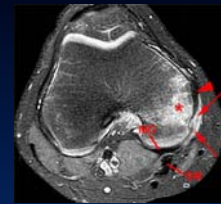
Park The Knee 2005
Victor Am J sport Med 2009

- ✓ MPFL non isometric
 - ✓ Sup bundle taut in extension
 - ✓ Inf bundle taut @ 30°



Spectrum of causing factors > medial injury

- ✓ After MCL tear
 - ✓ Conservative treatment
 - ✓ Post surgery
- ✓ MPFL reconstruction
- ✓ Tendinopathy
 - ✓ Rupture (harvesting/surgery)
 - ✓ Chronic
- ✓ Sudeck's syndrome (CRPS)
 - ✓ Timing of surgery
 - ✓ Single impact



Patient's check

- ✓ Clinical assesment
 - ✓ Slight lack of extension and/or deficit of flexion
 - ✓ Rigid or soft end point
 - ✓ Pain? Location
- ✓ Radiographs AP, lateral views in max Flex/Ext
- ✓ MRI
- ✓ Bone scan



Expectations!

CRPS

- ✓ Frequent & unpredictable
- ✓ Neural input of the medial aspect of the knee
- ✓ Timing of treatment
- ✓ Bone scan
- ✓ Medical treatment



Medial tendinopathy : pes anserinus

- ✓ Acute or overuse
Iatrogenic



- ✓ Risks factors (22 cases) valgus deformity & MCL deficiency
Alvarez-Nemegyei J Clin Rhum 2007

- ✓ Sonography (37 cases) = few bursitis
Uson Scand J Rhum 2008

- ✓ Rehab treatment, Injection



MCL tear

- ✓ After conservative treatment
Jacobson Clin Sport Med 1999

- ✓ Strict immobilization is detrimental
Woo J Biomechanics 2006

- ✓ Early controlled motion / rehab
- ✓ Hinged brace
Reider Am J Sport Med 1993



MCL tear : Chronic symptoms

- ✓ Chronic medial pain
 - ✓ 4% Kelberine & Meyer ISAKOS 2009
 - ✓ up to 20% Holden Am J Sport Med 1983



- ✓ Combined with stiffness (lack of flexion)
 - ✓ MRI = deep MCL (scarring, thickening)



- ✓ Calcific femoral deposit (Pellegrini Stieda)
Wang Am J Orthop 1995

Treatments

- ✓ Sono guided steroid injection + analgesic+ needling
repeated Jones *The Knee 2009*

- ✓ Calcification removal



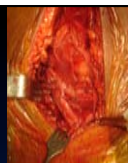
- ✓ Anatomic Reconstruction MCL (several techniques)

Which can led to stiffness.....



MCL tear

After MCL repair/reconstruction



- ✓ Timing of repair
 - ACL + MCL acute repair = major risk of stiffness
Hugston JBJS 1983
 - Froke Knee Surg Sport Trauma Arthrosc 1998*
 - Petersen Acta Orthop Trauma Surg 1999*

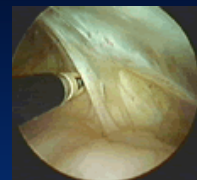
- ✓ Lack of post op rehabilitation



- ✓ Non anatomic repair
 - Knee kinematics are altered by a non anatomic reconstruction (short graft) *Van den Bogaerde KSSTA 2011*

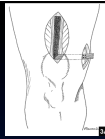
Treatment

- ✓ Steroid injections and / or needling (+ PRP?)
- ✓ Surgery (balance Benefice vs Risk : pain & recurrence)
 - ✓ Arthrolysis arthroscopic : medial gutter, electrocautery
 - ✓ Open arthrolysis step by step (distal detachment)



MPFL reconstruction

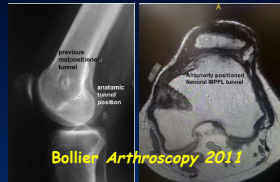
- ✓ So many techniques ! Some are non anatomical
- ✓ Stiffness due technical errors
 - Too tight
 - Tunnels malpositionning : up to 31% *Servien Am J Sport Med 2011*



- ✓ FP overload and/or misload

- ✓ Resurgery : choice?

- ✓ Resect the reconstruction
- ✓ Choice of new procedure? Controversial...



Conclusions

How to prevent?

Peterson Am J Sport Med 2000,
Koehle Am J Sport Med 2002

- 1) Indications for surgery
 - 2) Choice a technique as anatomic as possible
 - 3) More or less aggressive rehab?
 - 4) New horizons / MCL of the knee
 - Hyperbaric Oxygen Therapy
 - Growth Factors
- Creighton Sport Med Arthrosc Rev 2005*

