Remote ACL tear and medial meniscus surgery. Recent ACL reconstruction surgery 4mths ago. Continued anterior knee pain and difficulty extension.


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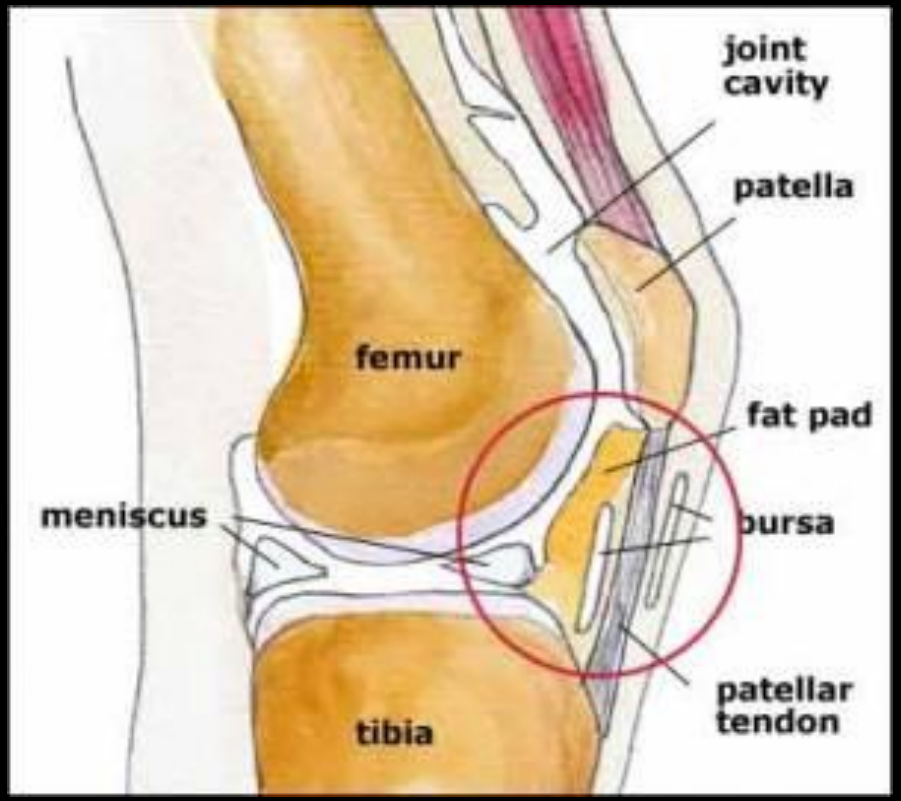
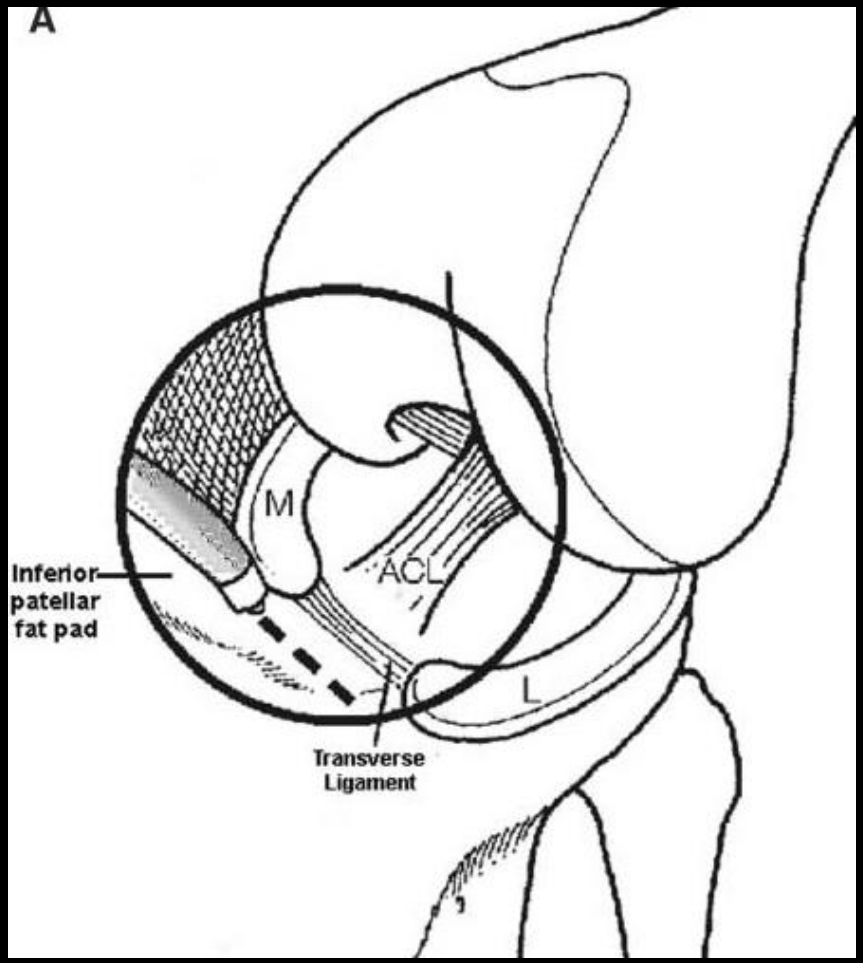
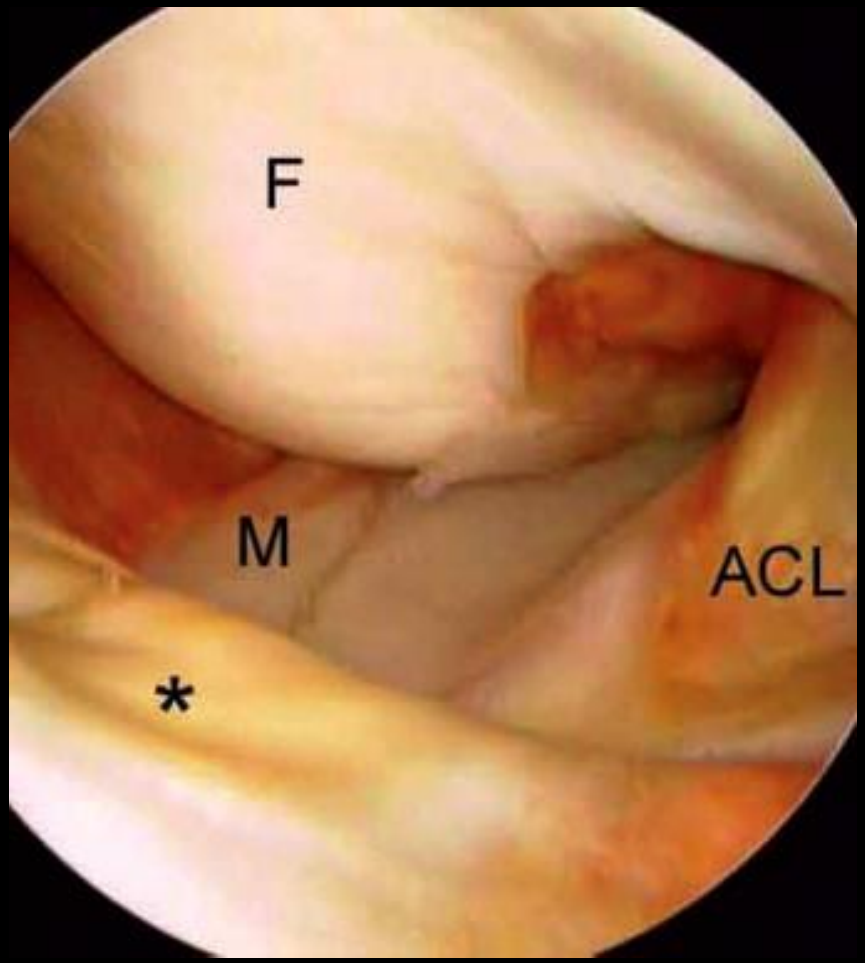
Anterior interval

- Space between the infrapatellar fat pad and patellar tendon anteriorly, and the anterior border of the tibia and the transverse meniscal ligament posteriorly.

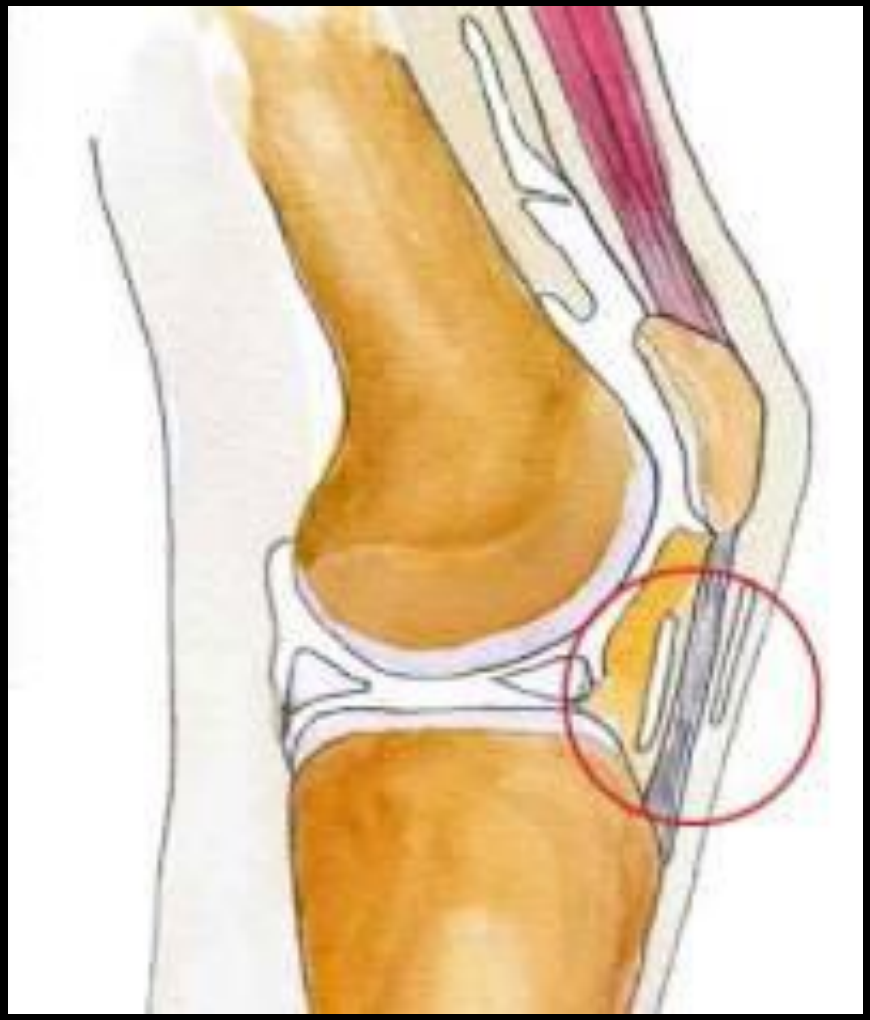



A
M
ACL
L
Inferior
patellar
fat pad
Transverse
Ligament


F
M
ACL
*

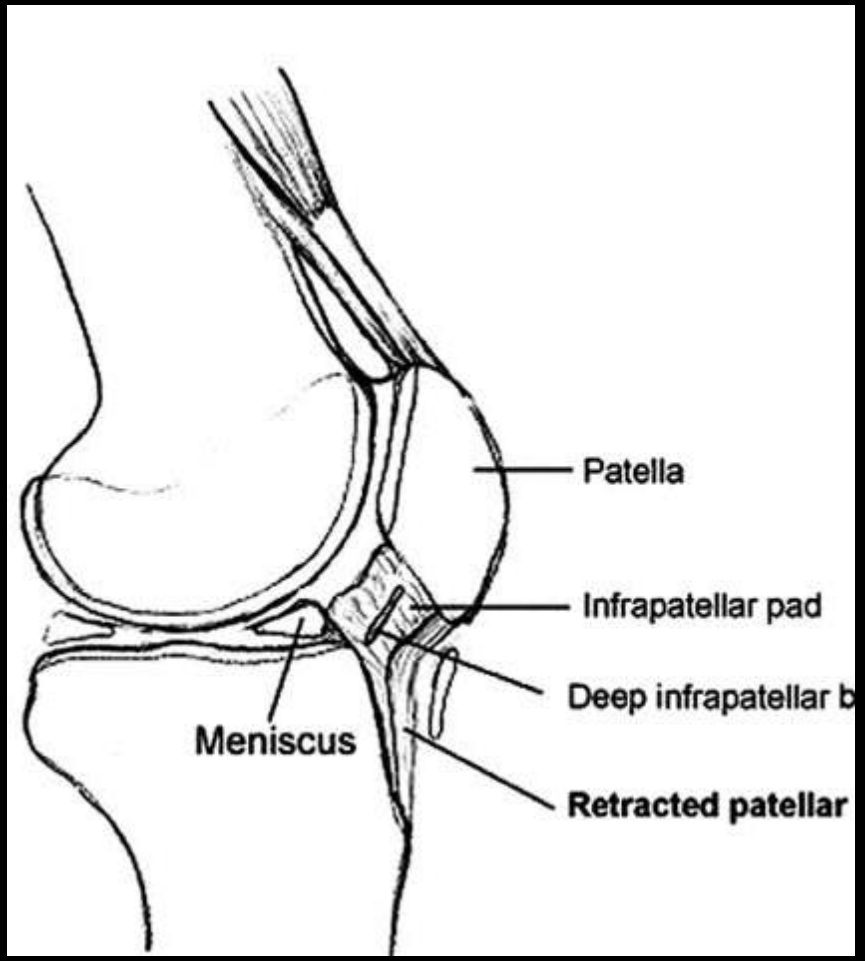
Causes

- 11% incidence in patients with ACL reconstruction.
- Arthrofibrosis result from abnormal fibrous tissue hyperplasia following injury or surgery to the knee
- Loss of extension of more than 10° or flexion of less than 125°
- Synovial tissue after ACL injury demonstrated the presence of fibrogenic cytokines and growth factors at sites of fibrosis up to 3 months after injury(Murakami et al
- Cytokines may be involved in new collagen synthesis and the accumulation of collagen in the synovium following ACL injury and reconstruction
- Recently, isolated a high concentration of type 6 collagen in tissue samples from the infrapatellar fat pad and intercondylar synovium in arthrofibrotic knees



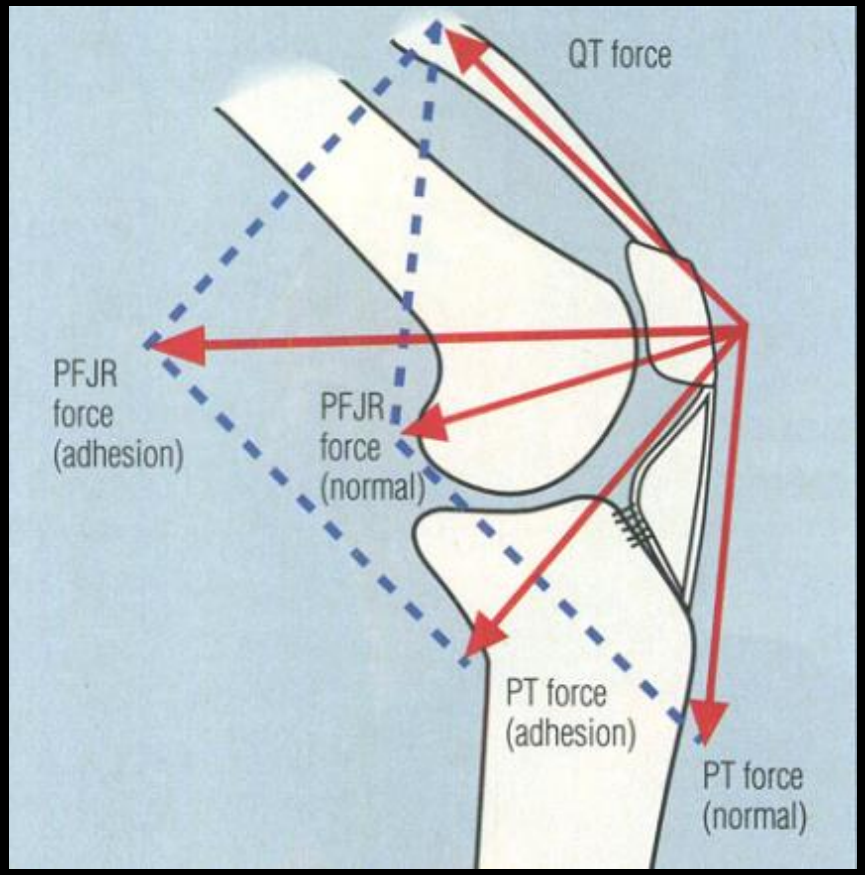
Biomechanics

- Alteration in patellafemoral articulation.
- Fibrosis lowers the patella, infra patellar contraction syndrome or patella baja
- The patellar tendon shortened, the quadriceps force necessary to generate the same extension moment would have to increase,
- Creating greater contact pressures between the patella and femur.



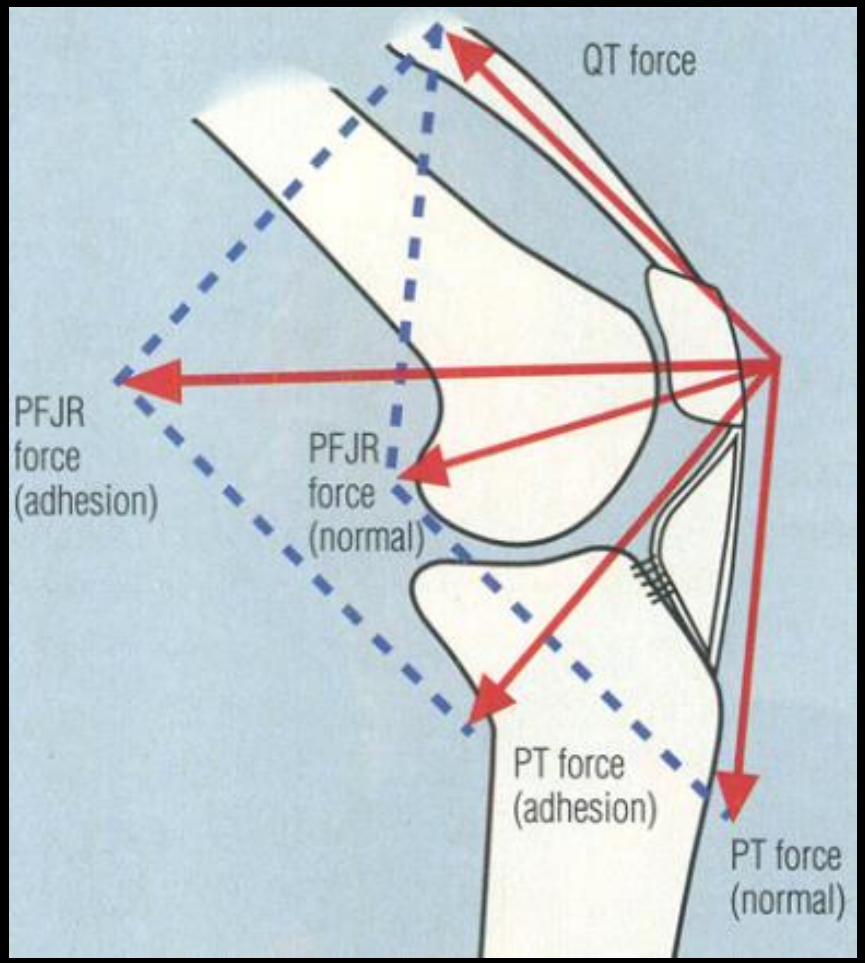
Biomechanics

- Adhesions alter the vector forces and increase loading of the knee.
- Patellofemoral joint reaction (PFJR) force results from the sum of the vector representing the quadriceps tendon (OT) and the patellar tendon (PT) forces.
- In the presence of adhesions of the patellar tendon to the tibia, the patellar tendon force is altered, resulting in an increased PFJR and increased loading of the patellofemoral joint.



Biomechanics

- These biomechanical changes lead to patellofemoral arthrosis (Costa et al)
- Altered location of contact could cause anterior knee pain after knee trauma or surgery (Ahmed et al)



Causes

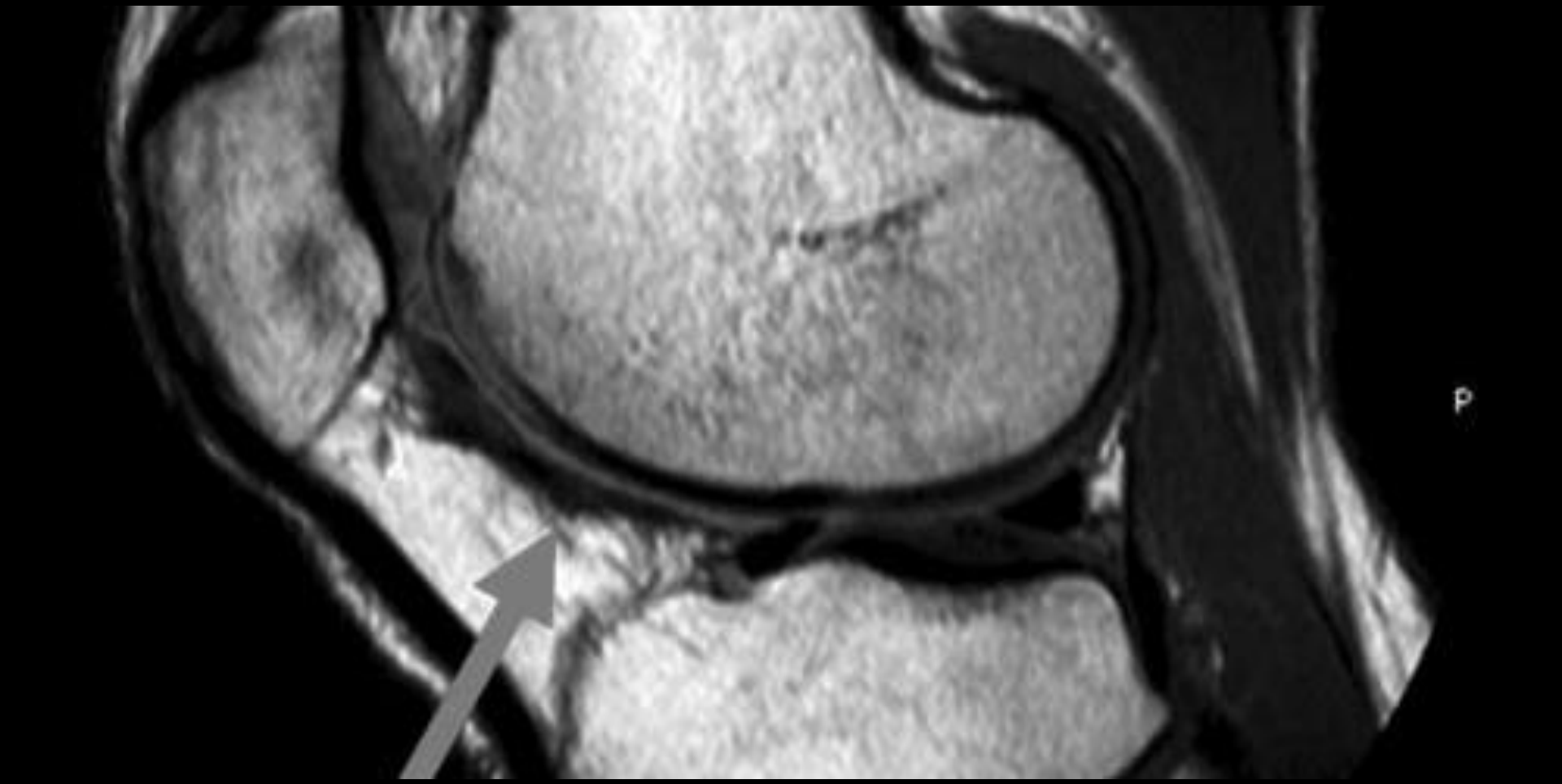
- Intraoperative technical errors and Open arthrotomy: has been identified as a factor in the development of arthrofibrosis, presumably because of increased trauma to the tissues about the knee.
- Knee injury severity: increased incidence of arthrofibrosis following multiple-ligament injuries and when multiple procedures are performed.
- Timing: Surgery performed in the acute postinjury period (within 3 or 4 weeks) has a higher risk of arthrofibrosis

Causes

- ACL injuries during loading activities such as football, basketball and volleyball may involve a heightened inflammatory response compared with those that occur during unloading activities such as skiing, and may therefore warrant greater delay before surgery
- Choice of graft material: no significant difference in synovial fibrosis between semitendinosus and gracilis graft harvest and patellar tendon graft harvest used for ACL (Murakami et al)
- Exercise timing: found that delaying motion until the second day following surgery significantly increased the incidence of arthrofibrosis (Graf et al)

Physical Exam

- positive Hoffa test result.
- flexion contracture compared with the other knee defined as a 5° or more difference in flexion between the 2 knees
- limitation of patellar mobility, measured by comparing the medial-lateral and superior-inferior glide with the opposite extremity


P

Arthroscopic Release for Symptomatic Scarring of the Anterior Interval of the Knee

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- Steadman et al described the results of isolated anterior interval release in twenty-five consecutive patients.
- Patients failed a minimum of six months of physical therapy and nonsteroidal anti-inflammatory medications.
- Patients had significant improvement in symptoms and function after surgery at an average follow-up of 76 months.
- Four patients had failed results, requiring a second surgical release.
- Conversely, patients with severe scarring, or infrapatellar contracture syndrome, had symptoms of patellofemoral arthritis and tibiofemoral arthritis
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References

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3. Steadman JR, Dragoo JL, Hines SL, Briggs KK. Arthroscopic release for symptomatic scarring of the anterior interval of the knee. Am J Sports Med. In press