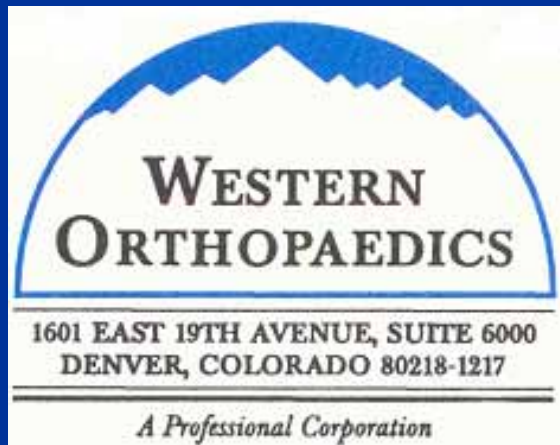


A Practical Approach to Knee Pain

Ted Parks, MD



Most Common Knee Problems:

- **Ligament Injuries**
- **Meniscal Injuries**
- **Arthritis**
- Patello-femoral (Knee Cap) Problems
- Tendonitis



ANATOMY: Building a Knee

Parts List:

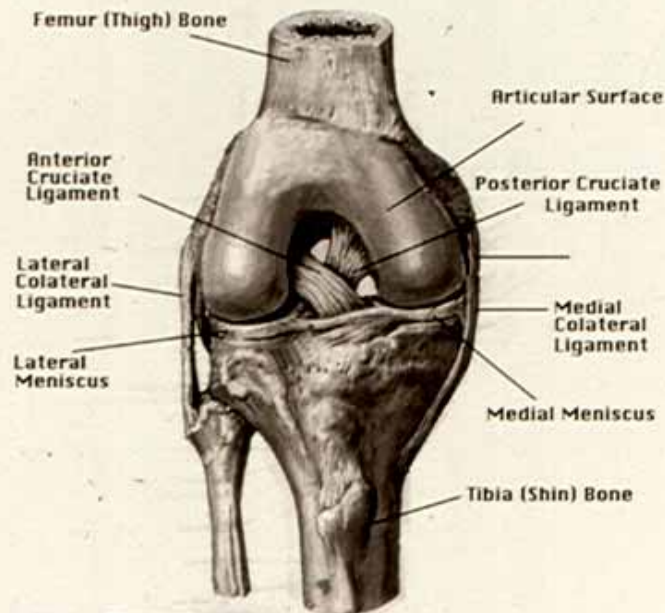
4 Bones

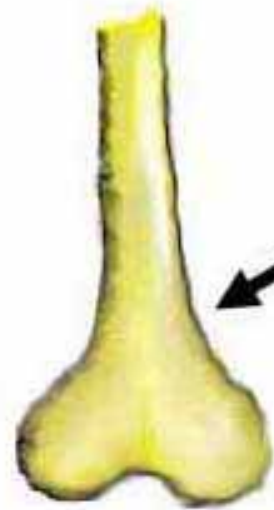
2 Tendons

4 Ligaments

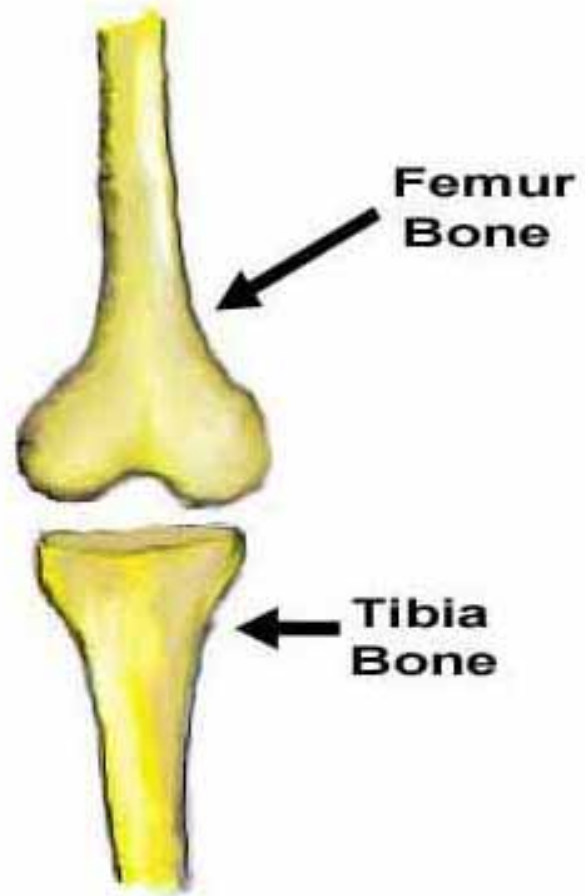
2 Types of
Cartilage

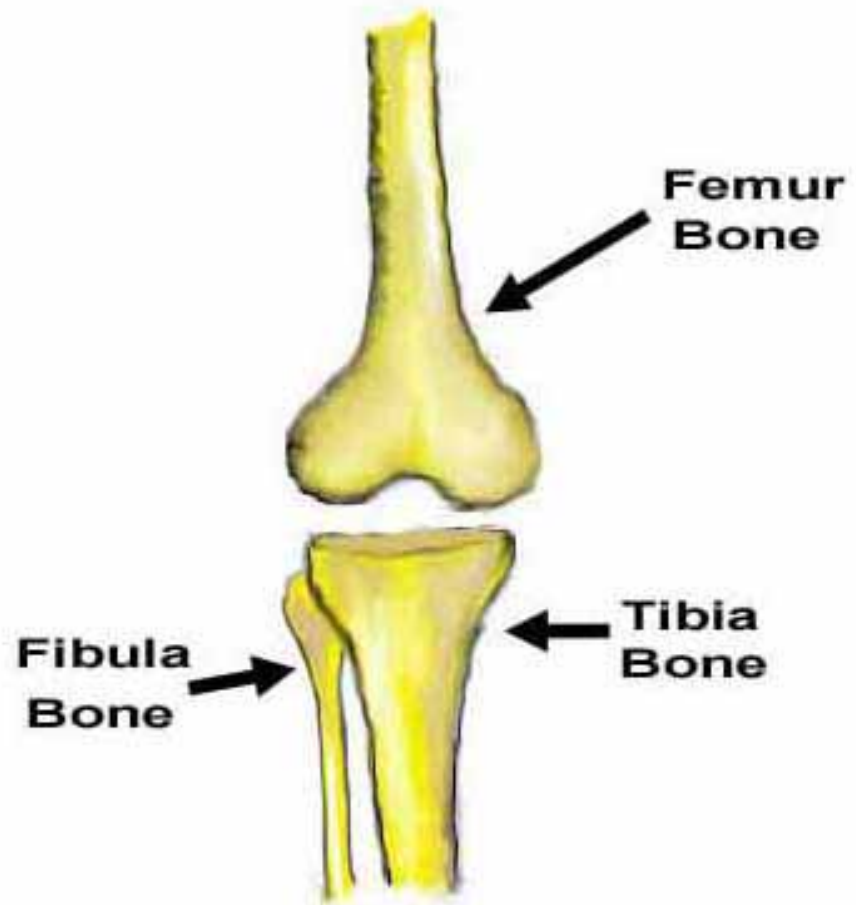
Knee Anatomy

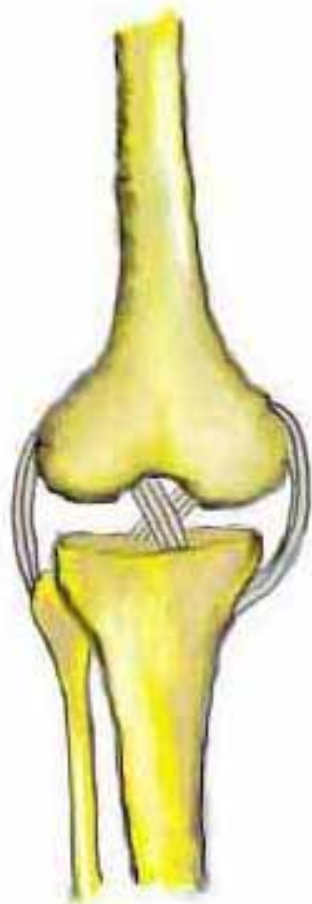




**Femur
Bone**







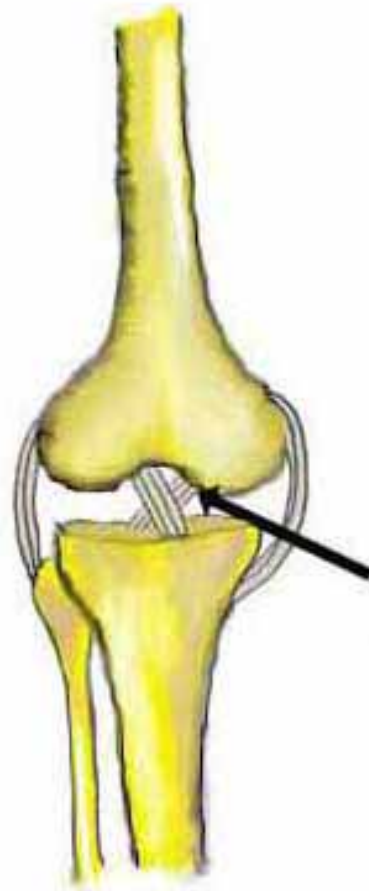
**Lateral
Colateral
Ligament
(LCL)**

**Medial
Colateral
Ligament
(MCL)**



**Anterior
Cruciate
Ligament
(ACL)**





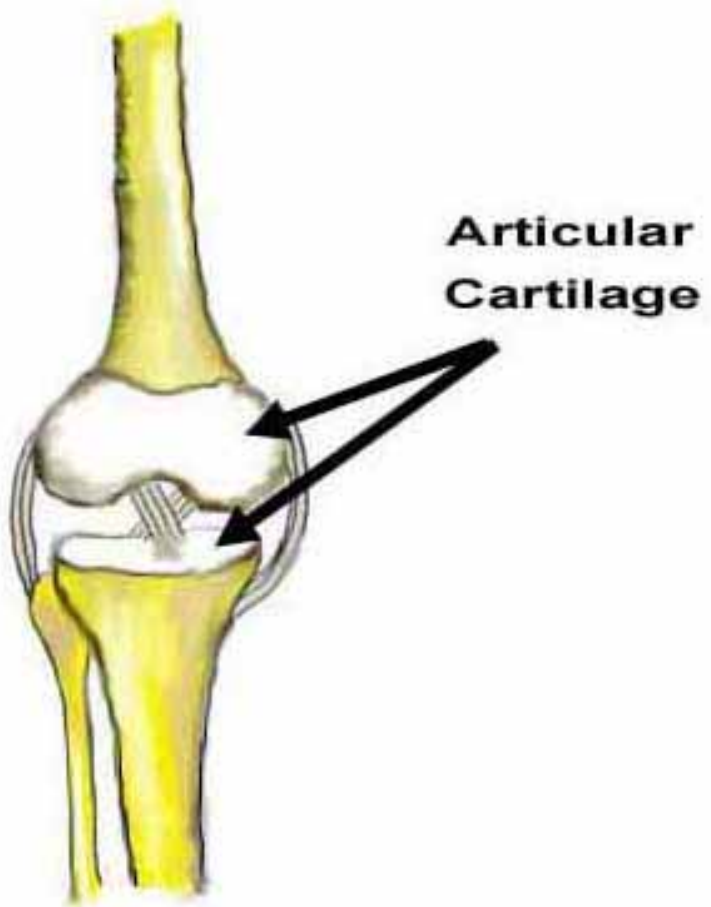
Posterior
Cruciate
Ligament
(PCL)



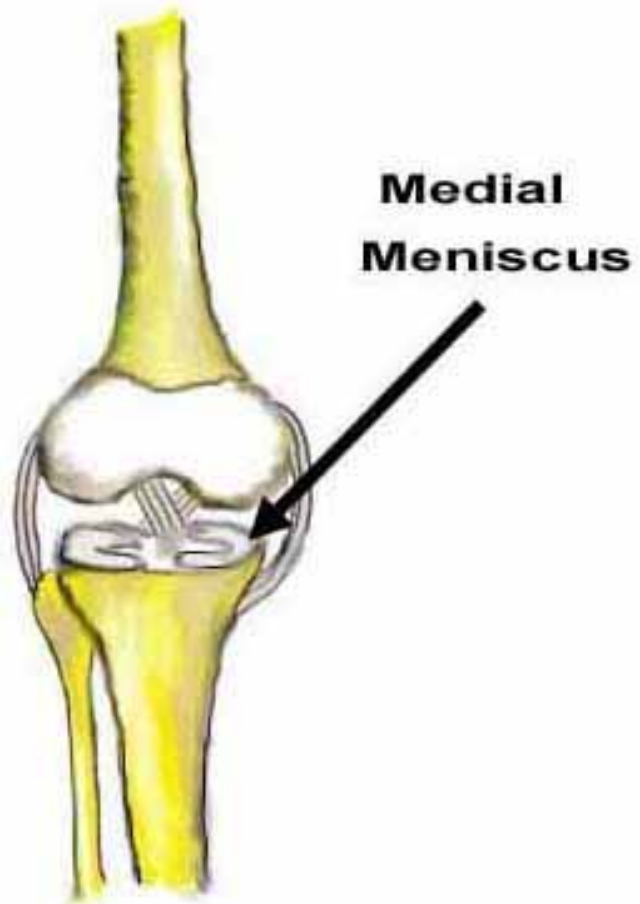


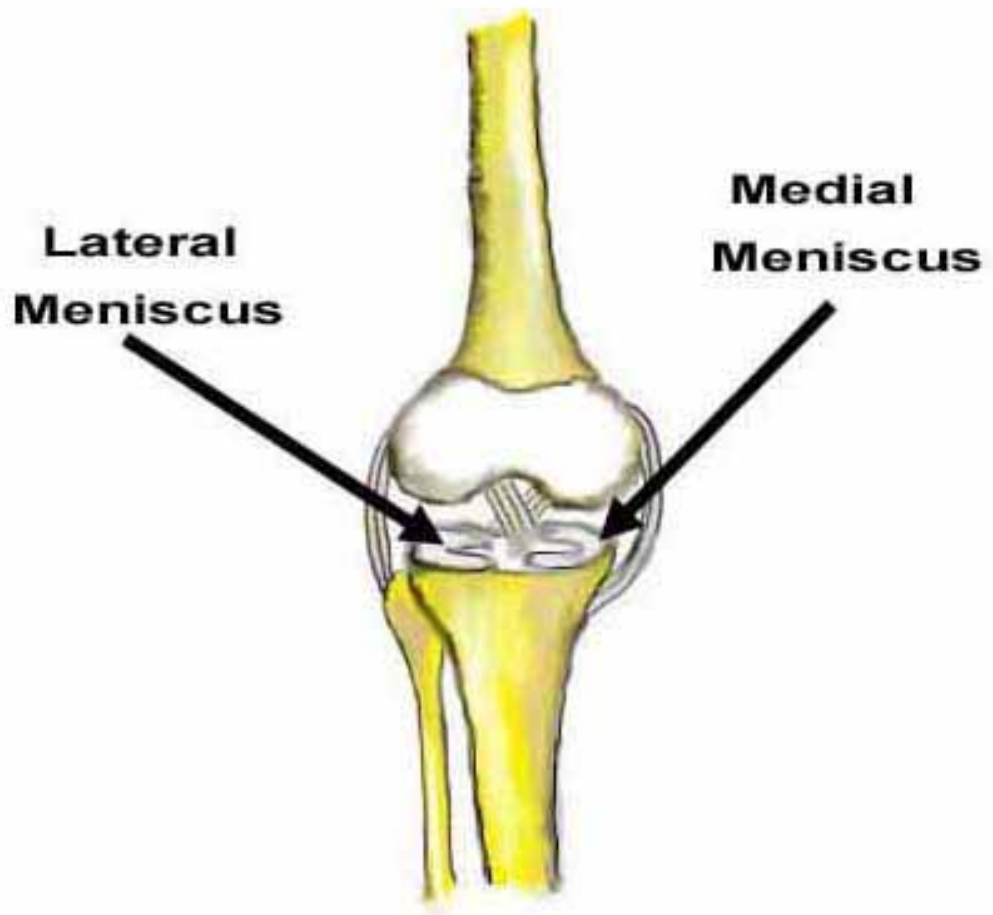
**Articular
Cartilage**



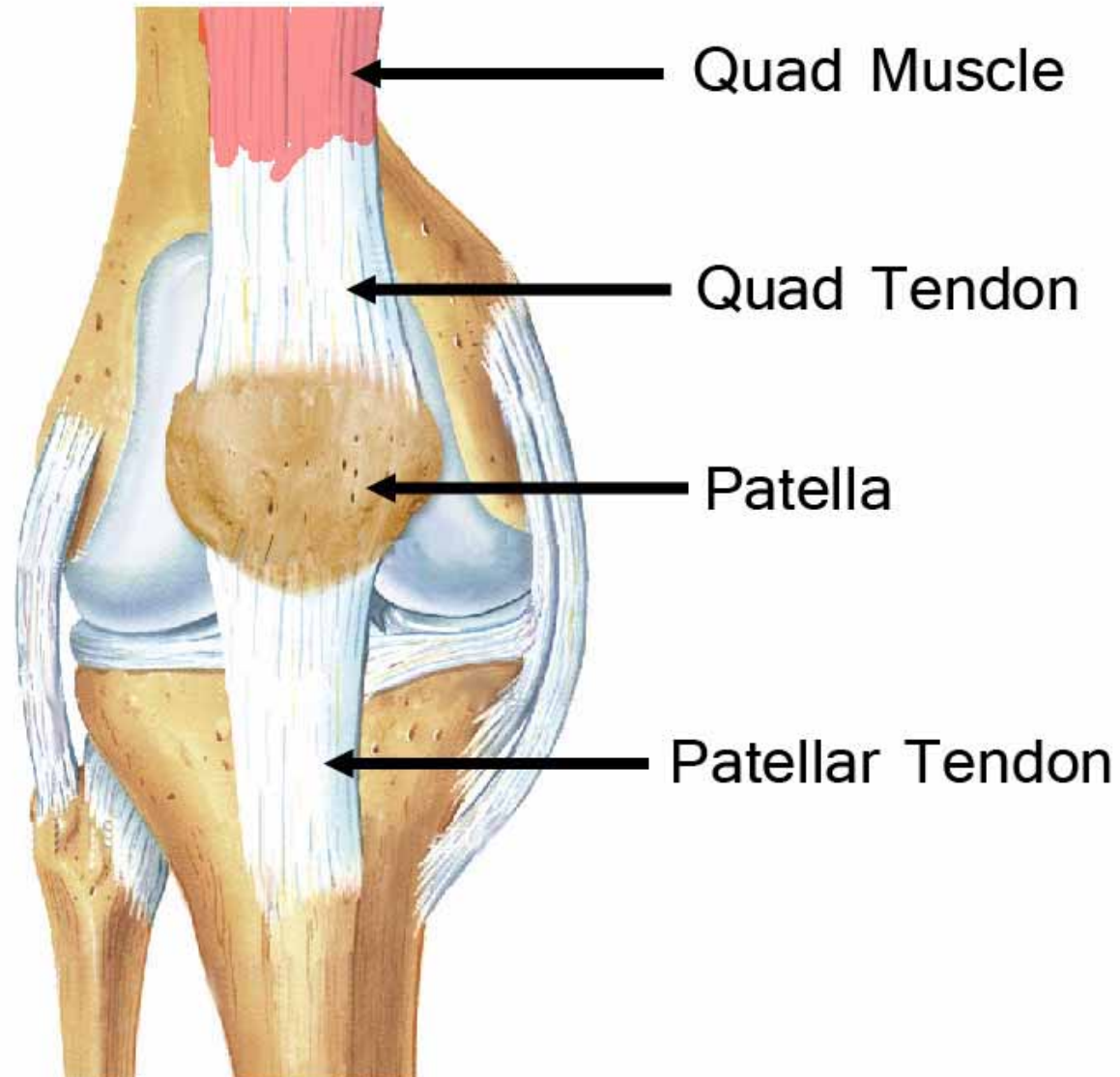




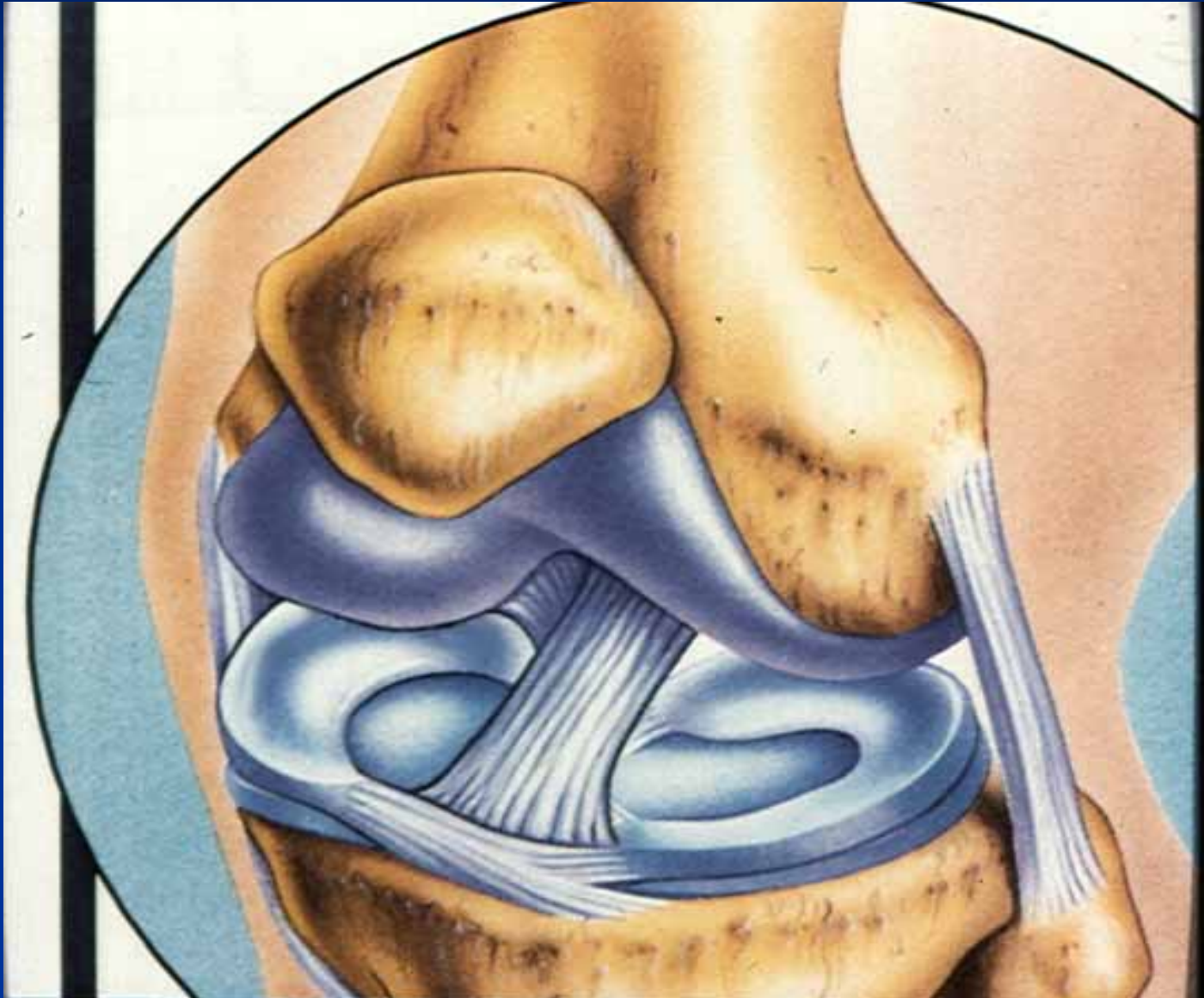




The Extensor Mechanism



Building a Knee



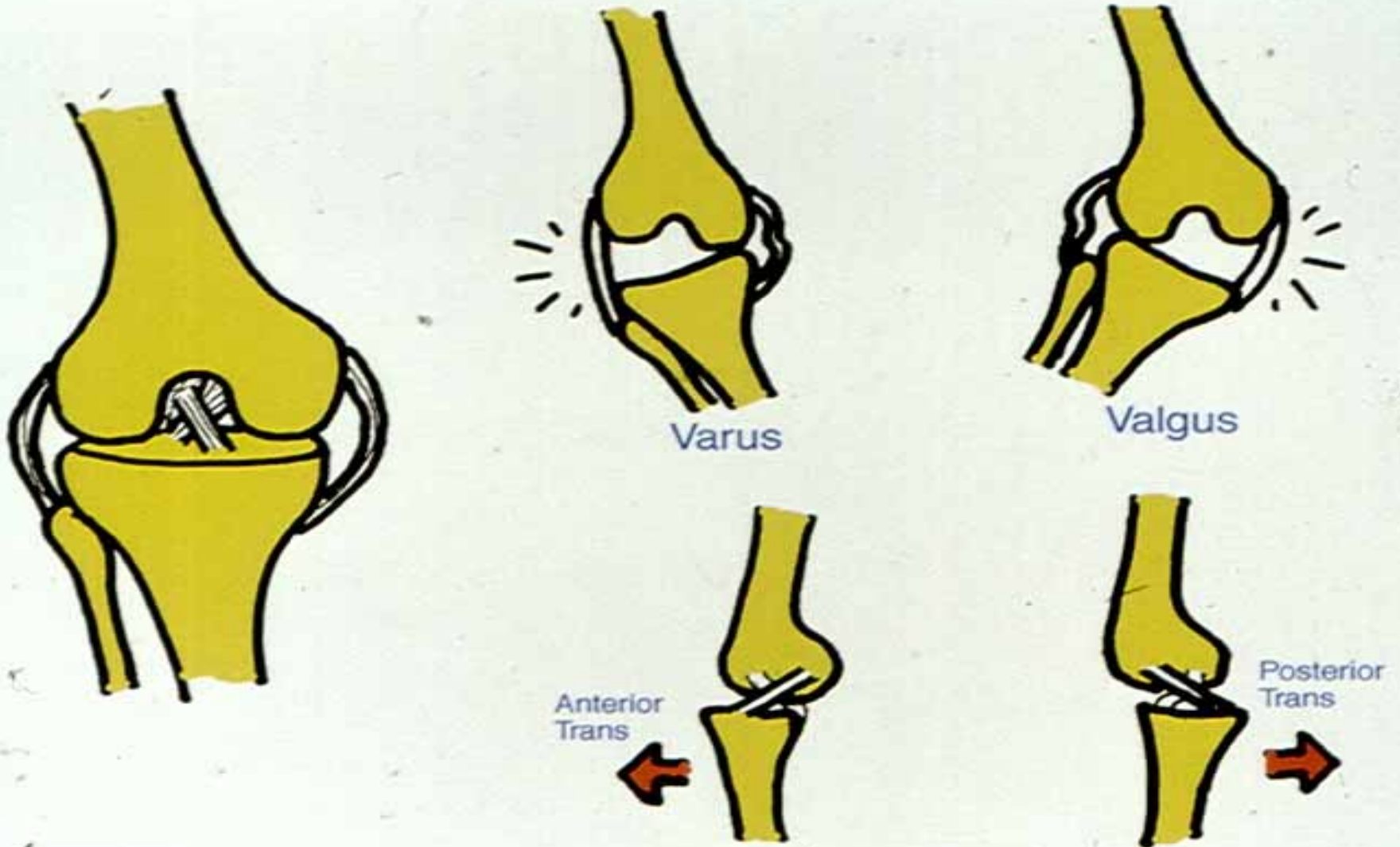
Ligament Injuries



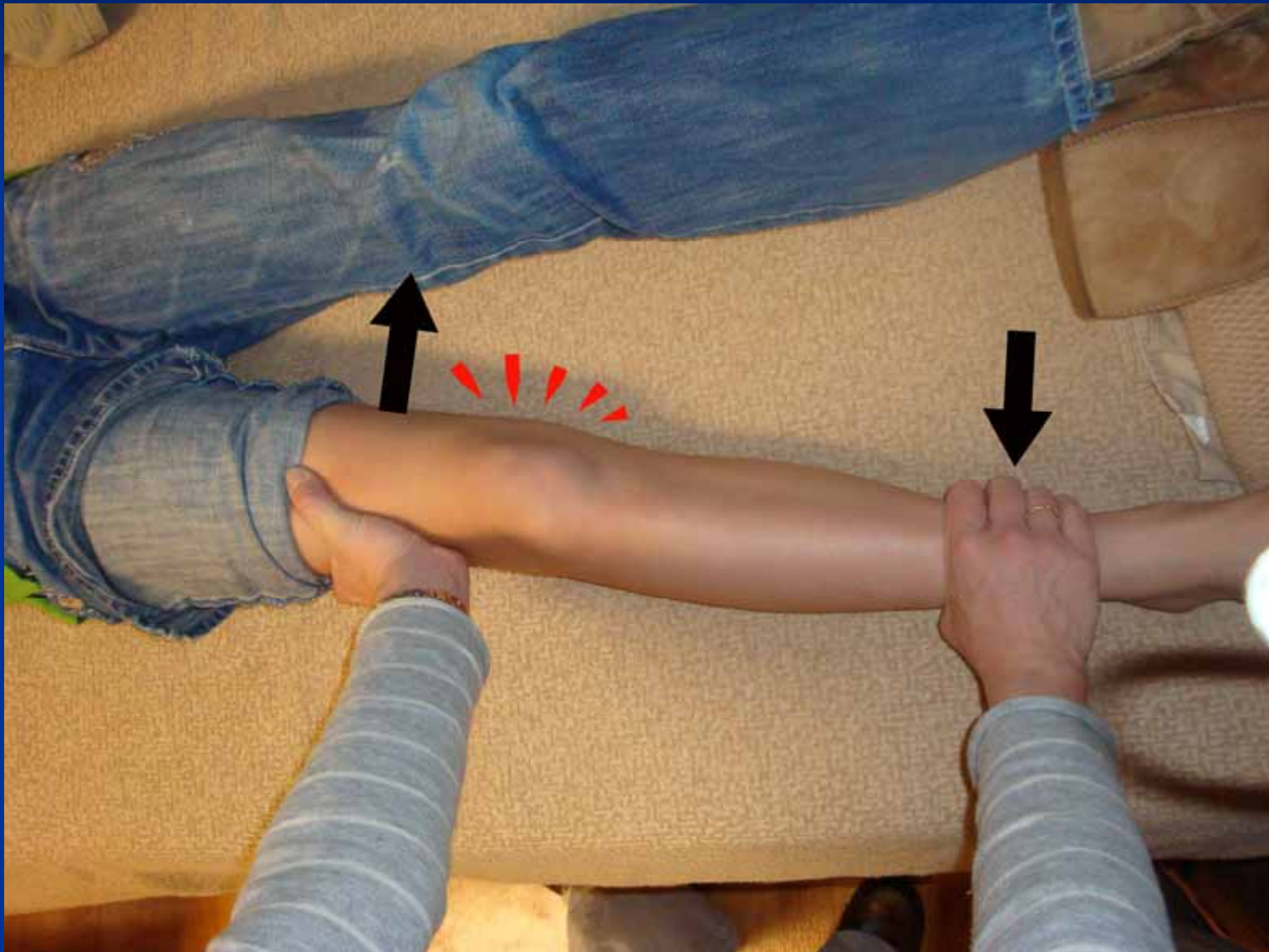
Ligament Injuries: History

- High Energy Injuries
- Sometimes feel a “pop”
- Swelling (within an hour or two)
- Once the pain subsides: **INSTABILITY**

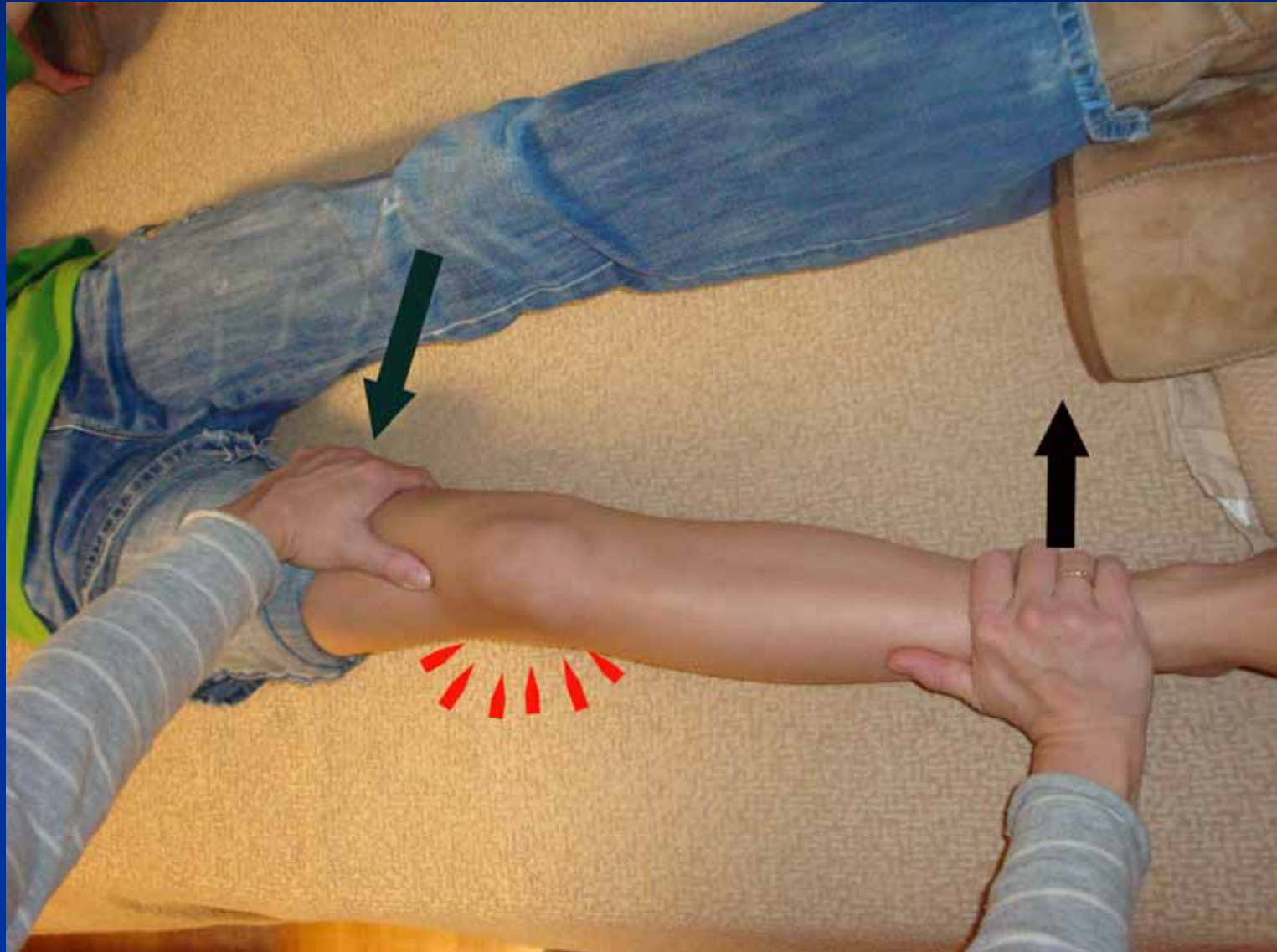
Ligaments: Physical Exam



Physical Exam: MCL



Physical Exam: LCL

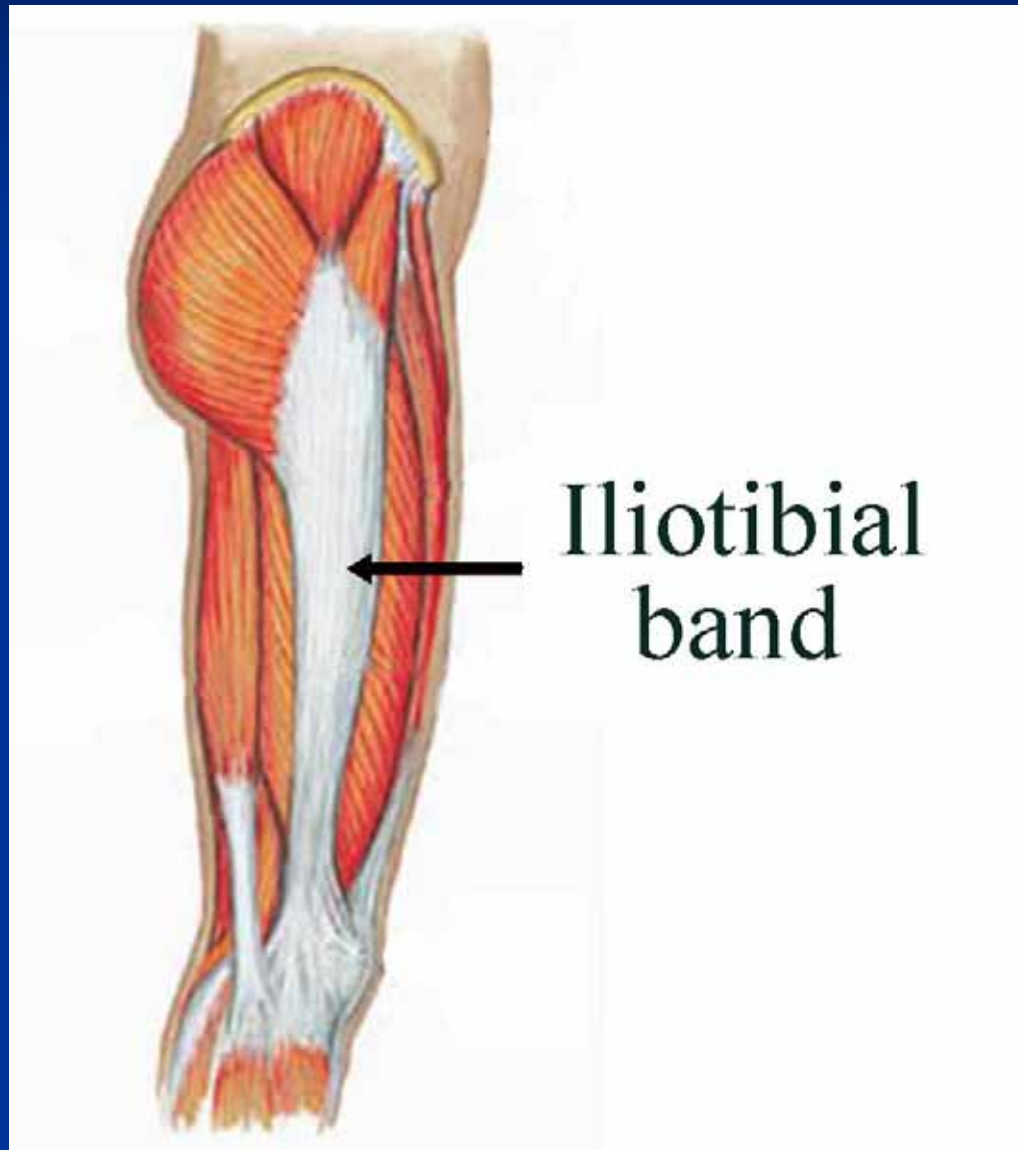


ACL Tests

Anterior Drawer Test

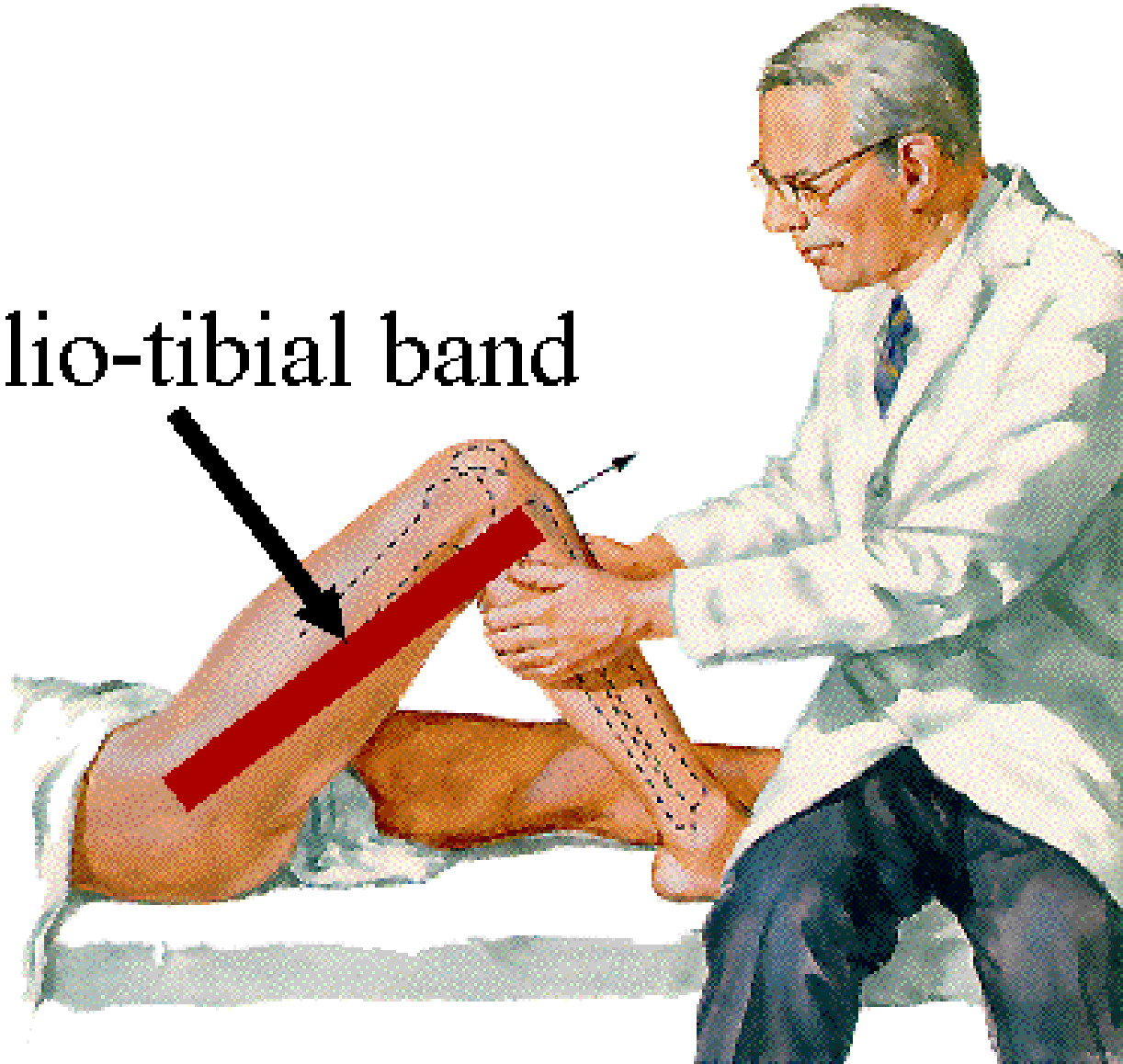


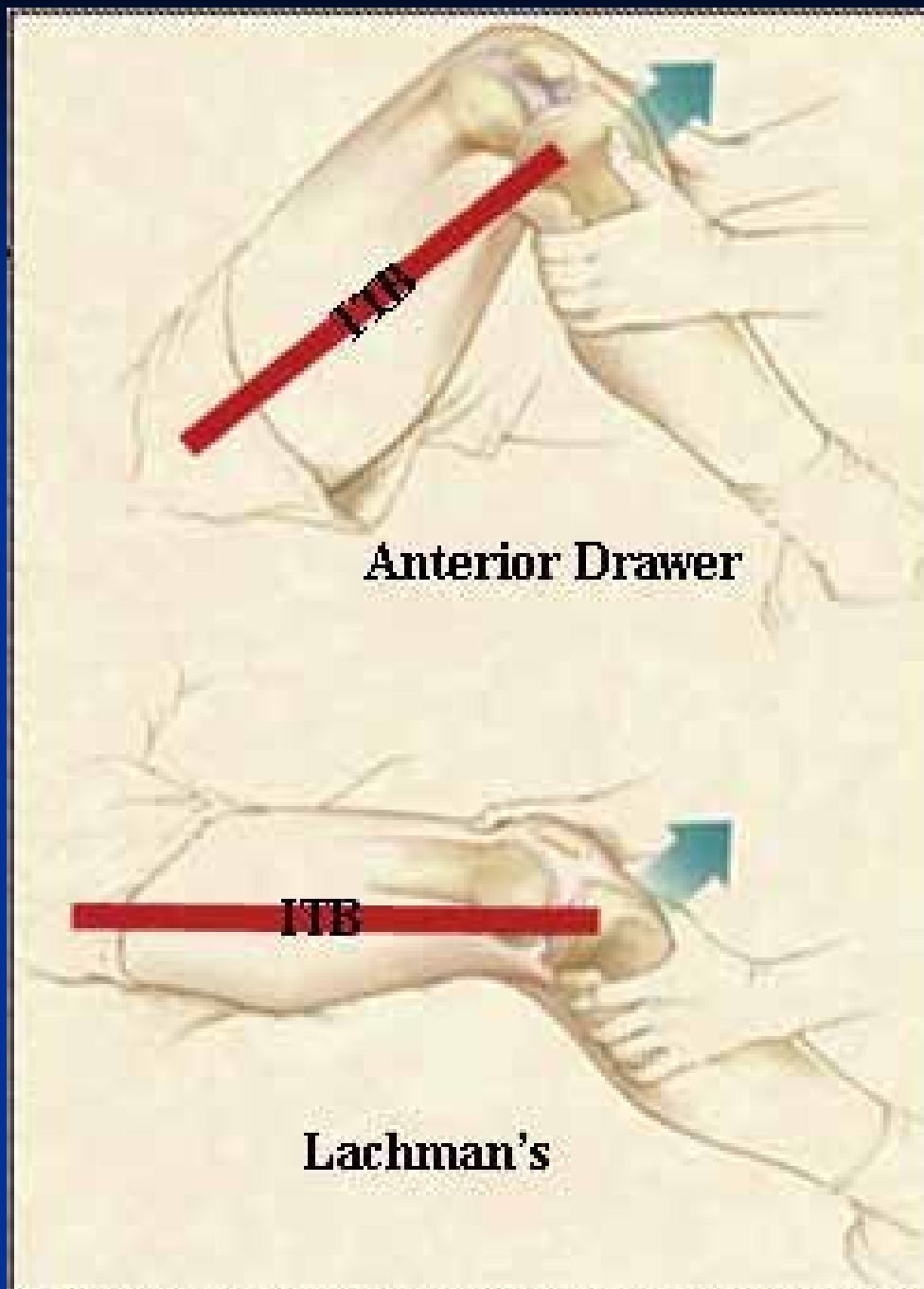
Iliotibial (IT) band



ACL Tests

Ilio-tibial band



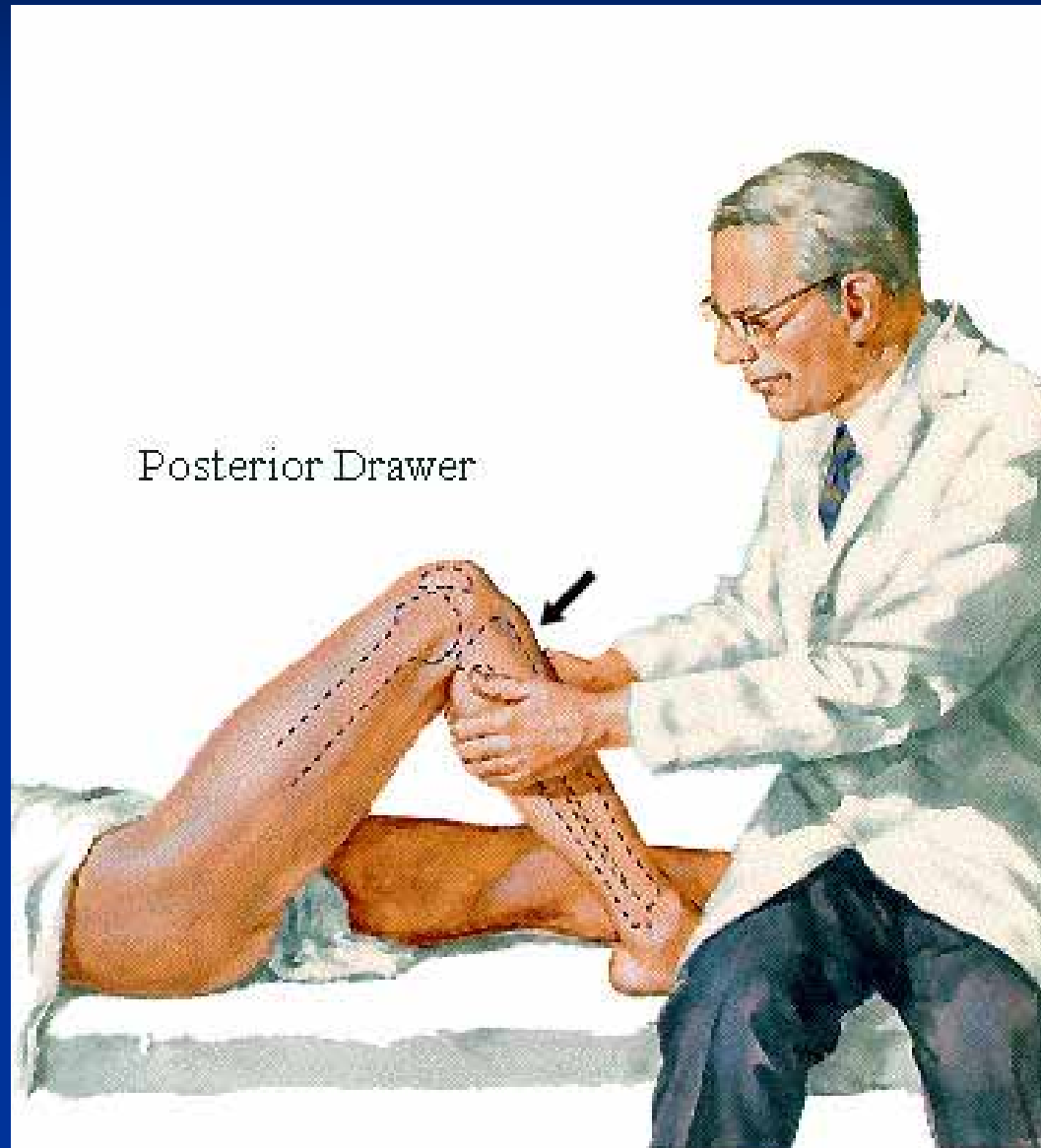


Anterior Drawer

ITB

Lachman's

PCL Test



PCL Test “Sag Sign”

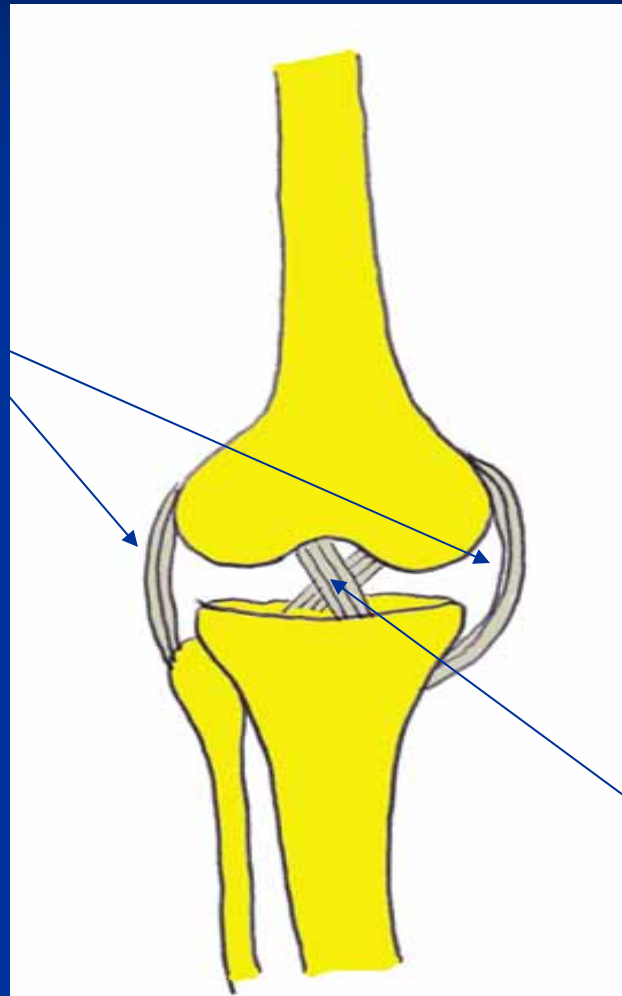


Studies

- X-ray: Yes (mechanism)
- MRI (maybe)

Treatment of Ligament Injuries

Torn
Collateral
Ligaments
heal
without
surgery



Torn
Cruciate
Ligaments
require surgery

Rx = “Hinged Knee Brace”



ACL Tears

- Relatively Common
- Don't Heal
- If untreated, result in arthritis

ACL Tears → Arthritis

ACL Tears → Arthritis

ACL Tears → Instability → Meniscus Tears → Arthritis

ACL Tears → Arthritis

ACL Tears → Instability → Meniscus Tears → Arthritis

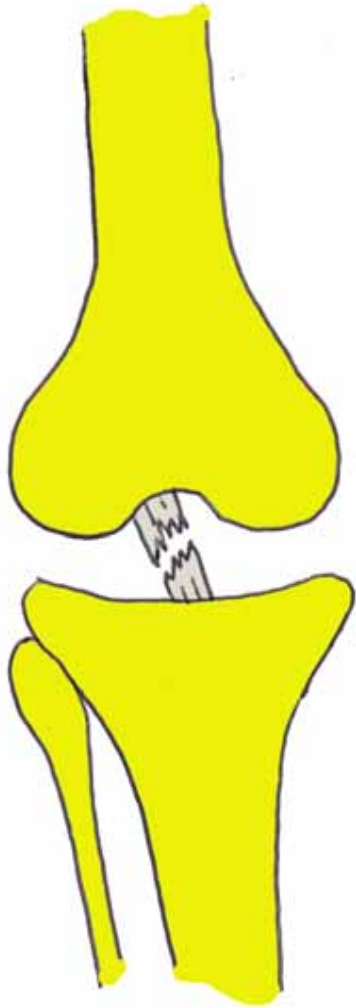
ACL Tears ~~→~~ Instability → Meniscus Tears → Arthritis

Treatment Option #1: Brace

Rx = “ACL Performance Brace”



Treatment Option #2: Surgery

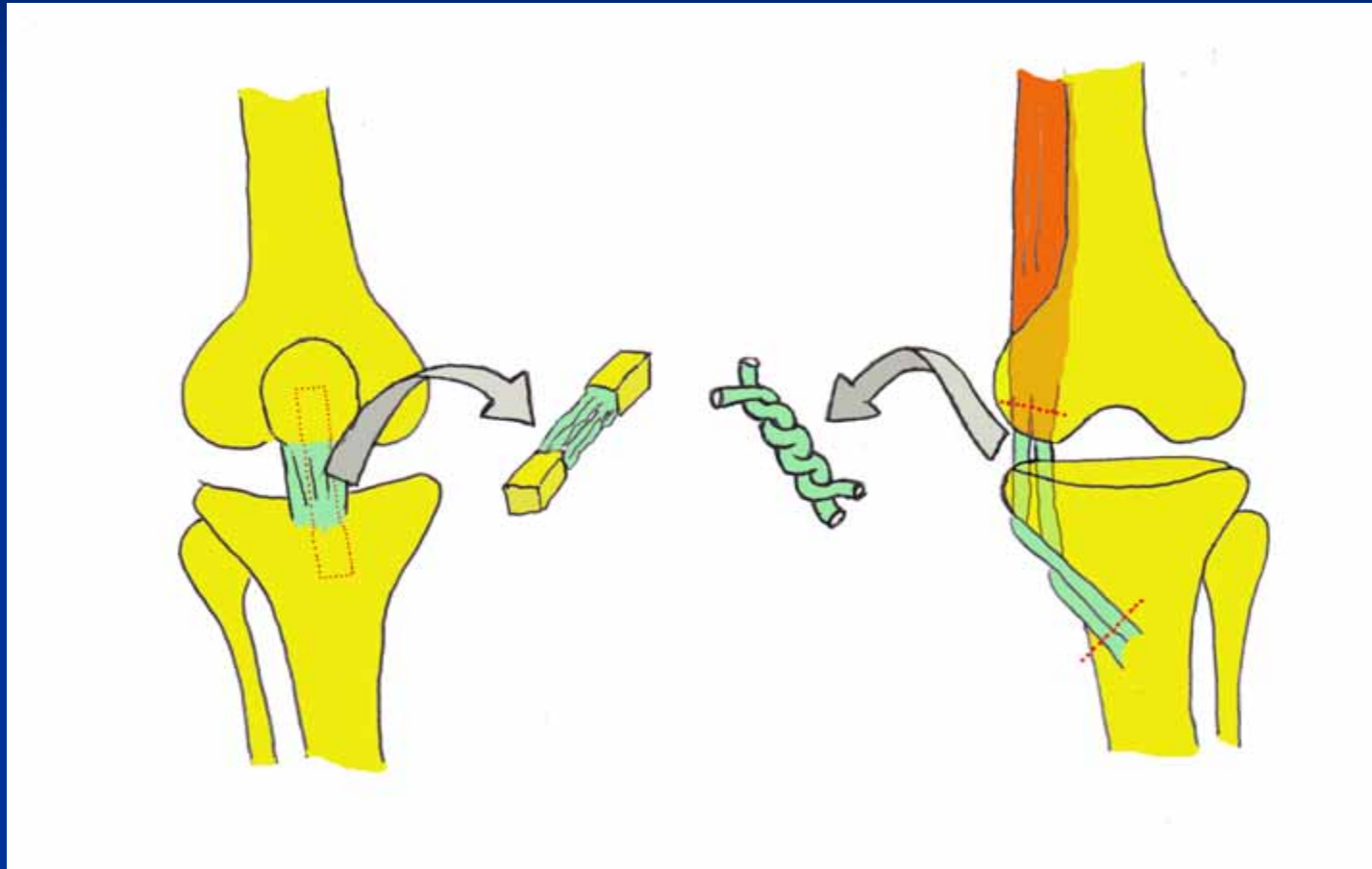


- End to End Repairs Don't Work
- Ligament Must be Replaced with a Graft

Graft Options

- Synthetic (Gortex) Ligament
- Allograft (Cadaver) Ligament
- Autograft (patient's own tissue)
 - Hamstrings
 - Patellar (knee cap) tendon

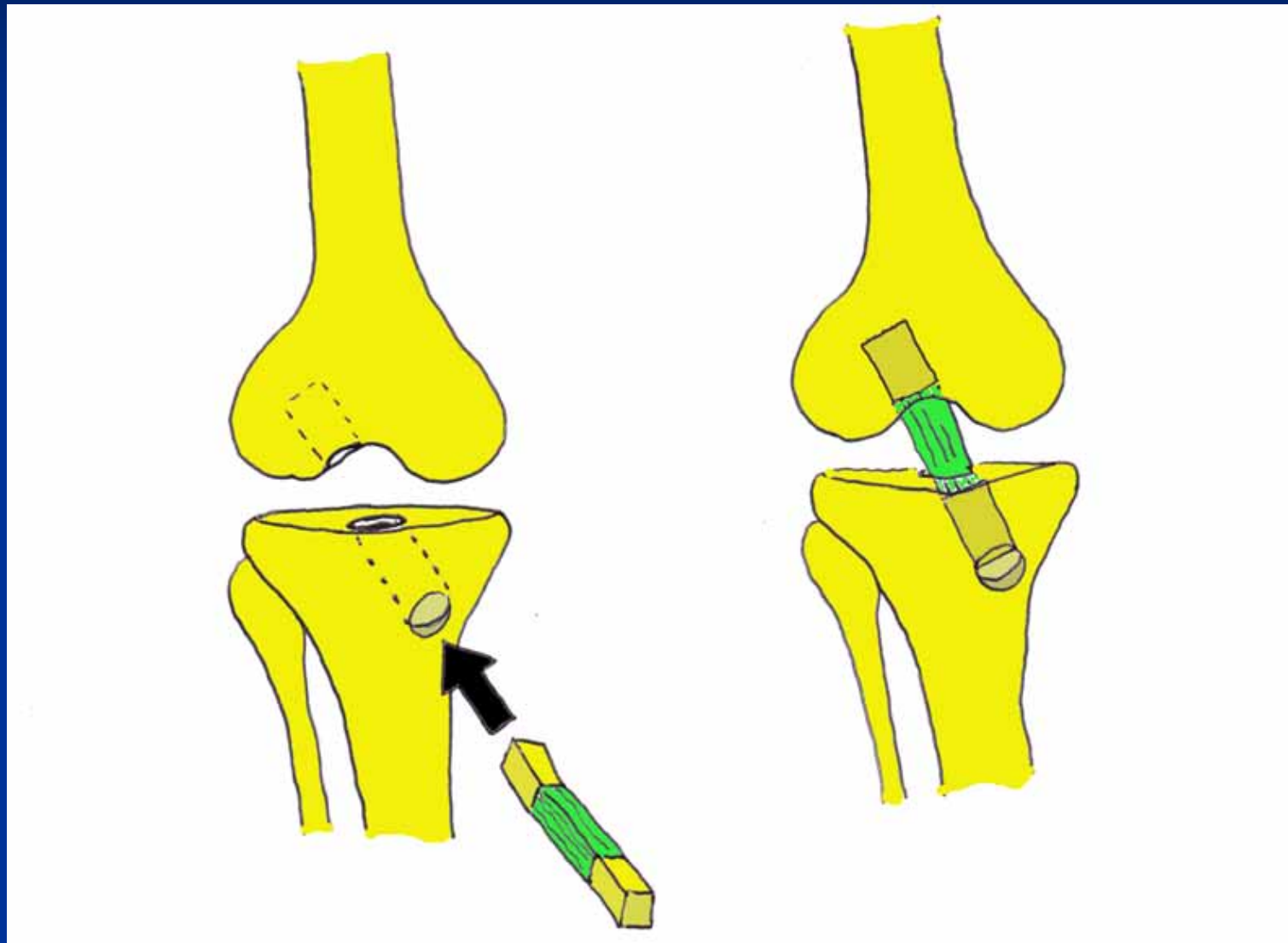
Autograft Options



Patellar tendon

Hamstrings

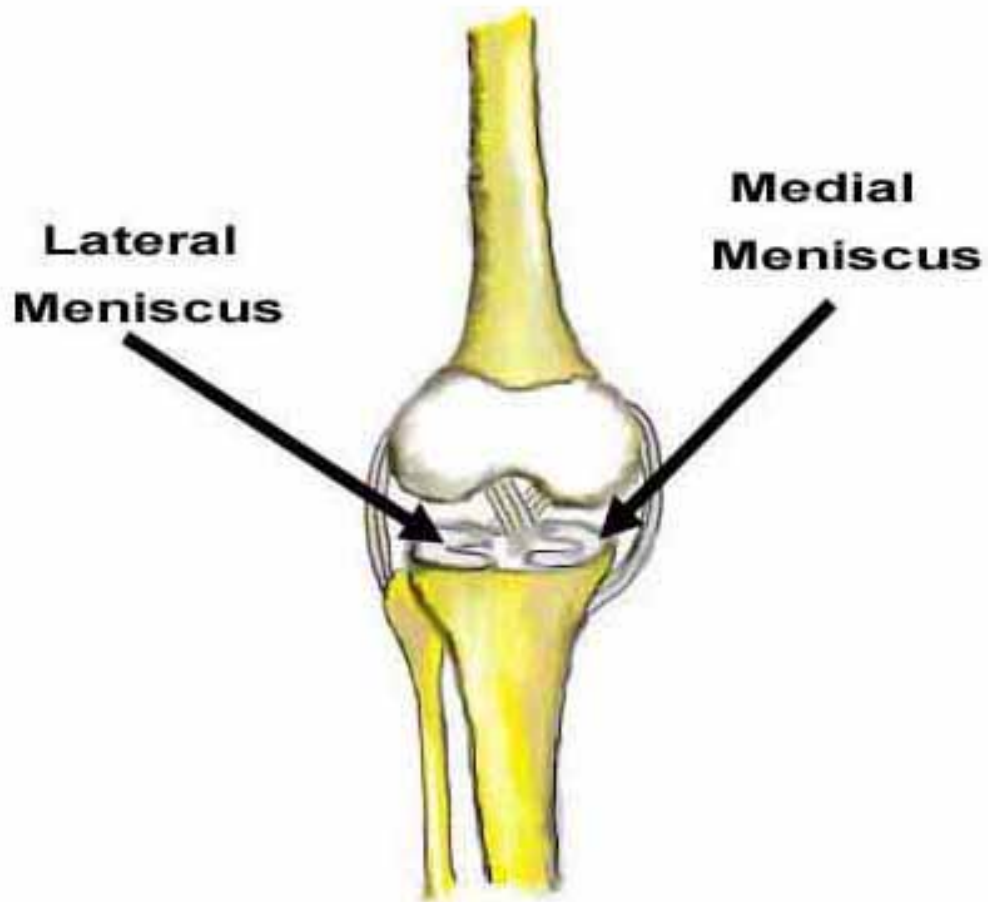
Implanting the Graft

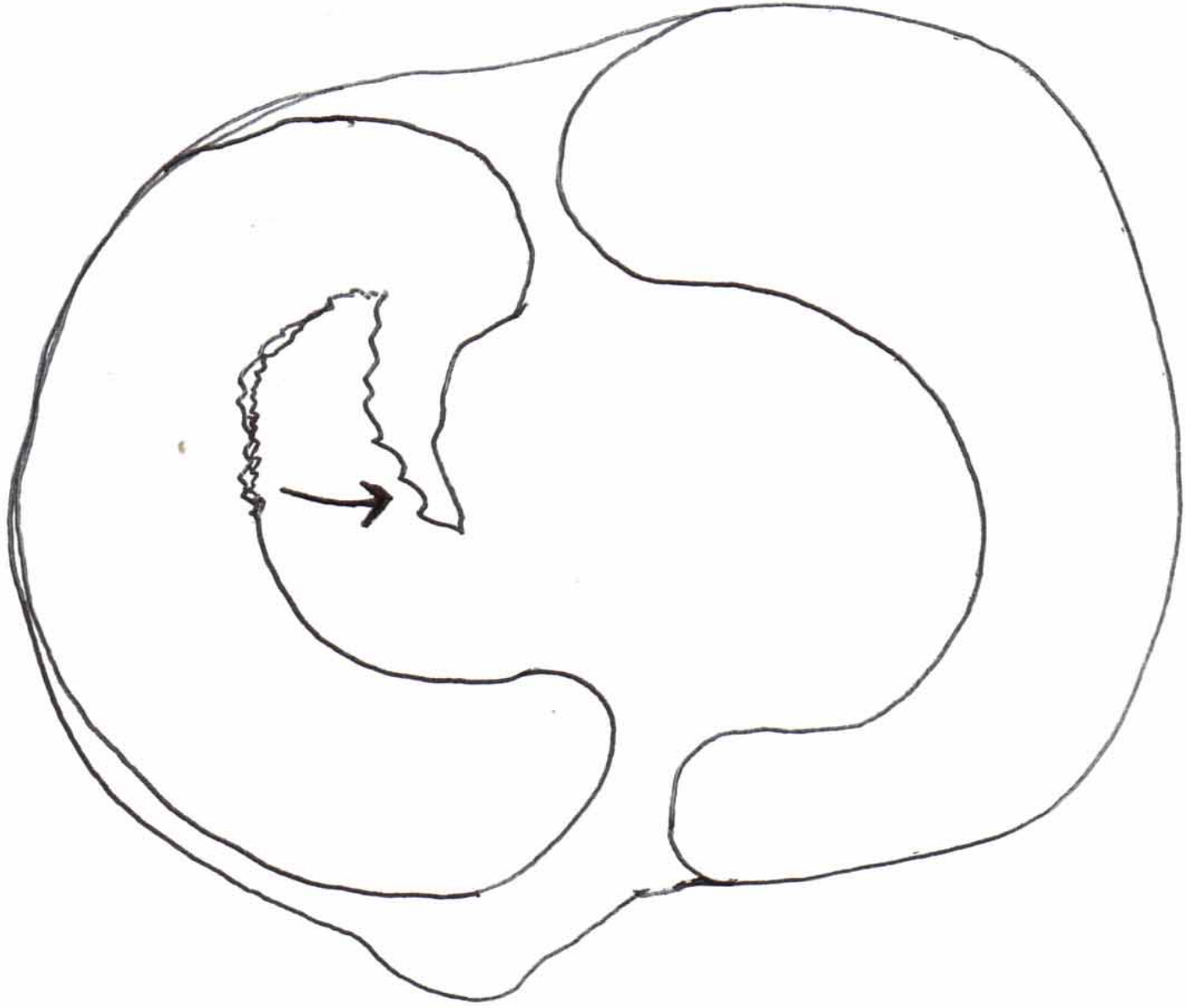


ACL Reconstructive Surgery

- Over 90% Success for restoring stability
- 75-80% Success for returning to sports
- Significant (Predicted) decrease in Arthritis later in life

MENISCUS TEARS





Meniscus Tears: History

- “Sided” pain
 - Trauma +/-
 - Mechanical symptoms +/-
 - Swelling, other +/-

Meniscus Physical Exam

- Joint line tenderness
- Joint line pain with deep flexion
- McMurray's test



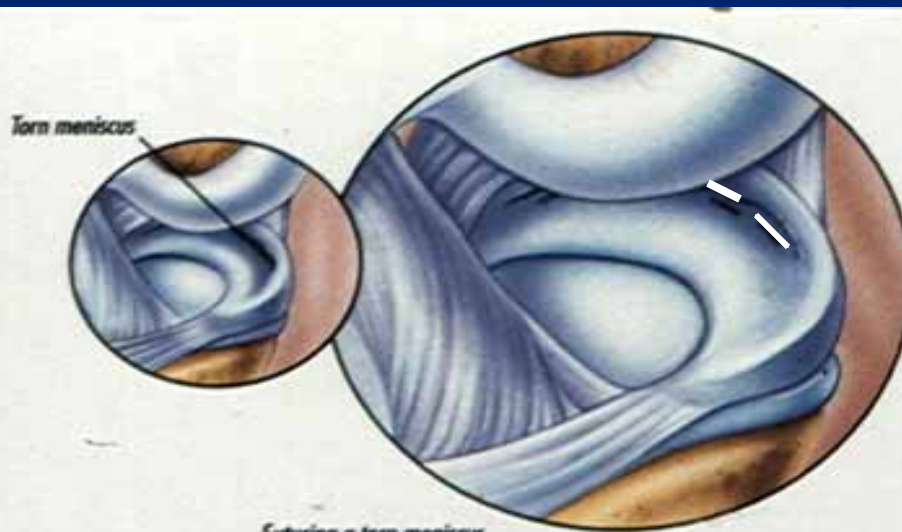
Studies

- X-rays (If age over 40: YES)*
- MRI (Maybe)

Should I order an MRI ?

- 50% of meniscus tears are asymptomatic in 6 weeks
- If all signs and symptoms are positive after 6 weeks: SURGERY

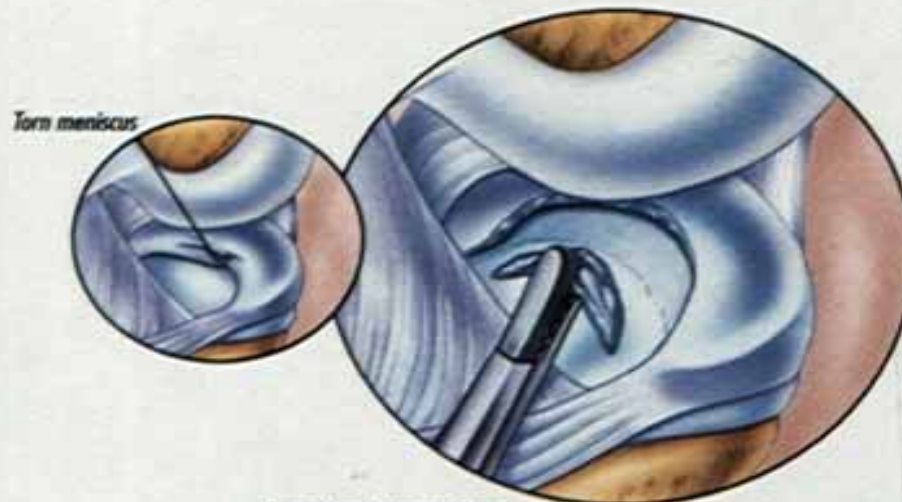
Surgical Treatment of Meniscus Tears



Suturing a torn meniscus

Repair

Whenever possible, your surgeon will try to repair your meniscus to maximize the shock absorption in your joint. This type of surgery may be an option if the tear is within an area supplied by blood, which allows for healing. Your meniscus is sutured together, possibly requiring an additional incision at the back or side of your knee.



Removing a torn meniscus

Removal

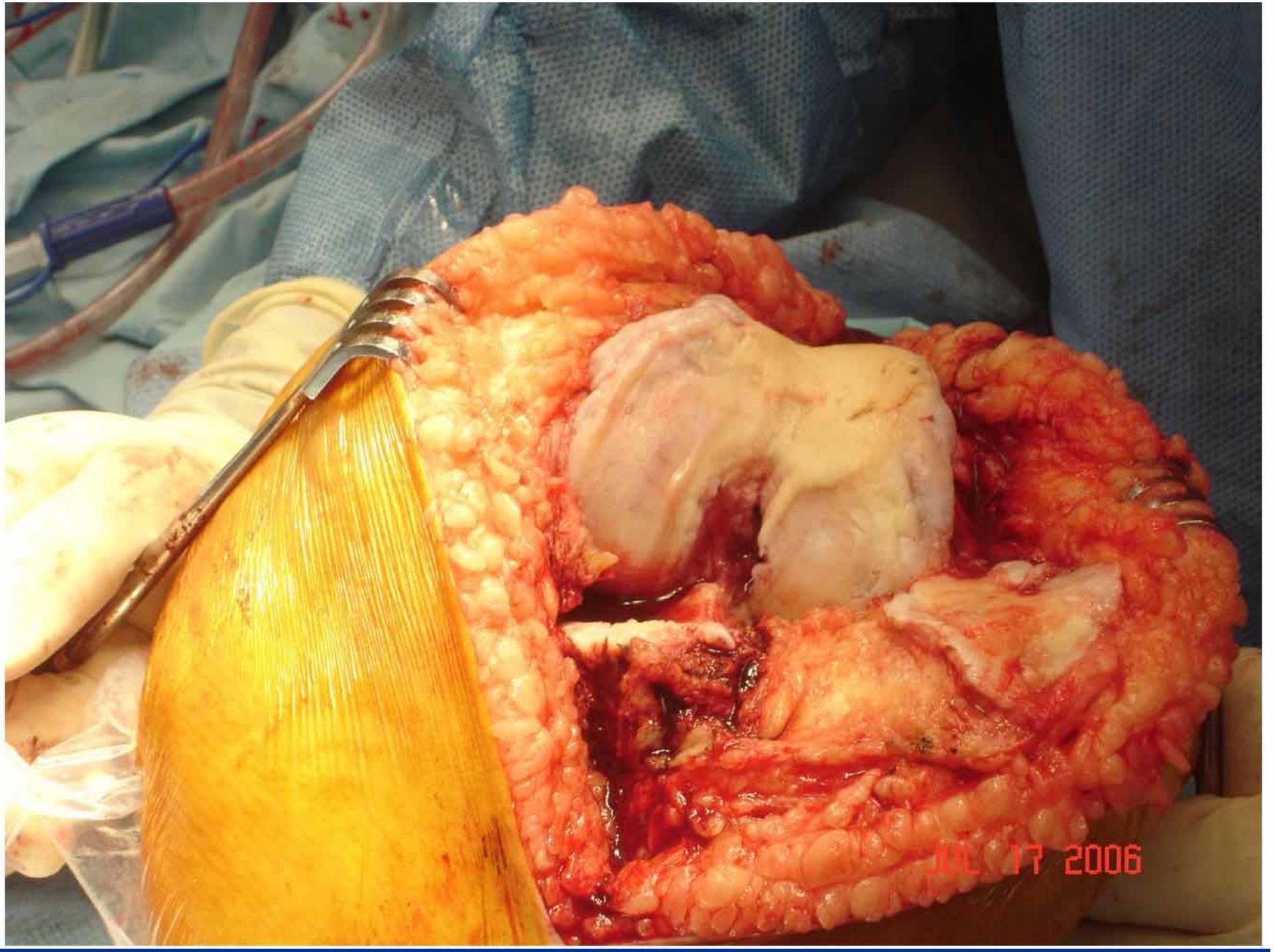
If repair can't be done, your doctor will remove as little of your meniscus as possible. Since the meniscus won't completely grow back, the articular cartilage will now take over the role as shock absorber for your knee joint.

Arthroscopy for Meniscus Tears

- 45 minute Operation
- 80 – 90% Patient Satisfaction
- 80 – 90 % Return to Sports
- Good results for decreasing development of Arthritis

ARTHRITIS





Arthritis History

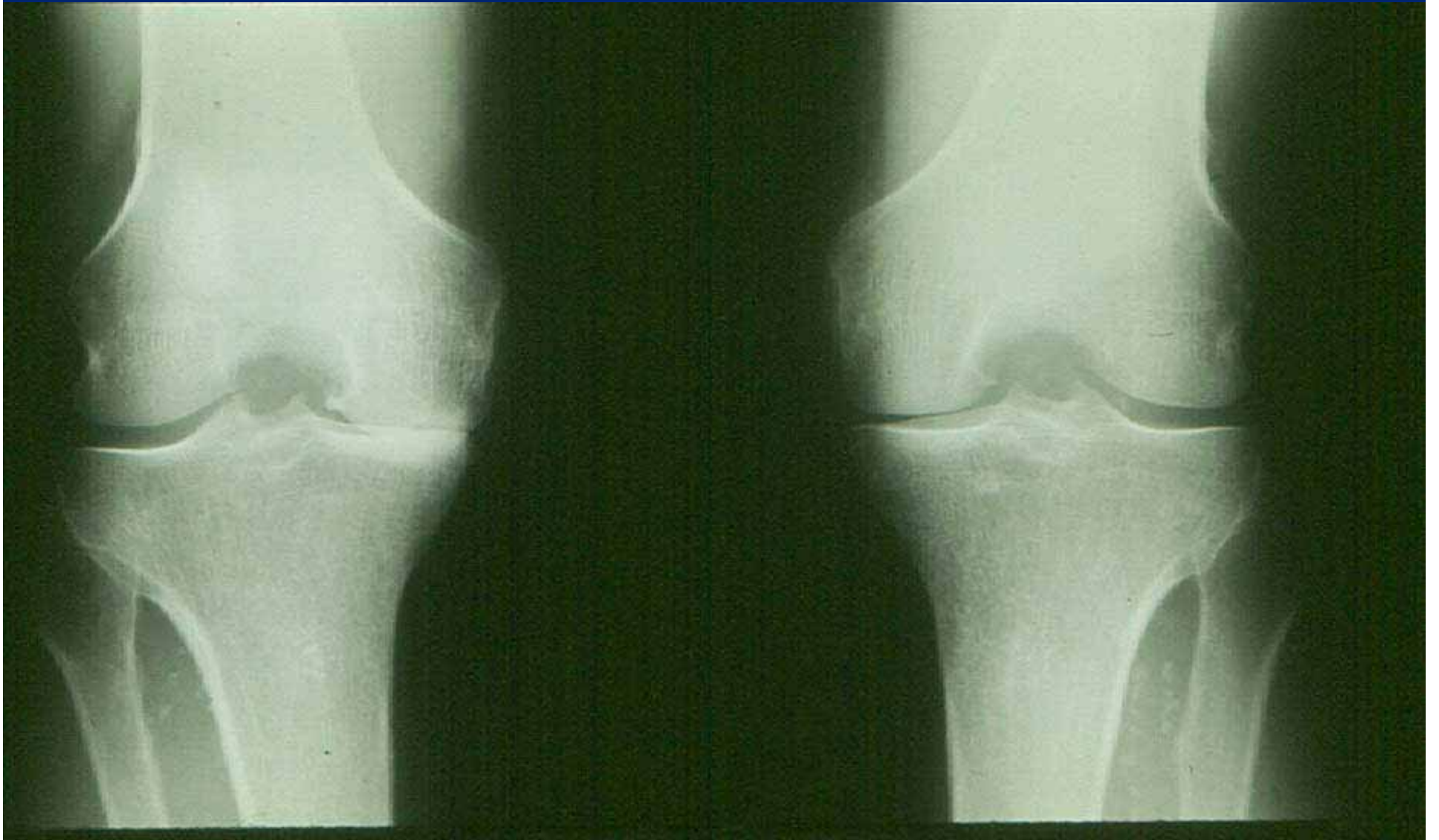
- Age (High Mileage)
 - Past trauma
 - Rheumatic disease
 - Previous surgery

Physical Exam

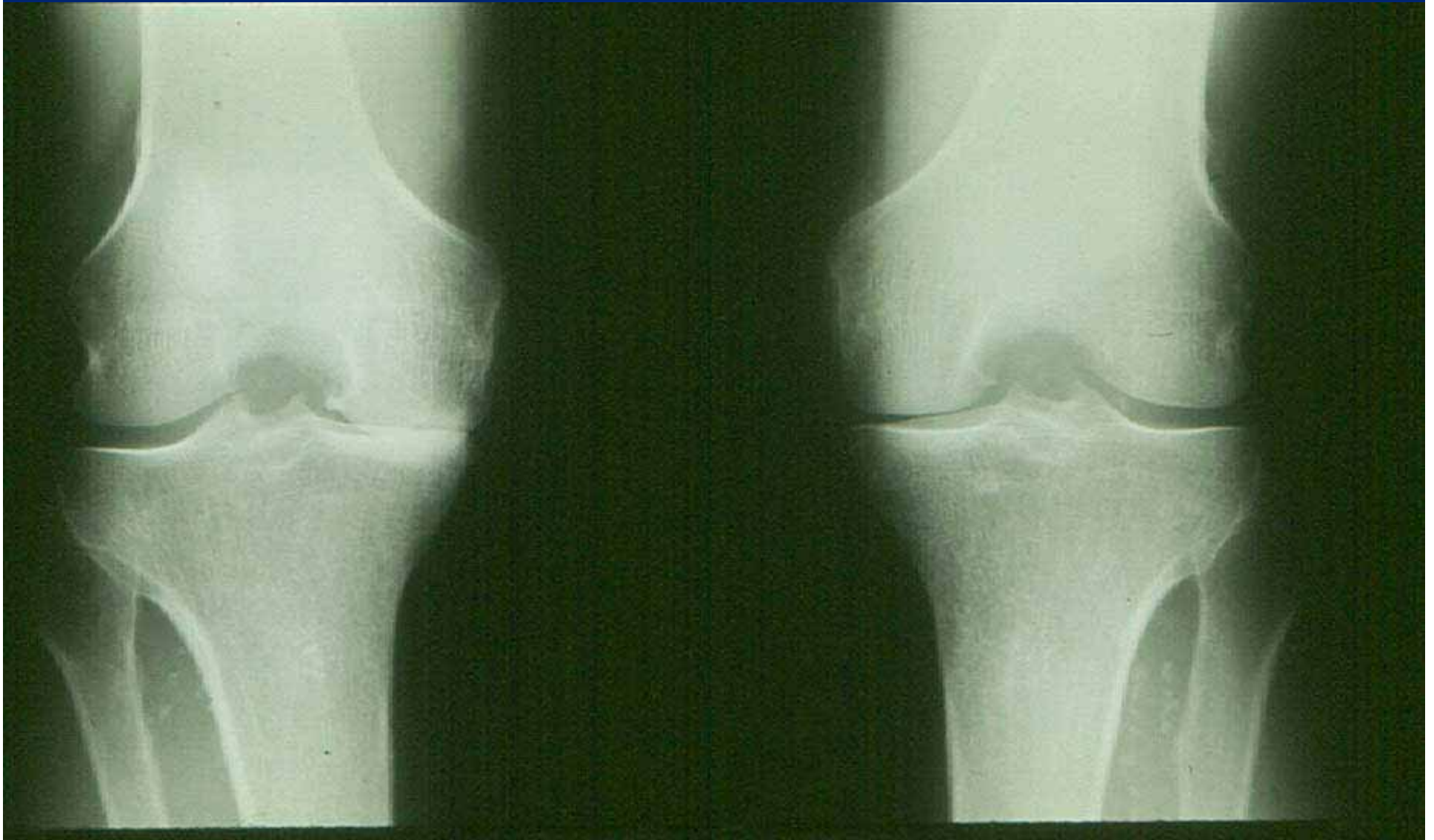
Making the Diagnosis

- History: Age (“high mileage” joints)
- Physical Exam
- **X-RAYS**



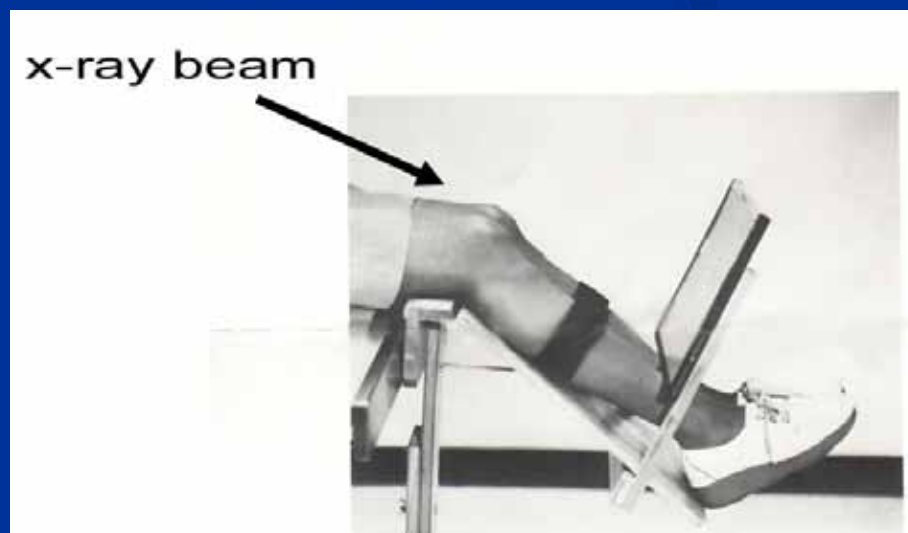


Meniscus Tear vs Arthritis?



Getting the right x-ray views

- **Wt bearing AP**
- Wt bearing 60 deg PA
- Lateral
- Merchant's (aka "sunrise") view







Treatment: Non-Surgical

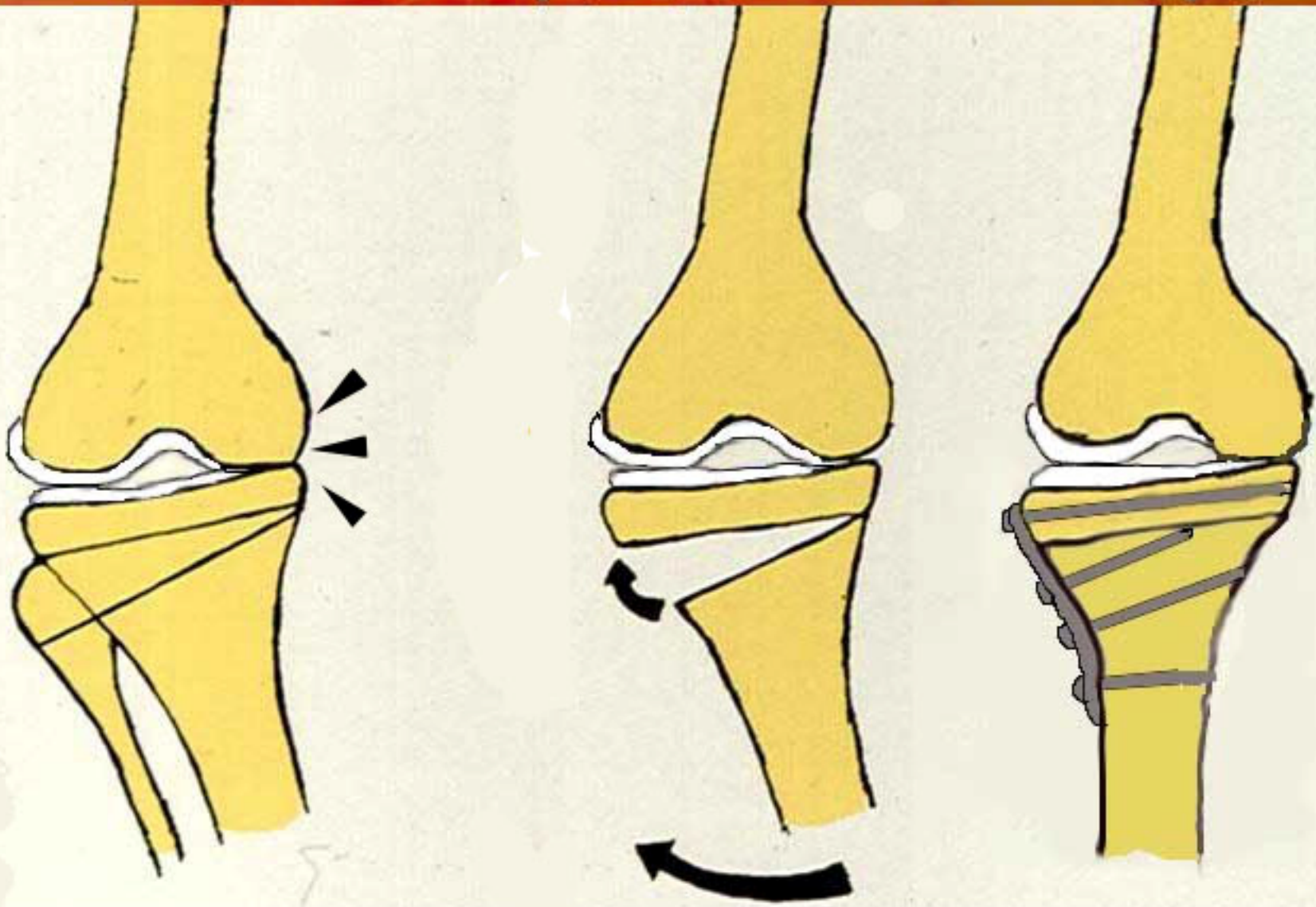
- Anti-inflammatory Medicines
- Supplements
- Braces
- Cortisone Shots
- Viscosupplementation Shots
- Weight Loss
- Cane, Crutches, Walker
- Physical Therapy

Arthritis Treatment: Surgical

PAST: (Pre-1970)

- Knee Fusion
- Osteotomy

Treatment Options: Osteotomy

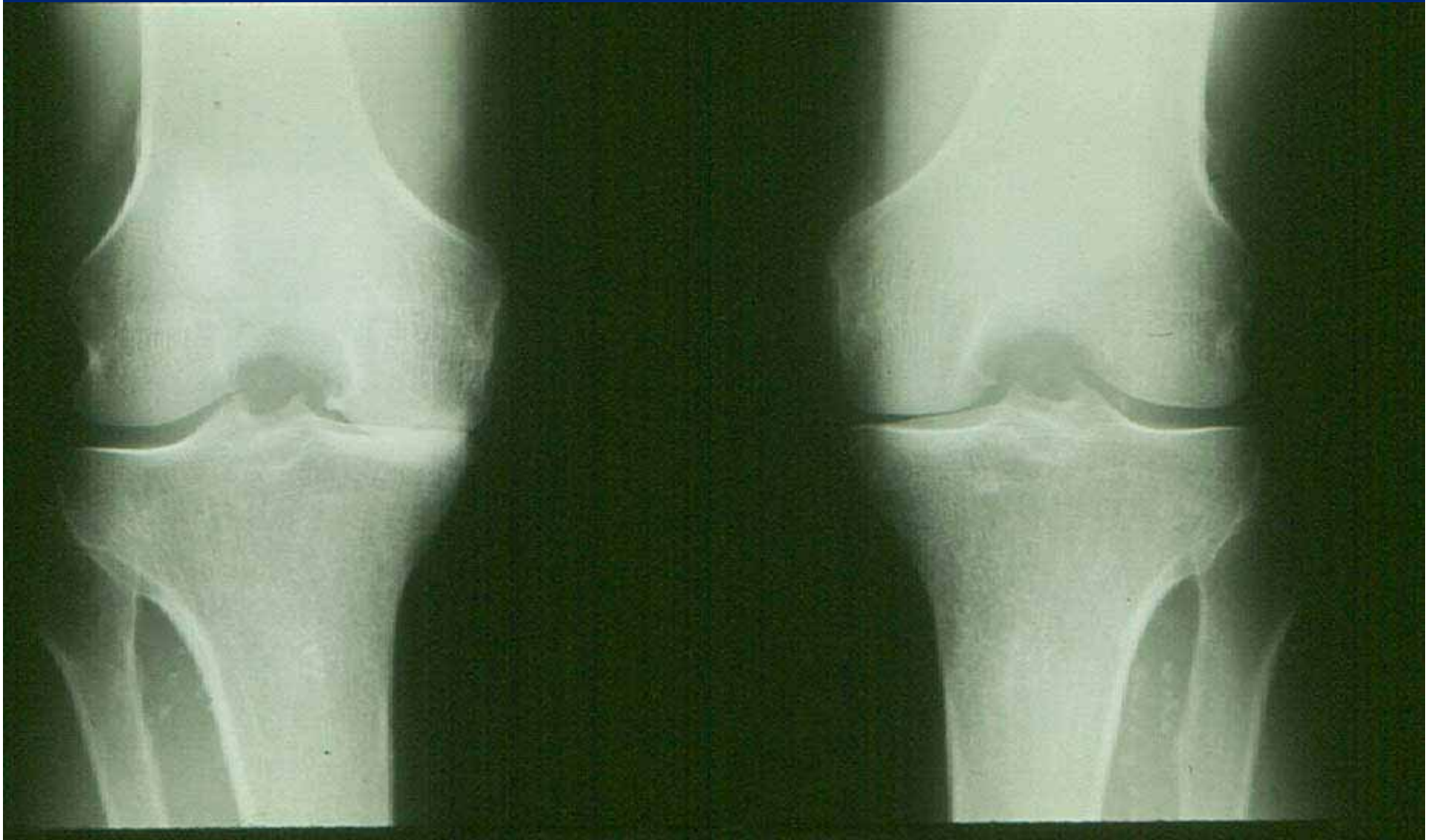


Arthritis Treatment: Surgical

PRESENT:

- Unicompartamental Knee Replacement
- Total Knee Replacement

Treatment Options?



Unicompartmental Knee Replacement



Unicompartmental Knee Replacement

- **Pros:**

- Smaller scar

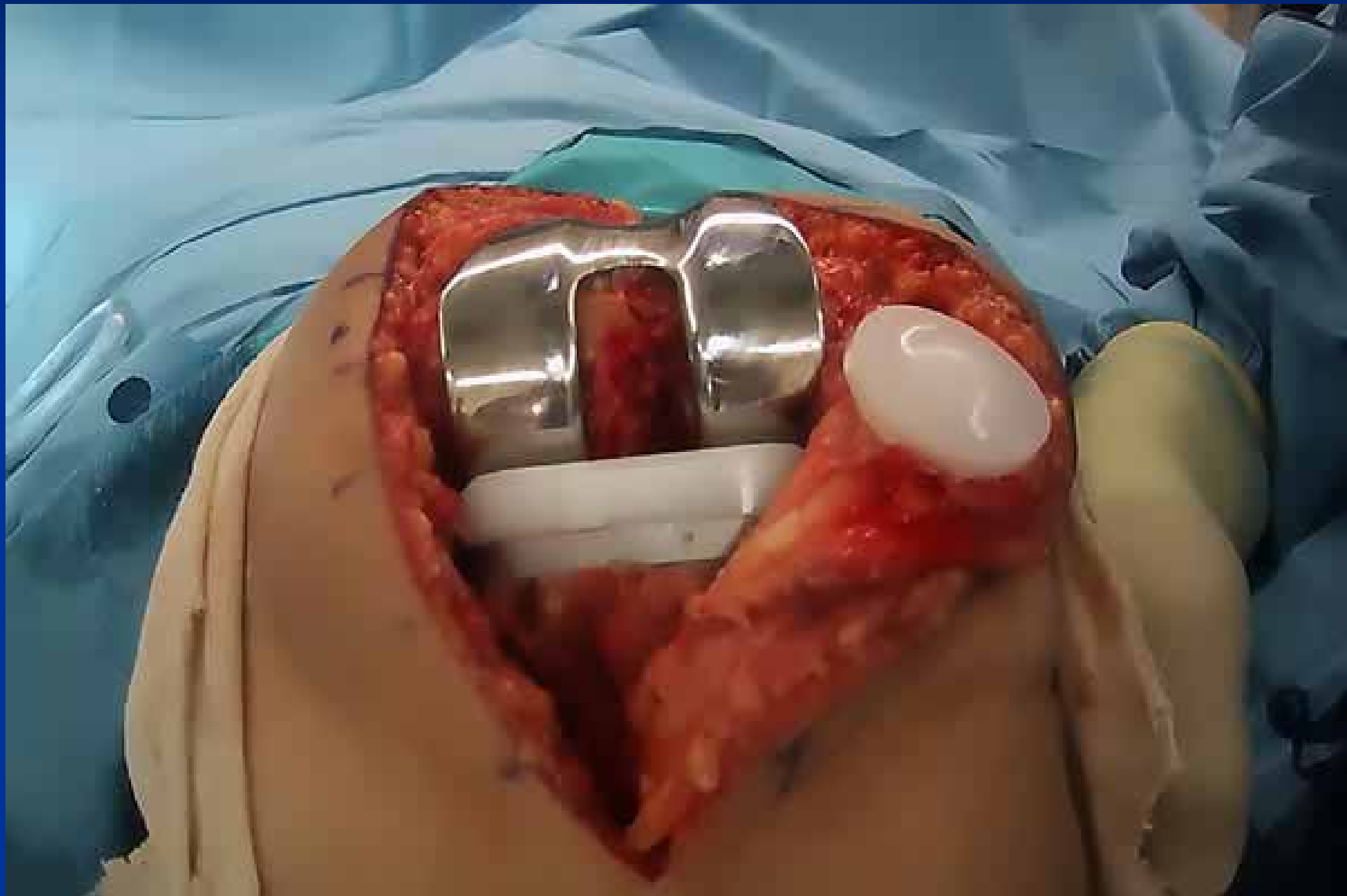
- Faster recovery

- **Cons:**

- Chance of incomplete pain relief

- Don't last as long

Total Knee Replacement



Minimal Incision Knee Replacement

- **Pro:**
 - Smaller scar
 - Out of hospital sooner
 - Quicker recovery (weeks)
- **Cons:**
 - Higher chance for error
 - May fail sooner

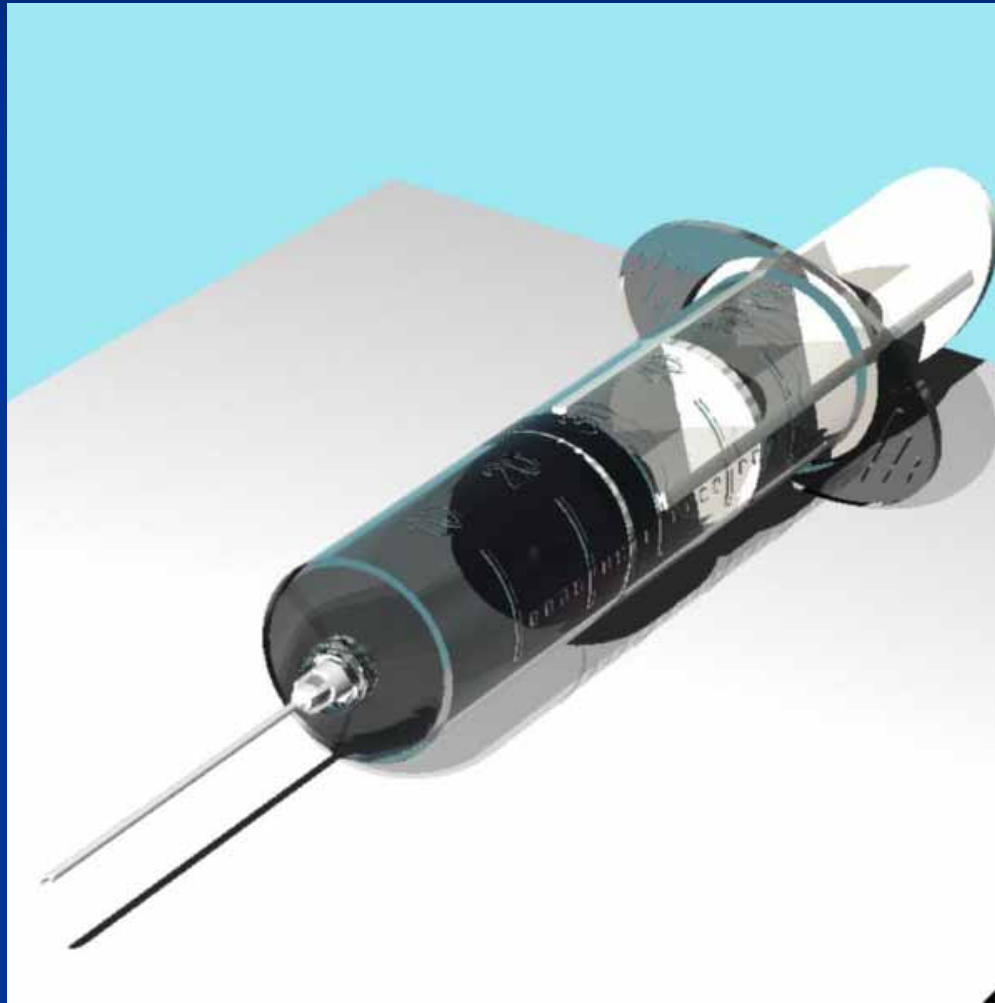


Arthritis Treatment: Surgical

FUTURE:

- Cartilage Grafting/Growth Procedures

Knee Joint Injections



Therapeutic Injections in your practice

A great choice for:

- Your Patients
- You
- Me

Therapeutic Injections

Me (Orthopedists)

- Decreases volume of non operative patients

Therapeutic Injections

You (Primary Care Providers)

- Satisfaction of rendering effective treatment
- \$

Corticosteroid Injections

Patients

- Safe
- Effective
- Inexpensive (Cortisone shot=\$6.00)

Am J Med. 2005;118:1208-1214.

Arthritis Rheum. 2002;46:328-346.

Corticosteroid Injections



Corticosteroid
(Kenalog, Aristacort)



Lidocaine
1% without epi

Syringe and Needle

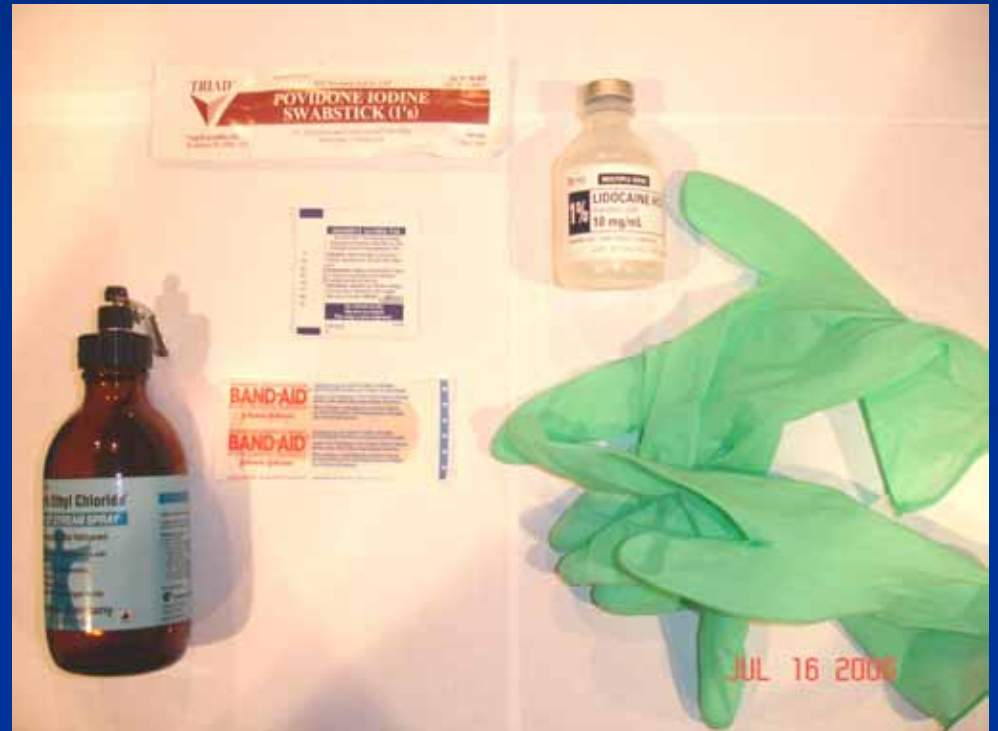


22 guage 1^{1/2}
inch needle

Syringe with Luer-Lock
(screw-on) tip

Prep

- Betadine
- Alcohol
- Gloves
- Lidocaine
- Cold Spray (ethyl chloride)



Infection rate=1:15,000

Clin Fam Prac, Vol 7,2:2005

General Rules...

- No more than one injection per month
- No more than 3 injections per year
- Don't inject infected areas

J Bone Joint Surg Am 1975;57:70-6

Curr Opin Rheumatol 1999;11:417-21

ACTA Orthop Scand 1997;132-4

Knee Joint Injection Technique

1cc Steroid, 4cc Lidocaine

- Pt supine on table
- Knee extended
- Muscles relaxed
- Lateral approach
- Sub-patellar



Jackson et al, J. Bone Joint Surg. AM., 84:1522-1527 (2002)

Physical Exam

SEATED

- Crepitation

SUPINE

- Patella mobility/irritability
- Extension/Flexion ROM
- Hip internal/external ROM
- Joint line tenderness/McMurray's test
- ACL and Collateral exam

Thank You!

Ted Parks, MD

