

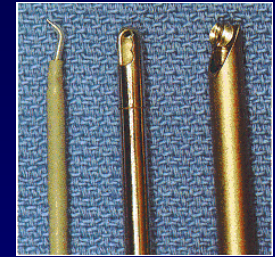
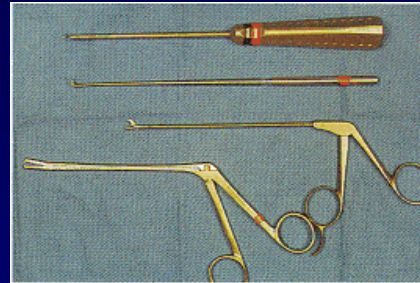
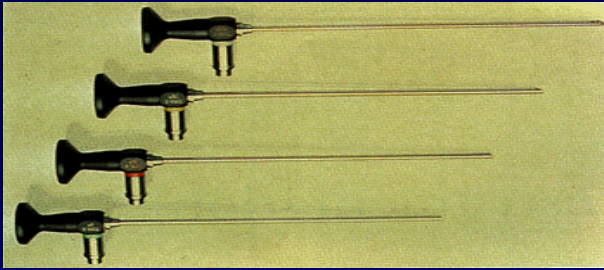
ARTROSKOPIE

- Endoskopická metoda
- Zobrazení a léčba
- Celková nebo spinální anestezie



- koleno
- rameno
- hlezno
- loket
- zápěstí
- kyčel
- malé klouby

Artroskopie



- Kamera
- Artroskop
- Xenonové světlo s optickým kabelem
- ASK pumpa
- Nástroje
- Shaver
- Vaper
- Tisk, VIDEO



Diagnostická artroskopie

Chrupavka

Vazy

Menisky

Jiné intraartikulární struktury

Synovialní membrána

Biopsie

Operativní artroskopie

Menisky

Chondropathie

Plastika vazů

Sutura rotátorové manžety

Instabilita ramene

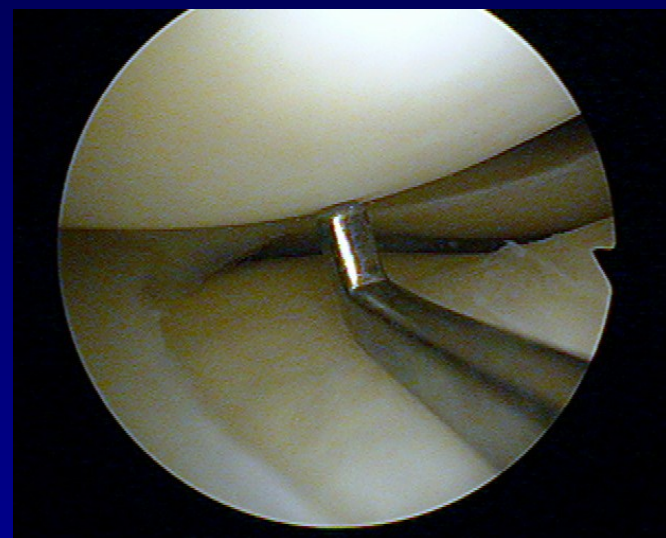
Ošetření transchodrálních lézí

Synovektomie

Podpora při léčení nitrokloubních zlomenin

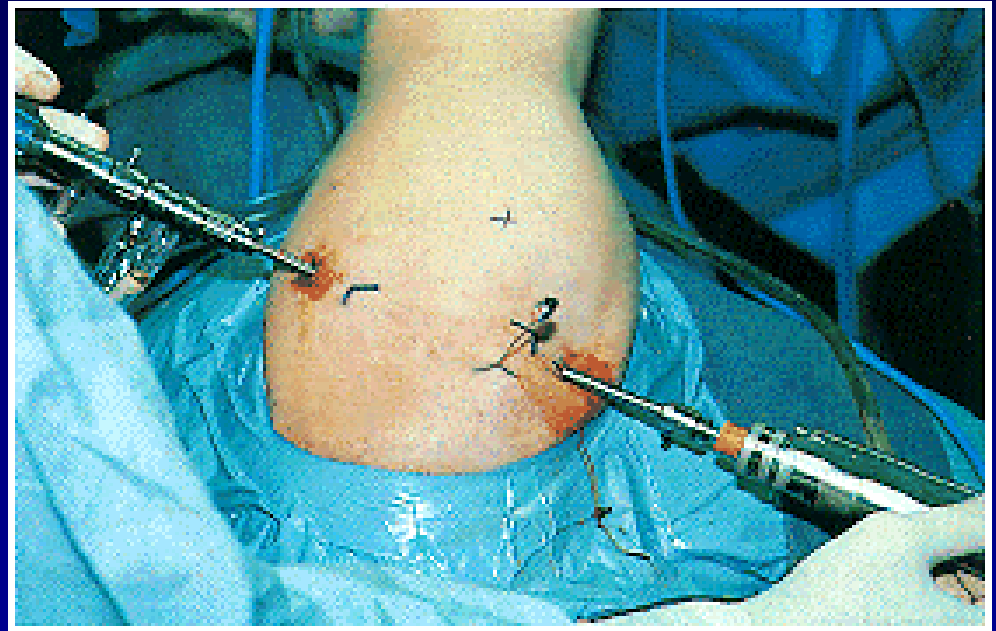
Výhody

- Perfektní vizualizace
- Menší bolest po výkonu
- Rychlá rehabilitace
- Malá incise



Nevýhody

- Invazivní metoda
- Turniket



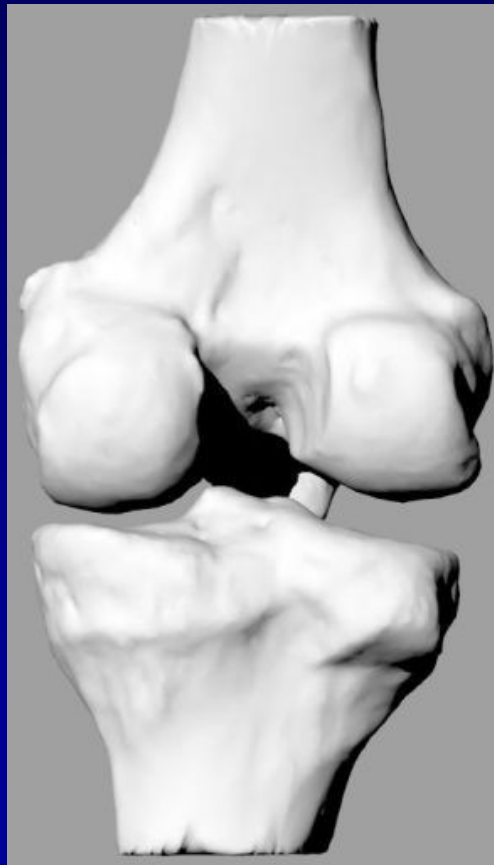
Komplikace

- Hojení rány
- Synovialitis, výpotky
- Nervové léze
- Flebotrombóza
- Infekce

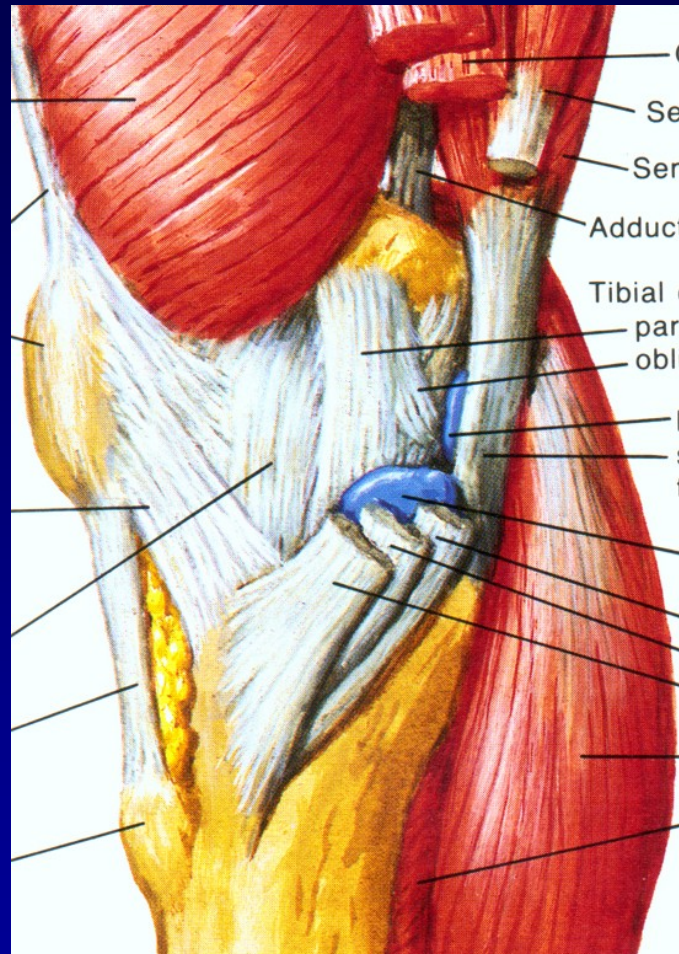


Koleno- složitá struktura

Artikulující kosti: Femur, tibie and patela

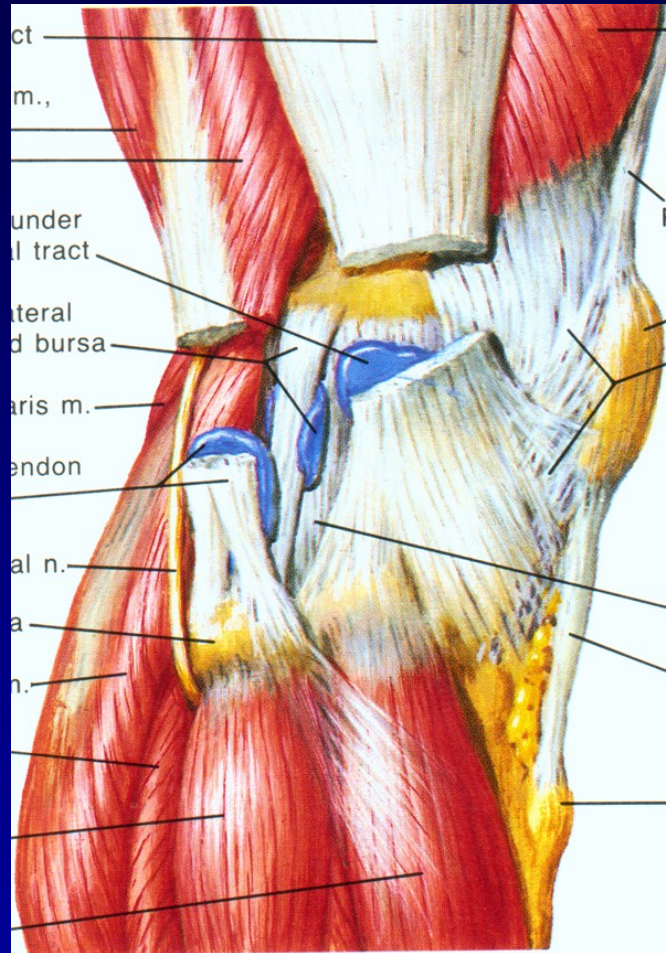


Stabilita



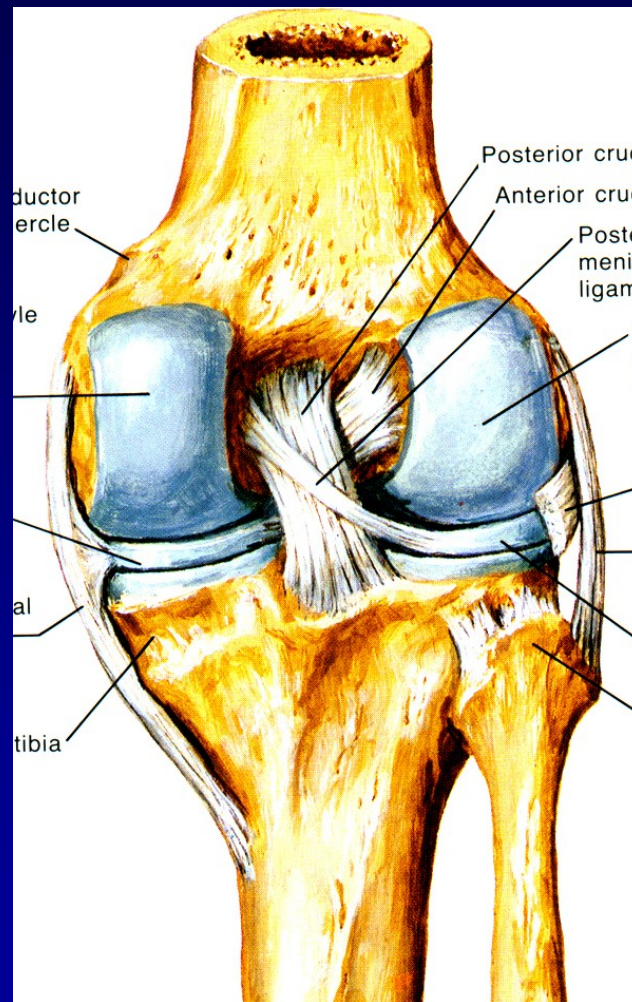
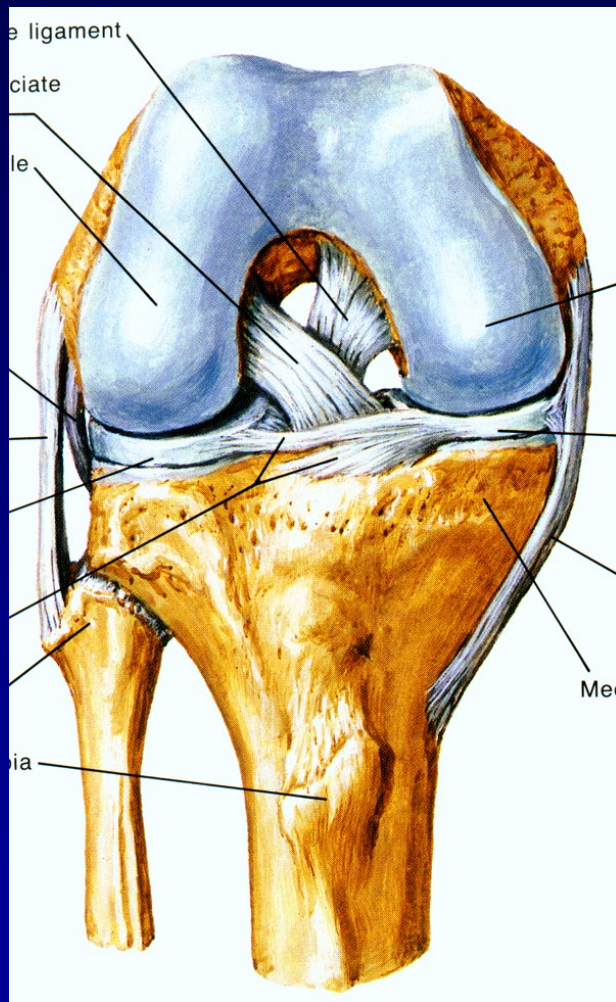
Medialní strana

Stabilita



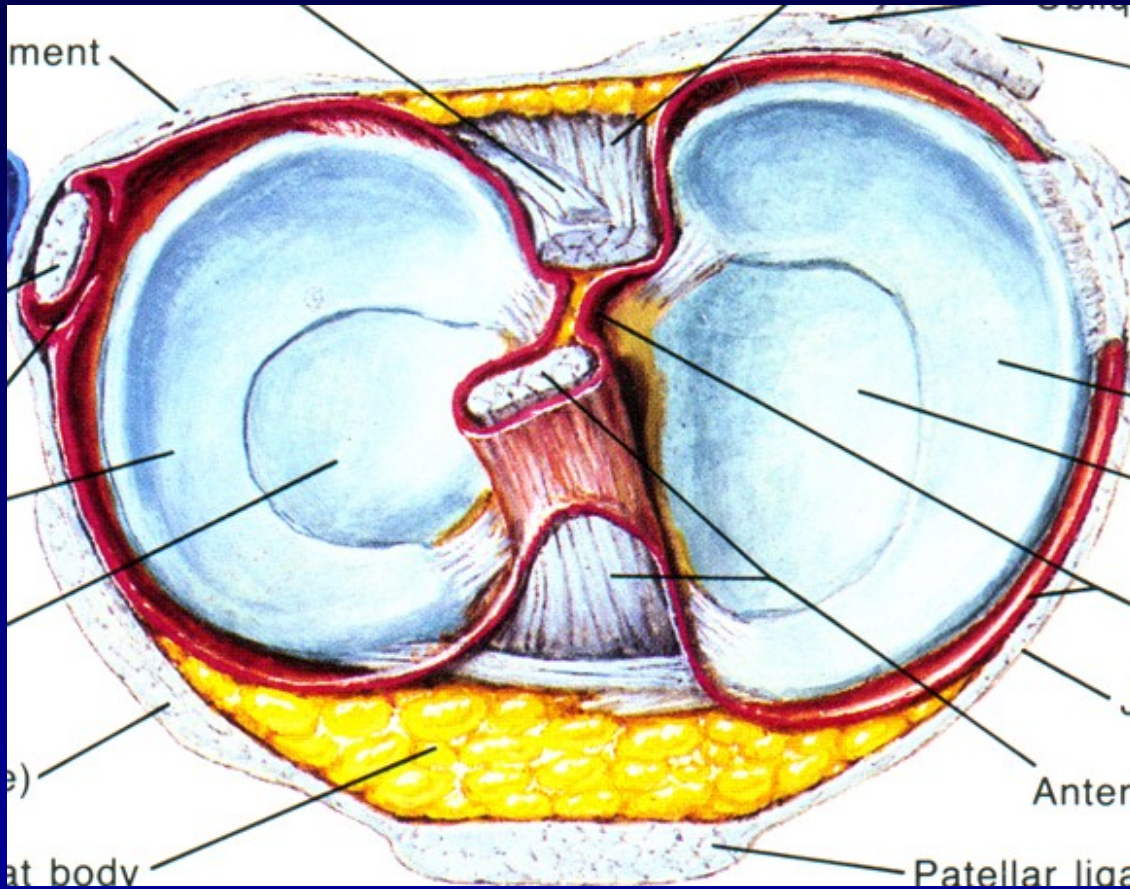
Laterální strana

Stabilita



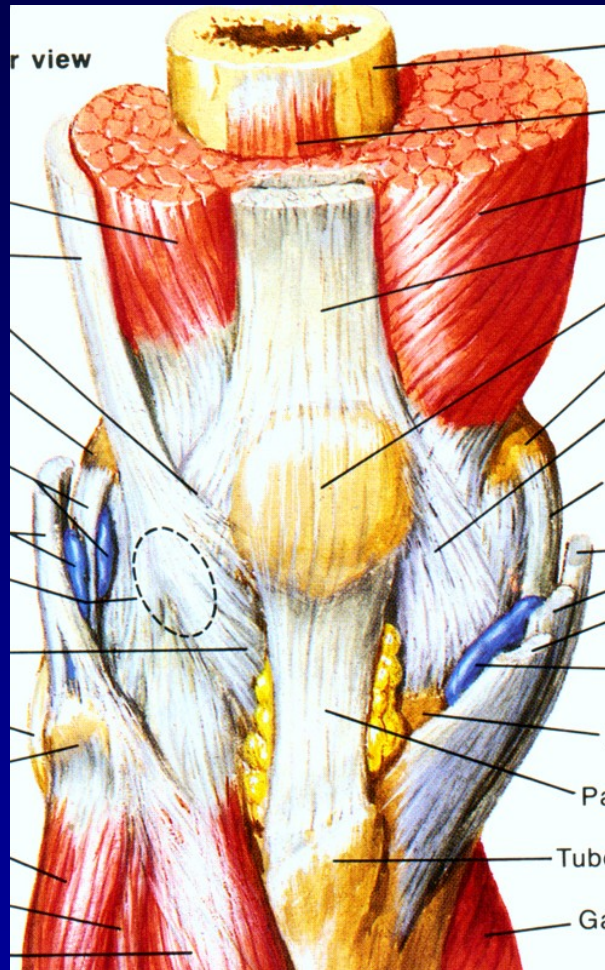
Zkřížené vazy

Stabilita



Menisky

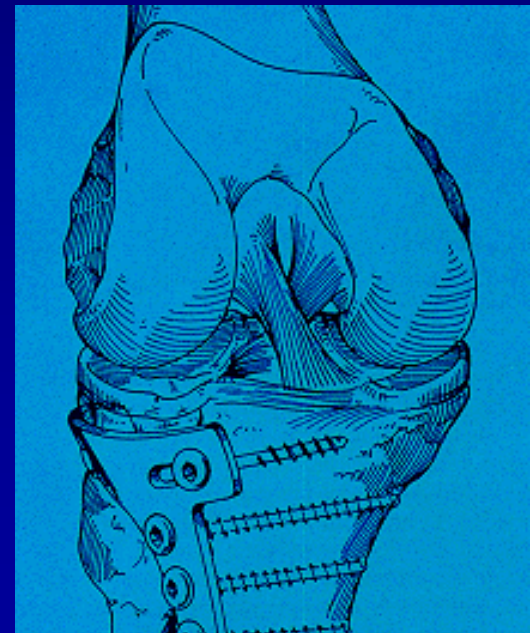
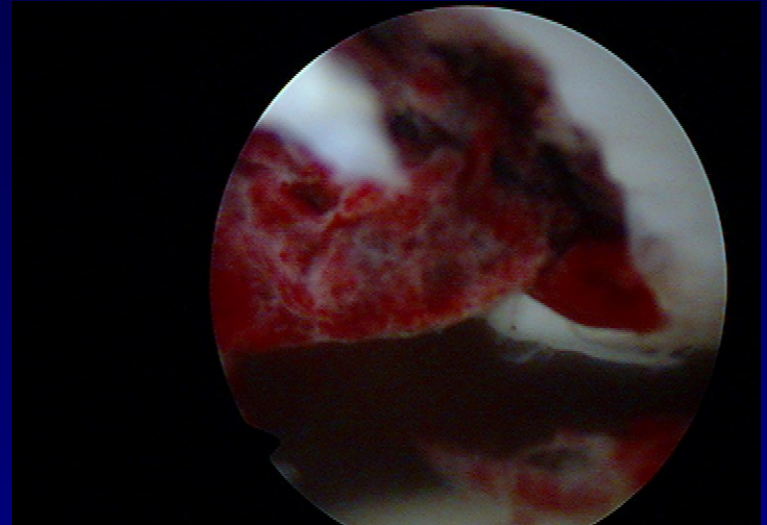
Stabilita



Svaly

Koleno

- Traumatologie
- Chondropatie
- Degenerativní změny



Traumatologie

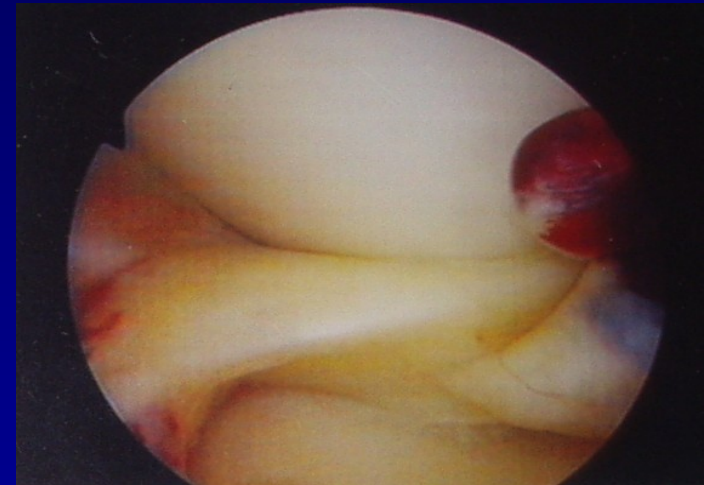
Haemarthros

Léze menisků

Ruptury vazů

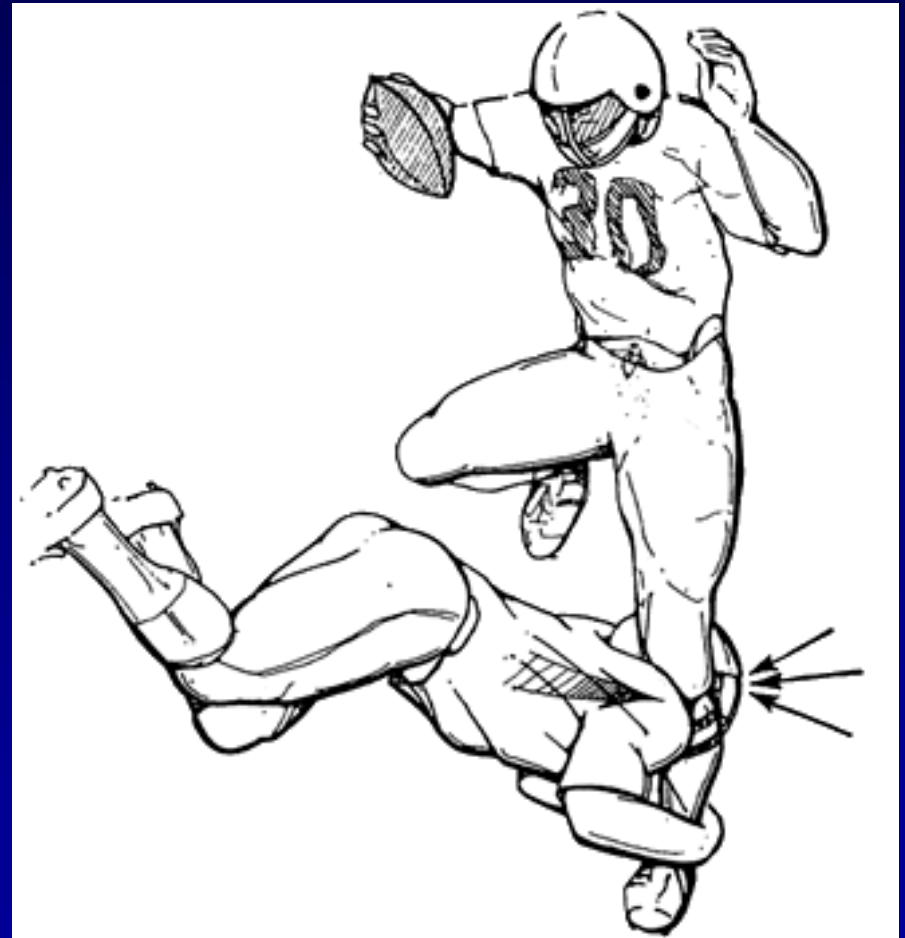
Luxace pately

Transchondrální zlomeniny



Anamnéza

- Kde
- Kdy
- Okolnosti úrazu
- Mechanismus úrazu



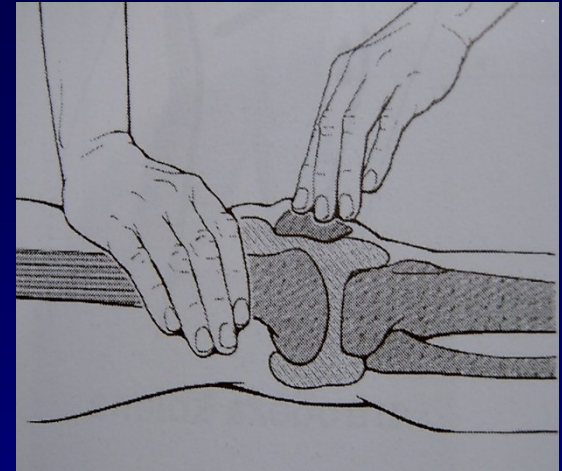
Vyšetření

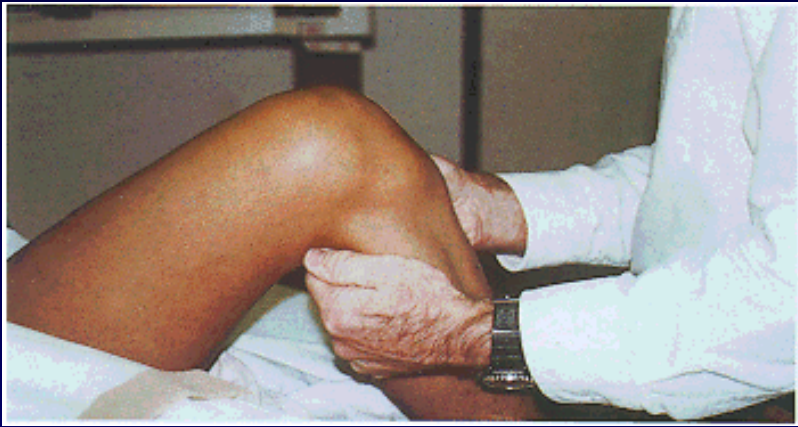
- Klinické vyšetření
- Punkce kloubu
- Mastné skvrny v krvi
- RTG
- MRI
- Ultrasonografie



Klinické vyšetření

- Otok , hematom
- Výpotek
- Pohyb
- Palpační bolest
- Testy stability
- Manévry
- Vyšetření pately

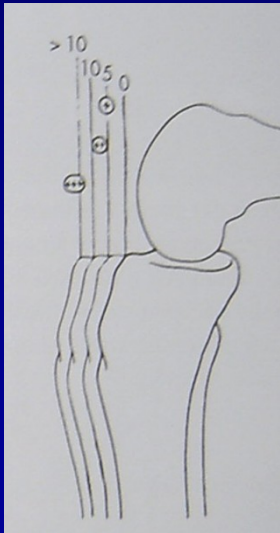




Přední zásuvka



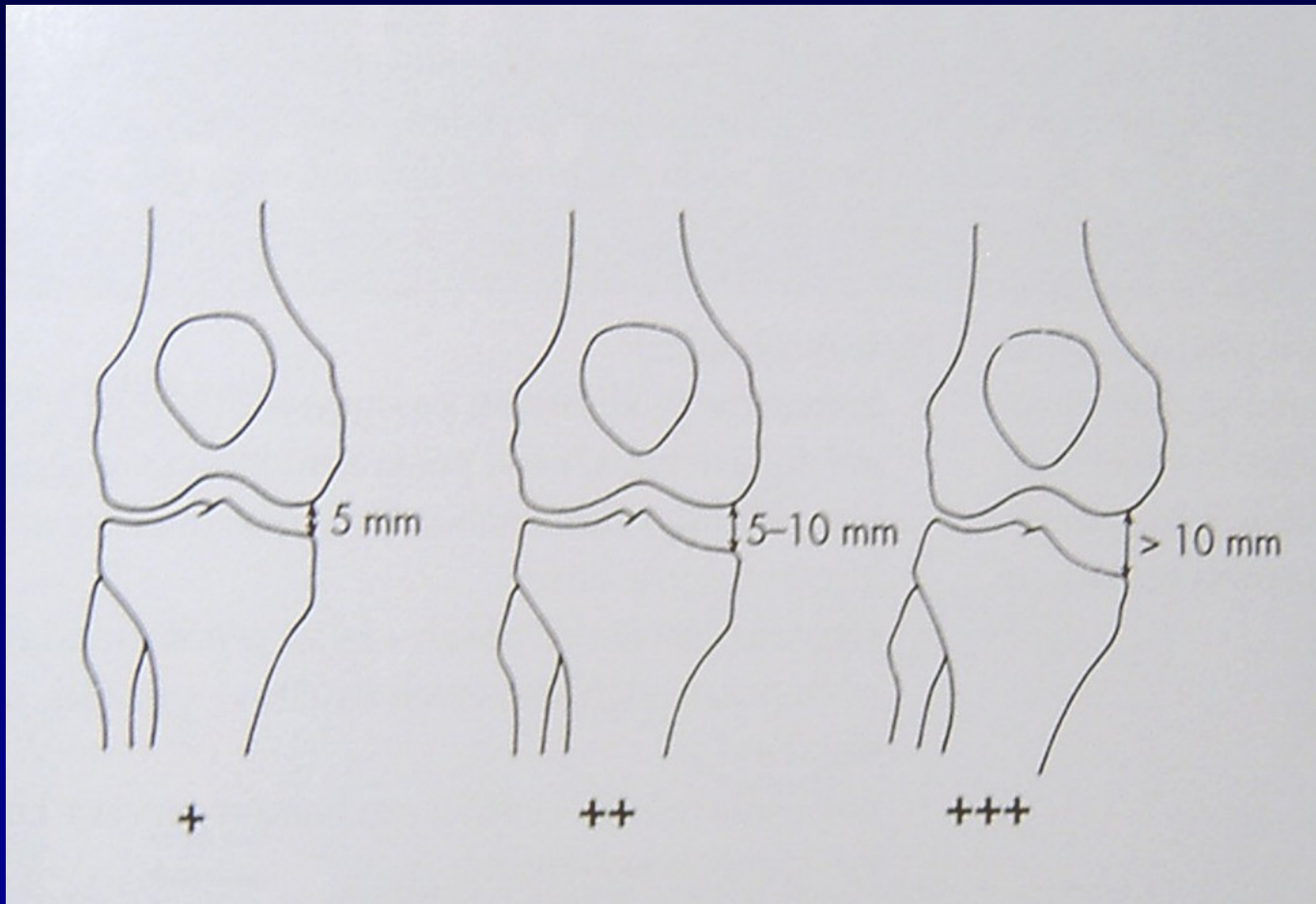
Lachmanův test



Přední zásuvka, pivot shift test



Zadní zásuvka



Valgóní stres test
Varóní stres test

Menisky

Mechanismus úrazu

Testy: Mc Murray

Steinmann I

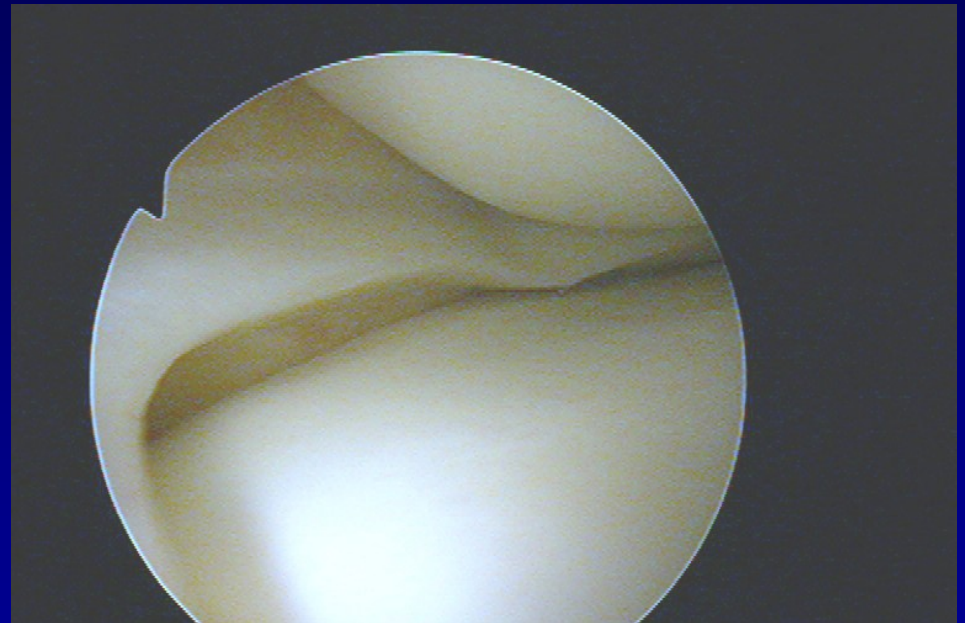
Steinmann II

Appley

Turner

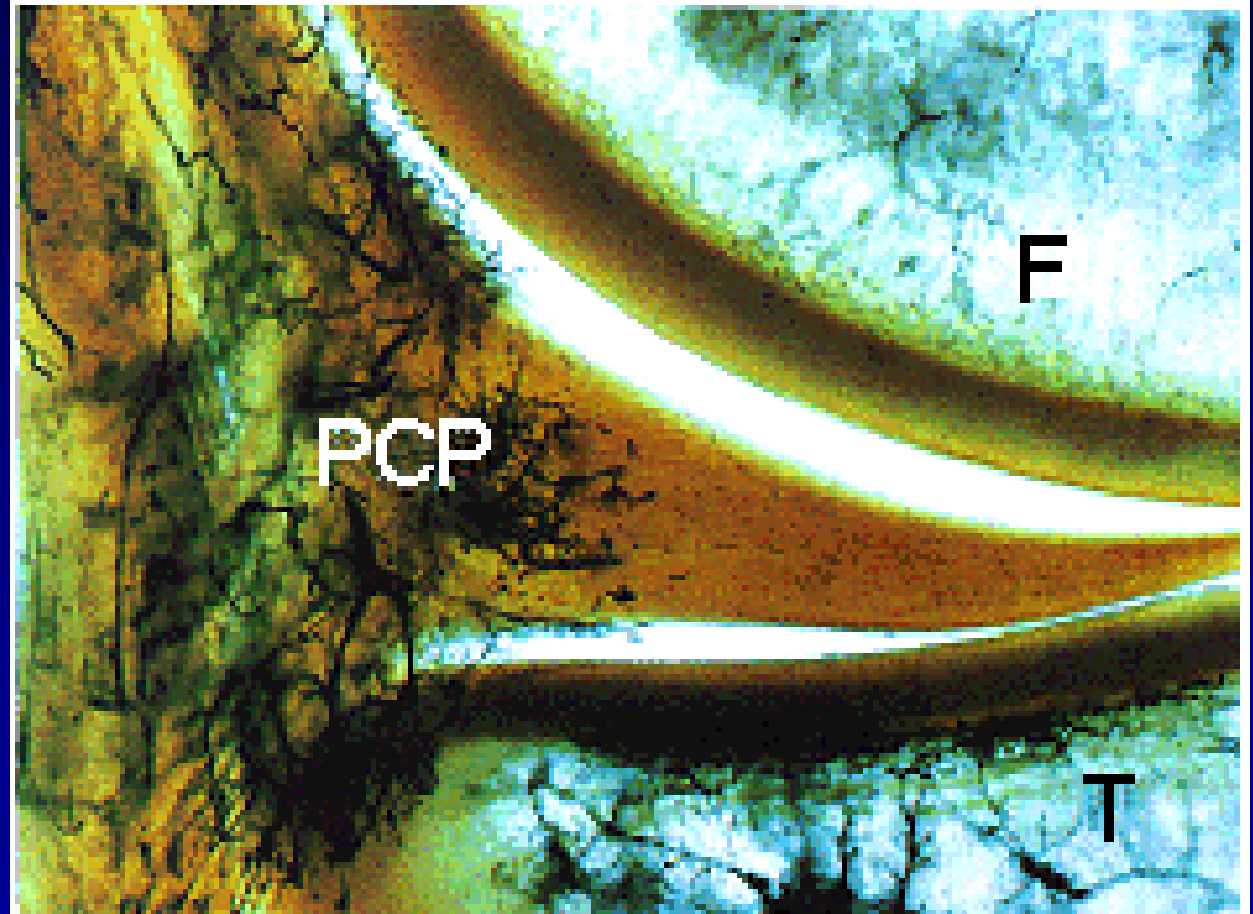
Payer

Childress- squat test



Meniskus

- Fibrocartilago
- Vysoká elasticita
- Parakapsulární zóna- cévy

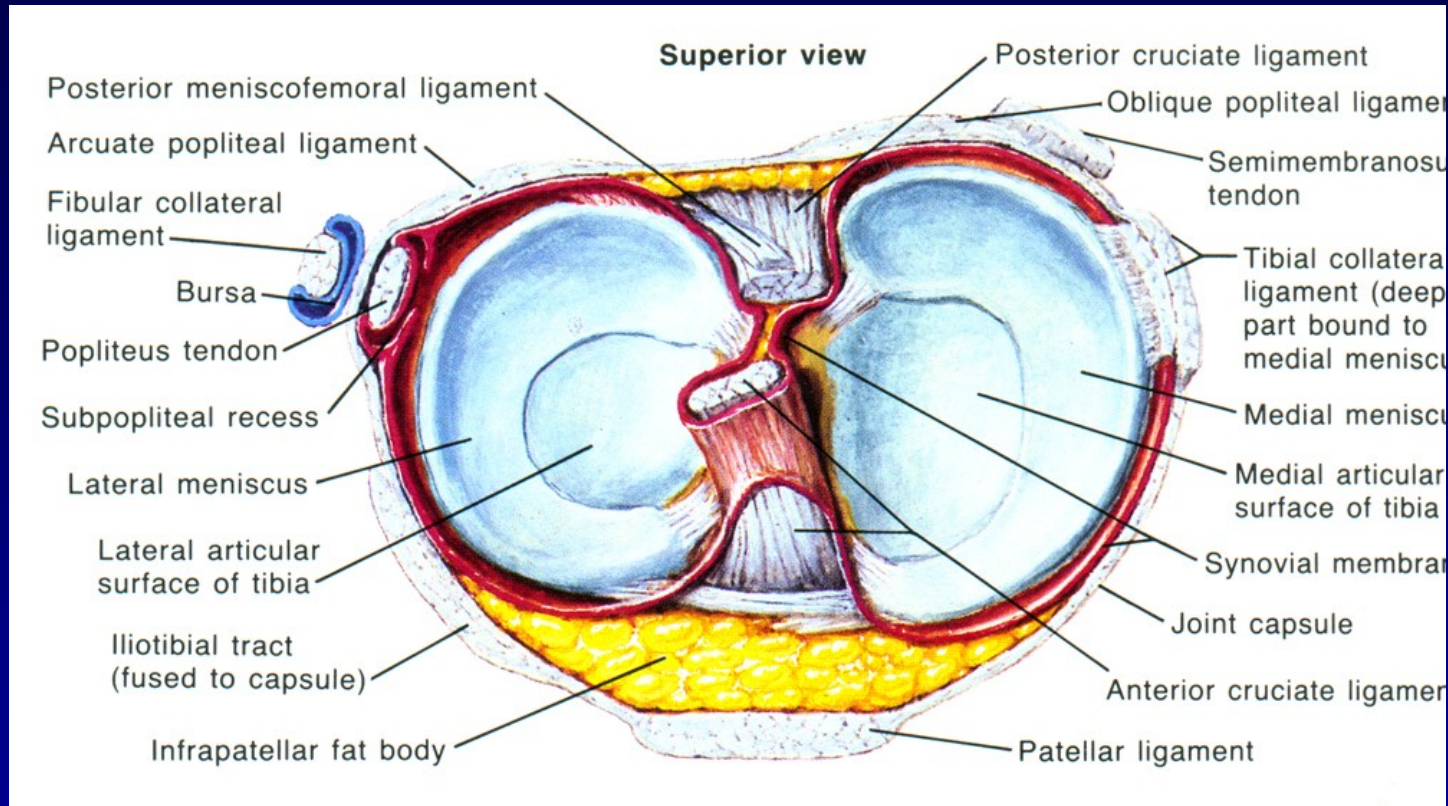


Red zone

red- white zone

white zone

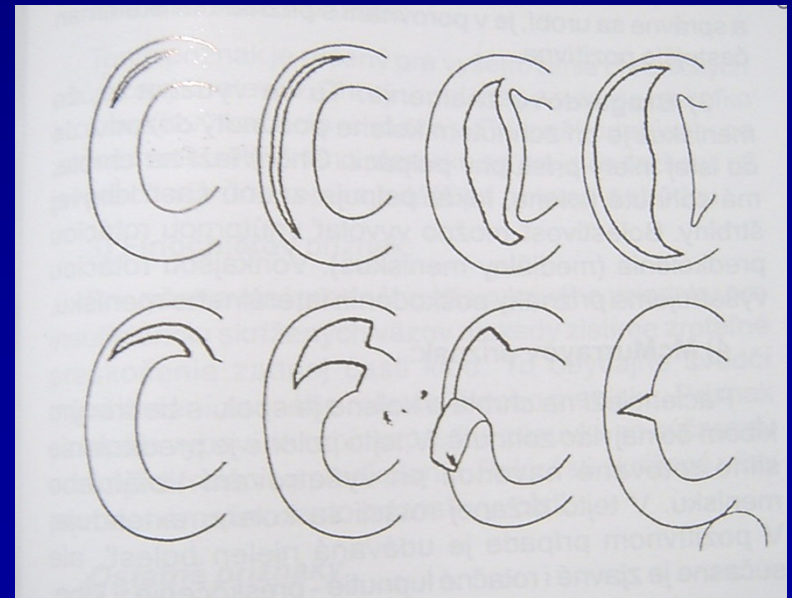
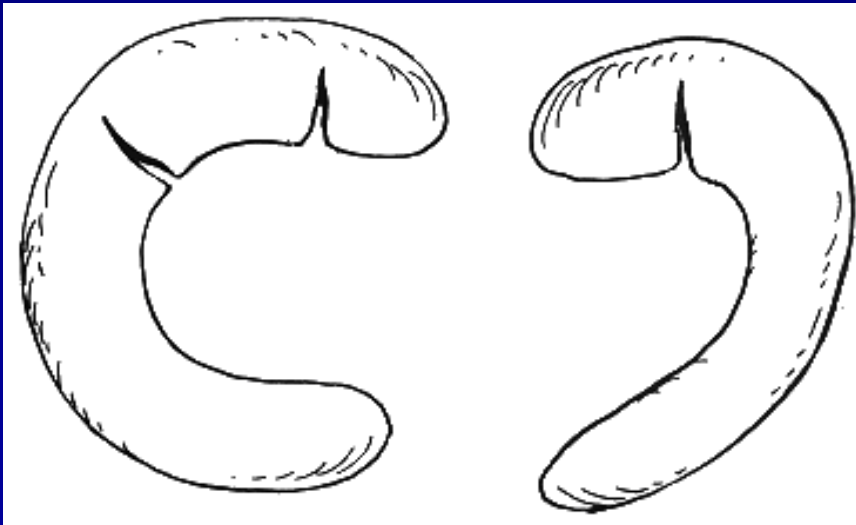
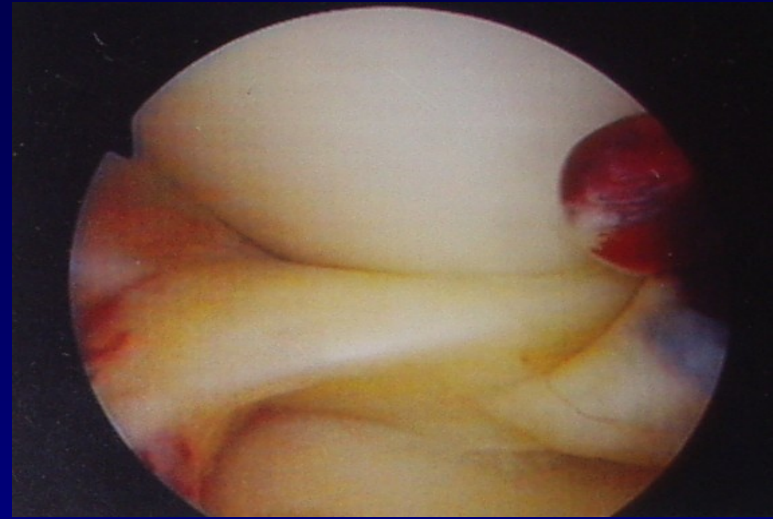
Funkce



- nárazník
- stabilizátor
- vyrovnávač kloubních ploch
- rozdělovač kloubní tekutiny
- LM – mobilnější
- MM - zranitelnější

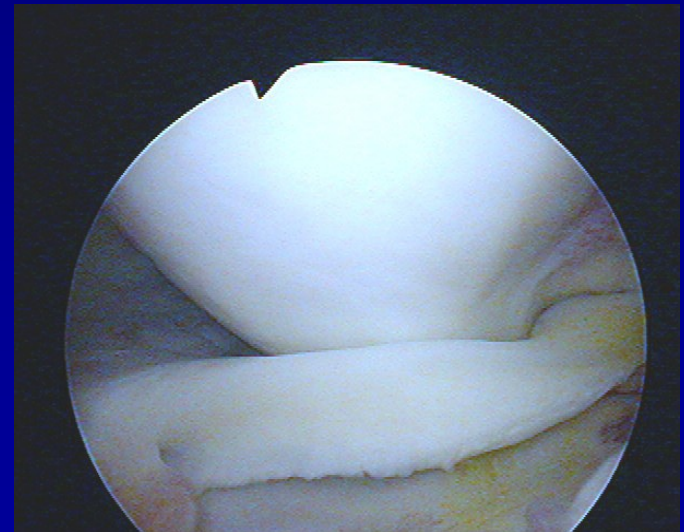
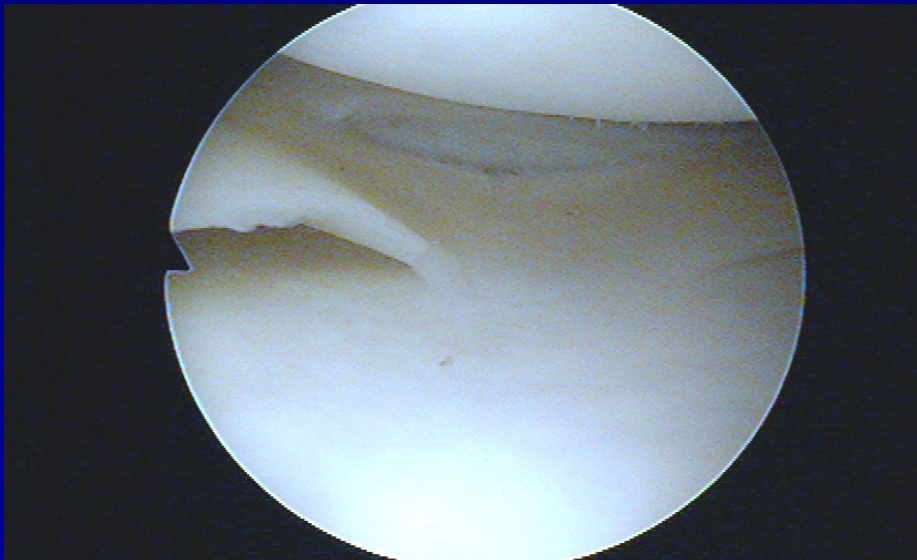
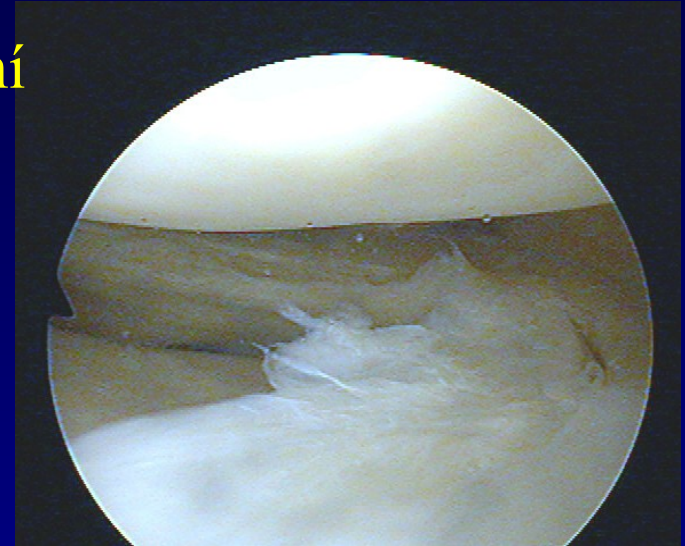
Ruptury menisků

- Longitudinální, horizontální, radiální
- Typ ucho od koše
- Degenerativní léze
- Diskoidní meniskus



Ruptury menisků

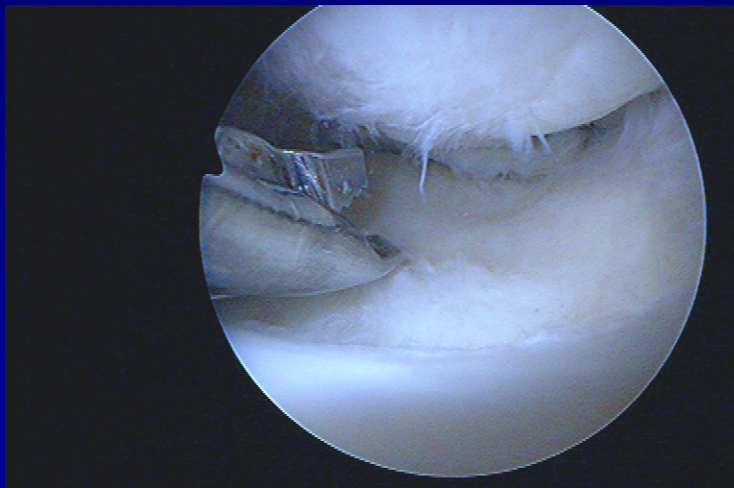
- Longitudinální, horizontální, radiální
- Typ ucho od koše
- Degenerativní léze
- Diskoidní meniskus



Ošetření menisků

Menisektomie

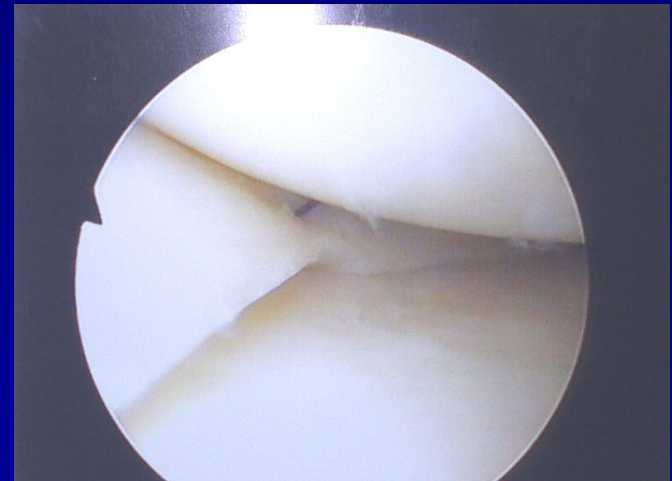
- parciální
- subtotální
- totální



Punch „v akci“

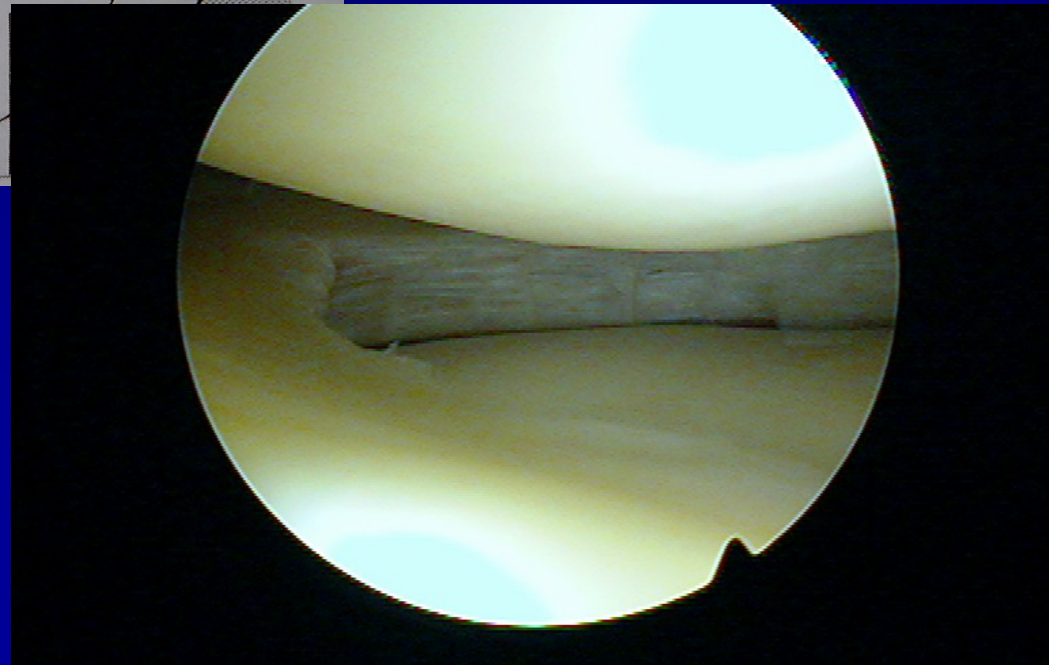
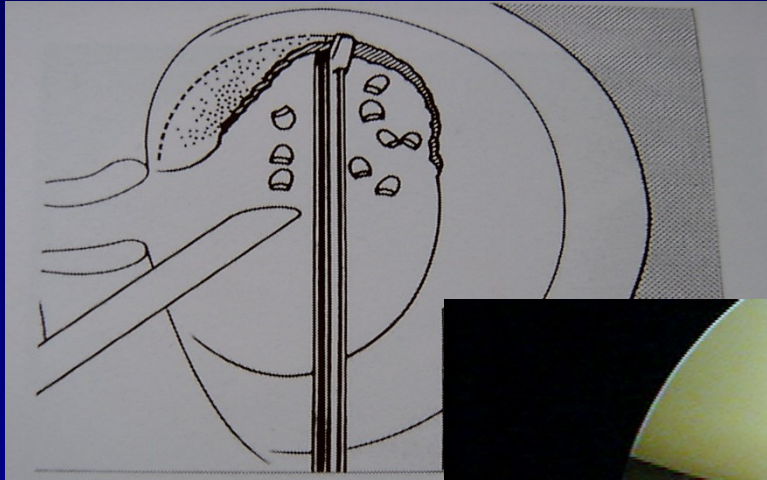
Meniskopexe

- outside-in
- inside-out
- all-inside

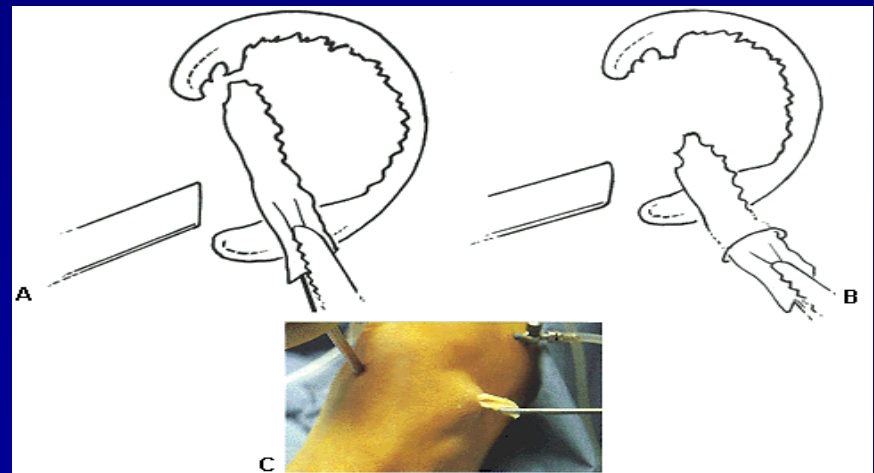
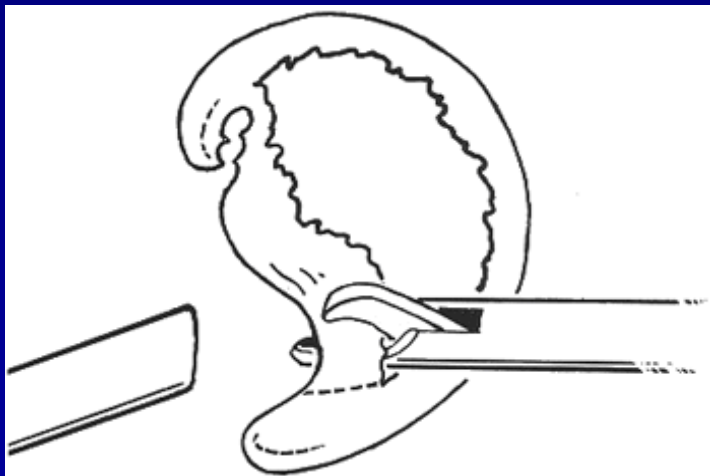
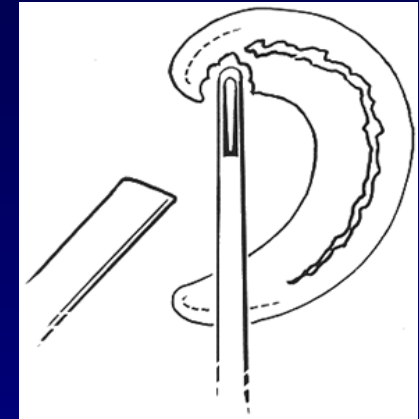
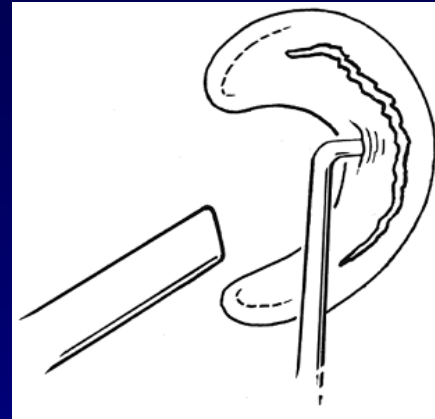
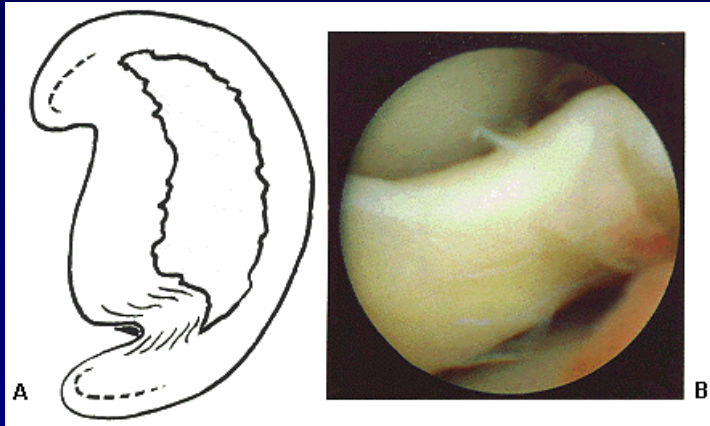


Přišitý meniskus

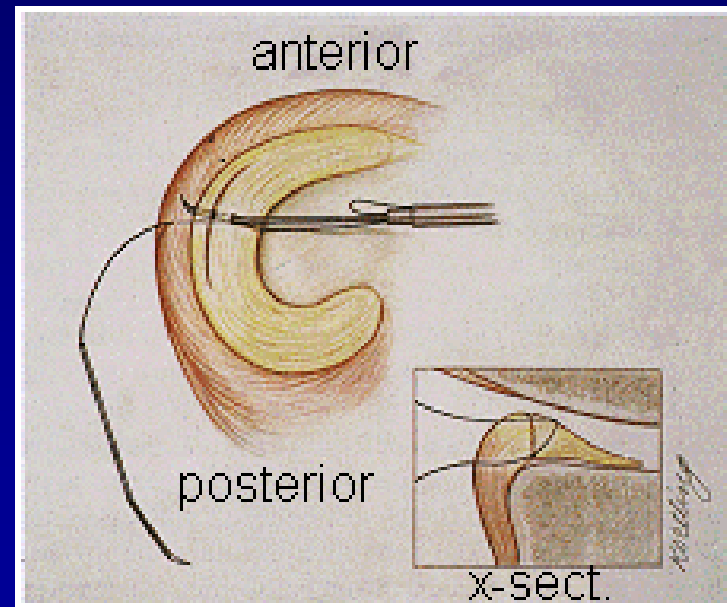
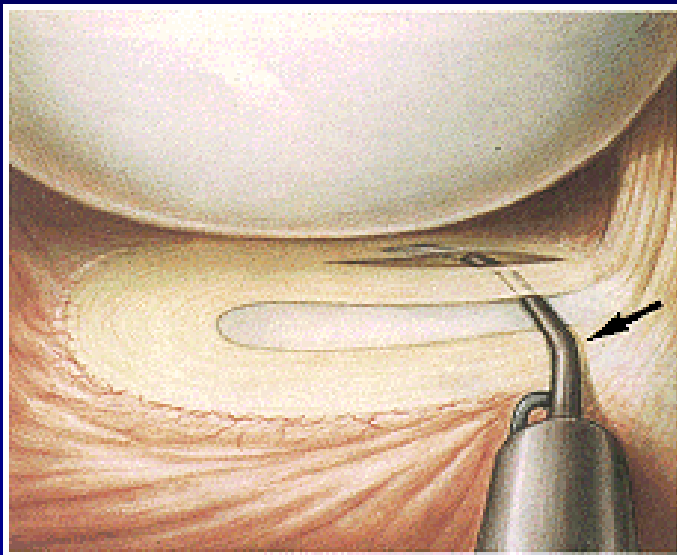
Parciální menisektomie



Subtotální menisektomie



ASK meniskopexe

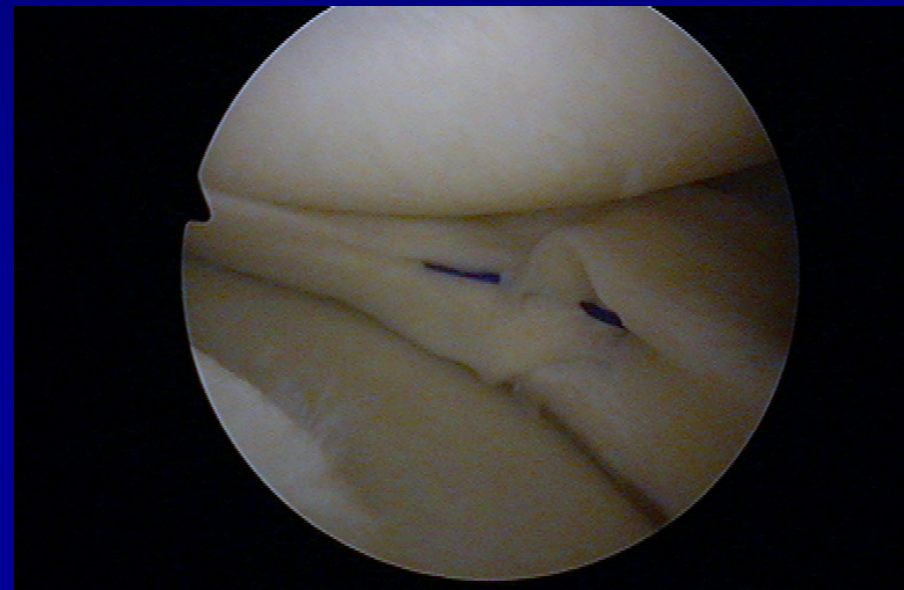
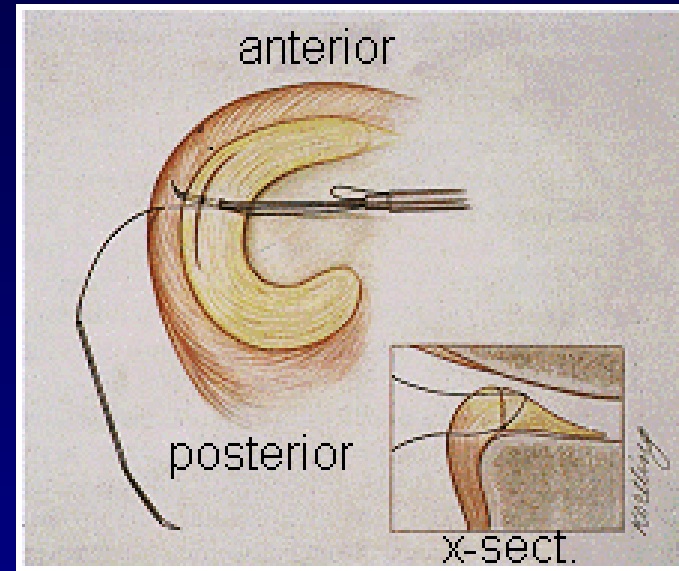


Sutura menisku- meniscopexis

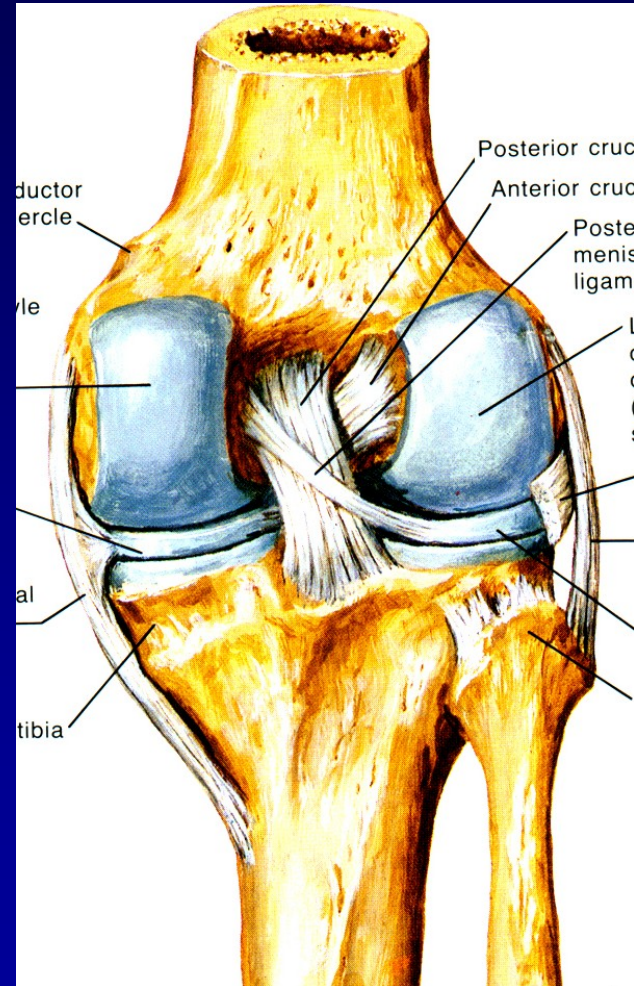
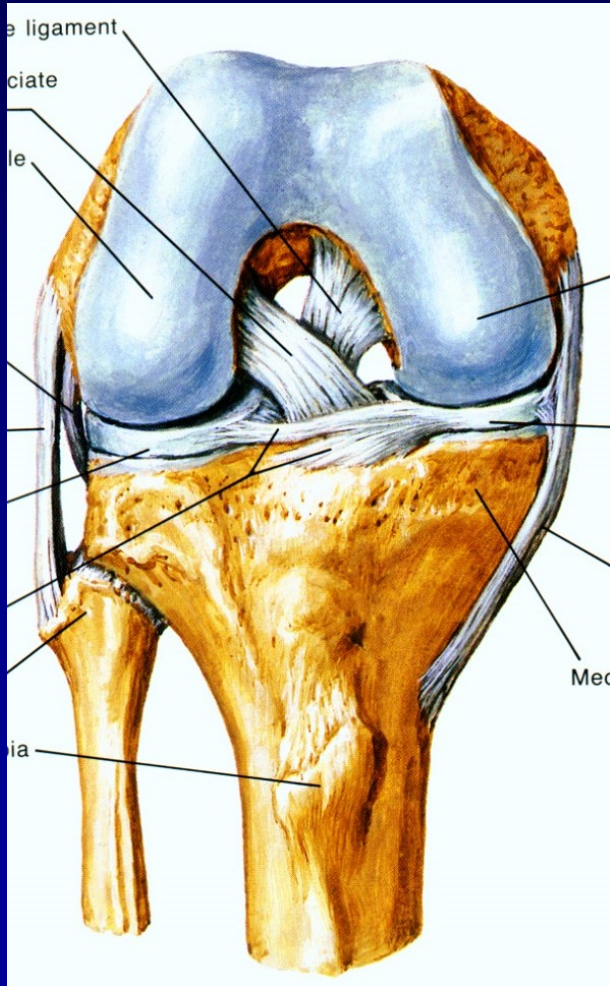
outside-in

inside-out

all-inside



Zkřížené vazy- ACL, PCL



Ruptury vazů

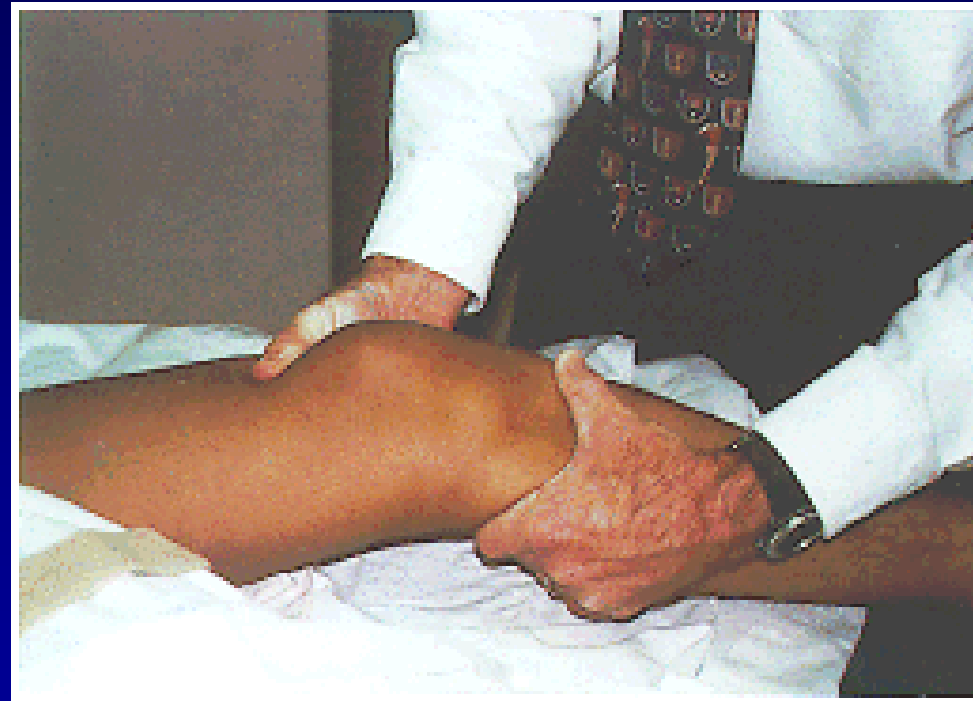
- **Distenze**
- **Parciální ruptura**
- **Totální ruptura**
- Mechanismus poranění
- Testy stability



„Unhappy trias“

Ruptura ACL

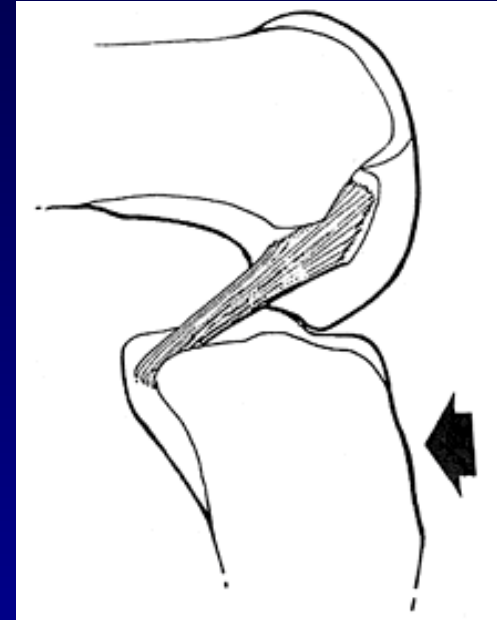
- Testy stability
- Lachmanův test
- Přední zásuvka
- Pivot-shift test



Lachman test

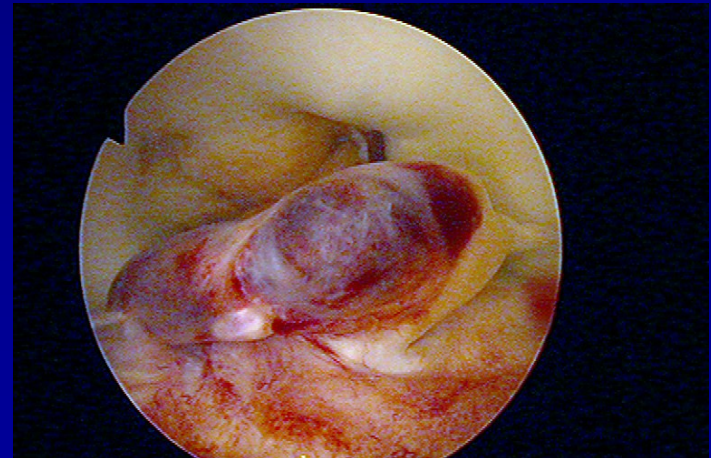
Rupture PCL

- Náraz na palubní desku
- Zadní zásuvka



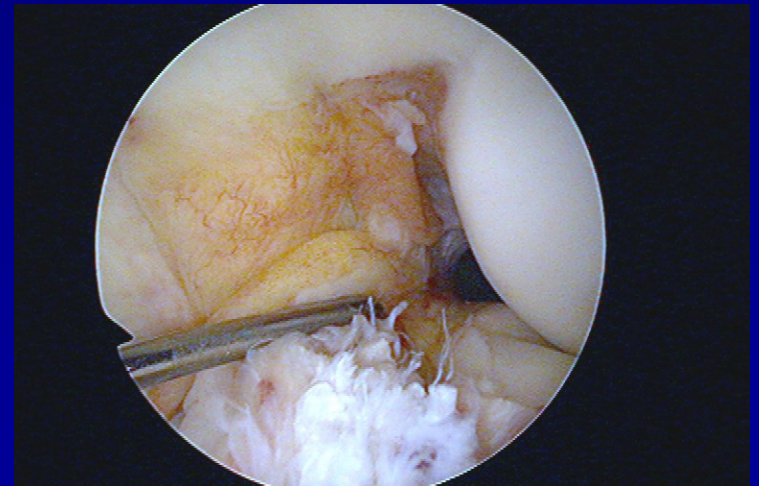
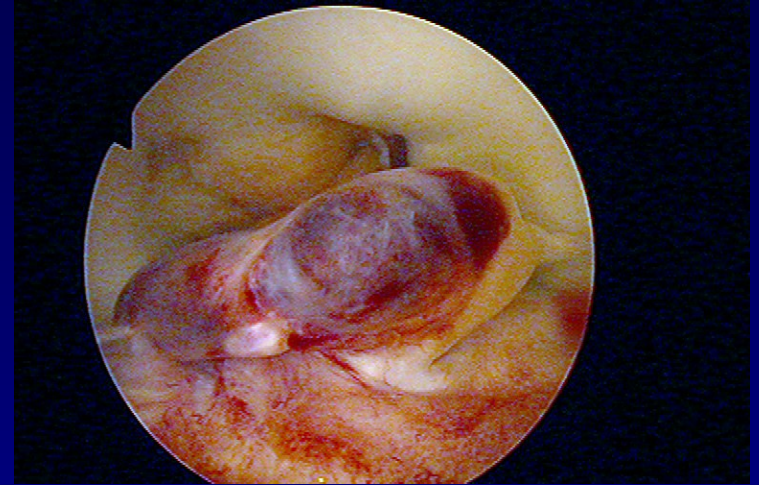
Rupture ACL

- Časté poranění



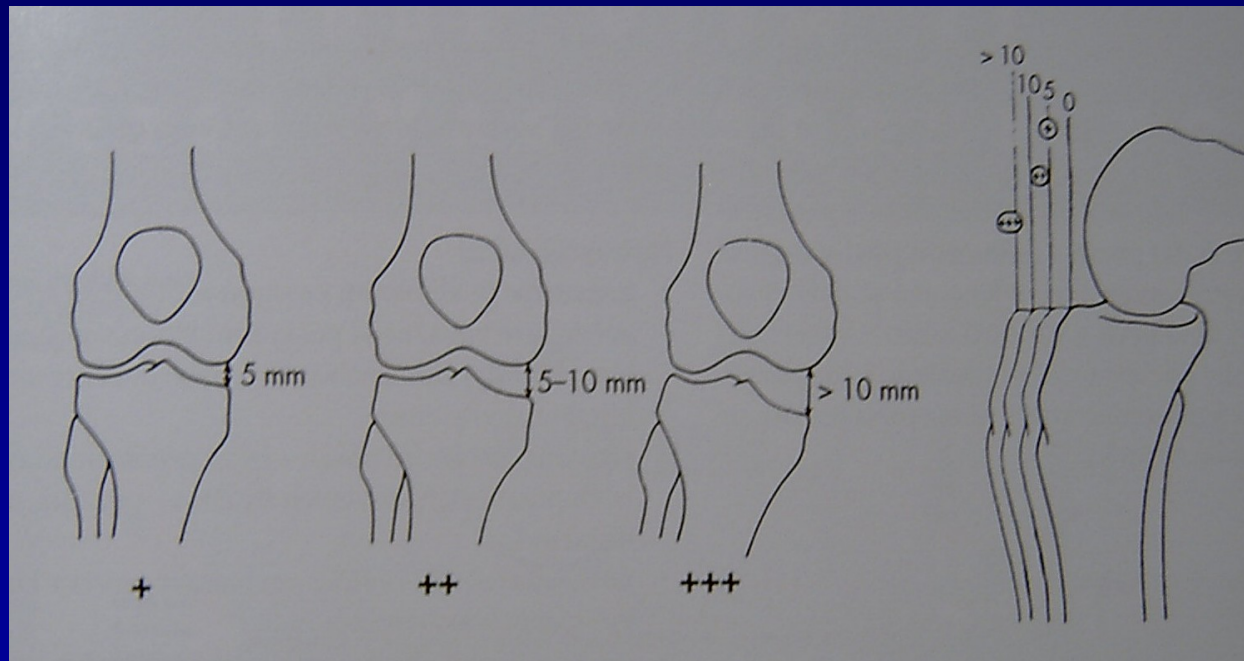
Akutní ruptura ACL

- Debridement
- Fyzioterapie
- Omezená aktivita
- Ortéza



Instabilita anteromediální

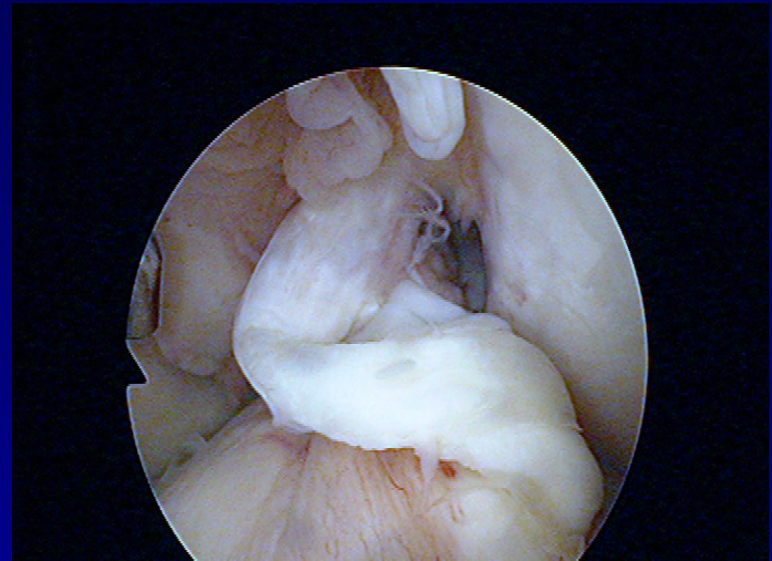
- v praxi nejčastější typ instability kolena
- následek páčení do valgozity – unhappy trias



valgus stress test + přední zásuvka

Indikace k rekonstrukci

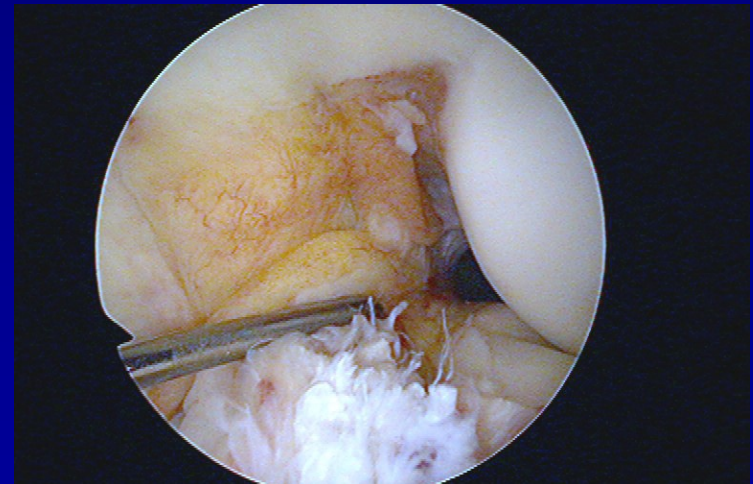
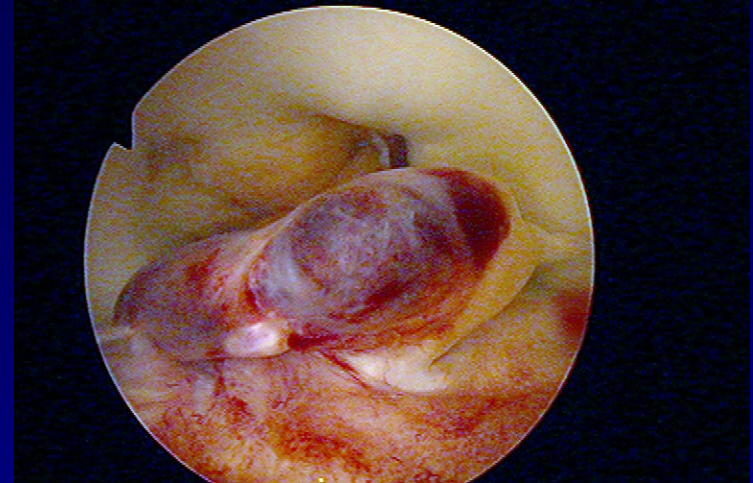
- 1/3 kompenzovaná i na sport
- 1/3 kompenzovaná jen po modifikaci sport. aktivit
- 1/3 nutnost rekonstrukce PZV



⇒ **individuální přístup k pacientovi**

Akutní ruptura PZV

- **Artroskopie**
 - debridement PZV
 - ošetření přidružených poranění (menisků, chrupavek)
- **Pooperační režim**
 - RHB program - hamstringy
 - propriocepce
- **Modifikace sport. aktivit**
 - omezení rizikových sportů
 - ortéza



Rehabilitace

- dynamická stabilita kolene s poškozeným PZV
- reedukace reflexních mechanismů

↓ absolutní síla hamstringů

↑ propriocepce



RHB → closed kinetic-chains cviky

Kolenní ortézy



postranní výztuhy



skořepinové



individuální

- proprioceptivní mechanismy
- psychologický efekt

Rekonstrukce PZV ve II. době

- selhání konzervativního postupu

výhody:

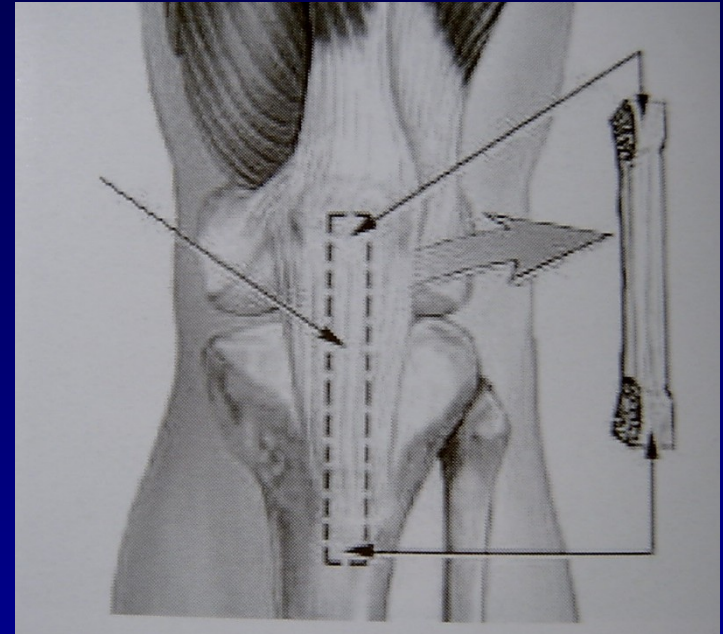
- motivovaný, spolupracující pacient, který má realistické představy o operaci, čas na RHB
- koleno s plným pohybem bez hypotrofie stehenního svalstva = **předoperační RHB**

Typy štěpů a fixace

- štěp z kadaveru
- autoštěp – vlastní tkáň
- štěp z lig. patelae /**BTB**/
- šlachy **hamstringů**
- fixace titanovými nebo vstřebatelnými materiály
- press-fit fixace

BTB štěp = zlatý standard

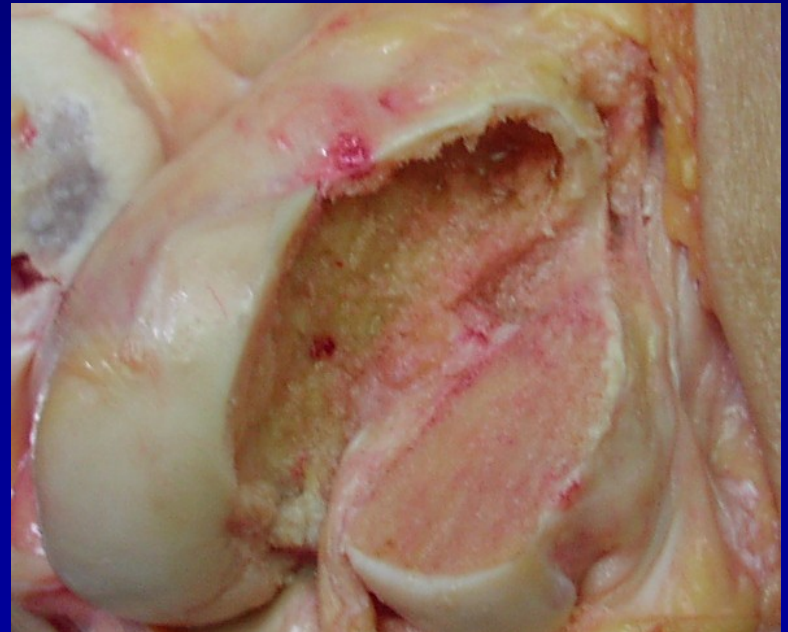
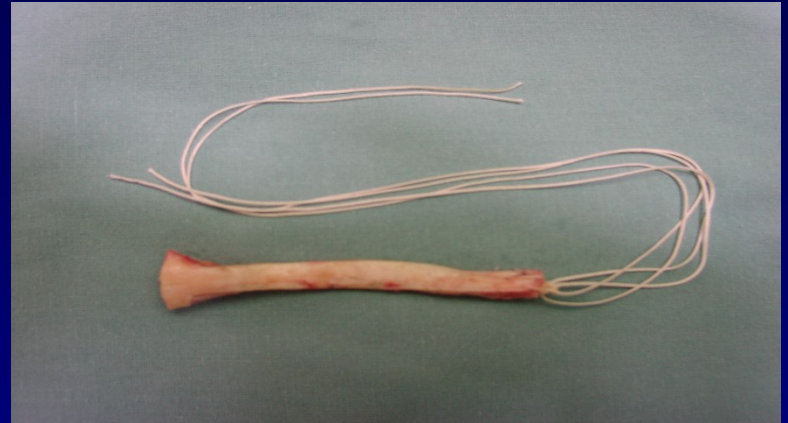
- **Bone-Tendon-Bone**
- autoštěp ze střední třetiny ligamentum patelae
- vhojení kostních bločků
- potíže z odběrového místa



- **miniincize** - šetří r. infrapatellaris n. sapheni

BTB štěp pro **press-fit** fixaci

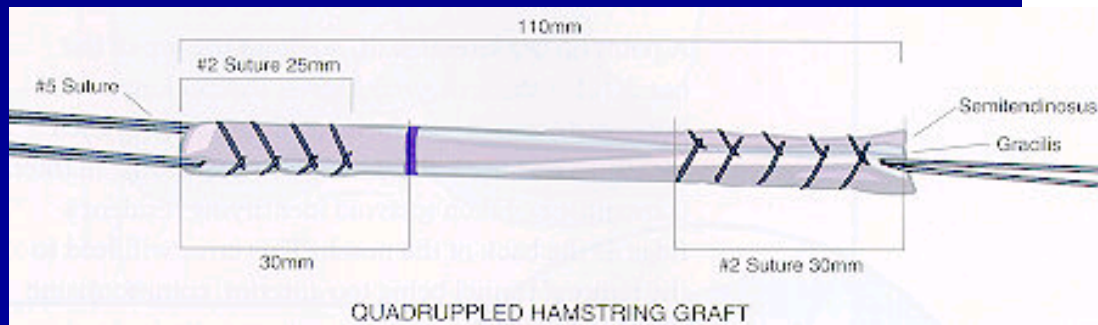
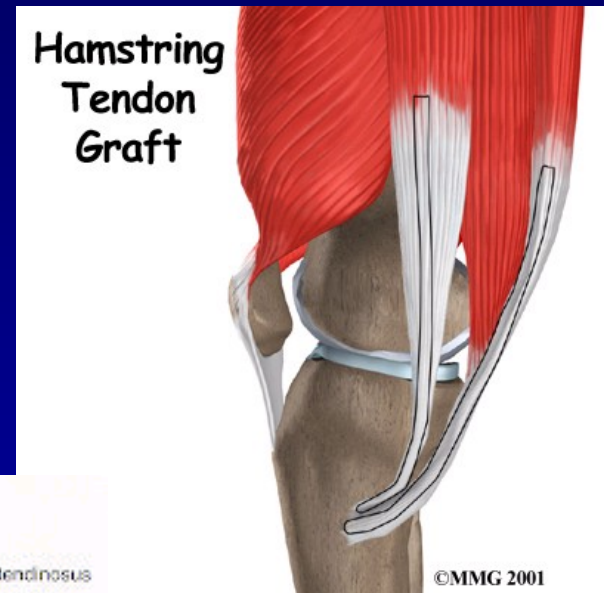
- proximální konec na řezu **lichoběžníkovitý tvar**
- **press-fit** fixace v **zuzujícím se** femorálním kanálu



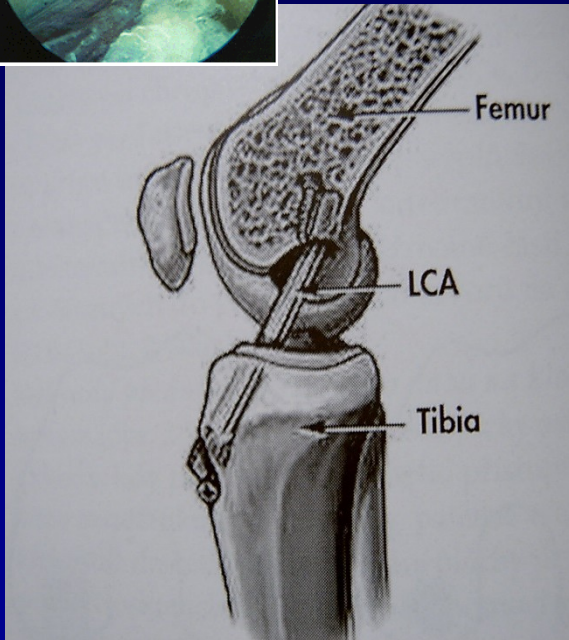
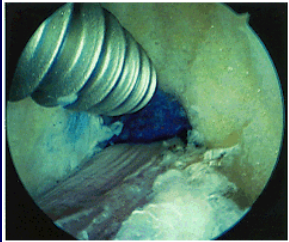
Hamstringy

(m. semitendinosus + m. gracilis)

- nejsou potíže z odběrového místa
- oslabení flexorů
- častější selhání
 - B-T-B **1,9 %**
 - hamstringy **4,9%**



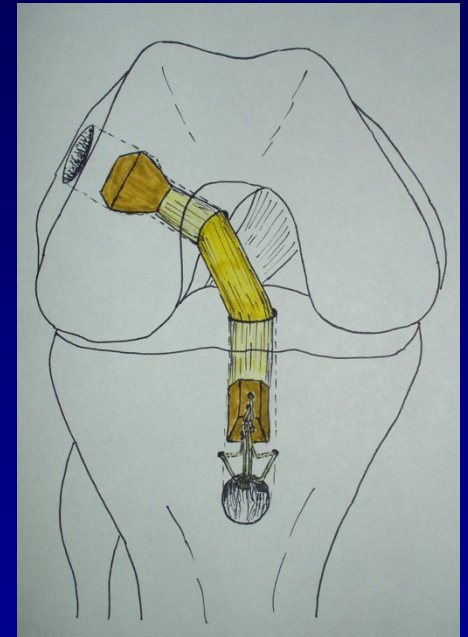
Fixace štěpu



interferenční šroubky



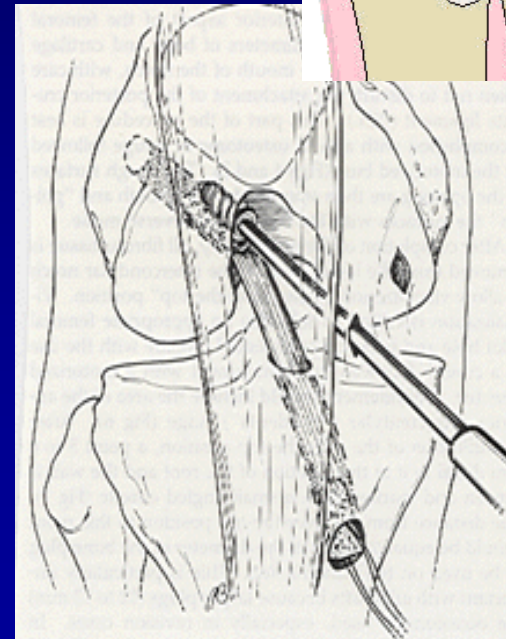
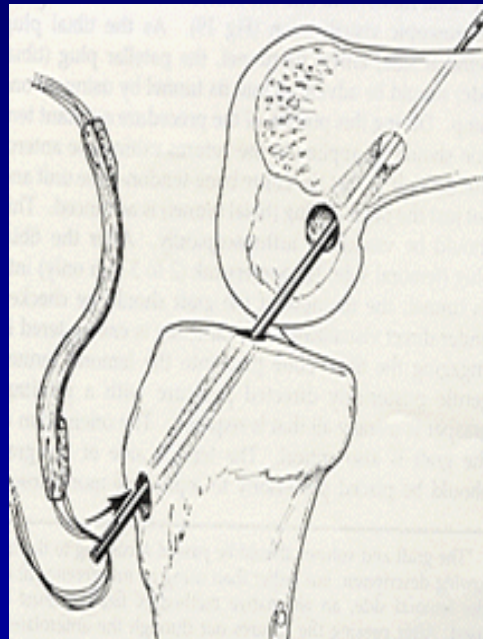
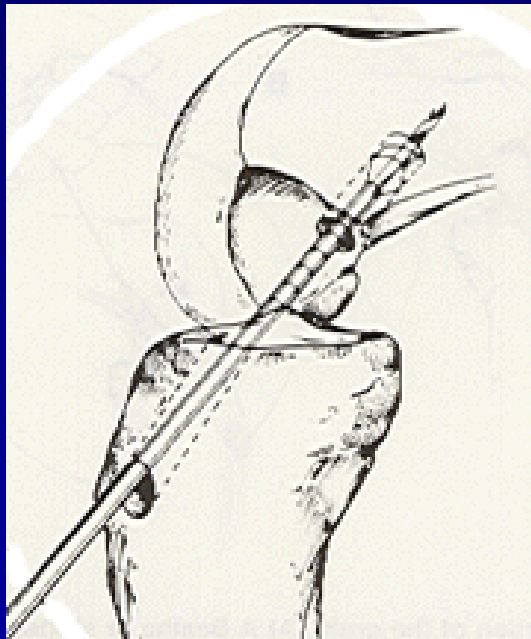
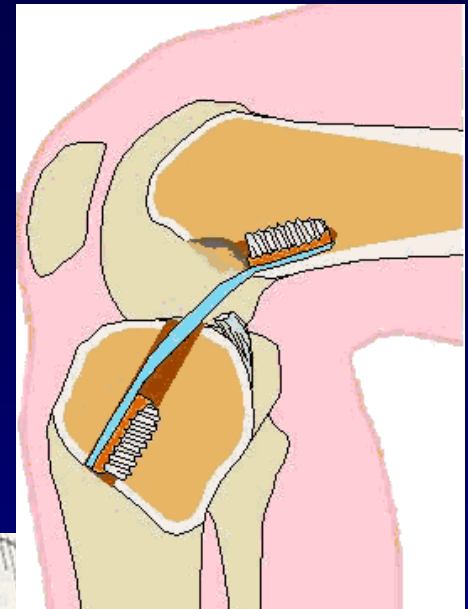
vstřebatelné klínky



press-fit

Techniky operace

- **transtibiální techniky** - štěp se protahuje přes T kanál do F kanálu

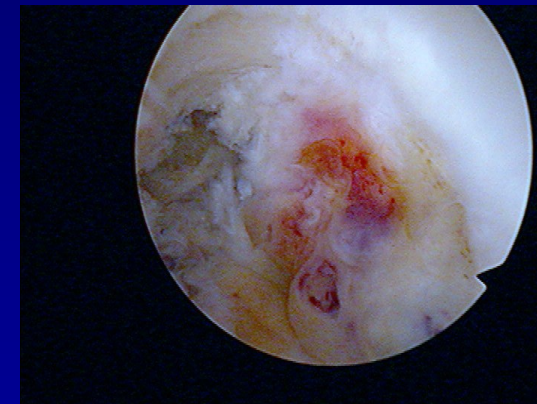
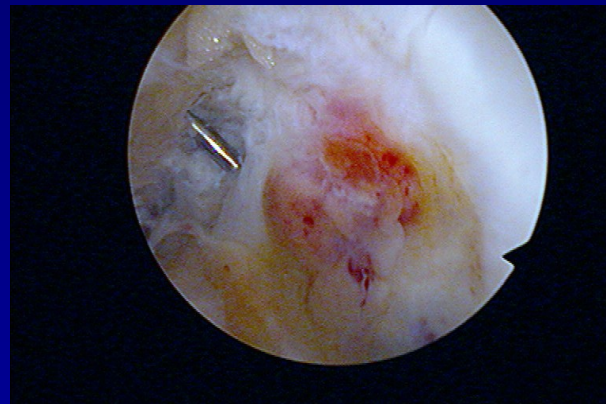
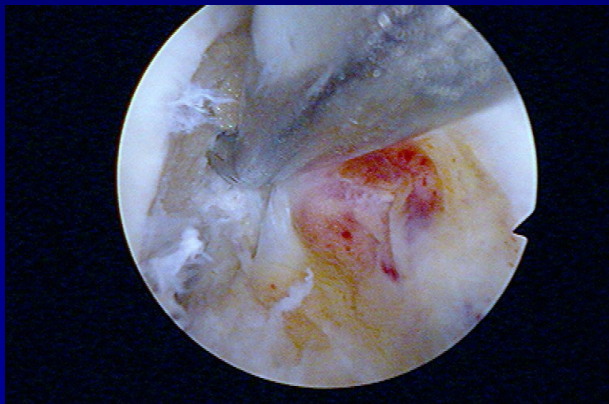


Techniky operace

- s pomocnou laterální miniincizí - štěp se protahuje přes F kanál do T kanálu

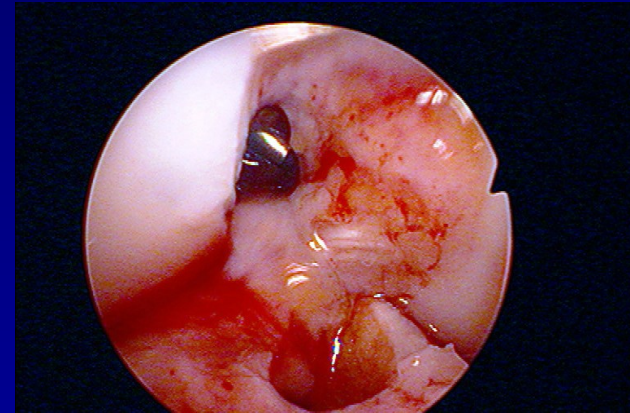
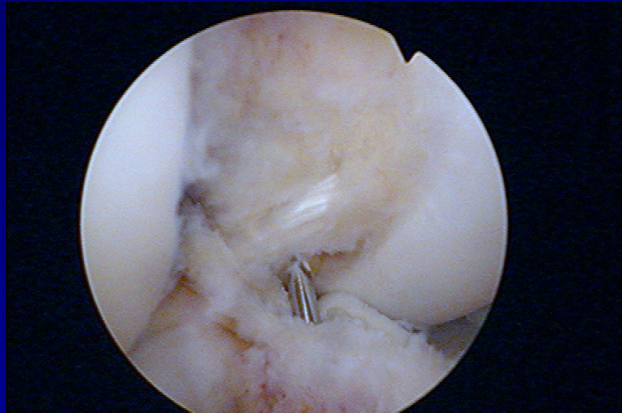


Femorální kanál



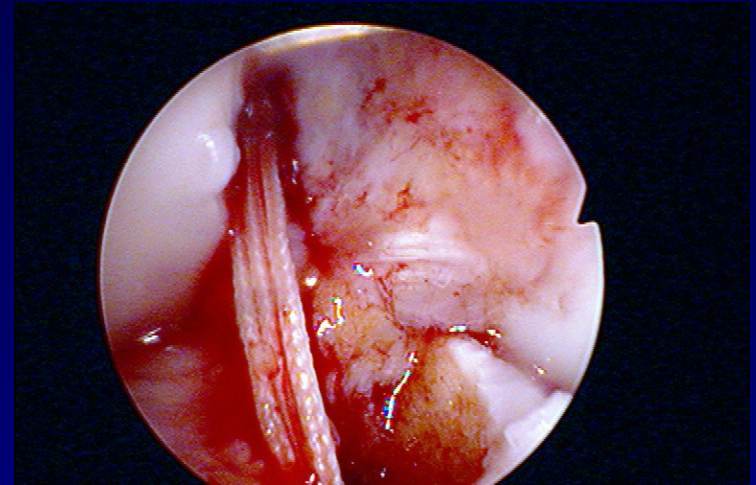
femorální cílič + vrtání femorálního kanálu pod
ASK kontrolou

Tibiální kanál

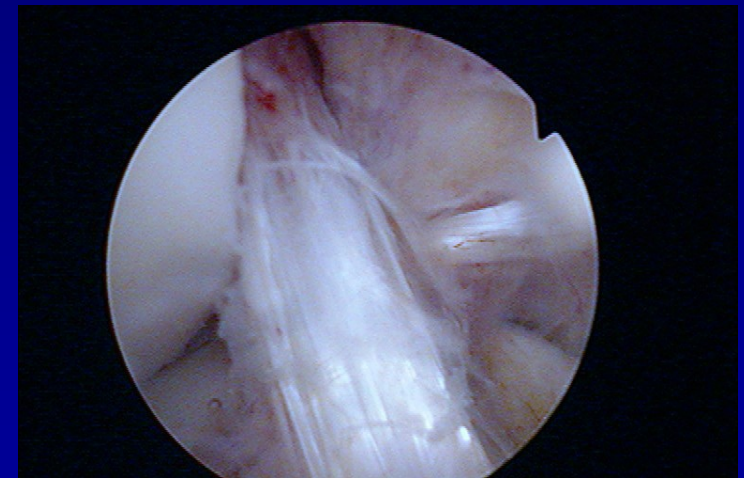


tibiální cílič + vrtání tibiálního kanálu pod ASK
kontrolou

Protažení štěpu



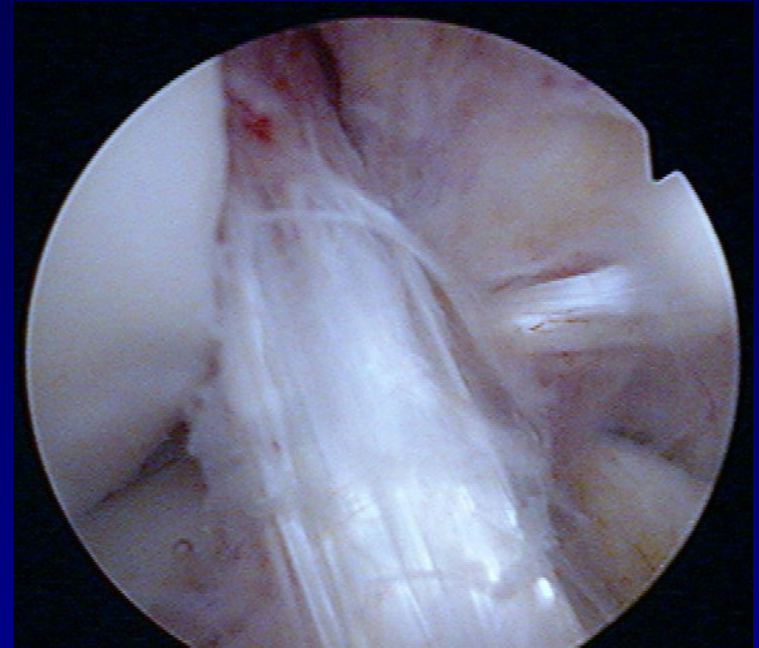
- protažení vláken nejprve přes femorální kanál a poté přes tibiální kanál



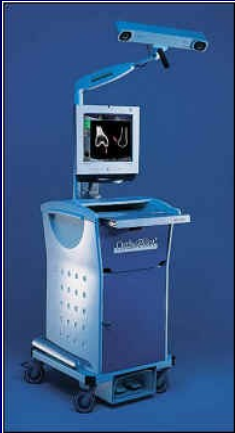
- protažení štěpu tahem za vlákna pod ASK kontrolou

REHABILITACE

- pooperační **RHB protokol**
 - ortéza 0-30 st.
 - pohyb ihned po operaci
 - polohování do plné extenze
 - 6 týdnů dlouhá ortéza s kloubem
 - revaskularizace štěpu = přestavba
 - **rizikové sporty až za 8 - 10 měsíců**



Navigace při rekonstrukci PZV



- infračervené sondy + kamera
- kinematický model, extrapolace
- navigace = cílení kanálů
- izometrická rekonstrukce





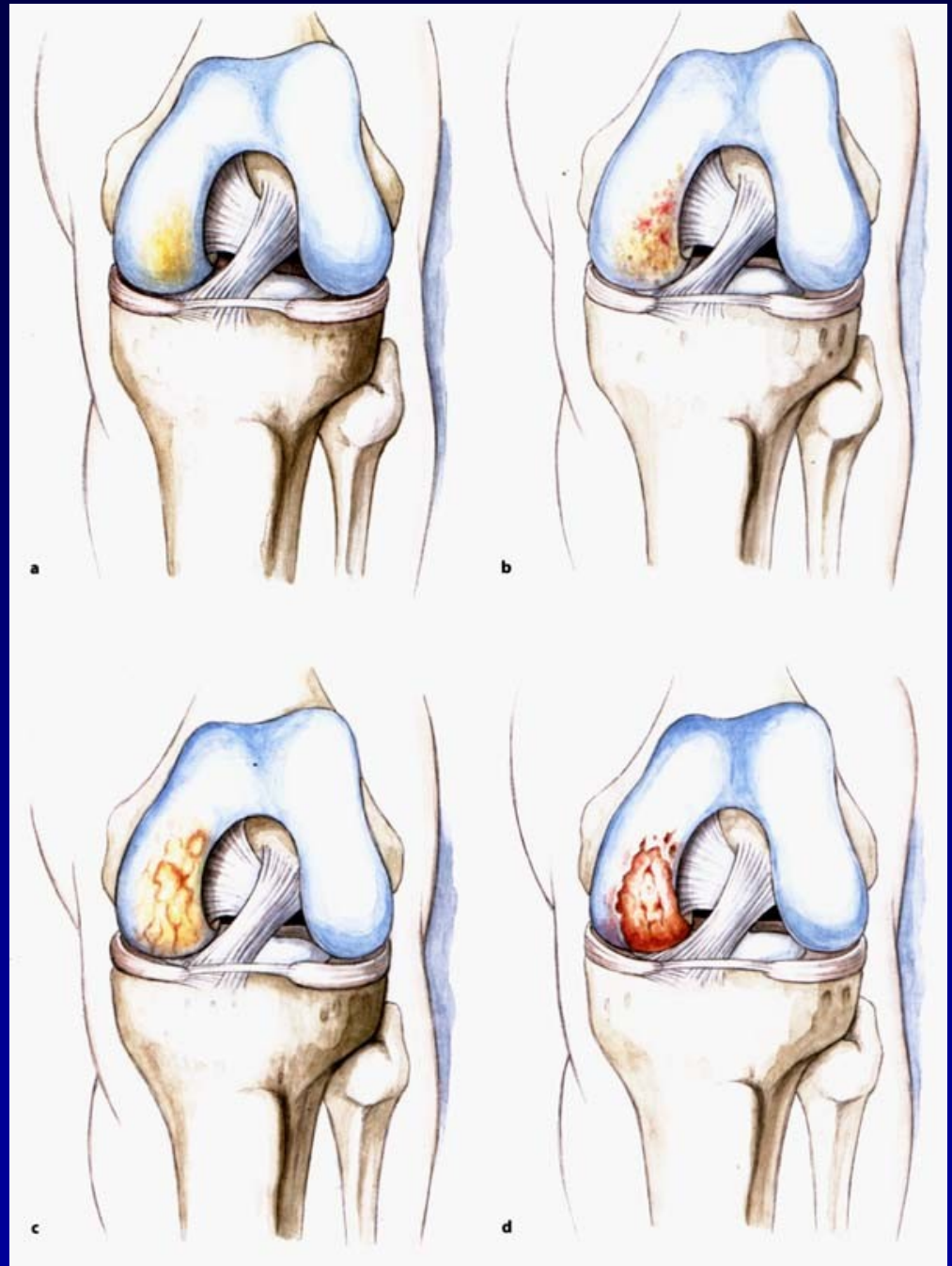
Fyzioterapie



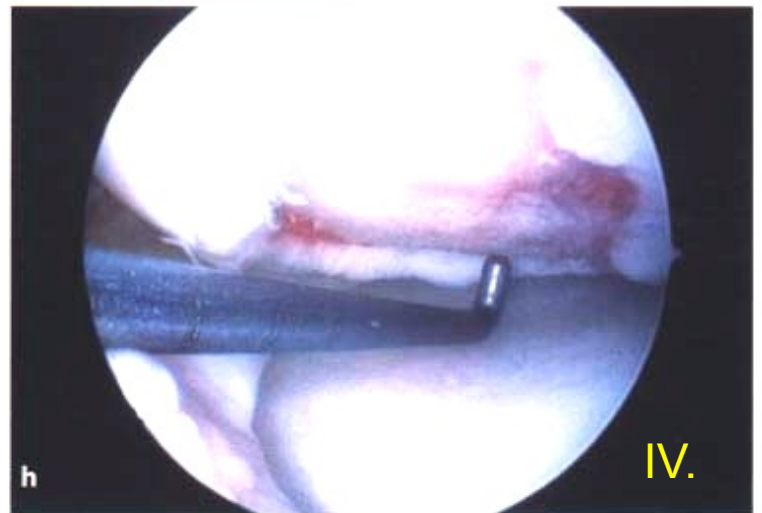
Ortéza

Chondropathy

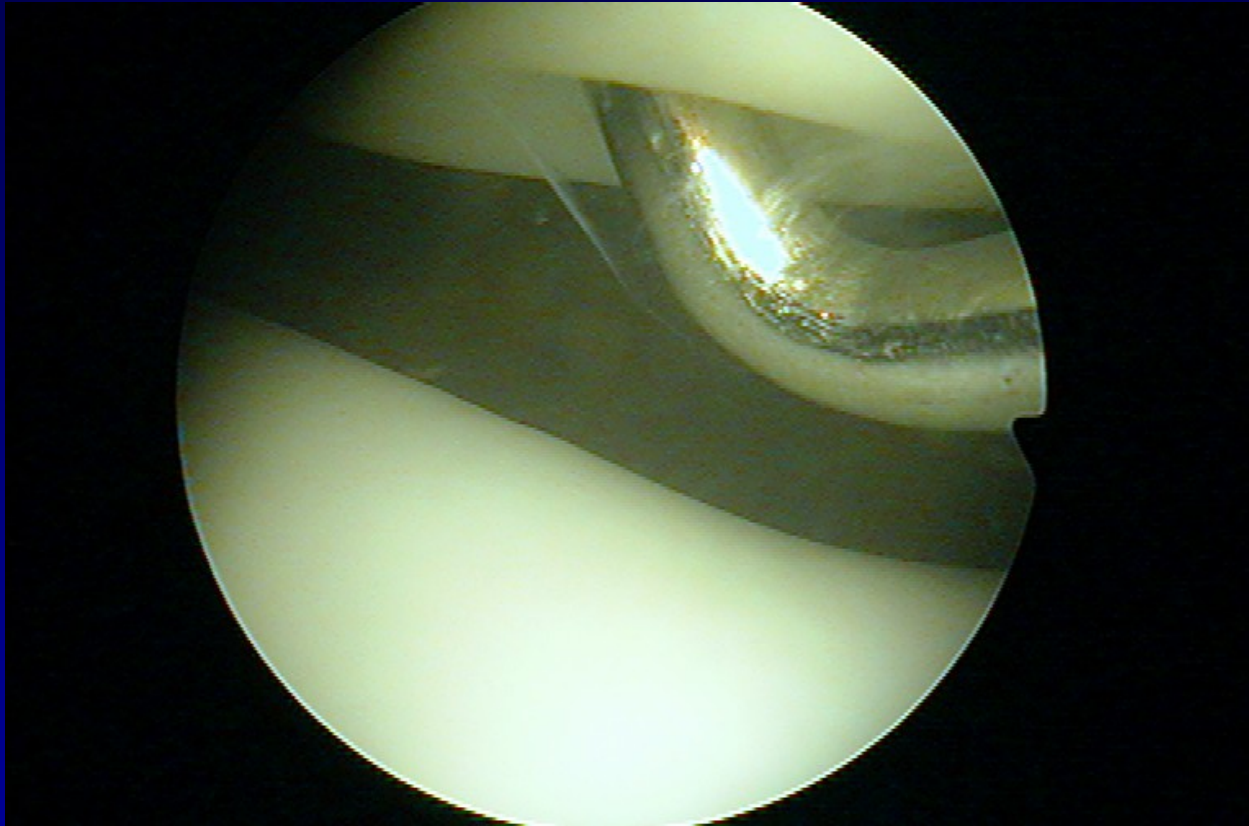
Outerbridge. H.K.



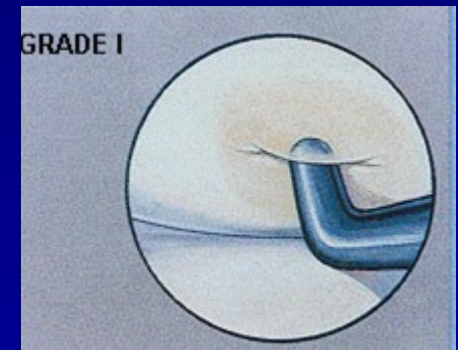
Chondropathy



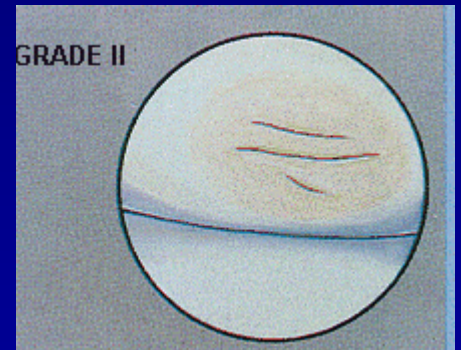
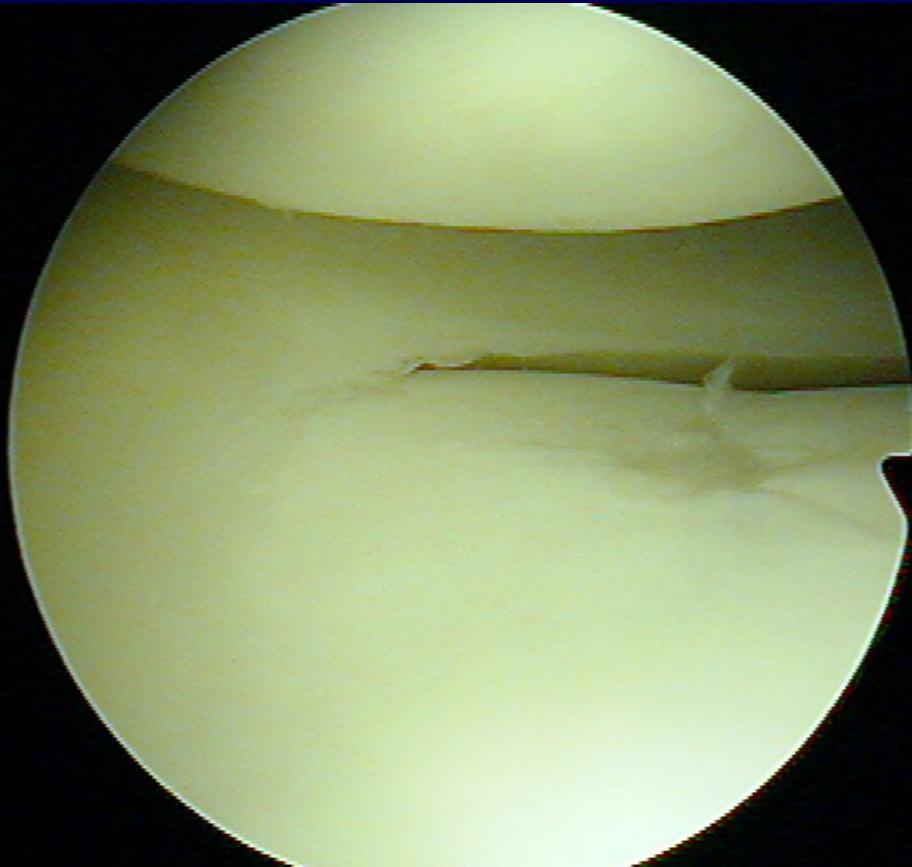
Chondropathy I. st.



Soft cartilage

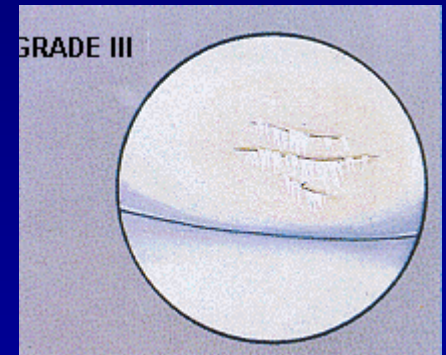
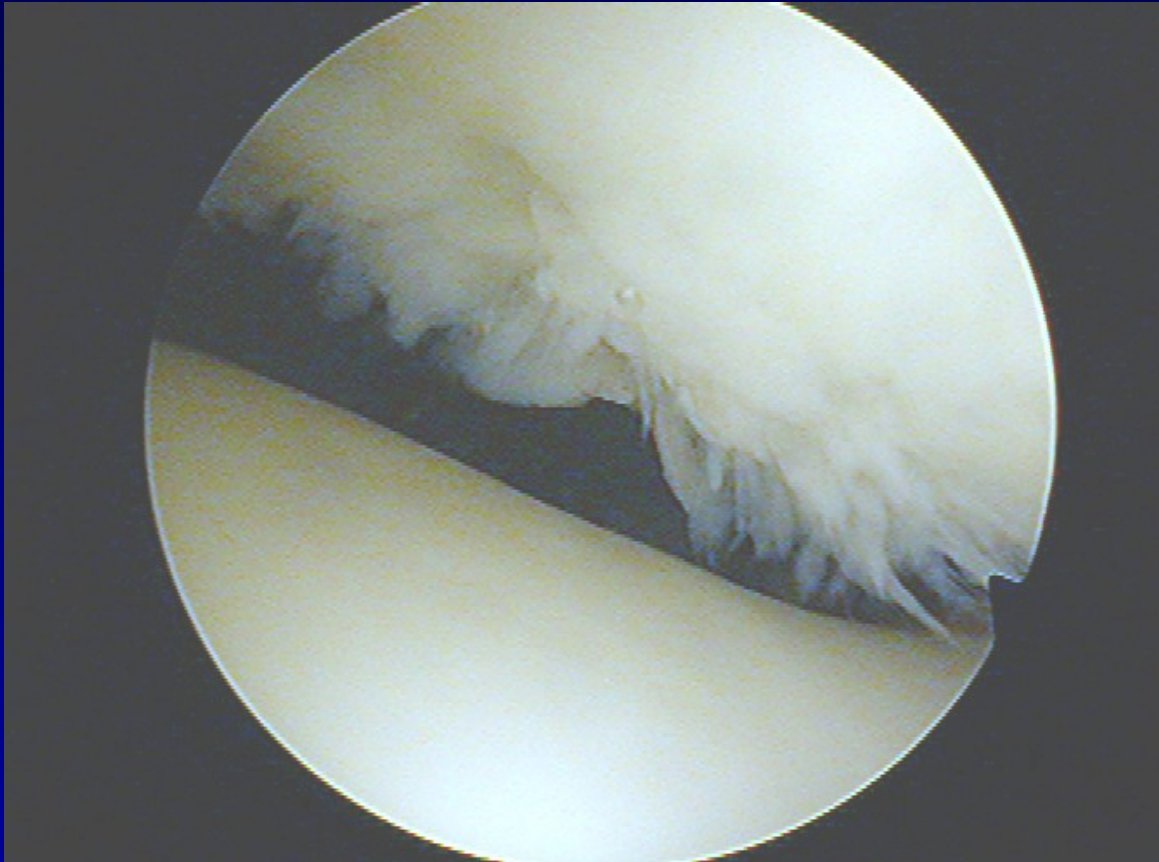


Chondropathy II. st.



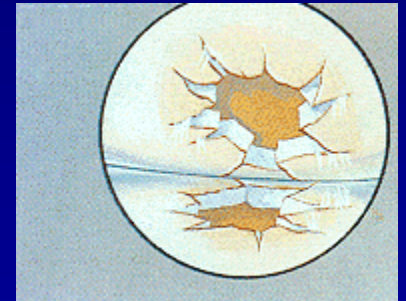
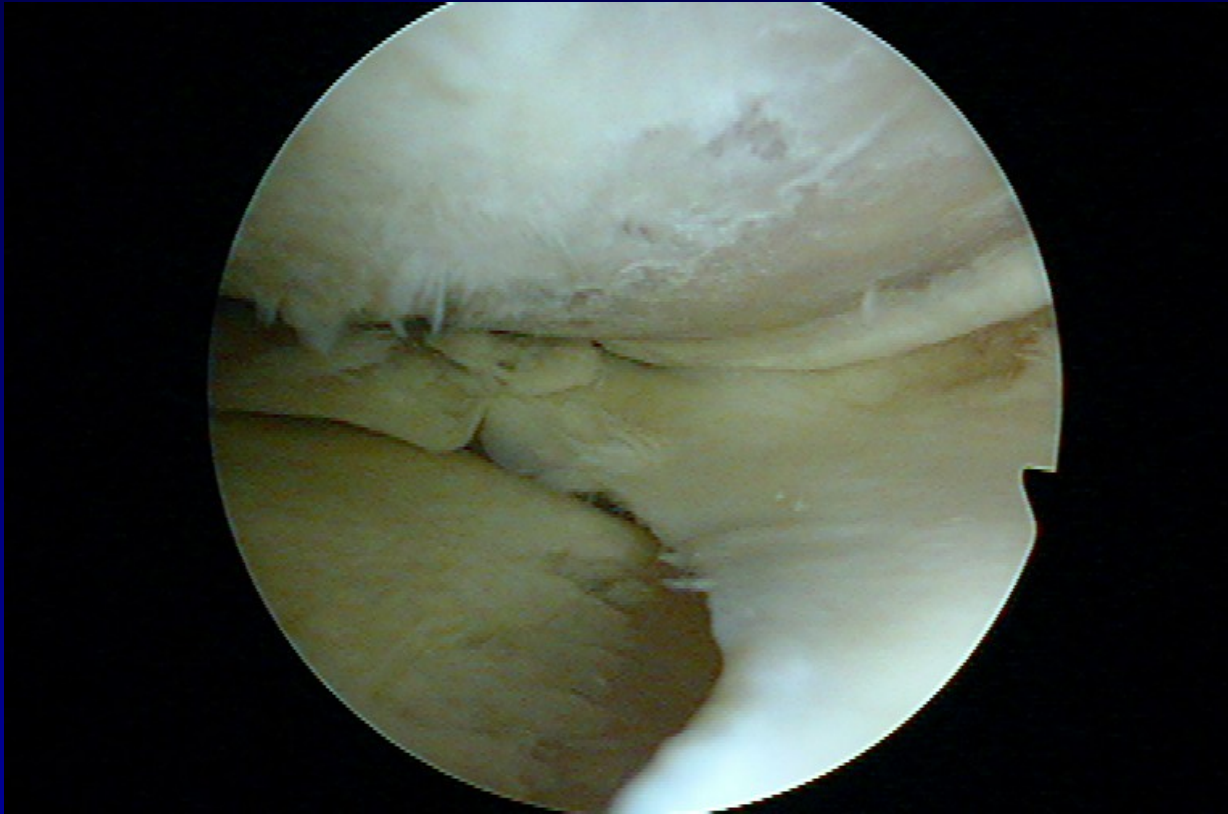
Fissures in the cartilage

Chondropathy III. st.



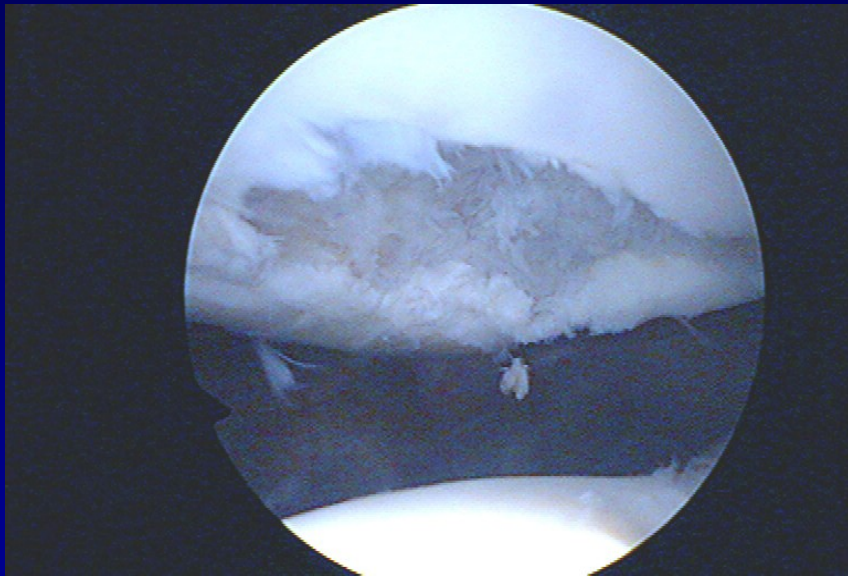
Fibrillation- „ crab meet“

Chondropathy IV. st.

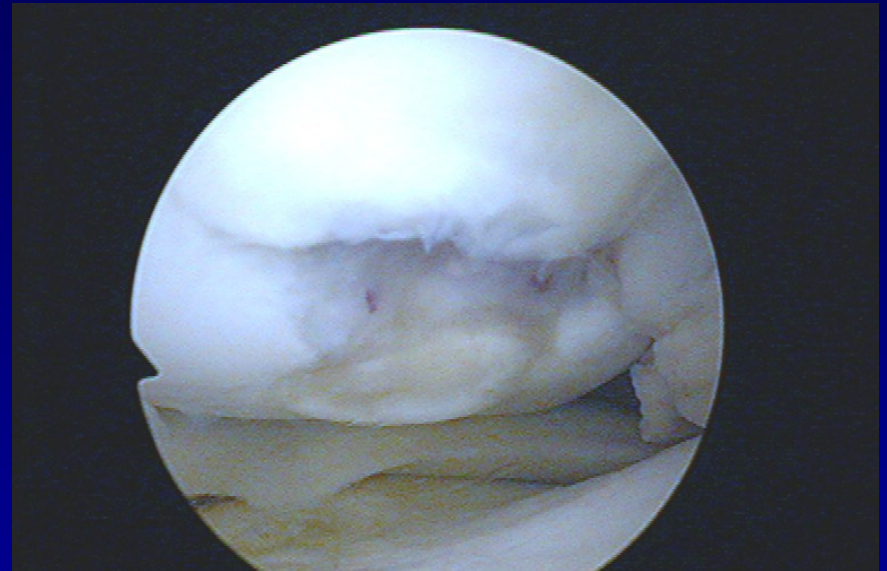


Defects to subchondral bone

Defects of cartilage

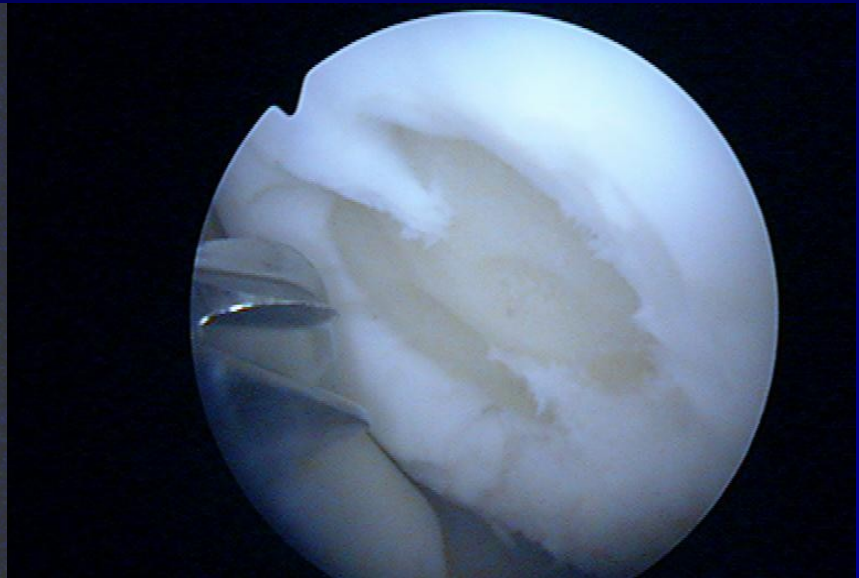
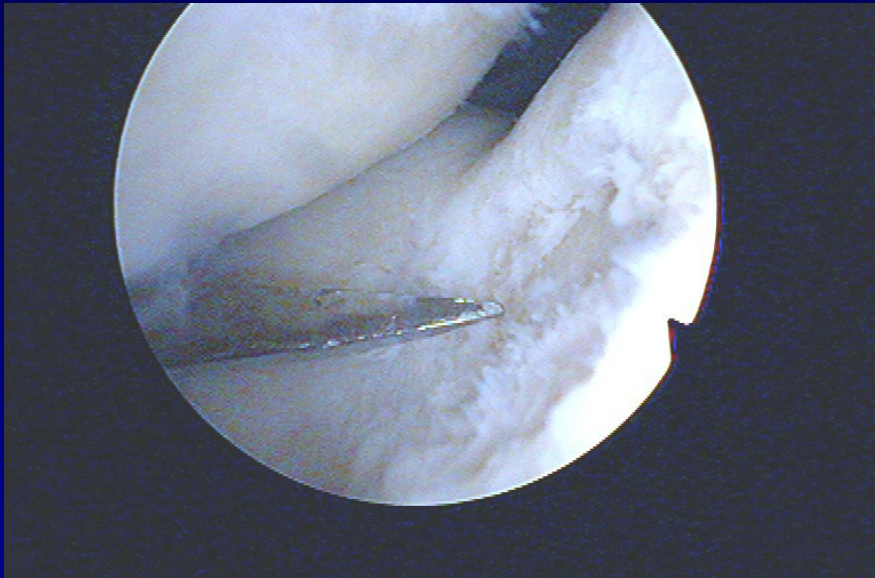


Patella



Medial condyle

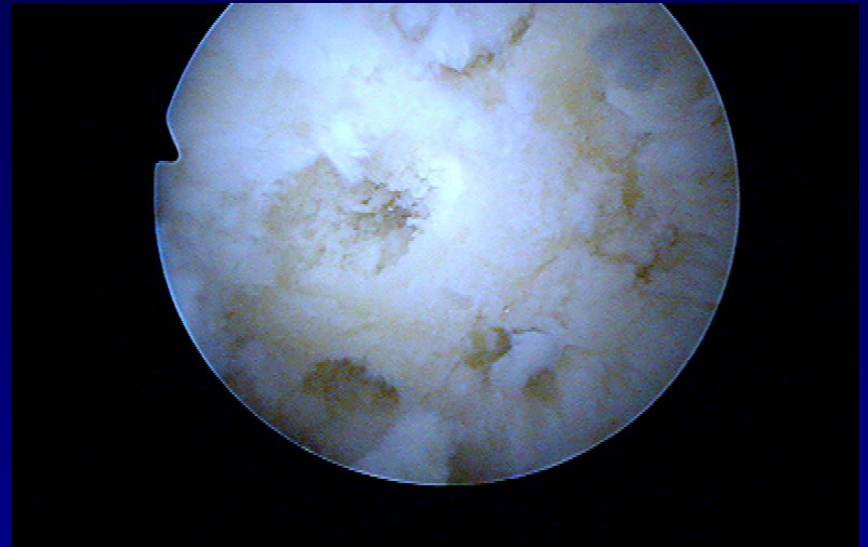
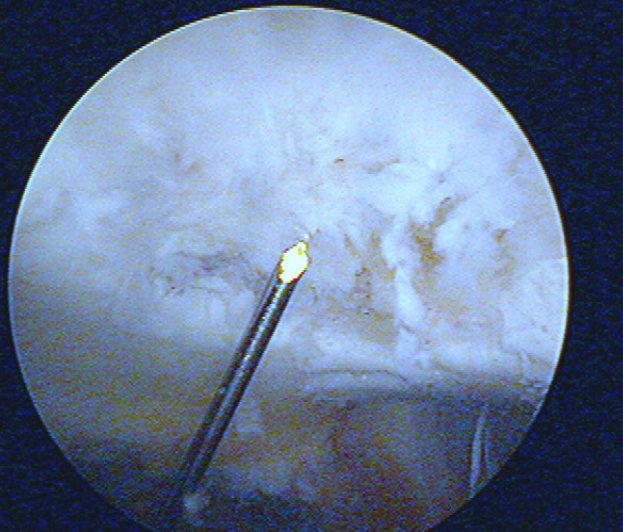
Shaving and drilling



-

-

Drilling

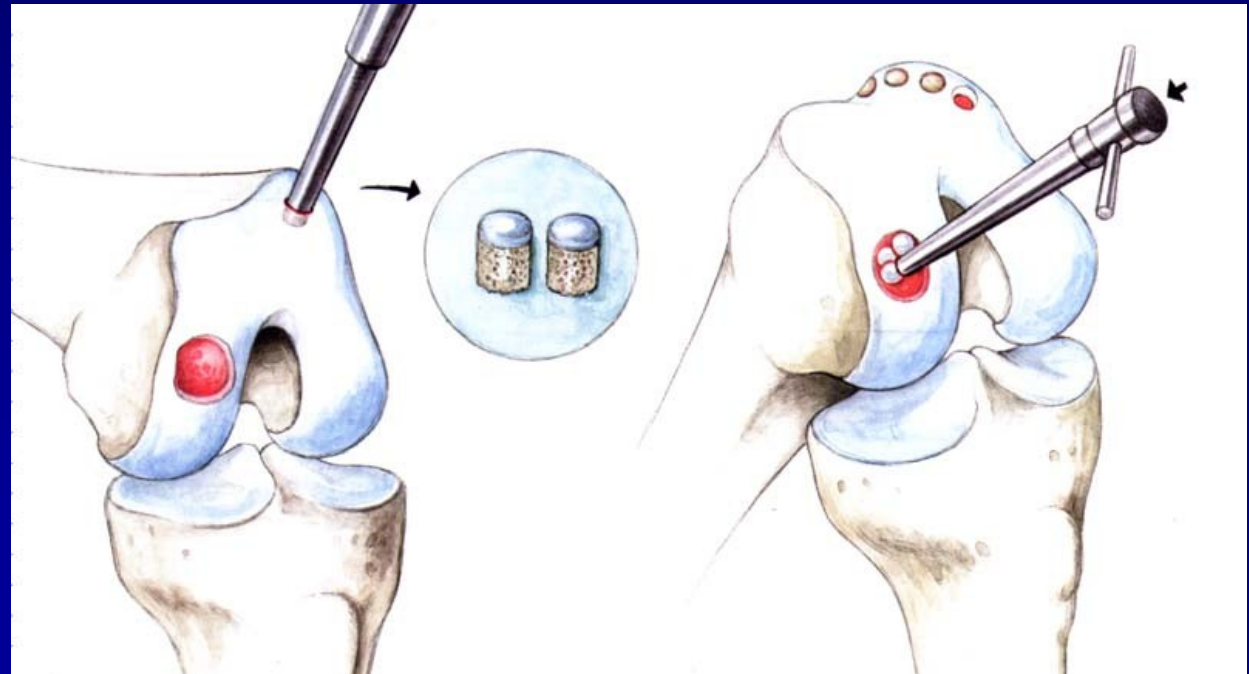


-

Osteochondral autograft transfer- OAT Mosaicplasty

Hangody, L., 1992

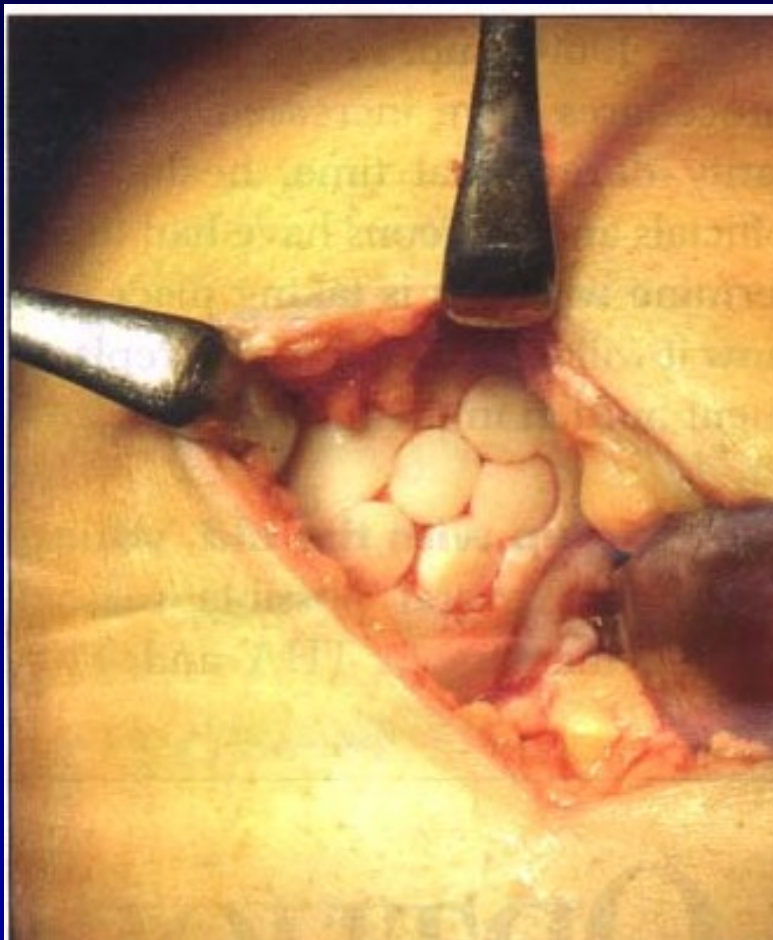
Defects up to 2 - 4 cm²



Osteochondral autograft transfer- OAT



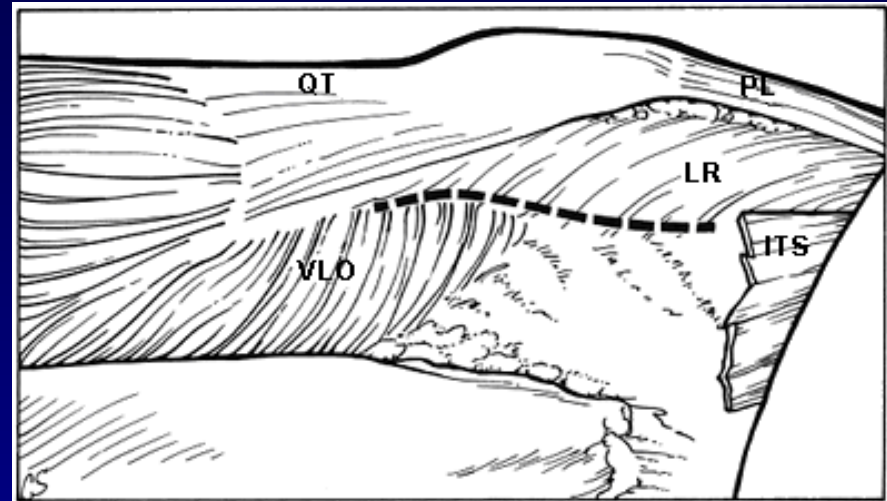
OAT



4 years after surgery

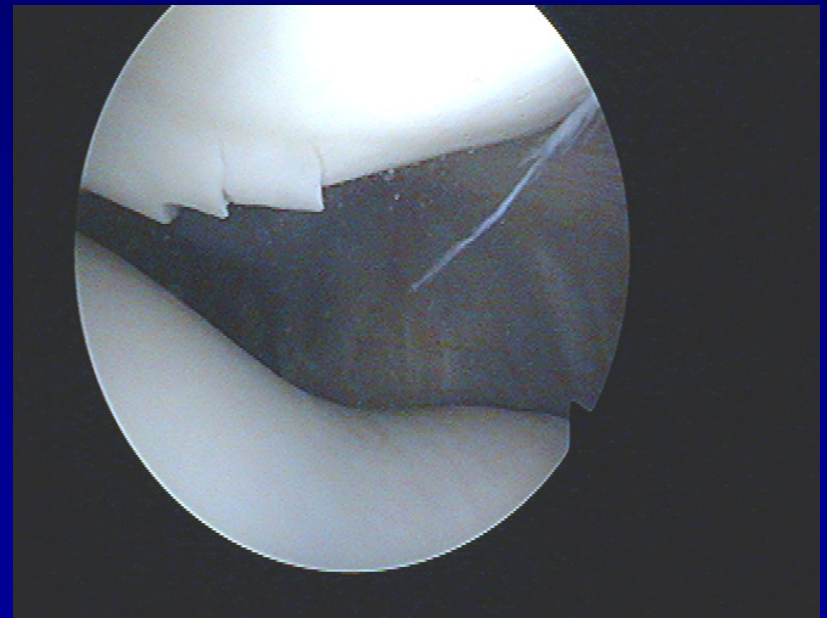
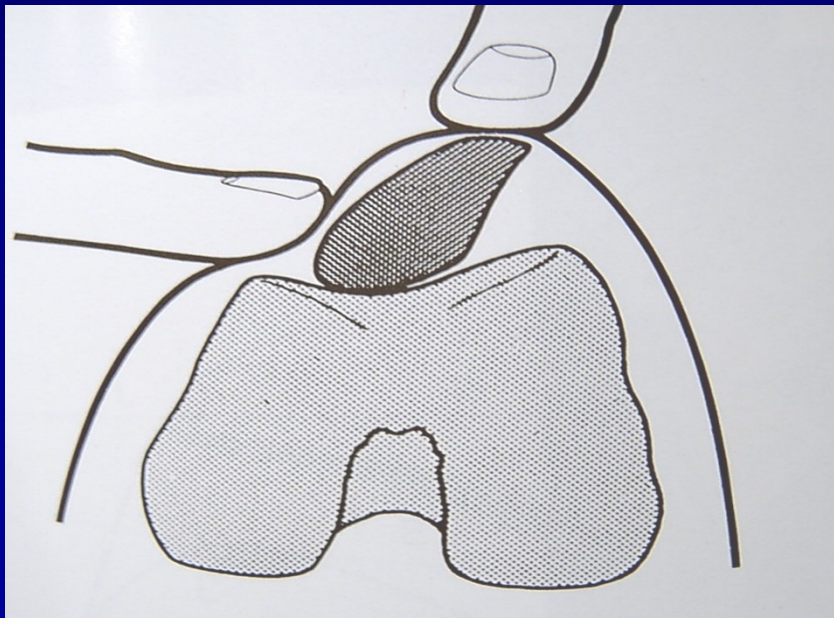
Patella

- Chondropathy
- Subluxation
- Dislocation



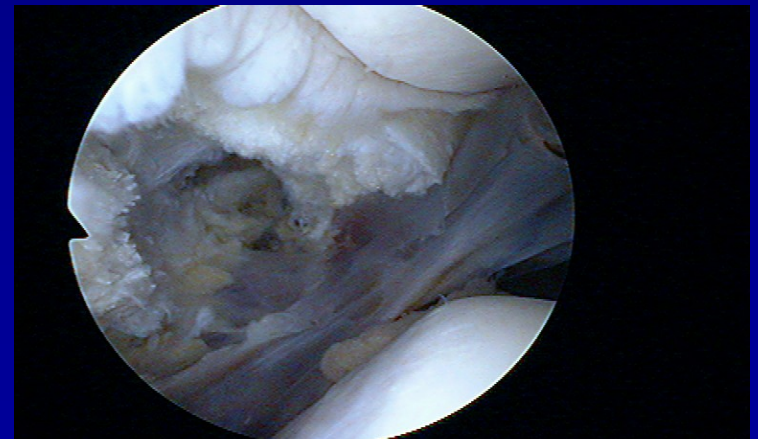
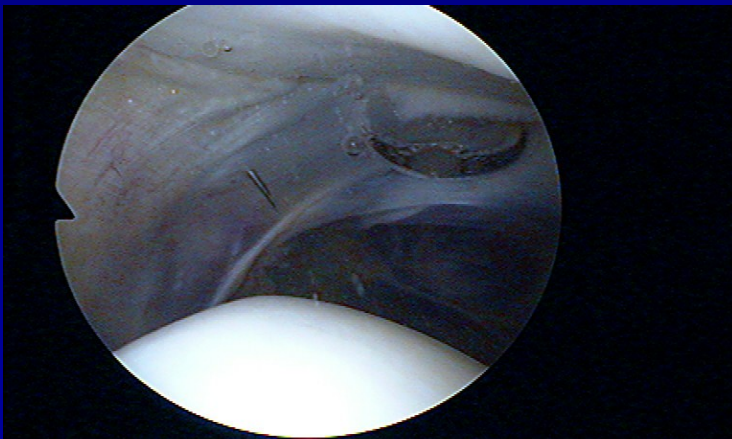
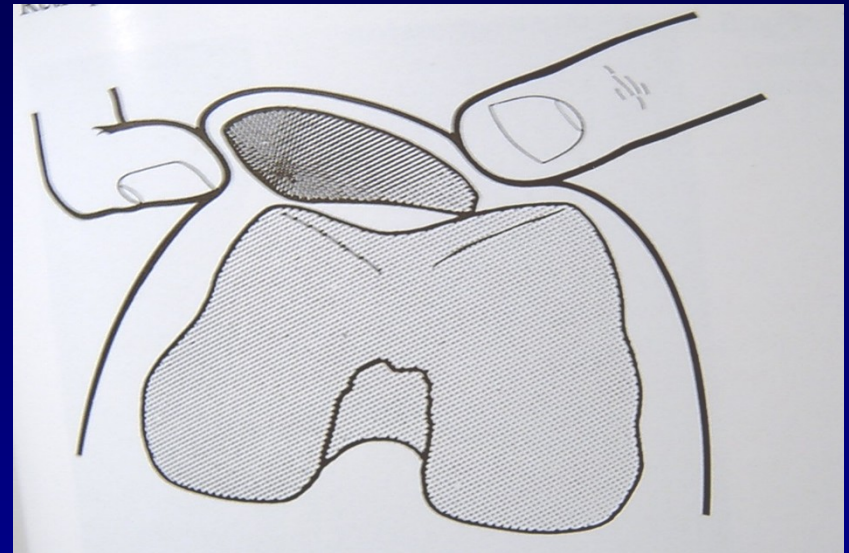
Chondropathy of the patella

Clinical symptoms

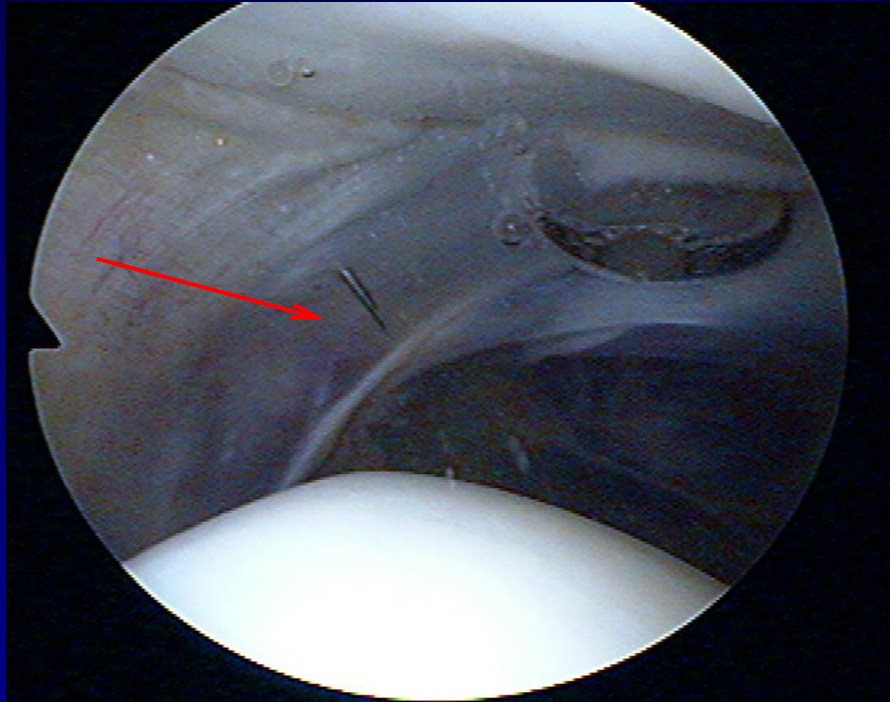


Chondropathy of the patella

- Lateral hyperpression
- Lateral release



Lateral release

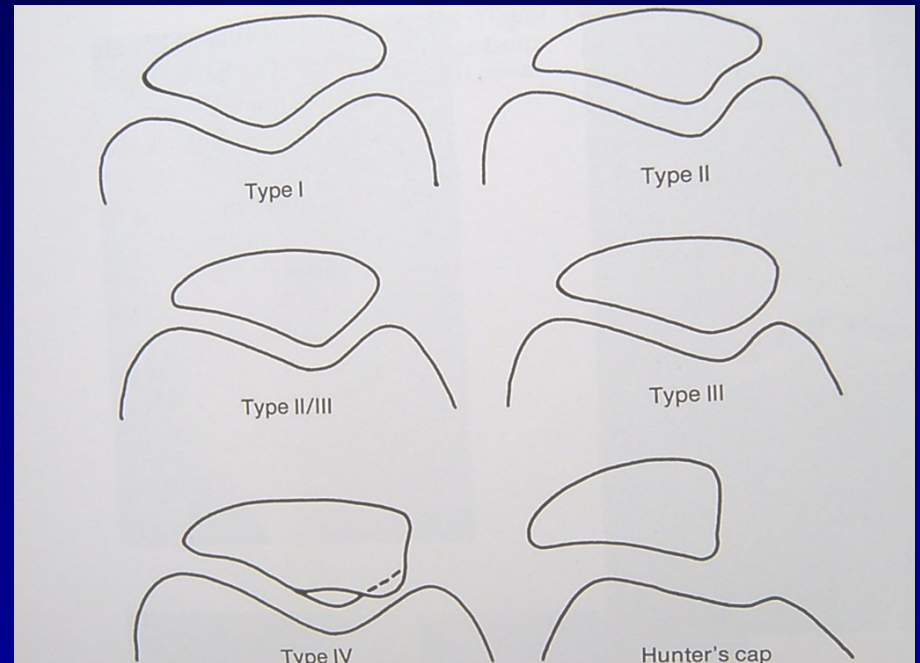


- Incision of lateral retinaculum



Traumatic dislocation of the patella

- Always laterally
- Conservative treatment
- Operative treatment

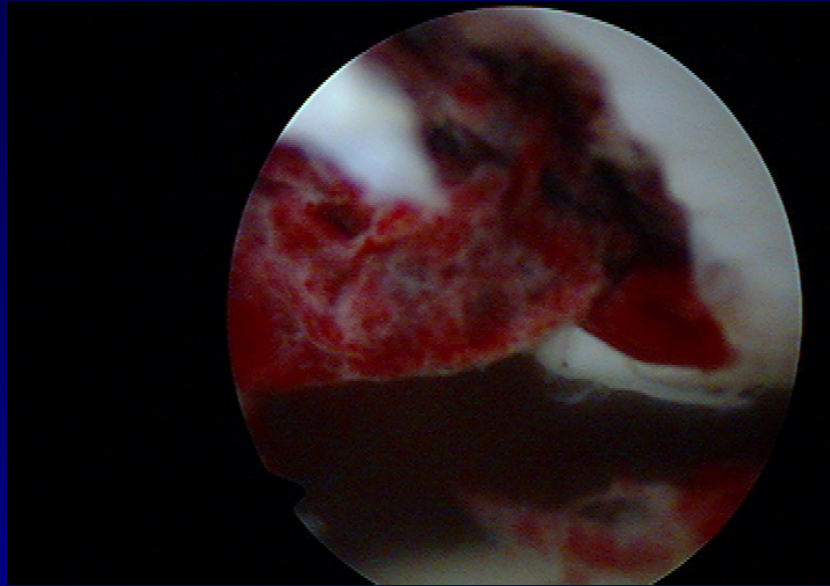


Types of patella

Recurrent dislocation of the patella

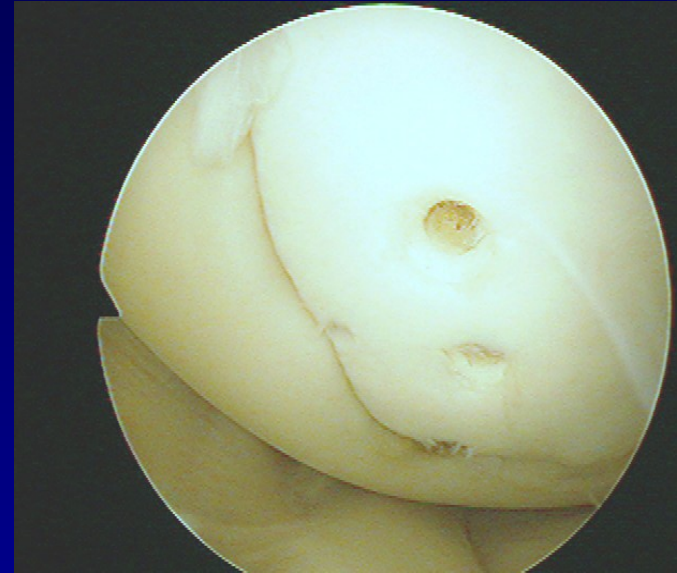
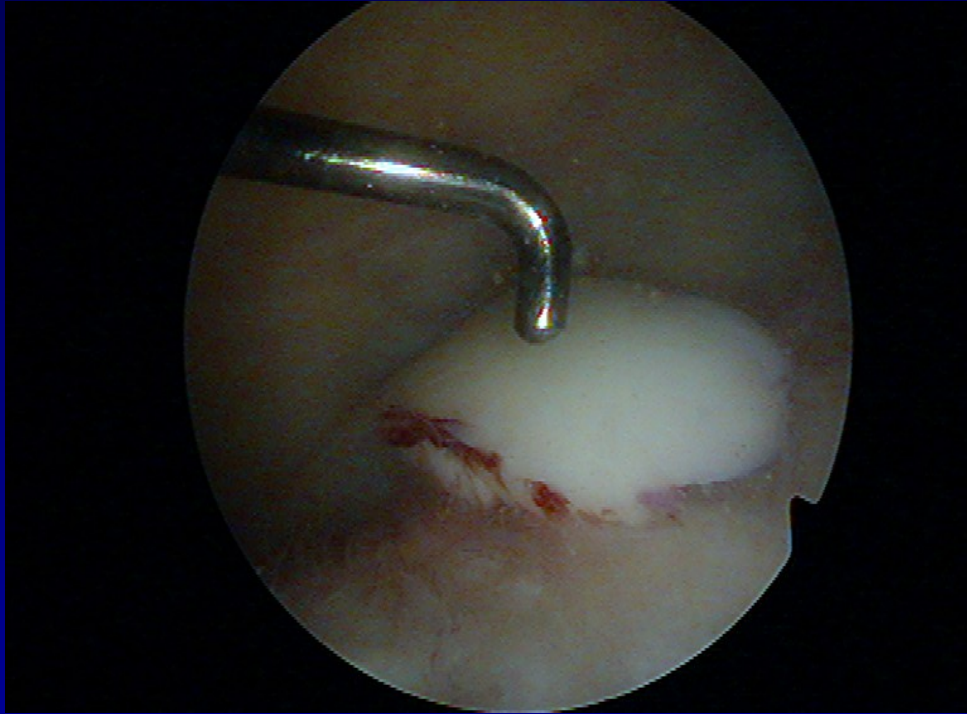
- posttraumatic
 - congenital
 - habitual
- ASK – lateral release + medial capsuloraphy
- Open surgery

Transchondral fracture



Removal of destroyed cartilage

Osteochondral fractures



Fixation by pins



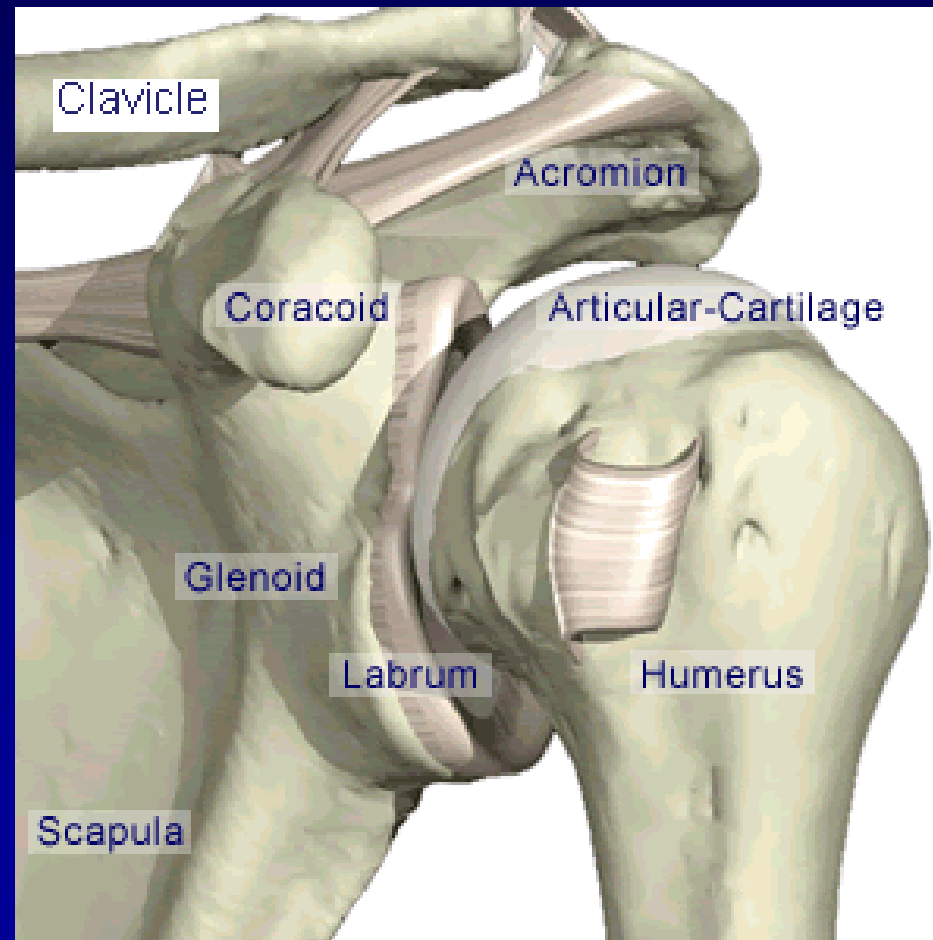
Arthroscopy of the shoulder

Subacromial decompression

Suture of rotator cuff

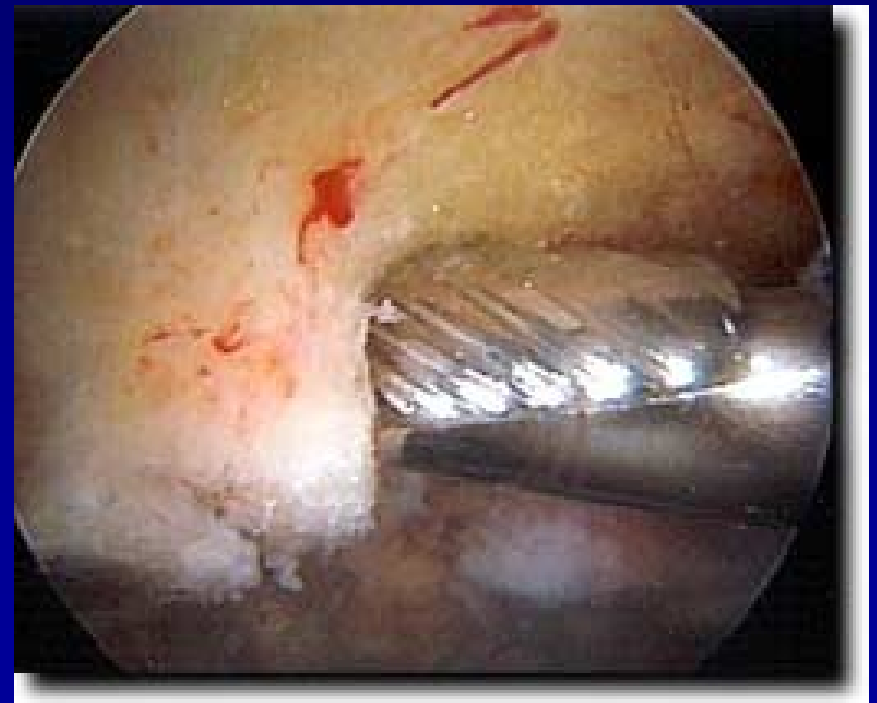
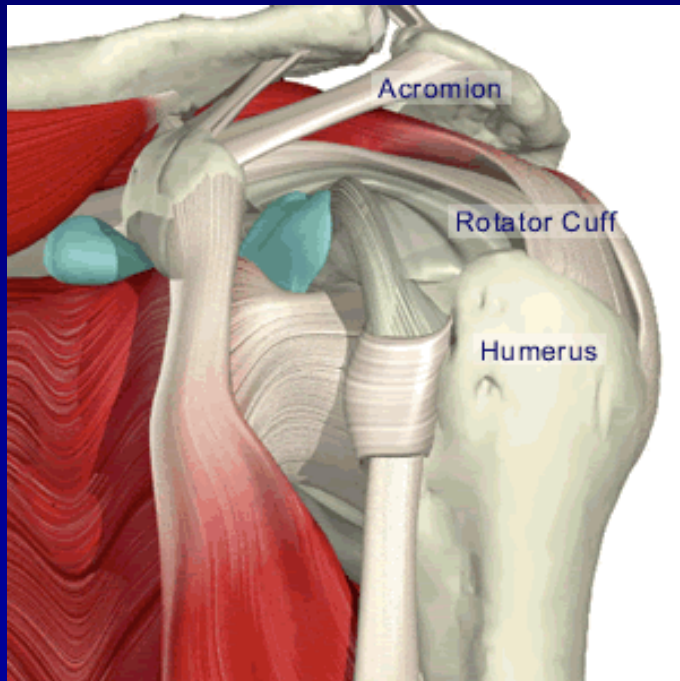
Chronic instability

SLAP lesion



ASAD – arthroscopic subacromial decompression

- Removal of bursa
- Acromioplasty - shaver



Rupture of rotator cuff

Suture:

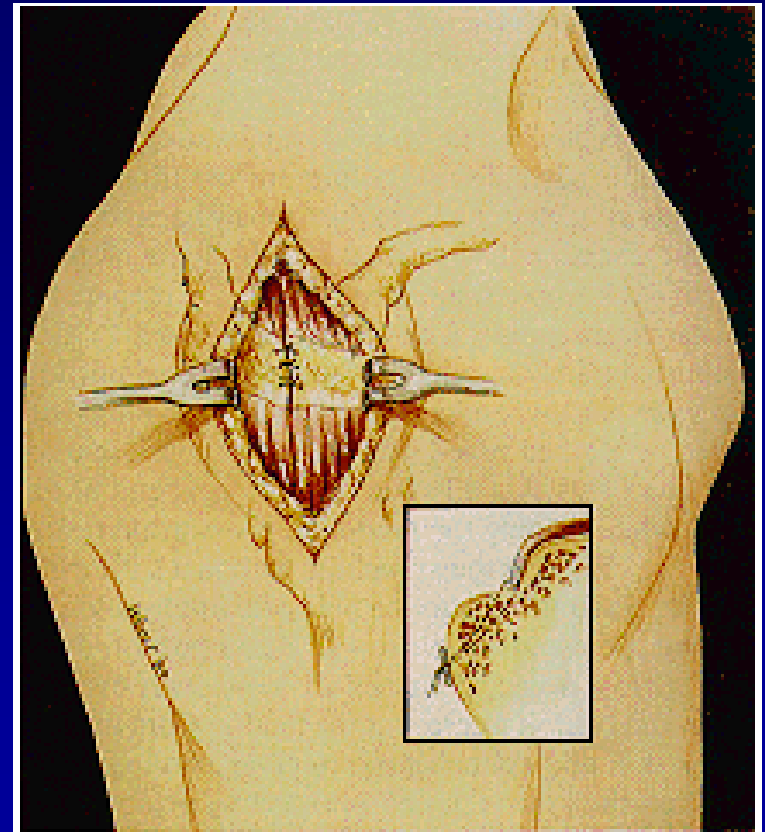
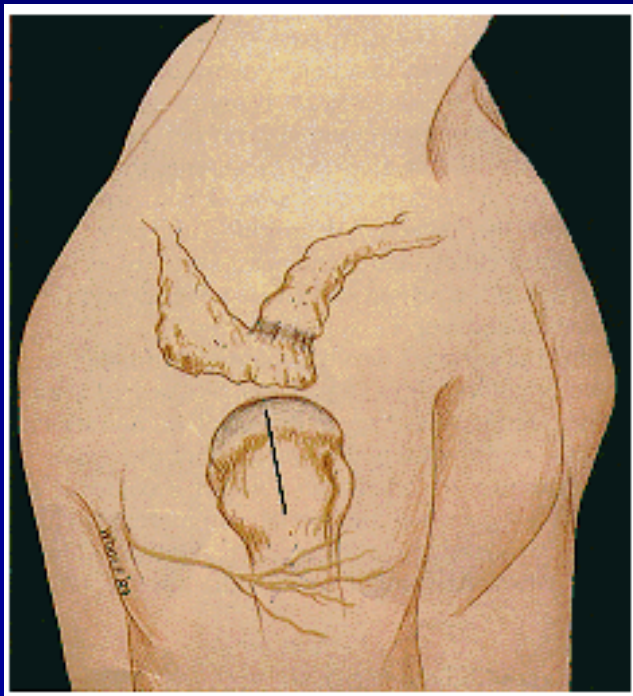
- arthroscopically



Rupture of rotator cuff

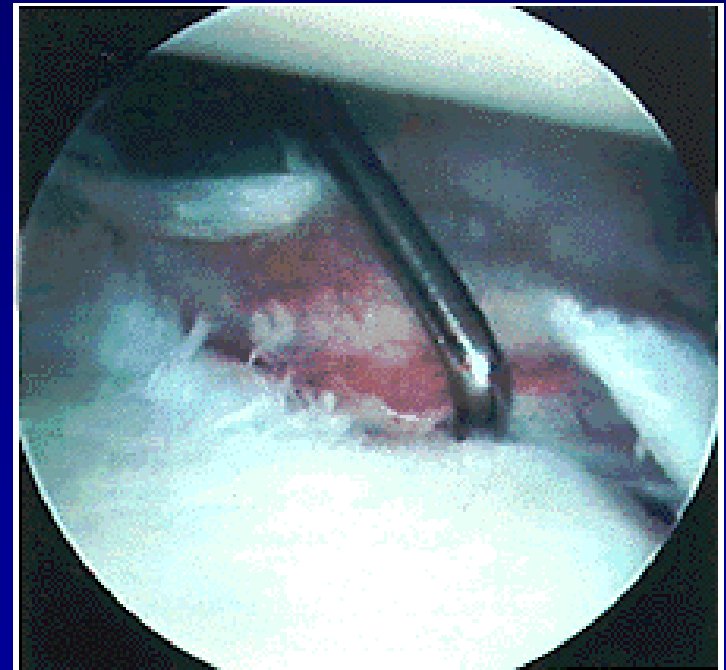
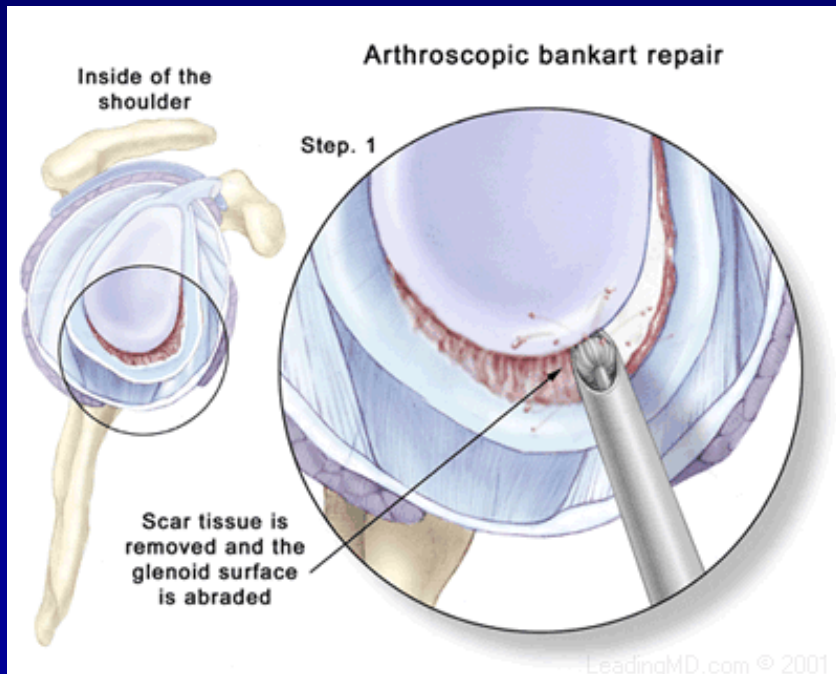
Suture:

- from small incision



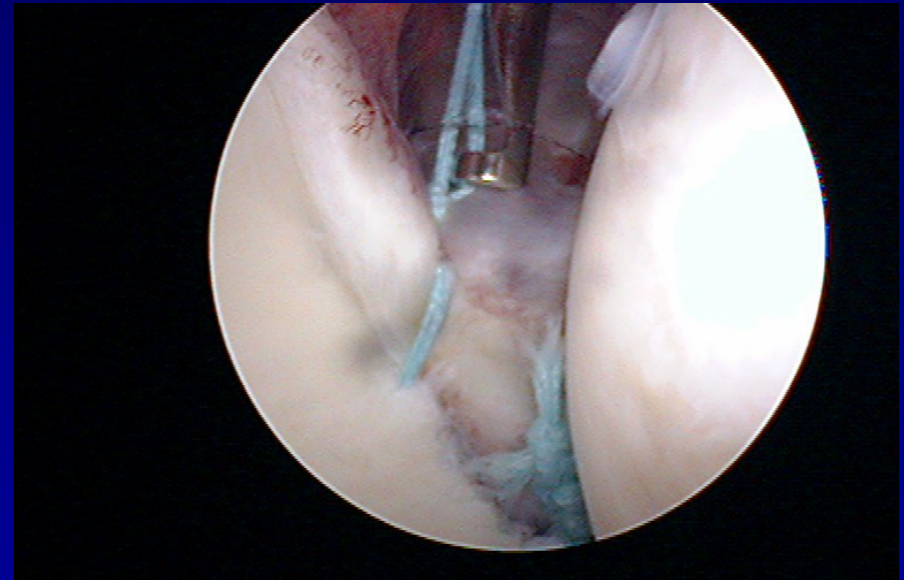
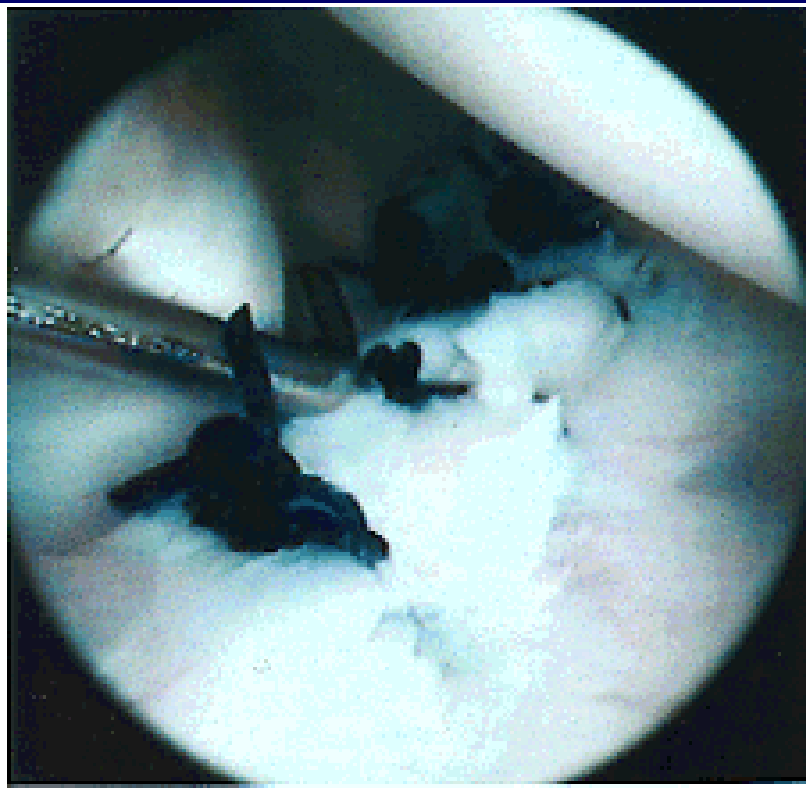
ASC- stabilisation

Fixation of the labrum to the bone – stitches and arrows



ASC- stabilisation

- Fixation of the labrum to the bone – stitches, arrows



SLAP lesion

Rupture of insertion of the tendon of long head of biceps

S.L.A.P. Lesion
Type III



S.L.A.P. Lesion
Type IV

