

X. Mezinárodní kongres úrazové chirurgie a soudního lékařství

Mikulov, 6-7.11.2018, hotel Galant



Sutura menisku

Pikula R., Uher T., Smékal P.

Klinika úrazové chirurgie LF MU a TC FN Brno

Historie

Thomas Annandale - 1883

Professor of Clinical Surgery, University of Edinburgh

*Annandale T (1885) An operation for displaced semilunar cartilage.
Br Med J 1:779*



Masaki Watanabe 1962

První artroskopicky asistovaná sutura menisku

Memories of early days of arthroscopy

Masaki Watanabe

Arthroscopy: The Journal of Arthroscopic & Related Surgery

Volume 2, Issue 4, December 1986, Pages 209-214

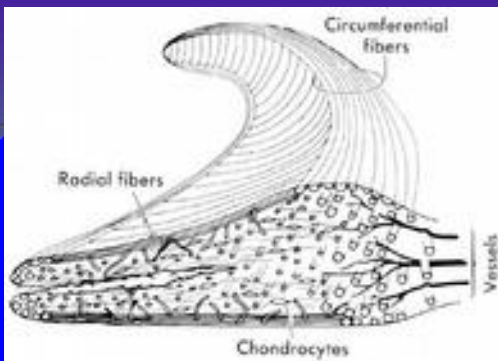
80.Léta – ČR – ÚN Brno

Transplantace hluboce mražených menisků

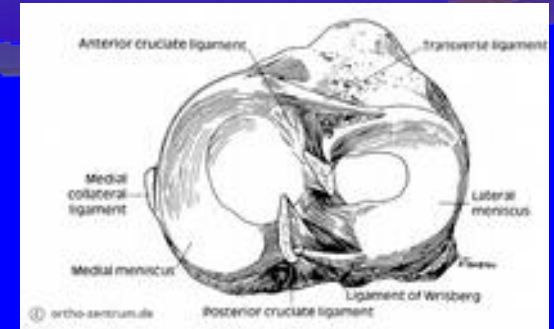
ACTA CHIRURGIAE ORTHOPAEDICAE ET TRAUMATOLOGIAE CECOSL., 75, 2008, p. 40_47

L. PAŠA, V. POKORNÝ, S. KALANDRA, I. MELICHAR, A. BILIK





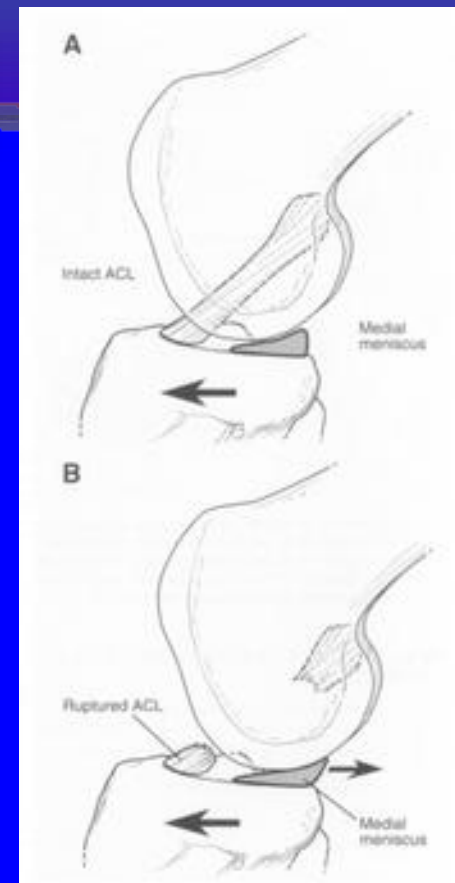
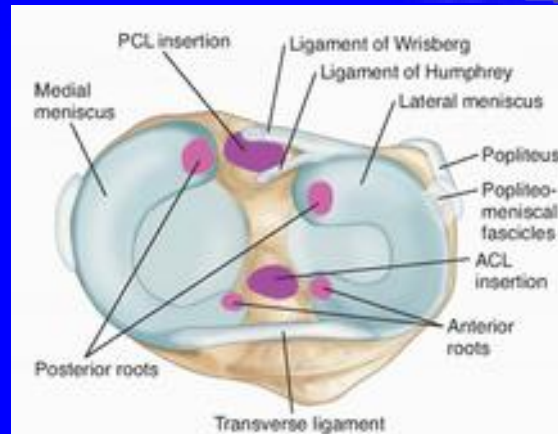
Meniskus



Zátěž kolena

- Absorbce zátěže v kompartmentu - med. meniskus 50% zátěže , laterální meniskus 70% zátěže
- Vertikální zátěž – absorbce menisky 50% (extenze) vs. 85% (90° flexe kolenního kloubu)
- Resekce 25-35% menisku – zvýšení tlaku na chrupavky o 350%

- Absorbce šoku
- Lubrikace
- Propriocepce
- Stabilita kloubu



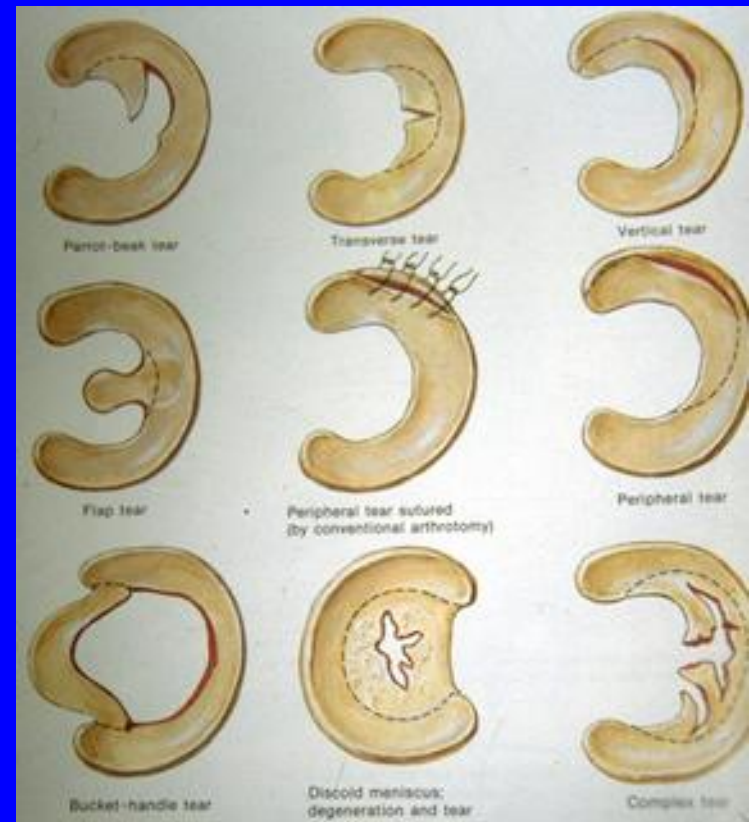
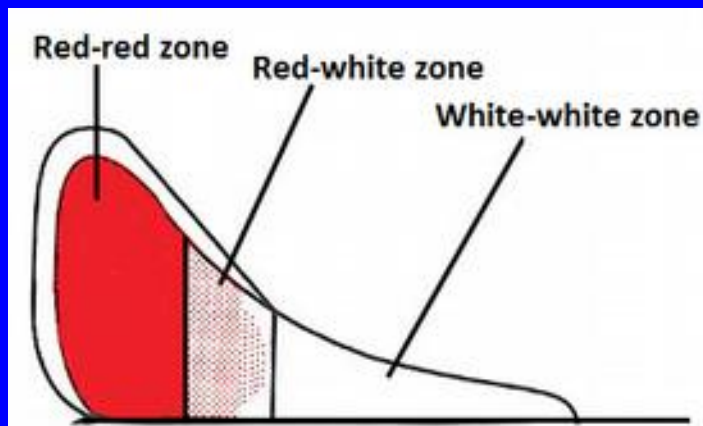
- Při rpt. LCA a med. menisektomii
 - vzestup přední tibiální translace o 58% při 90° flexi
 - vzestup zatížení menisku – med. meniskus o 52% v extenzi, o 197% v 60° flexi

Indikace meniscopexie

- *Tvar ruptury, místo ruptury (R-R, R-W, W), čas od úrazu, stabilita kolenního kloubu, artroza kloubu*

- Ideální indikace

věk <40, bez degenerativy, vertikální ruptura v R-R zóně při LCA rekonstrukci



Current Concepts in Meniscus Surgery: Resection to Replacement

Nicholas A. Sgaglione, M.D., J. Richard Steadman, M.D., Benjamin Shaffer, M.D.,
Mark D. Miller, M.D., and Freddie H. Fu, M.D.

TABLE 1. *Indications for Meniscal Resection, Repair, or Rasping*

	Resect	Repair	Rasp
Pattern	Oblique flaps, radial, degenerative complex, horizontal	Longitudinal/vertical bucket-handles	Incomplete longitudinal
Site	Inner (white-white)	Peripheral (red-red), middle (red-white), inner (white-white)	Red-red posterior horn, lateral meniscus
Size	NA	>7-10 mm	<7-10 mm
Excursion	NA	>5-mm displaced into notch	<3-5 mm
Tissue viability	Deformed frayed, nonviable	Minimal deformation, holds repair device, viable	Viable
Prognosticators	ACL intact, no malalignment, no chondral lesions	Associated ACLR, associated chondral procedure, axially malaligned	ACL intact, well-aligned, no chondral lesions

Abbreviations: ACL, anterior cruciate ligament; ACLR, anterior cruciate ligament repair; NA, not applicable.

Laterální meniskus – lepší hojení, menisektomie – horší outcome

Noyes – pacienti do 19 let věku, rpt. do W zony – 67% zhojení

Arthroscopic Repair of Meniscal Tears Extending into the Avascular Zone in Patients Younger than Twenty Years of Age
FR Noyes, SD Barber-Westin

The American Journal of Sports Medicine, Vol 30, Issue 4, 2002

Ramp lesion

- 9-17% při ruptuře LCA
- Longitudinální rpt. zadního rohu MM
- MRI negativní
- PM port – ošetření léze
- All-inside ošetření

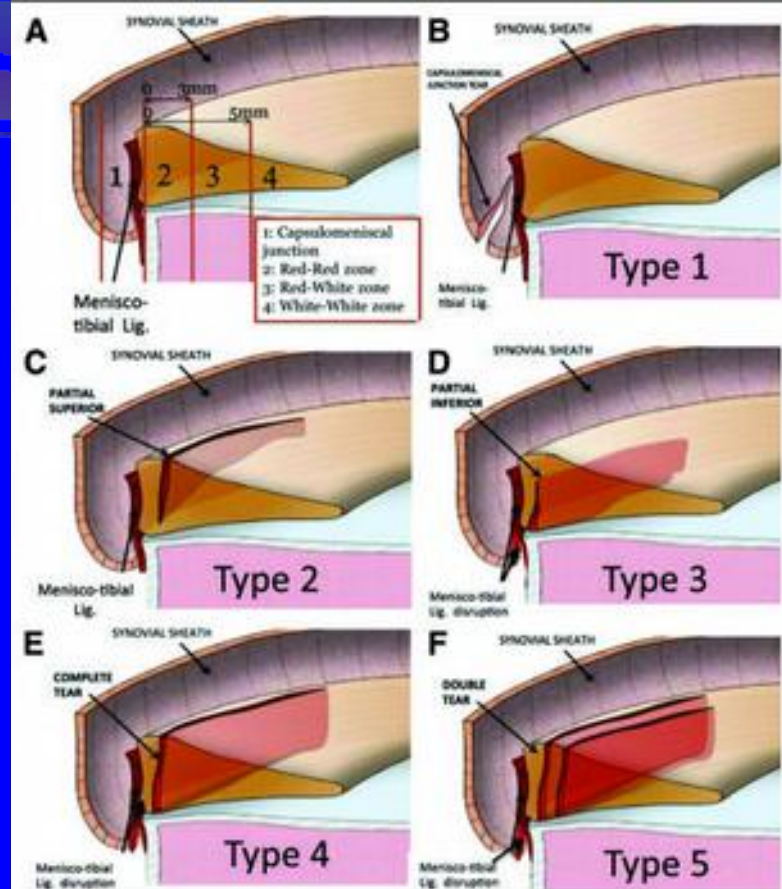
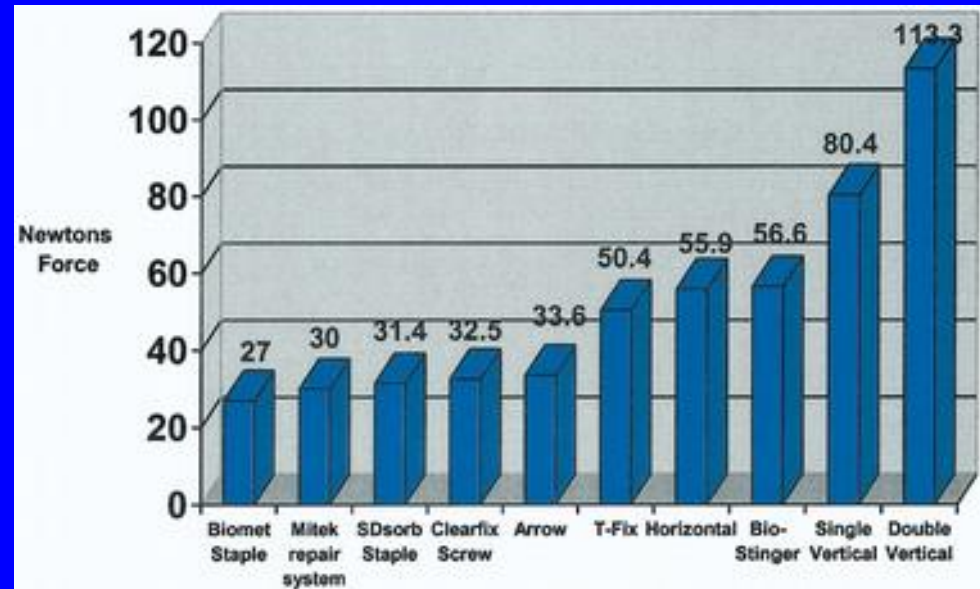


Figure 2: CLASSIFICATION OF RAMP LESIONS: (A) These tears can then further classified by their proximity to meniscus blood supply, namely, whether they are located in the capsulomeniscal junction (1), red-red (2), red-white (3), or white-white (4) zones. (B) Type 1: Capsulomeniscal junction lesions. Lesions are very peripherally located in the synovial sheath. Mobility at probing is very low. (C) Type 2: Partial superior lesions. It is stable and can be diagnosed only by the trans-notch approach. Mobility at probing is low. (D) Type 3: Partial inferior or hidden lesions. They are not visible with the trans-notch approach, but they may be suspected in case of mobility at probing, which is high because of the disruption of the meniscotibial ligament. (E) Type 4: Complete tear in the red-red zone. Mobility at probing is very high. (F) Type 5: Double tear.

Technika meniscopexe

- Outside-in – PDS stehy
- Inside-out
- All inside



- Zadní roh – all-inside technika, curved spinal needle
- Cca 4-5mm (8mm) vzdálenost stehů od sebe
- Léze pod 2cm - 94% zhojení, nad 4cm – 50% zhojení

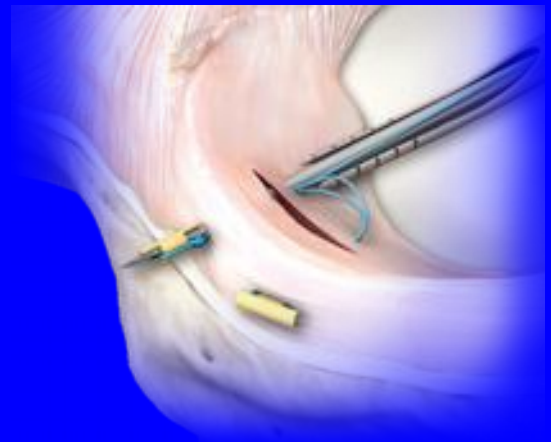
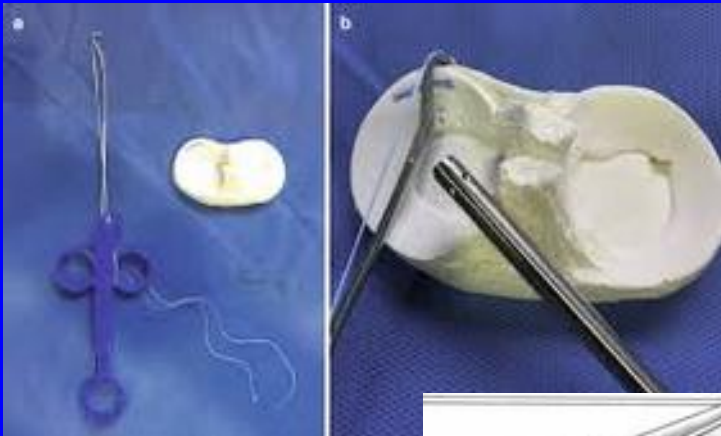


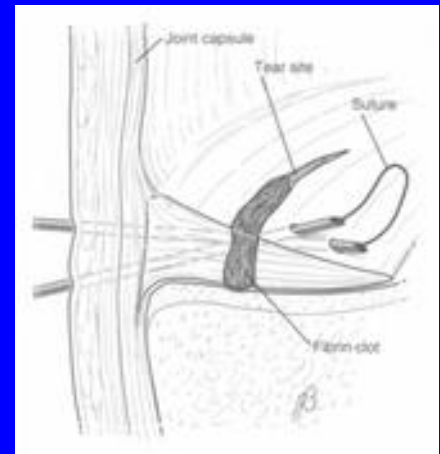
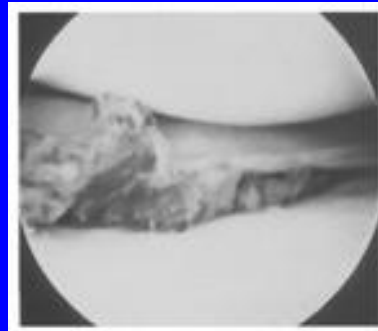
Table 2: Comparison between the different surgical techniques for meniscal repair

Technique	Inside-out	Outside-in	All-inside	
			Suture Hook	Meniscal Devices
Instrumentation	Long cannulae to pass long needles through the meniscal tissue. Wire attached to needle is sutured to the extra-articular part of the capsule.	Consists of percutaneous suture by needle. After passing from within to outside the joint, the wires are sutured to the knee capsule.	Using a curved hook with a posterolateral or posteromedial arthroscopic approach. The wires are sutured using a knot pusher.	Tacks, staples, screws, or self-adjusting suture anchors
Indications	Posterior horn lesions.	<ol style="list-style-type: none"> 1. Anterior or middle third tears of the meniscus as 2. meniscal allograft insertion.³⁷ 3. lateral meniscus tears. 	<ol style="list-style-type: none"> 1. Meniscosynovial lesions of the 2. Capsular attachment of posterior horns hard to repair by other techniques. 	<ol style="list-style-type: none"> 1. Posterior horn meniscal tears 2. Complex Tears with greater length and instability along with sutures
Advantages	More consistent suture placement perpendicular to the tear.	<ol style="list-style-type: none"> 1. This is a simple and low-cost technique. 2. reduce the risk of neurovascular complications in comparison to inside-out 	<ol style="list-style-type: none"> 1. Suture materials are significantly less expensive 2. can avoid various potential complications associated with meniscal fixation devices, such as chondral damage, protrusion or 	eliminate the need for an additional incision, reduce the risk of neurovascular injury, and simplify the procedure.
Disadvantages	Exiting needles require a posterolateral or posteromedial approach. There is an increased risk of iatrogenic damage to the saphenous nerve posteromedially and the peroneal nerve posterolaterally and popliteal vessels and nerve requires a larger incision and carries the risk of neurovascular complications (1.2% to 2.5%).	Cannot be used for posterior horn tears	<ol style="list-style-type: none"> 1. Second incision is necessary. 2. More operative time. 3. Significant learning curve in placing and tying the sutures. 4. Potential risk for synovial fistula 	<ol style="list-style-type: none"> 1. Inadequate strength of fixation in ramp lesions. 2. Most meniscal fixators cannot facilitate meniscal repair in vertical mattress fashion. 3. Blind deployment of the meniscal repair devices, can cause complications like migration or breakage of the implant and iatrogenic cartilage damage. Fewer devices also provide less

Peroperačně

- LM – zavedení jehly ve 60-90° flexi – n. peroneus
- MM – zavedení jehly ve 10-30° flexi – n. saphenus
- Transiluminace
- Vascular access channels – inside-out trepanace jehlou
- Shaving, rasping - rašplování

- Fibrin Clot



- Mikrofracturing interkondylární fossy (notche)

Pooperačně

- Ortéza kolenní rigidní cca 6 týdnů
- Pasivní cvičení 0-0-70° od 2. pooperačního dne
- Chůze o berlích 2 týdny bez došlapu, 4 týdny odlehčení
- Od 6 týdne flexe 100°, rotoped, plavání
- Dřep, sporty, rotace se zátěží, skoky - 3 měsíce od úrazu
- *Průměrná doba rekurence symptomů – 34 měsíců
(16-53 měsíců)*

2016-7

Meniscal Sutures are Superior to Bioabsorbable Arrows: Results After 918 Consecutive Meniscal Repairs in a Dual Center Analysis

Orthop J Sports Med. 2017 May;

Karl Eriksson,1 Erik Rönnblad,2 Bjorn Barenius,1 and Bjorn Engstrom2

The Optimal Placement of Sutures in All-inside Repair of Meniscocapsular Separation

Open Orthop J. 2016; 10: 89–93.

Uğur Tiftikci and Sancar Serbest

The all-inside meniscal repair technique has less risk of injury to the lateral geniculate artery than the inside-out repair technique when suturing the lateral meniscus.

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 13

Cuéllar A, Cuéllar R, Heredia JD, Cuéllar A, García-Alonso I, Ruiz-Ibán MA.

Soubor pacientů

01/2012 – 01/2017

Ruptura menisku 236 pacientů

Sutura menisku 66 pacientů

outside-in 50 pacientů

all-inside 14 pacientů

inside-out 2 pacienti

1 rok od operace

- Bolest v med. kl. šterbině 12.5%
- Blokády, přeskokování 3.6%
- Opakované výpotky 7.1%
- McMurray pozitivní 8.9%
- Lysholm score 94.2%
- 73% (41 pacientů) dobré výsledky (84–100 bodů), 27% (15 pacientů) uspokojivé výsledky (65–83 bodů)

LYSHOLM KNEE SCORING SCALE

Instructions: Below are common complaints which people frequently have with their knee problems. Please check the statement which best describes your condition.

I. LIMP	V. PAIN
<input type="checkbox"/> I have no limp when I walk. (1)	<input type="checkbox"/> I have no pain in my knee. (24)
<input type="checkbox"/> I have a slight or partial limp when I walk. (3)	<input type="checkbox"/> I have intermittent or slight pain in my knee during vigorous activities. (20)
<input type="checkbox"/> I have a severe and constant limp when I walk. (5)	<input type="checkbox"/> I have marked pain in my knee during vigorous activities. (16)
II. USING CANE OR CRUTCHES	<input type="checkbox"/> I have marked pain in my knee during or after walking more than 1 mile. (20)
<input type="checkbox"/> I do not use a cane or crutches. (1)	<input type="checkbox"/> I have marked pain in my knee during or after walking less than 1 mile. (16)
<input type="checkbox"/> I use a cane or crutches with some weight-bearing. (3)	<input type="checkbox"/> I have constant pain in my knee. (8)
<input type="checkbox"/> Putting weight on my knee by is impossible. (5)	
III. LOCKING SENSATION IN THE KNEE	VI. SWELLING
<input type="checkbox"/> I have no locking and no catching sensations in my knee. (14)	<input type="checkbox"/> I have no swelling in my knee. (18)
<input type="checkbox"/> I have catching sensations but no locking sensation in my knee. (10)	<input type="checkbox"/> I have swelling in my knee only after vigorous activities. (14)
<input type="checkbox"/> My knee locks occasionally. (6)	<input type="checkbox"/> I have swelling in my knee after ordinary activities. (12)
<input type="checkbox"/> My knee locks frequently. (3)	<input type="checkbox"/> I have swelling constantly in my knee. (8)
<input type="checkbox"/> My knee both locked at this moment. (0)	
IV. GIVING WAY SENSATION FROM THE KNEE	VII. CLIMBING STAIRS
<input type="checkbox"/> My knee never gives way. (24)	<input type="checkbox"/> I have no problems climbing stairs. (24)
<input type="checkbox"/> My knee rarely gives way, only during athletic or other vigorous activities. (20)	<input type="checkbox"/> I have slight problems climbing stairs. (18)
<input type="checkbox"/> My knee frequently gives way during athletic or other vigorous activities, in that I am unable to participate in these activities. (16)	<input type="checkbox"/> I can climb stairs only one at a time. (12)
<input type="checkbox"/> My knee occasionally gives way during daily activities. (10)	<input type="checkbox"/> Climbing stairs is impossible for me. (0)
<input type="checkbox"/> My knee often gives way during daily activities. (7)	VIII. SQUATTING
<input type="checkbox"/> My knee gives way every step I take. (5)	<input type="checkbox"/> I have no problems squatting. (24)
	<input type="checkbox"/> I have slight problems squatting. (18)
	<input type="checkbox"/> I can not squat beyond a 90 degree bend in my knee. (12)
	<input type="checkbox"/> Squatting is impossible because of my knee. (0)

TOTAL _____ /100

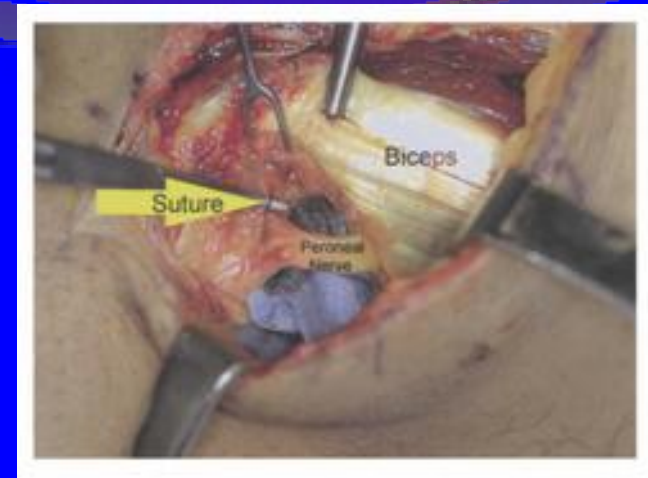
INSTRUCTIONS: Please place an X on the line to indicate the amount of pain you have had in your knee(s) the past 14 hours. The scale ranges from "no pain at all" to the "worst possible pain".

RIGHT KNEE _____
no pain worst possible pain

LEFT KNEE _____
no pain worst possible pain

Komplikace

- *Iritace n. saphenus* 3.0%
- *Iritace n. peroneus* 0%
- *Bolesti v místě inzerce stehů* 7.6%



- Miniheparinizace na 6 týdnů od operace
- Naložení turniketu – EMG změny u 70% pacientů
Postmeniscectomy tourniquet palsy and functional sequelae.
Am J Sports Med. 1982 Jul-Aug;10(4):211-4.
Dobner JJ, Nitz AJ.

Závěr

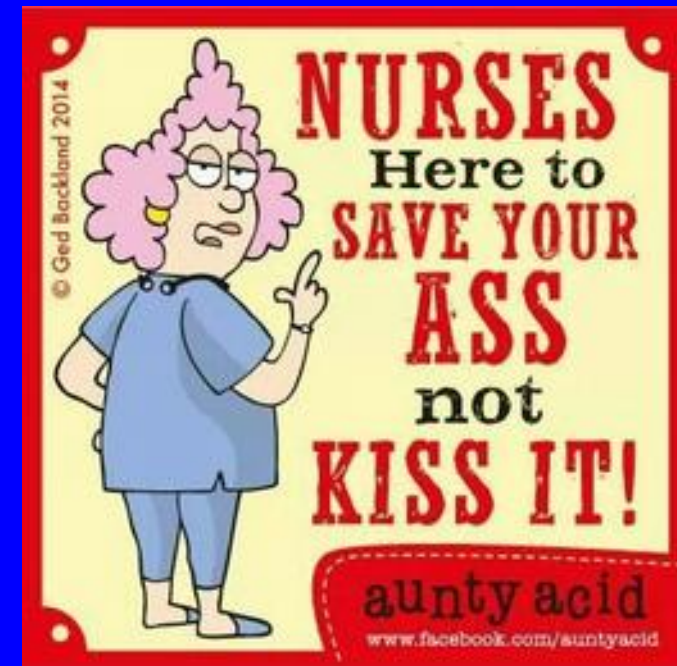
Snaha o meniscopexi

Nejde o rychlost ale o kvalitu

Poučený pacient

Odborně vedená rehabilitace

Spokojenost pacienta



Děkuji za pozornost !

