Il trattamento non protesico dell'artrosi di ginocchio

M. Berruto

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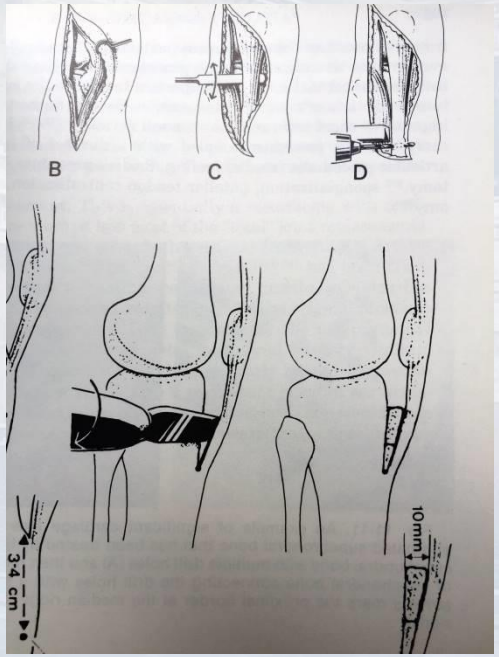
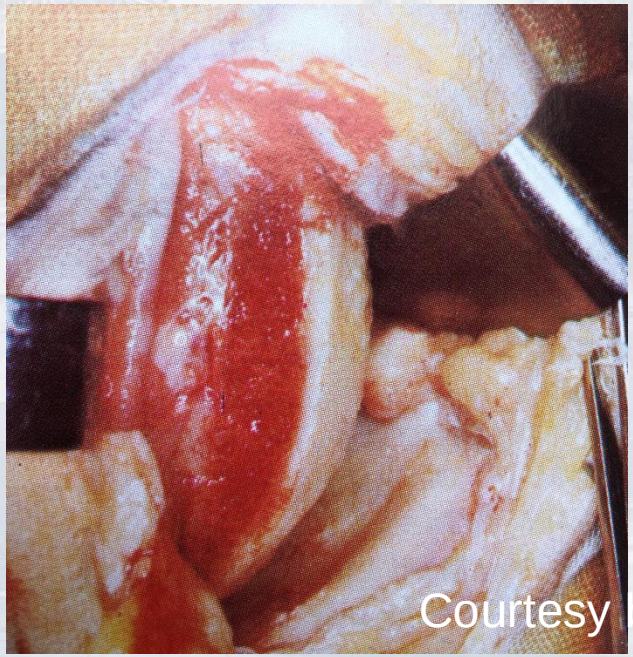
1987

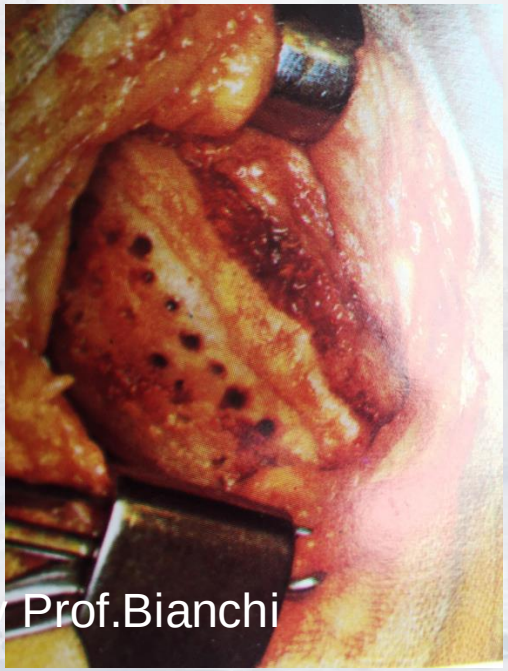
SURGERY OF THE ARTHRITIC KNEE

- Debridement by arthrotomy (ostephytes removal)
- Osteotomies
- Drilling by Pridie
- Maquet procedure (P-F arthritis)





Courtesy by Prof.Bianchi









THE METAL INVASION

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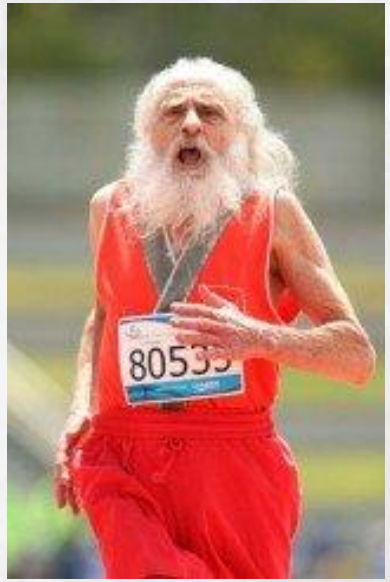
PATIENTS BECAME DIFFERENT

- More Active
- Longer life expectancy
- Higher funcional and activity level



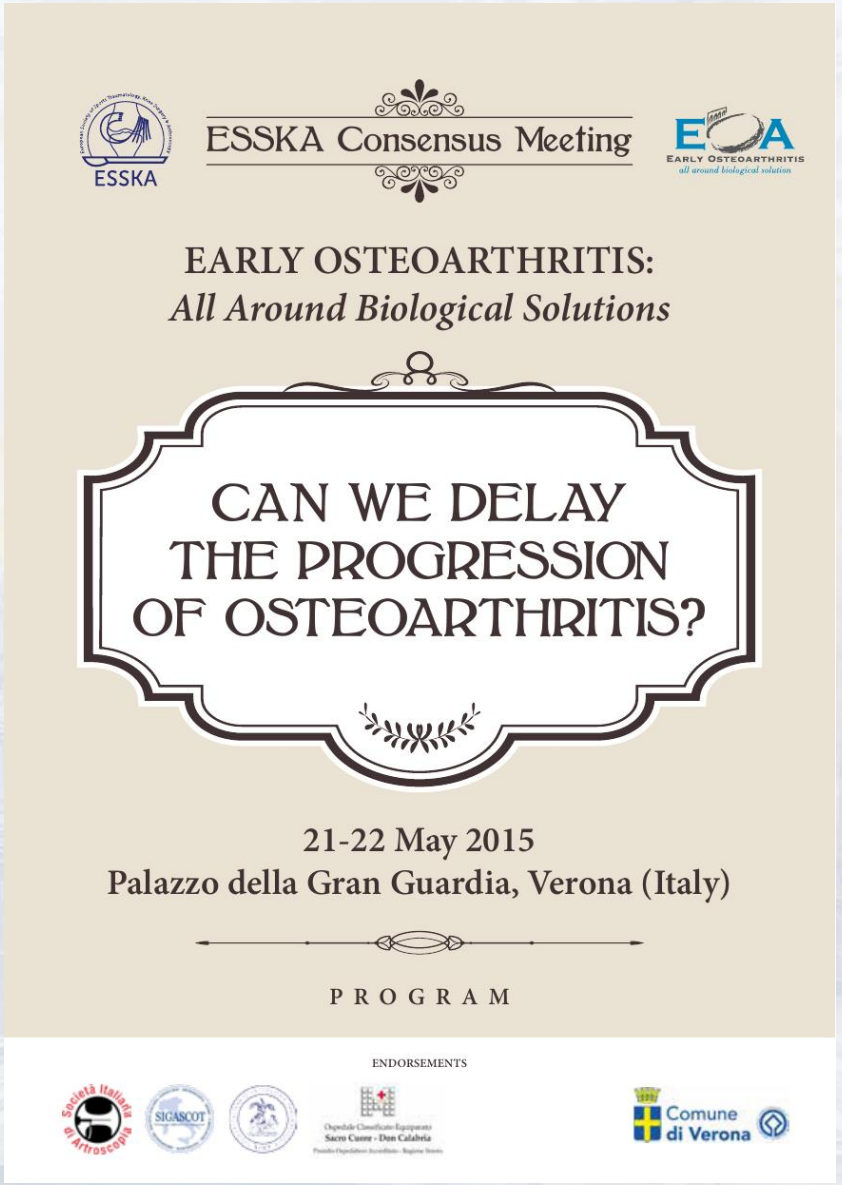
New Concept
Early osteoarthritis

Knee Surg Sports Traumatol Arthrosc (2016) 24:1753–1762
DOI 10.1007/s00167-016-4068-3

KNEE

Early osteoarthritis of the knee

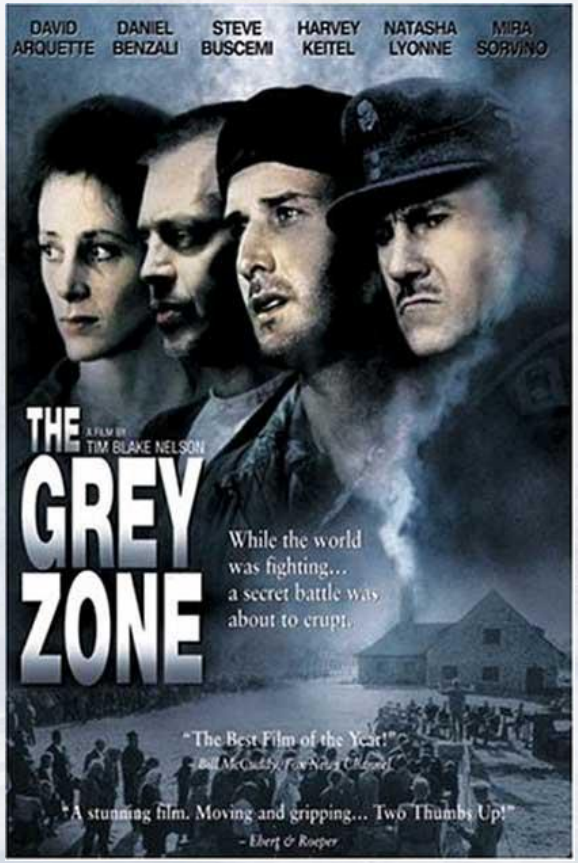
Henning Madry[1,2] · Elizaveta Kon[3] · Vincenzo Condello[4] · Giuseppe M. Peretti[5,6] · Matthias Steinwachs[7] · Romain Seil[8] · Massimo Berruto[9] · Lars Engebretsen[10] · Giuseppe Filardo[11] · Peter Angele[12,13]



Parametri clinici, imaging e artroscopici

EARLY OSTEOARTHRITIS

Appropriate Surgery ?



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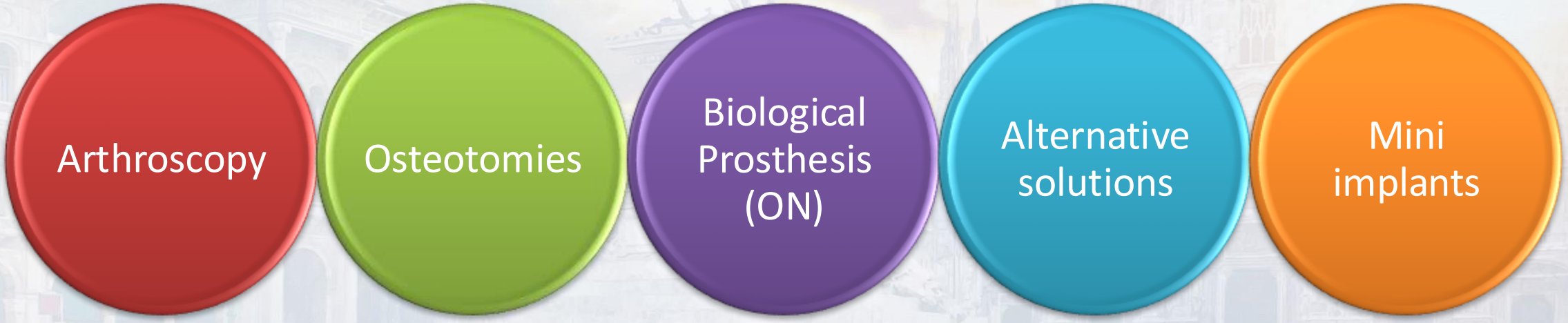
ALTERNATIVE PROCEDURES?



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ARTHROSCOPY

1. Notchplasty and anterior spur removal
2. DJD PACKAGE (Steadman)
3. Meniscal root injuries treatment

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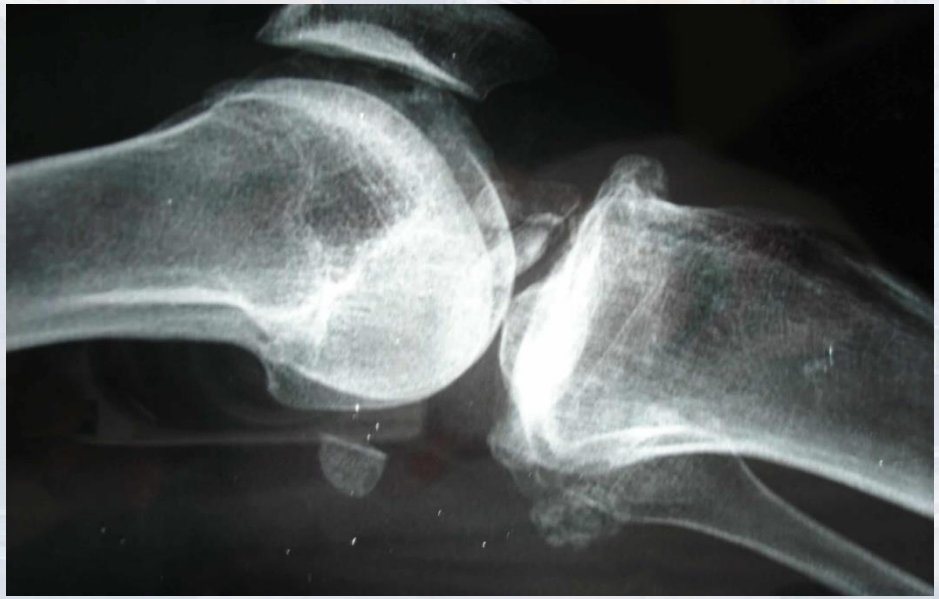
EARLY OSTEOARTHRITIS –EXTENSION LAG

The articular homeostasis is altered by the extension deficit leading to:

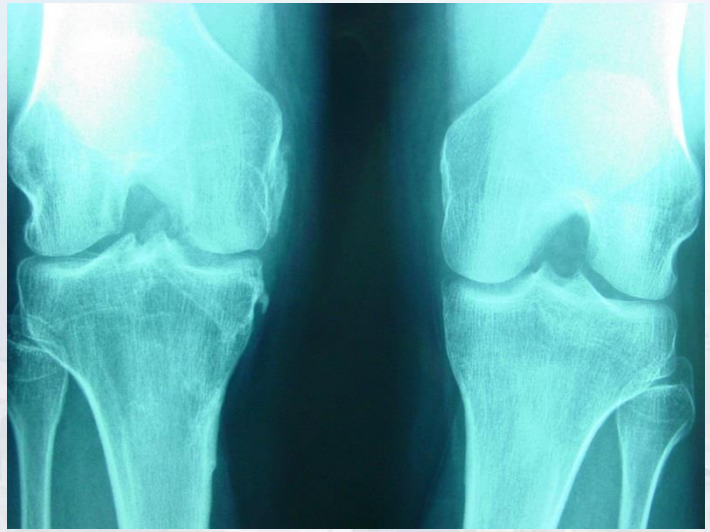
- **Increasing pain**
- **OA progression**
- **Lameness**

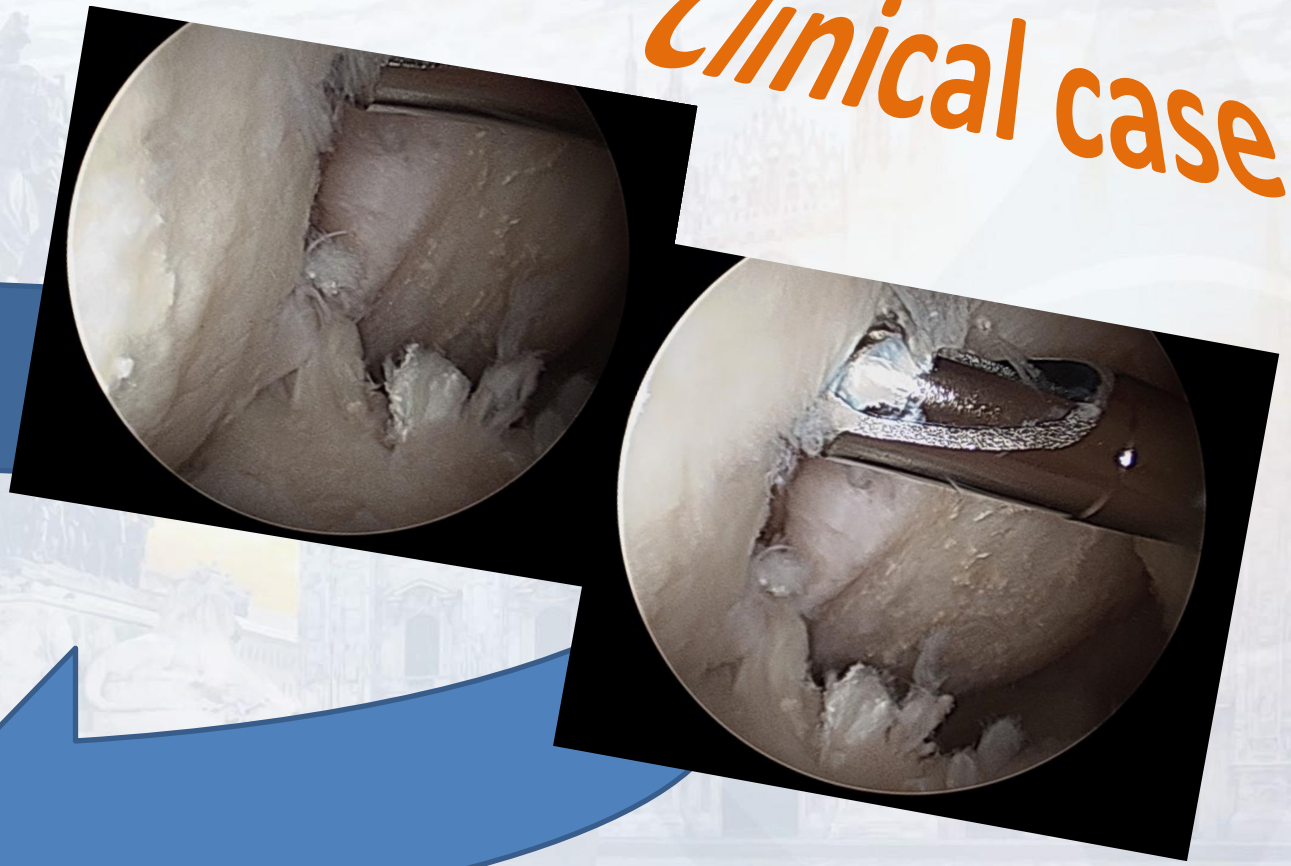


Notchplasty+ Anterior spur removal

Clinical case

46 aa M
extension lag
in knee OA





Full extension recover

Intercondylar notch debridement
using an arthroscopic shaver

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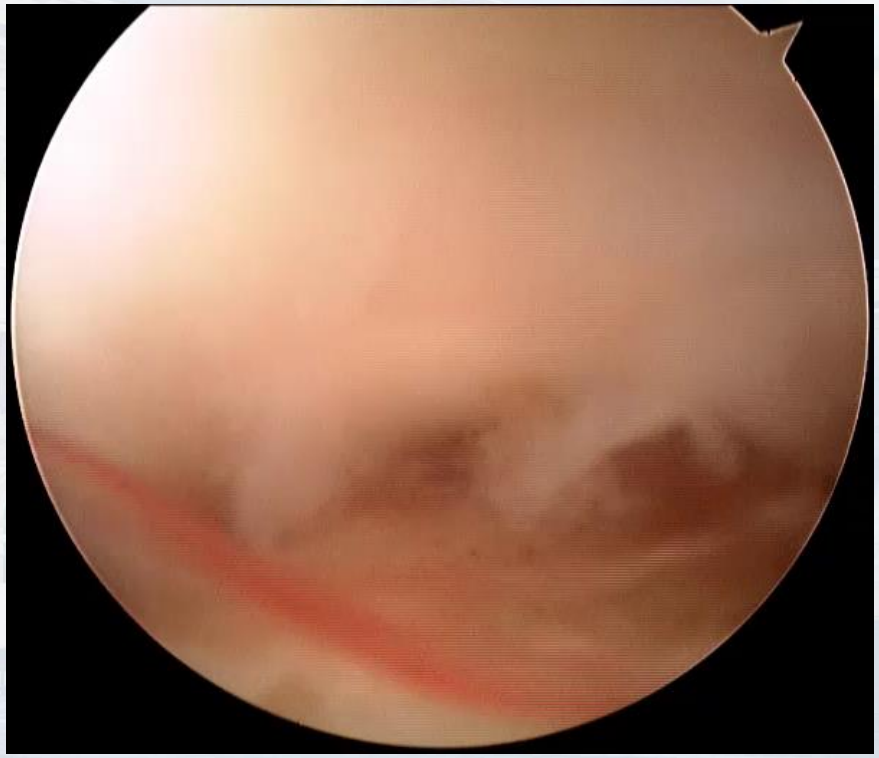
Notchplasty+ Anterior spur removal



Anvil' Osteophyte

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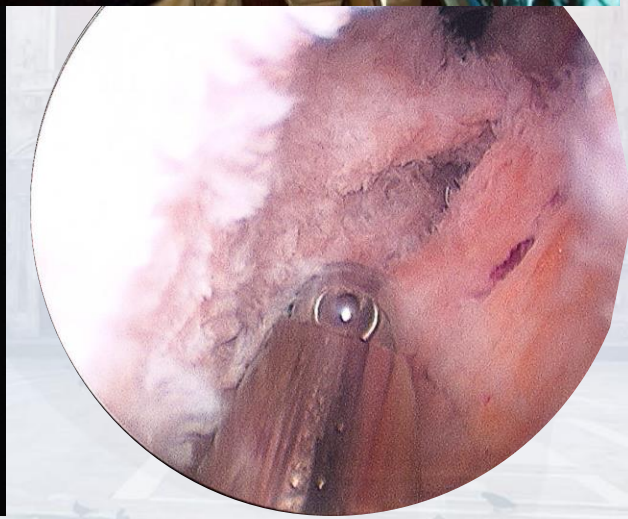
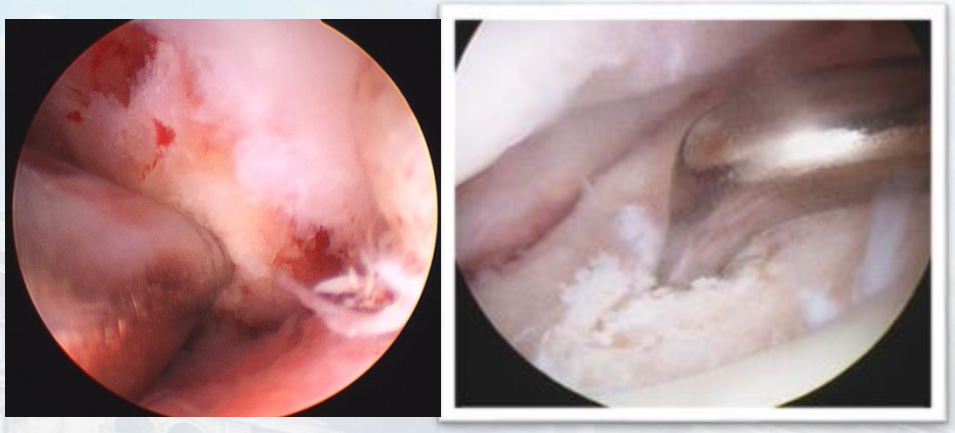
«DJD P ackage" (Steadman)

- Suprapatellar pouch dilatation and patellar mobilization
- Microfractures
- Regularization of the unstable cartilaginous lesions
- Loose bodies removal
- Anterior osteophytes removal
- Synovectomy

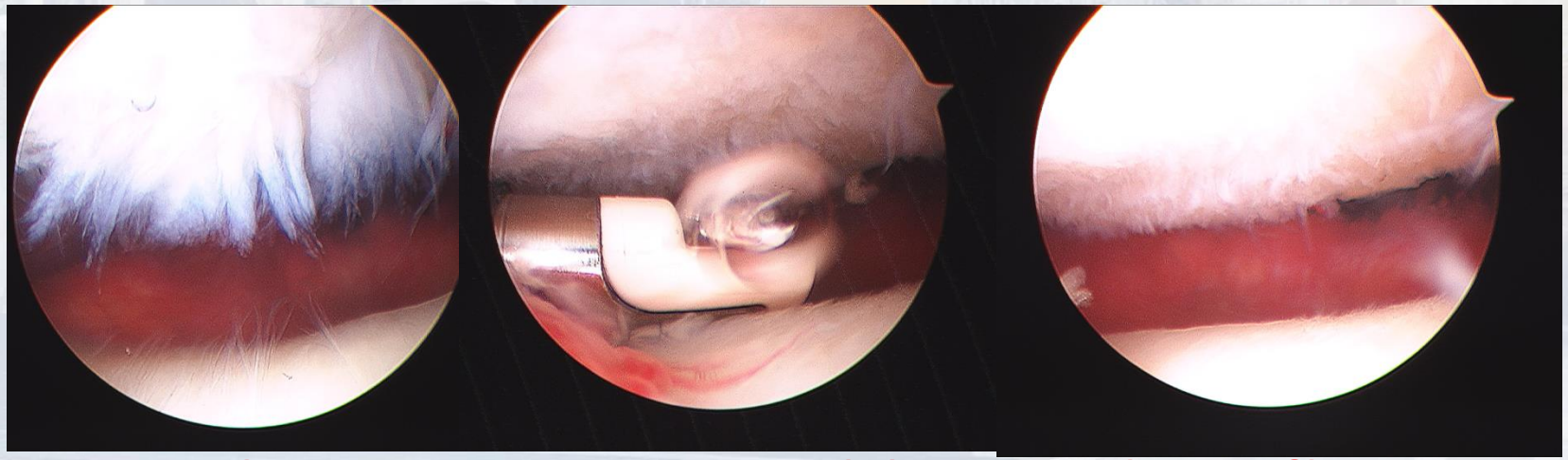


«DJD Package” (Steadman)



Microfractures

Loose Body Removal



Regolarizzazione Unstable Cartilage flaps

MENISCAL ROOT LESIONS

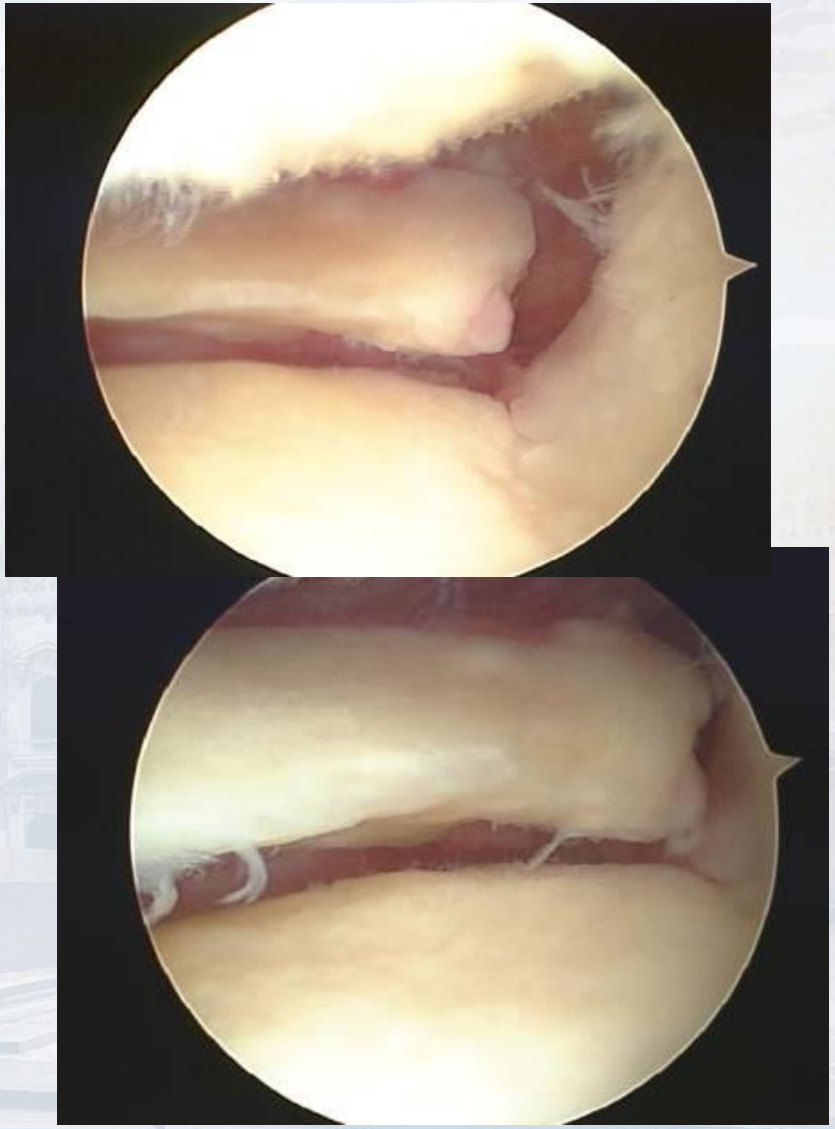
Firstly described in 1991
(Pagnani Arthroscopy)

Meniscal insertion avulsion from the tibial plateau

Most commonly the posterior horn of he medial meniscus

Traumatic: often associated to ACL/PCL and MCL lesions, more common in young patients

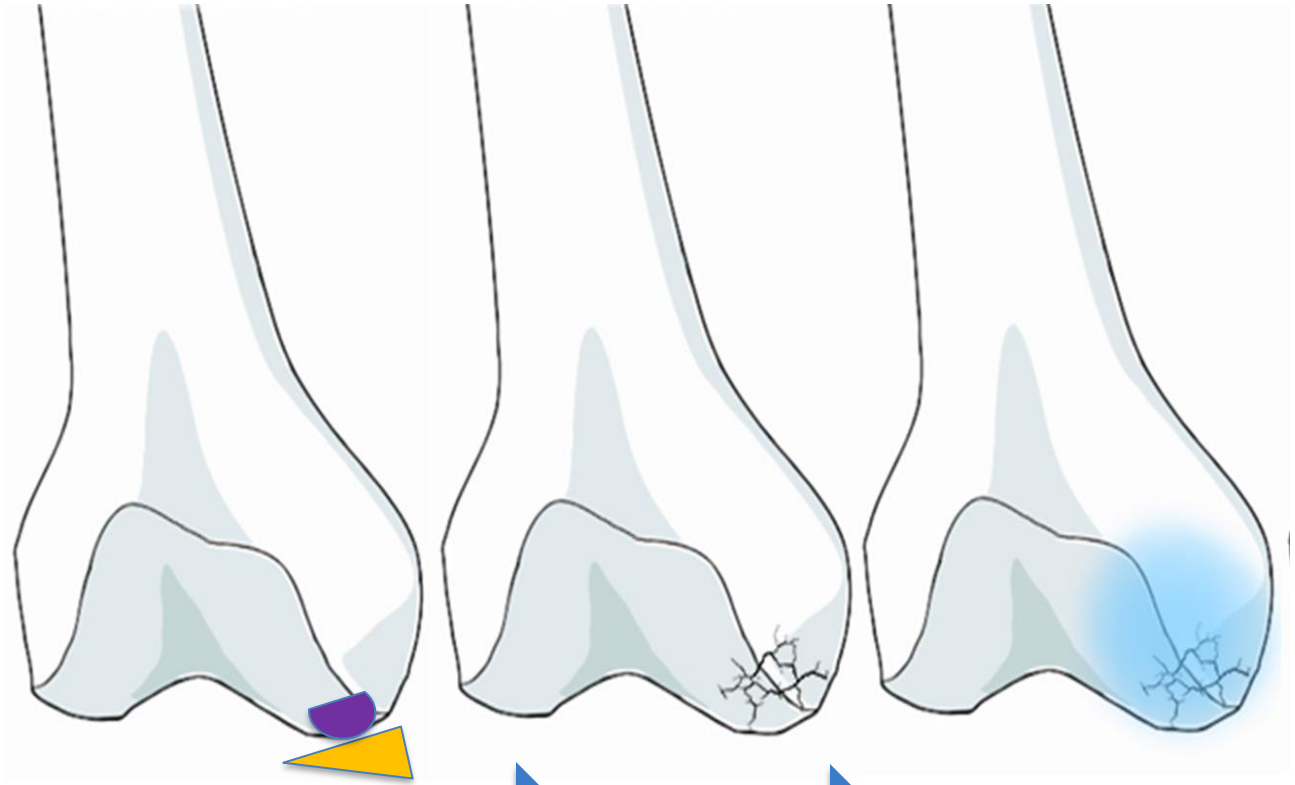
***Degenerative*: more common, characterized by the extrusion of the medial meniscus posterior horn**



MENISCAL ROOT LESIONS

- Medial meniscus extrusion
- SIFK (Subchondral Insufficiency Fracture of the Knee)
- MFC and MTP BML
- OA Crysis

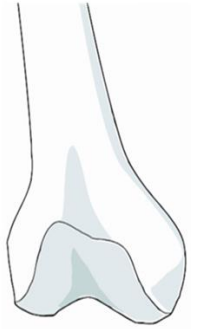
BML - SIFK



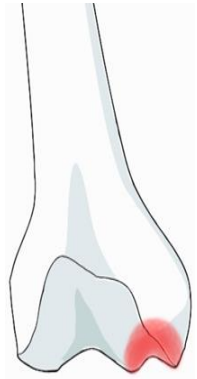
- MENISCAL EXTRUSION
- CHONDRAL OSTEOCHONDRAL LESION

SIFK

OEDEMA

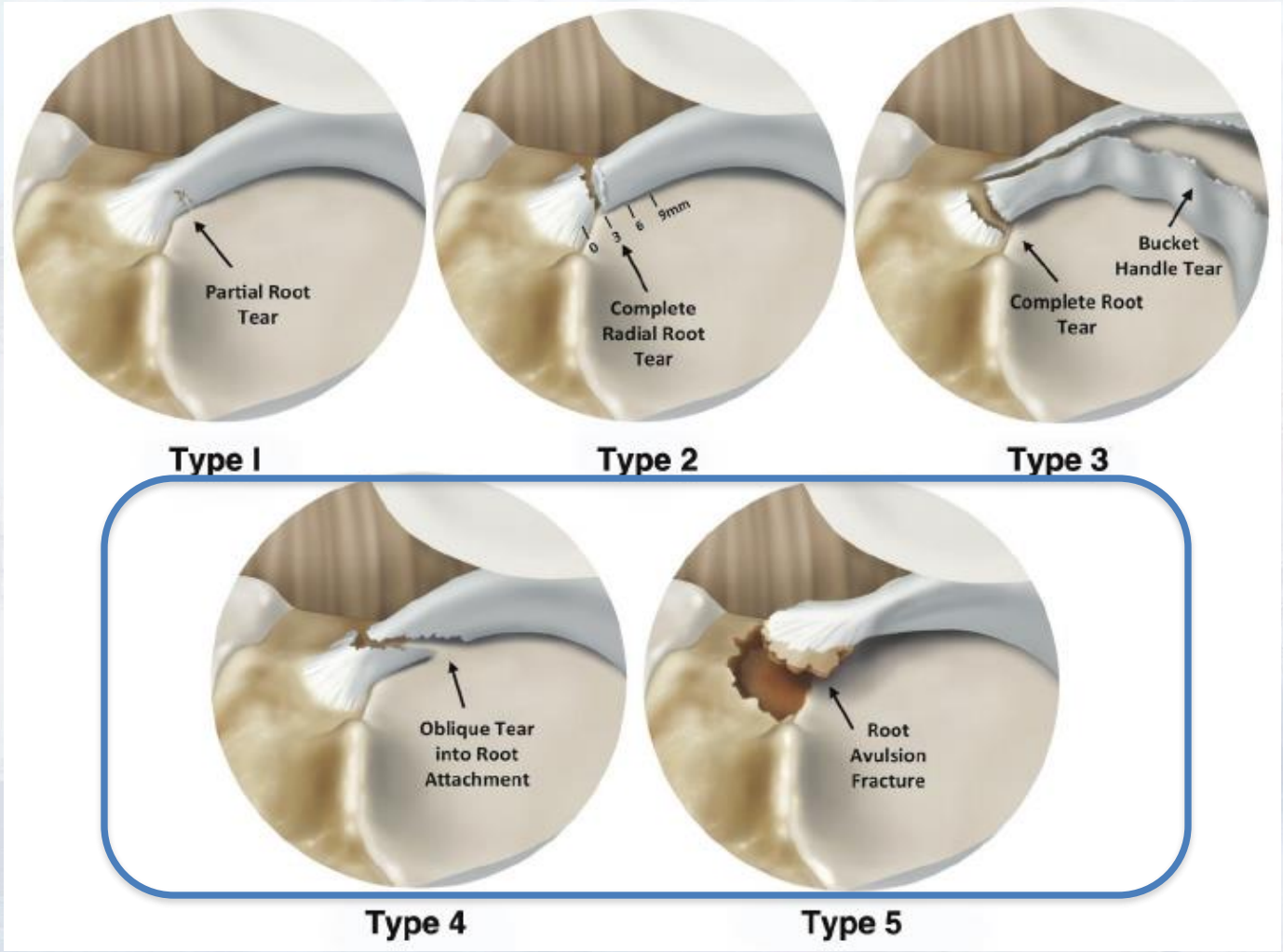


HEALING



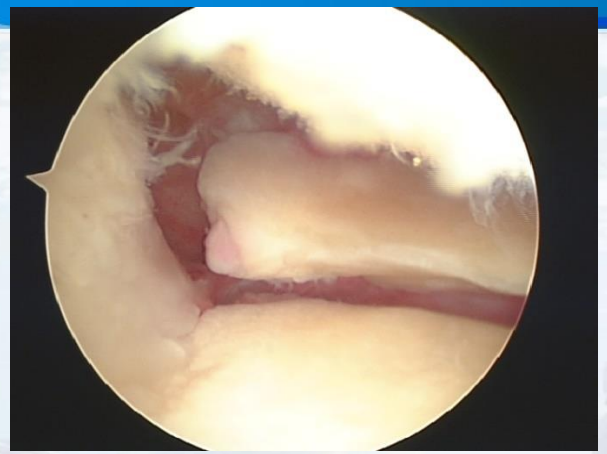
OC DEFECT

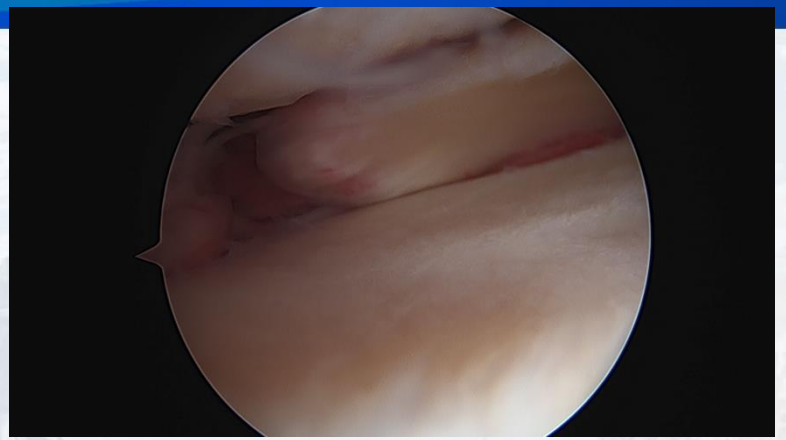
MENISCAL ROOT LESIONS, CLASSIFICATION



La Prade AJSM 2015

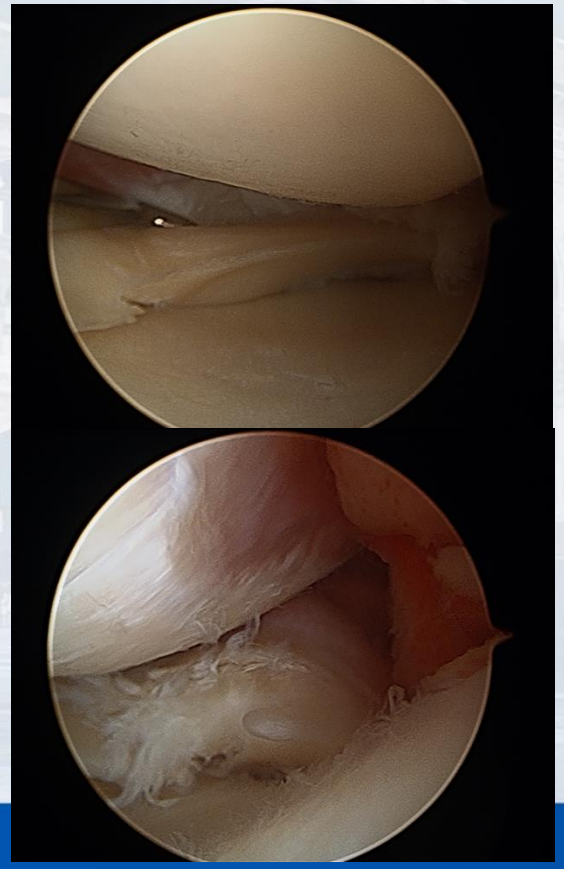
Type 1





Type 2

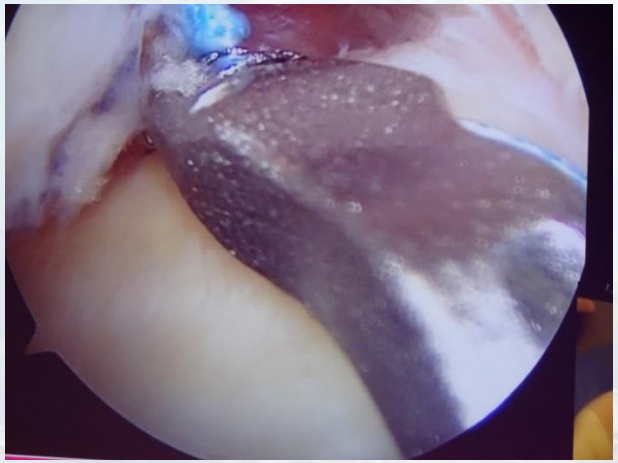
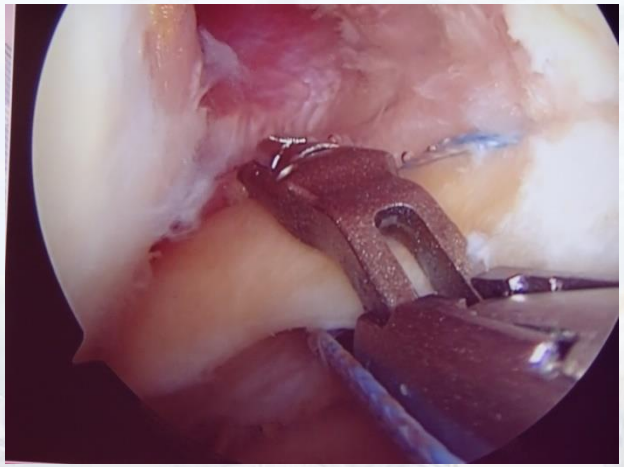
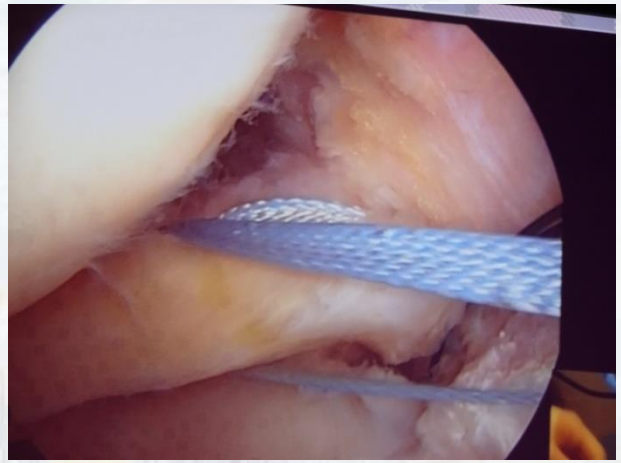
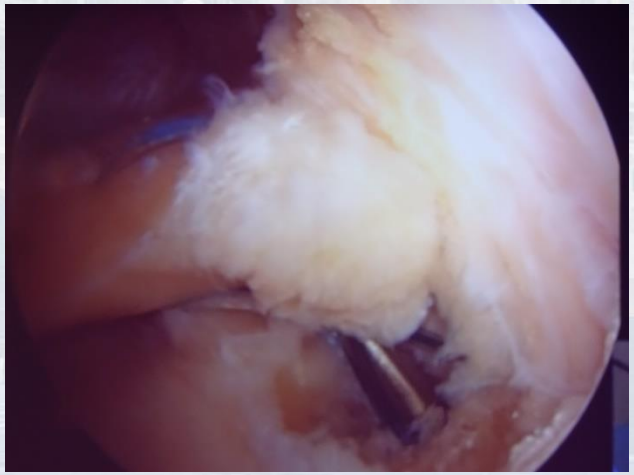
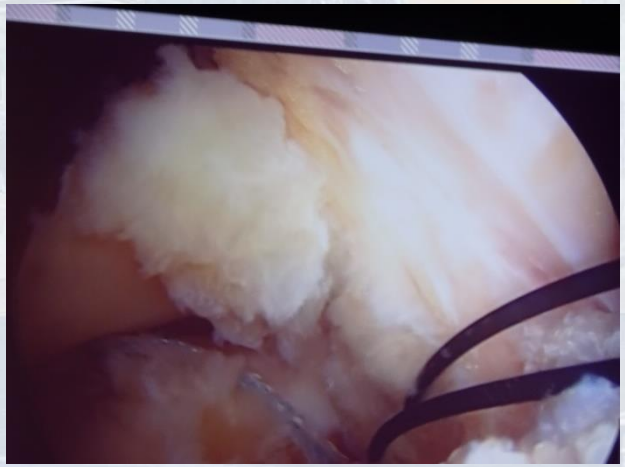
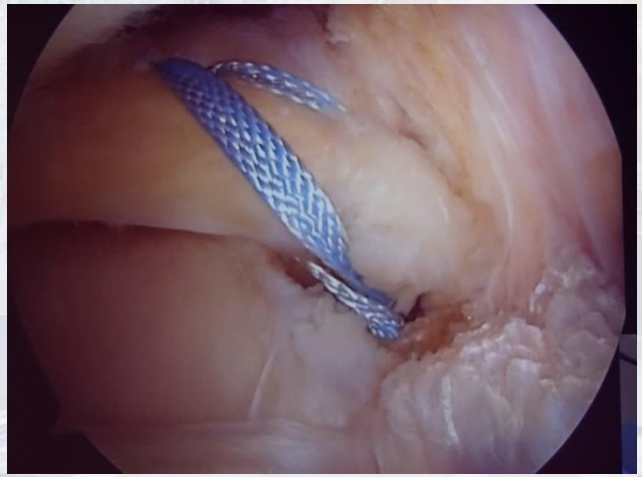
Type 3



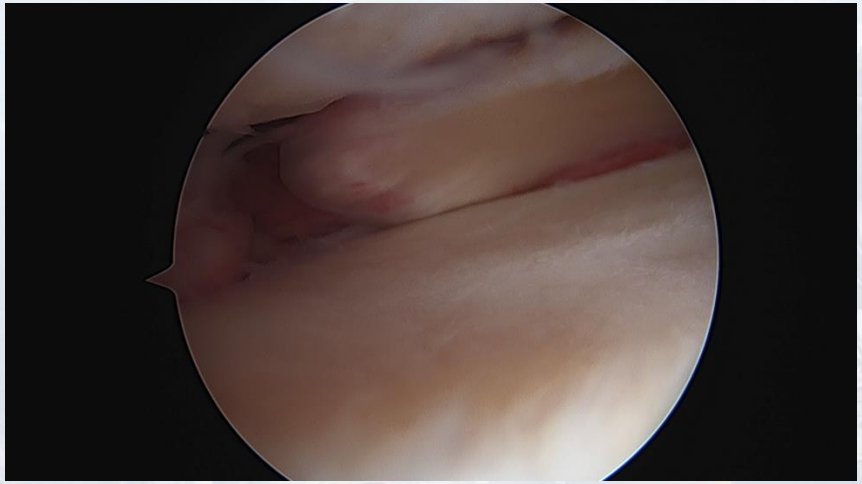
Type 4

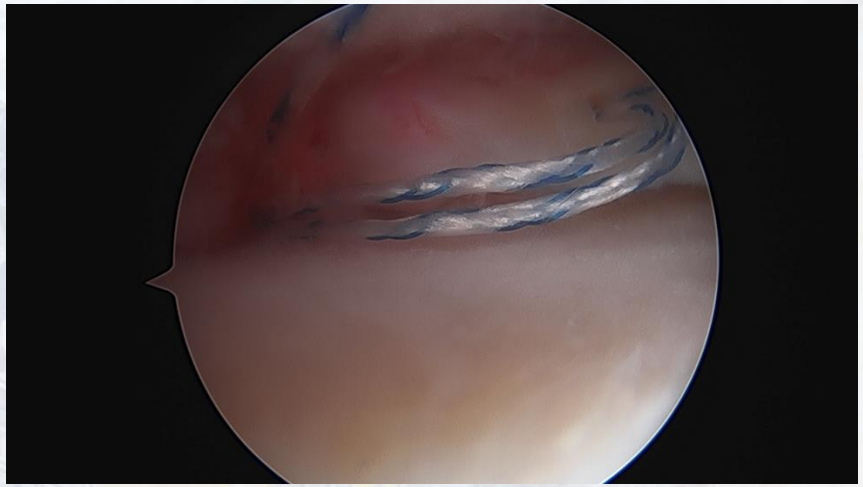
Type 5

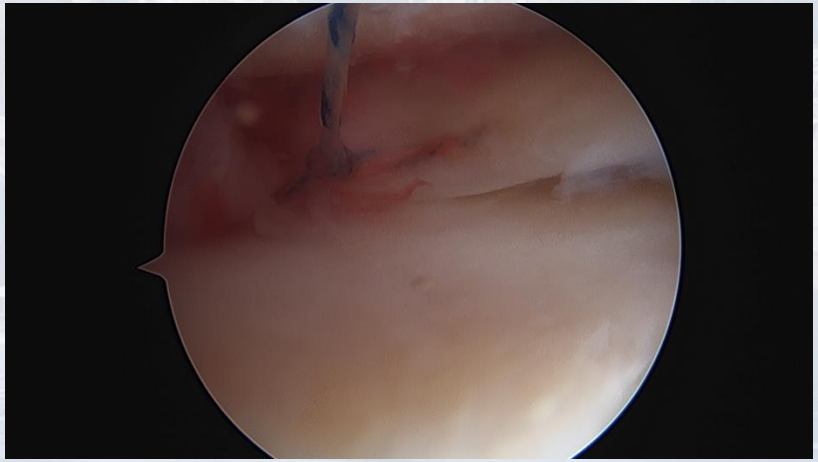
MENISCAL ROOT REPAIR

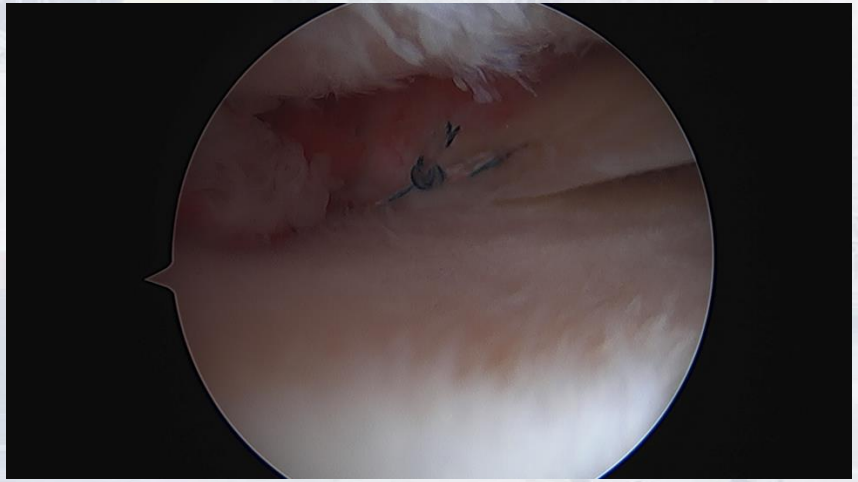







ALL-INSIDE / SIDE TO SIDE REPAIR

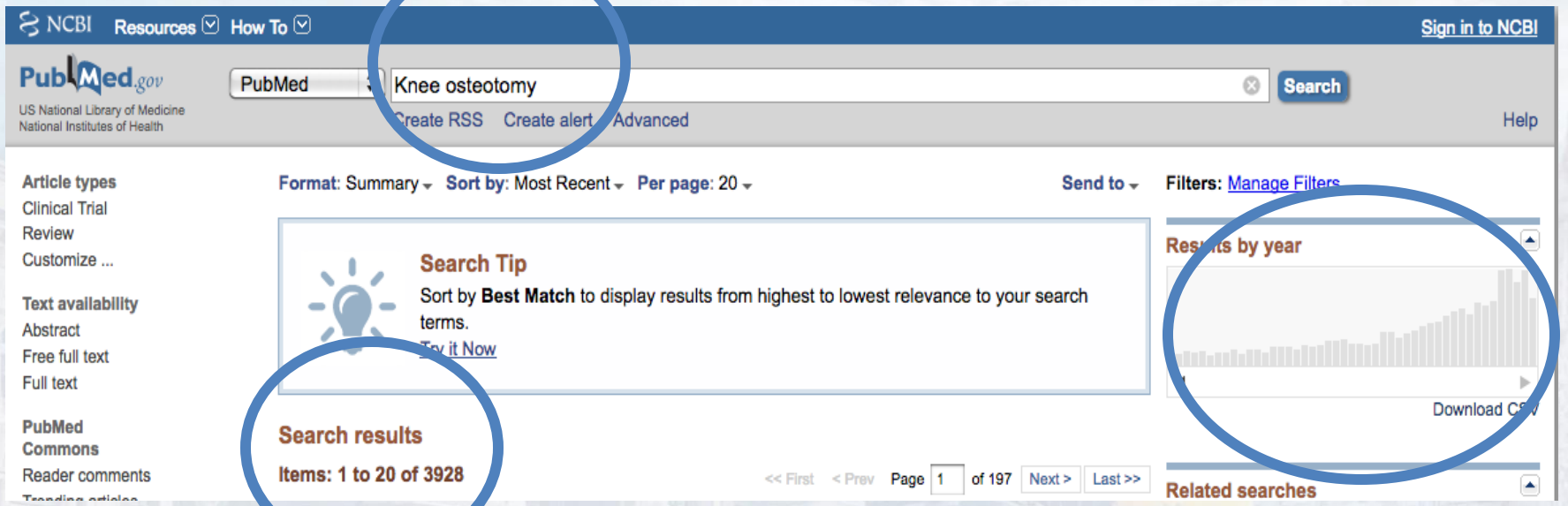


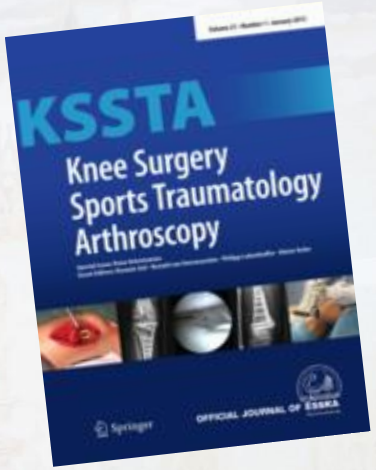






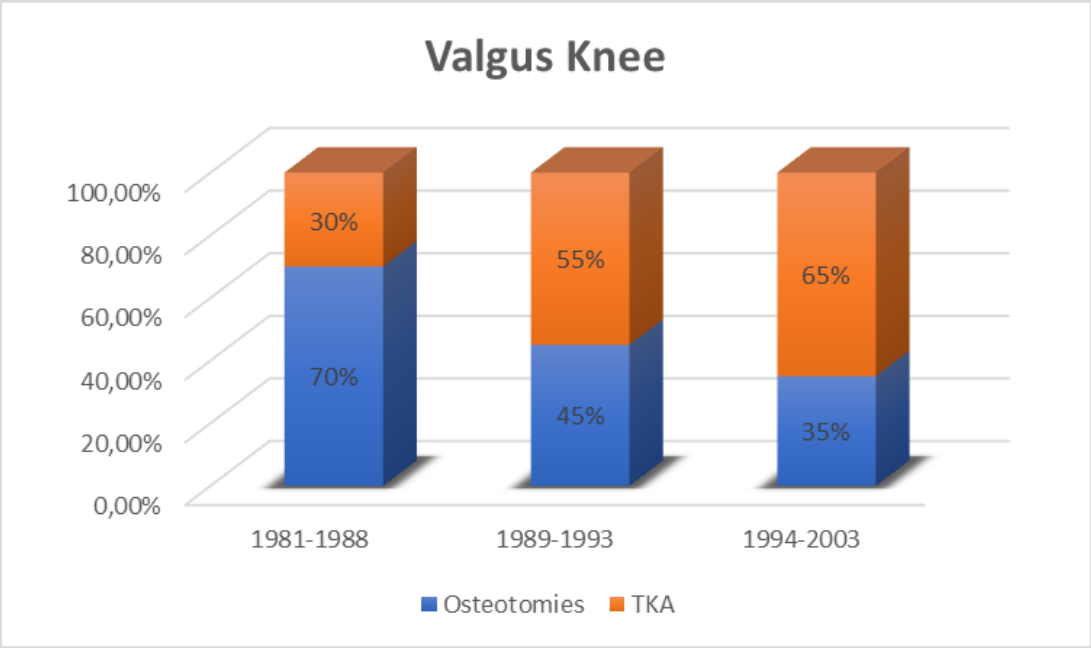
THE "RENAISSANCE" OF OSTEOTOMIES

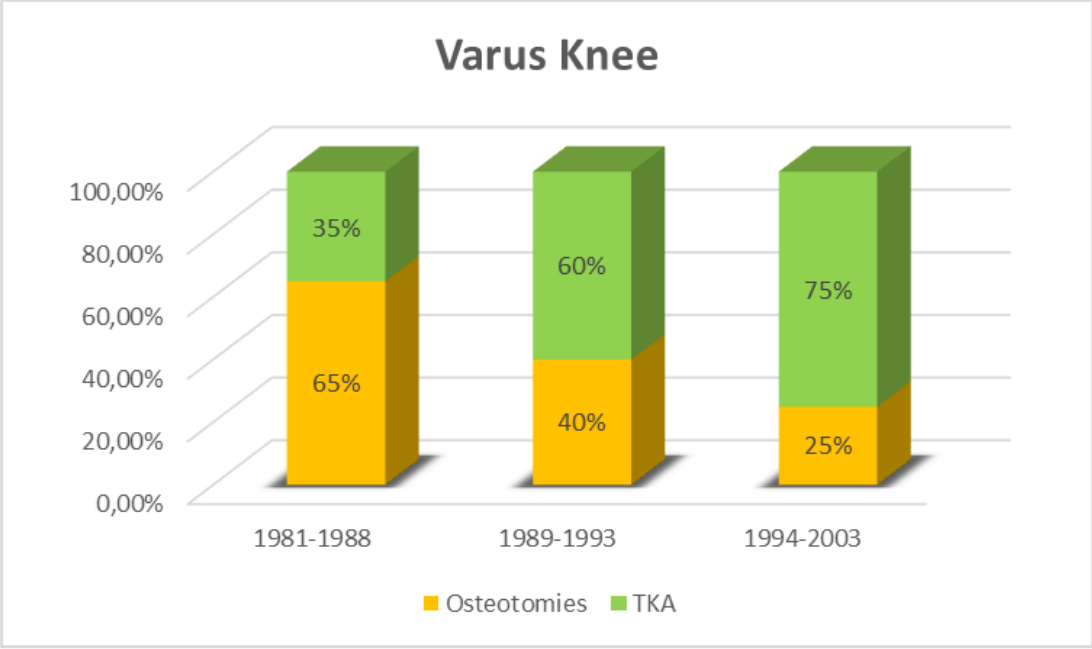




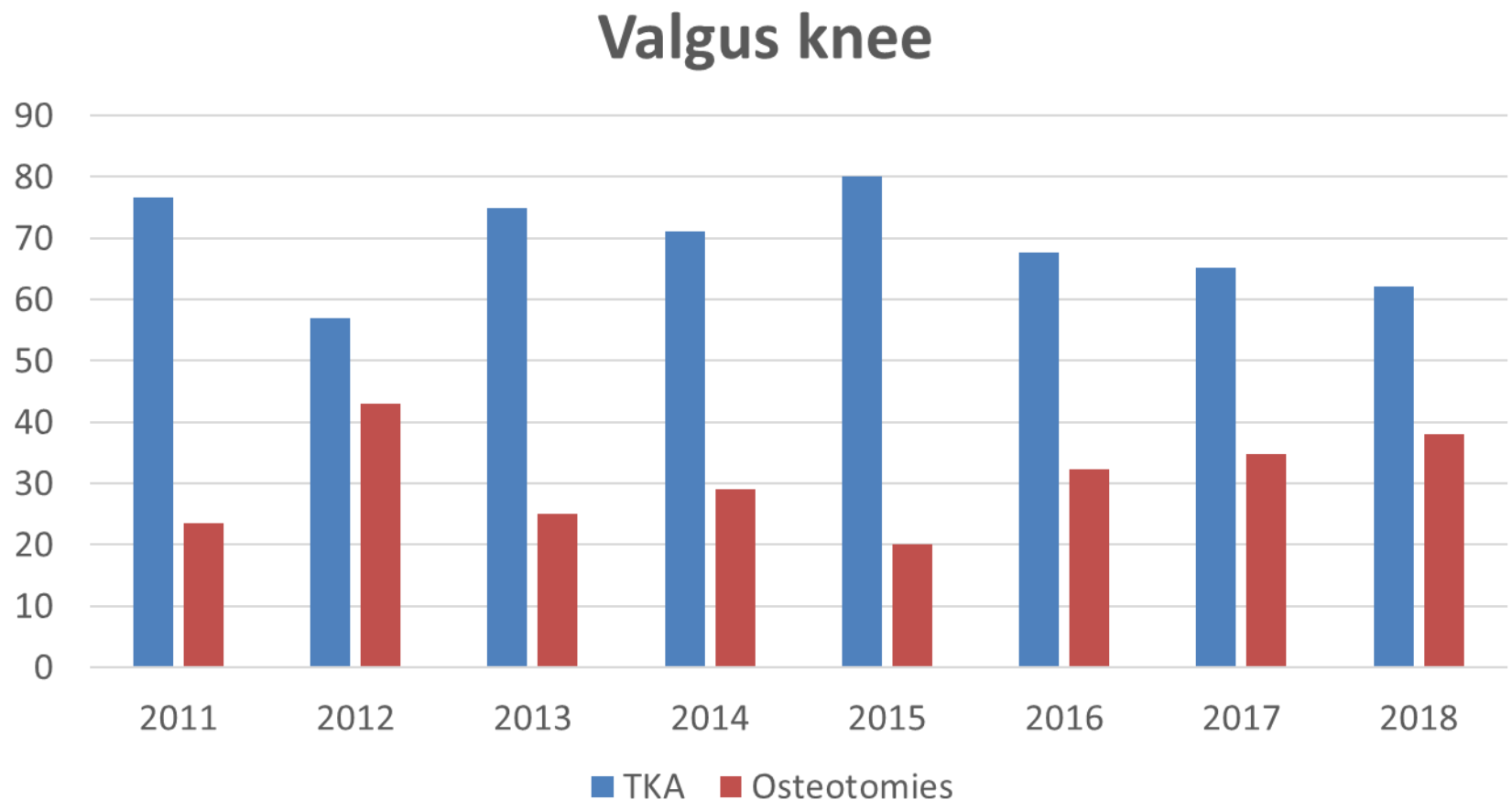
SCHOOL OF OSTEOTOMY
SIGASC OST

SURGERIES DISTRIBUTION





SURGERIES DISTRIBUTION



OSTEOTOMY INDICATIONS

- Varus/Valgus knee
- Age (range 40 – 60-65)
- High activity level
- Deformity (< o = 12° -15°)
- ROM </=5° -> 120°
- OA </= 3 Ahlback
- Pain (varus)
- Pain and/or instability (valgus)

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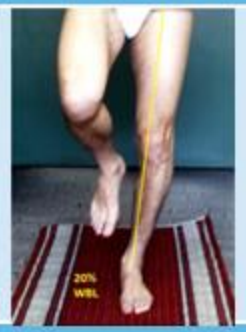
Noyes Classification

PRIMARY VARUS

- Costitutional varus
- +/- loss of medial substance (meniscal or cho



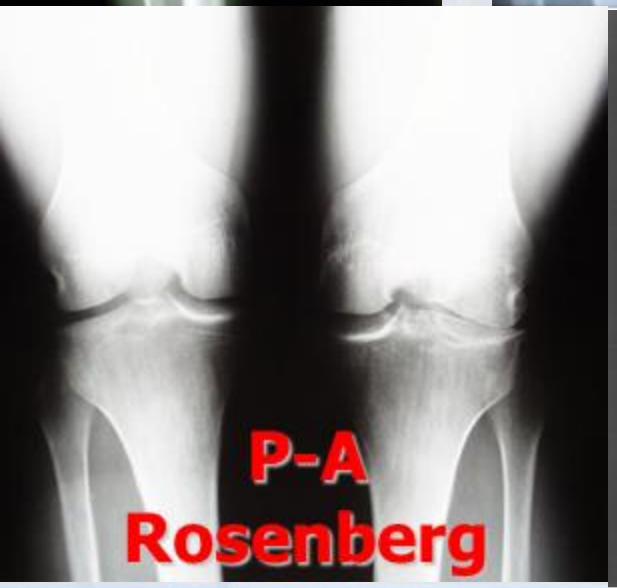
DOUBLE VARUS

- Costitutional varus
- ACL rupture
- Separaration of the lateral compartment owing t of lateral soft tissues

TRIPLE VARUS

- Costitutional varus

X-Ray Evaluation



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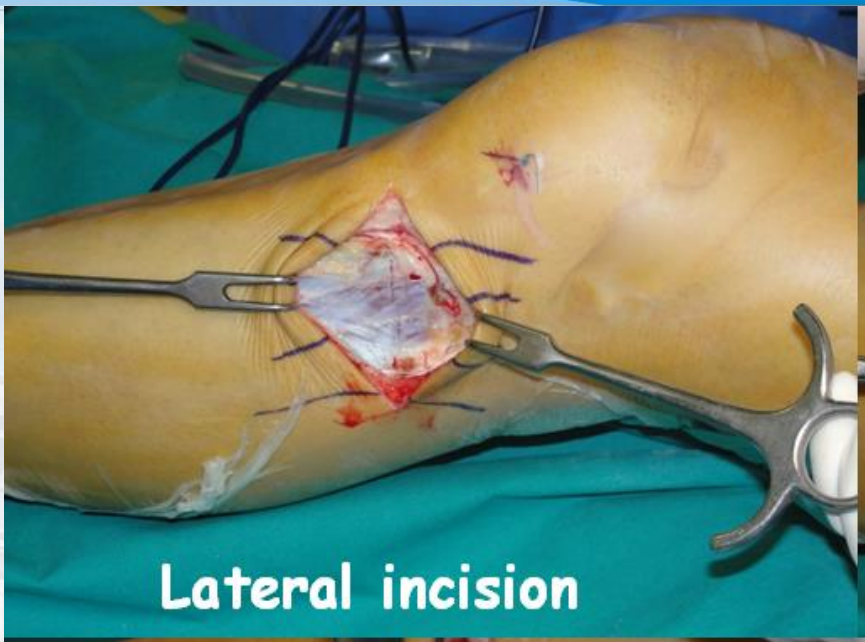
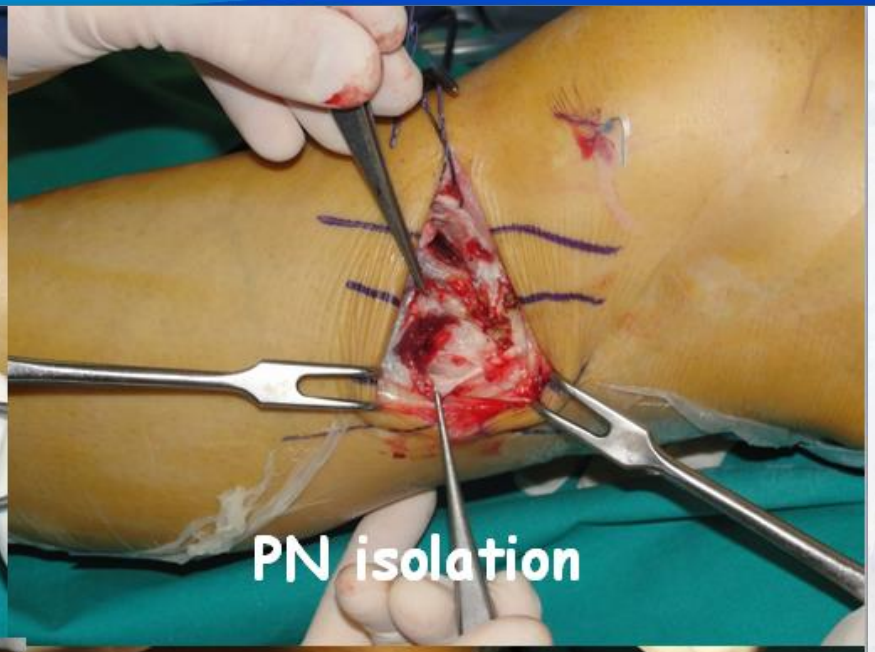
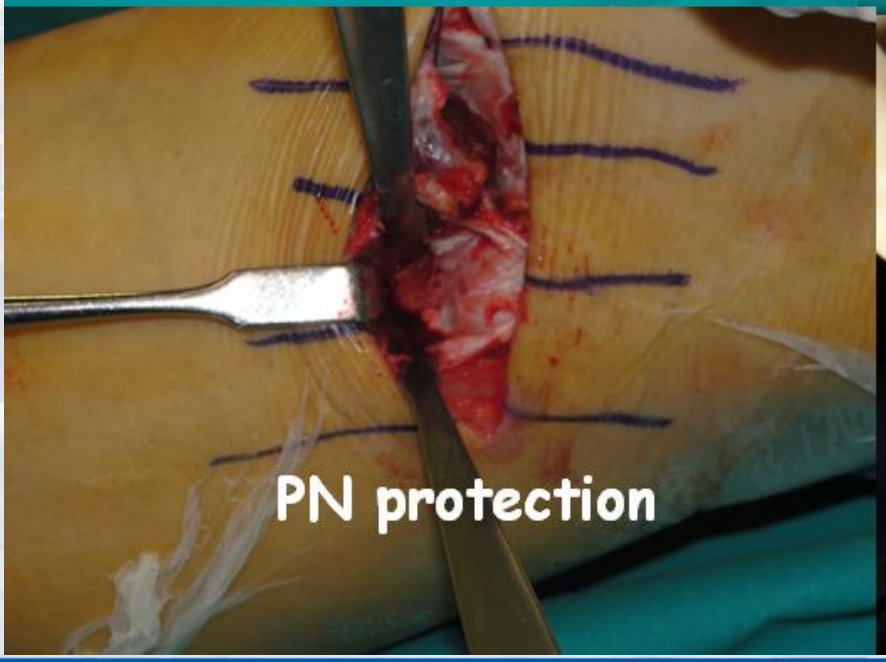
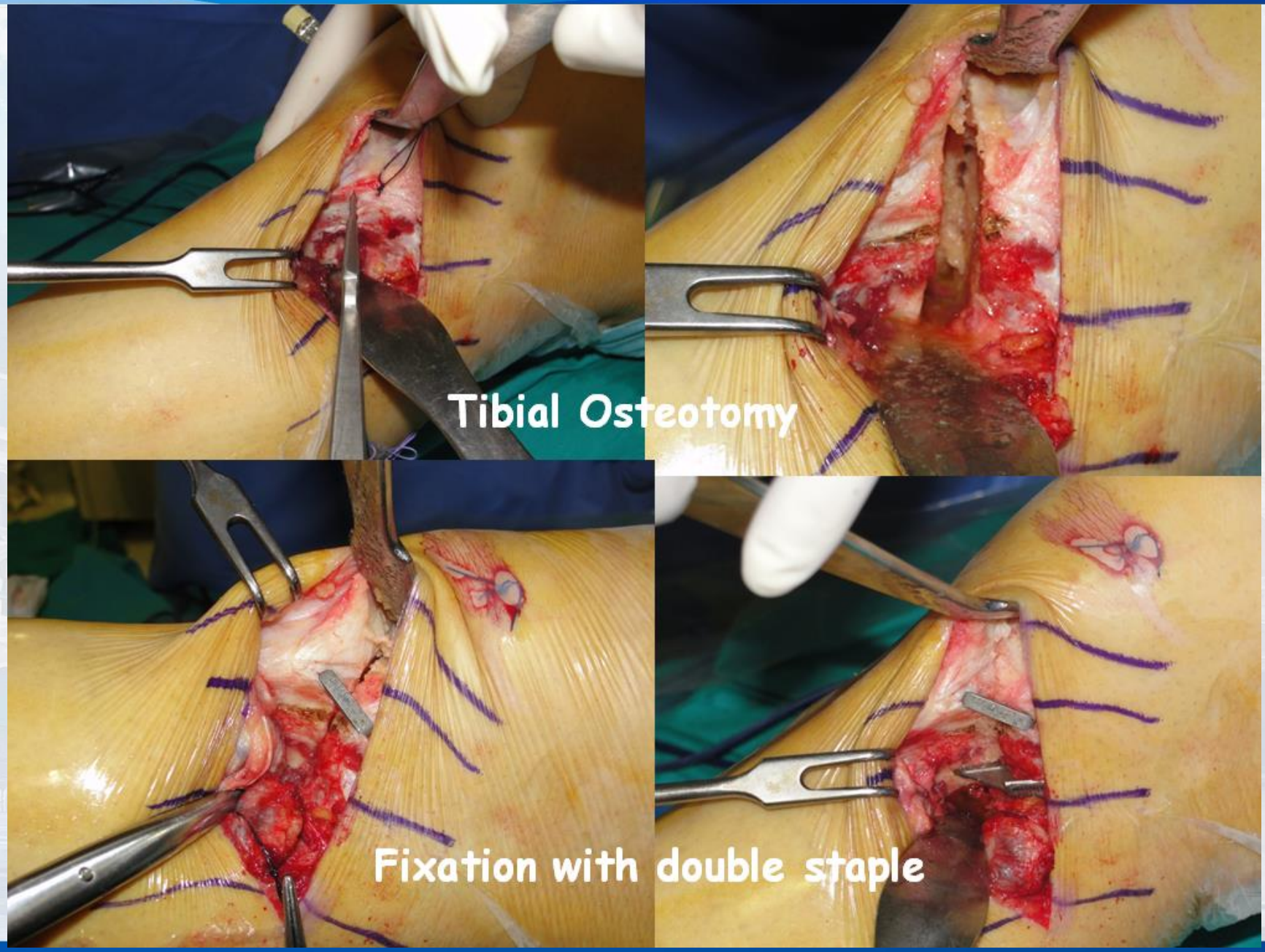






CW- Surgical technique


Tibial Osteotomy
Fixation with double staple

CW – Correction accuracy

GOOD CORRECTION

BORDER-LINE

IPOCORRECTION

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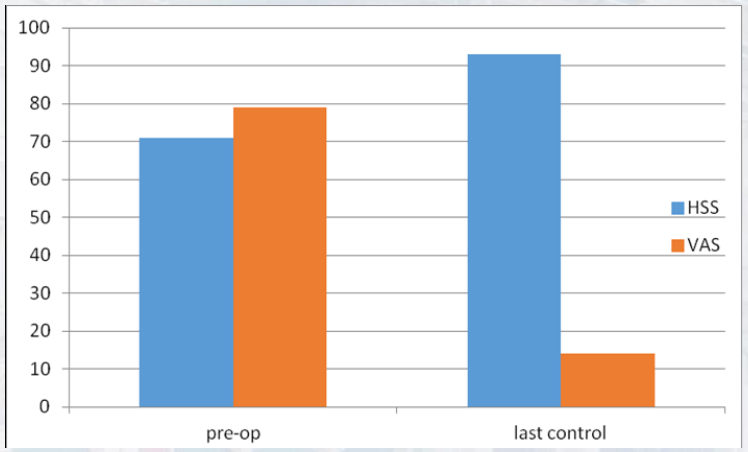
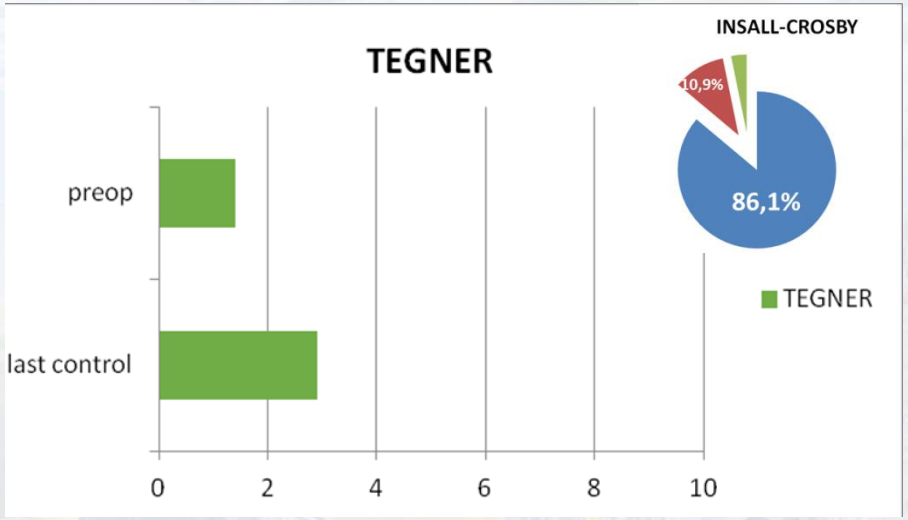
Closing Wedge – Our results

166 selected patients
82 (35 F e 47 M) evaluated patients
Mean age 55.32 yrs (45-73)
Mean-FU 11,96 yrs (4-28)



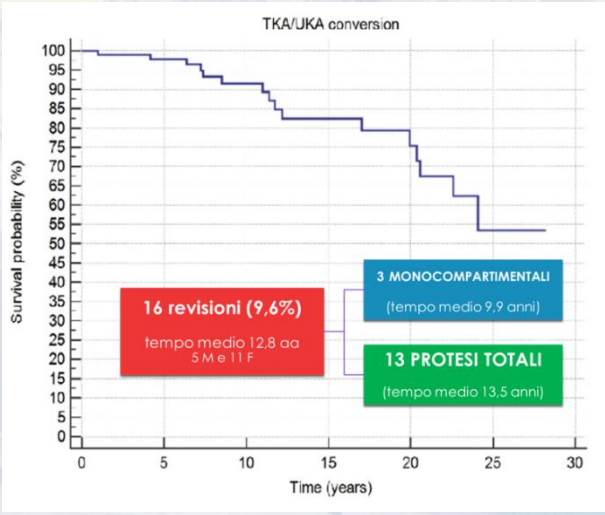
HSS: 70,87 ± 9,3 → 93,27 ± 5,46 (p<0,05)
VAS: 7,92 ± 1,79 a 1,64 ± 1,38 (p<0,05)



TEGNER: 1,37 ± 0,77 → 2,84 ± 1,13

Complications 5%:
- 2 delayed union
- 1 hardware removal
- 1 temporary ESP deficit

FU	Survival probability
10	92%
15	82%
20	80%



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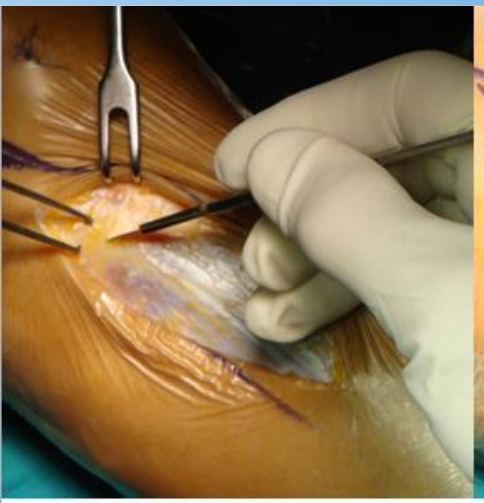
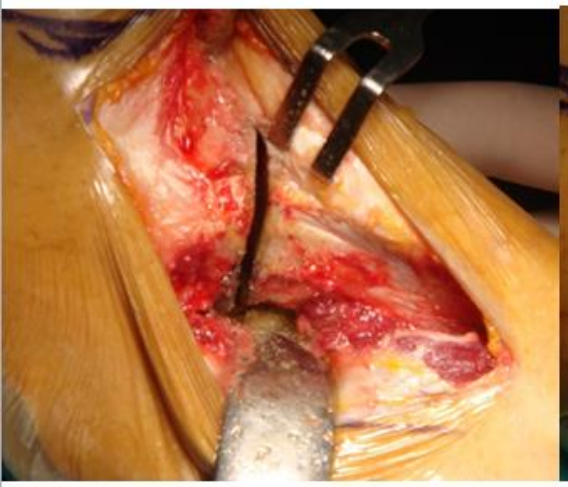
OW- Surgical technique

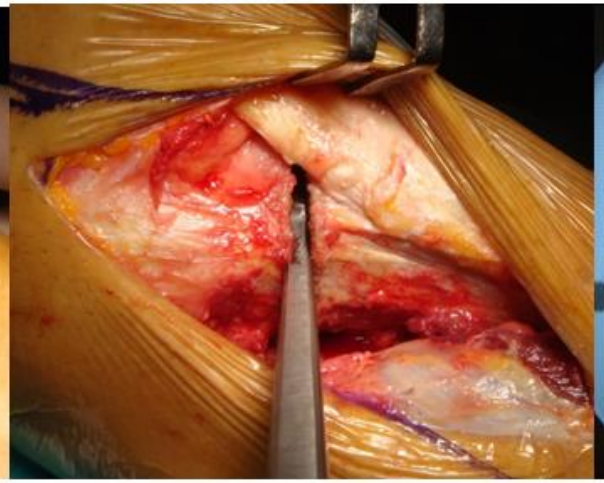


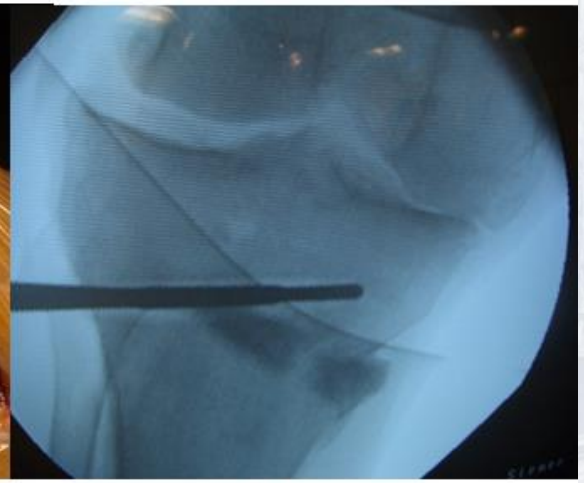
Medial Longitudinal
Skin incision

Oblique K wire positioning from medial to lateral
under fluoroscopy

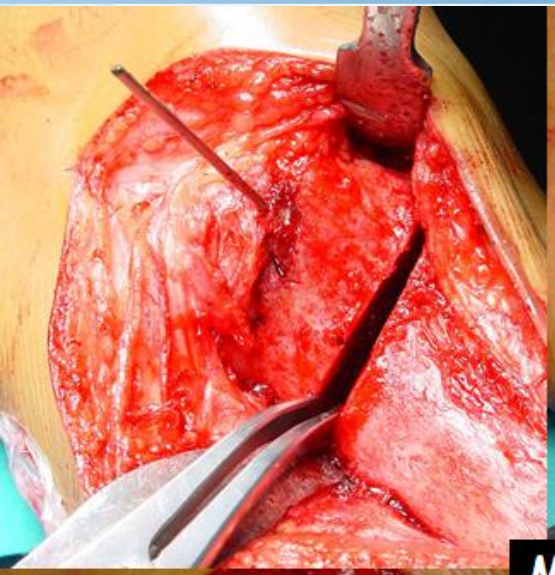


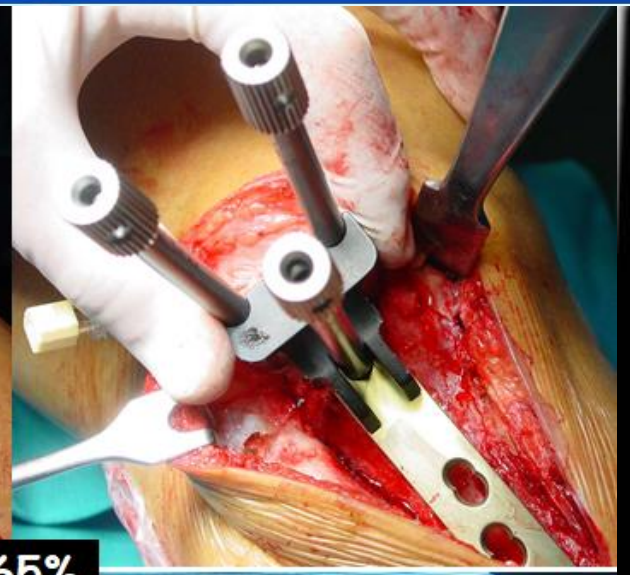
Osteotomy
Maintaining MCL integrity

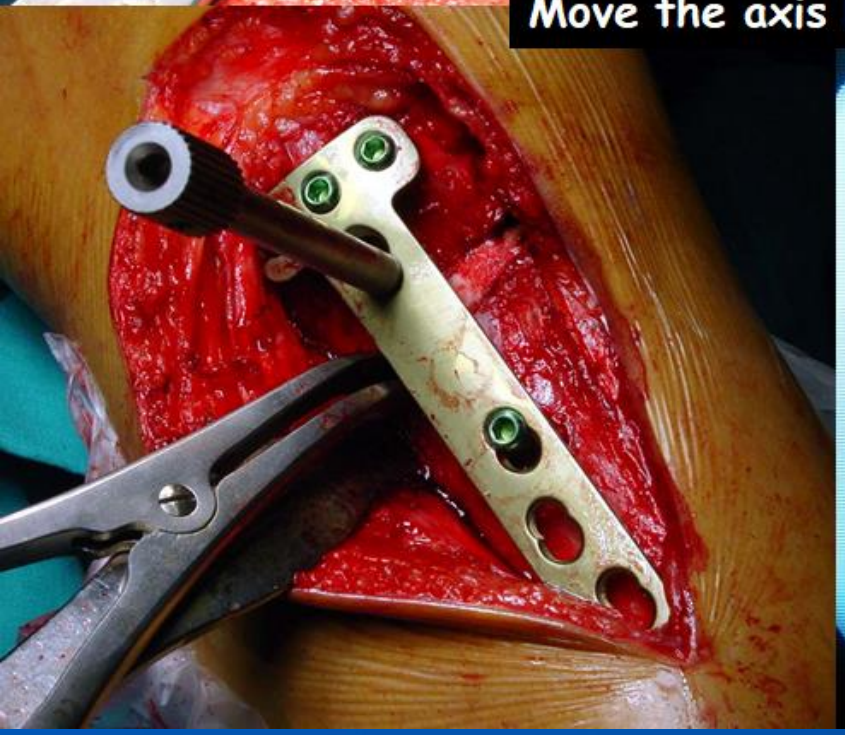
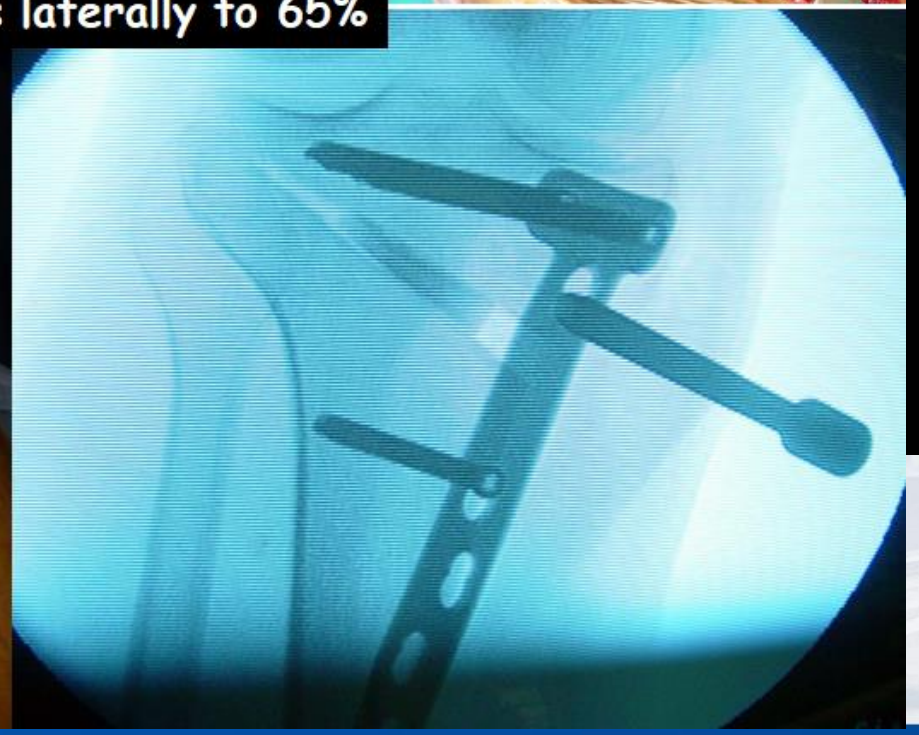




Complete osteotomy by osteotome
under fluoroscopy maintaining lateral hinge





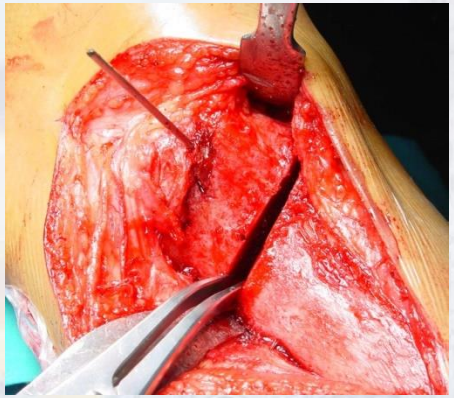

Move the axis laterally to 65%



HTO in varus knee – Our indications

CW

- Single-Double Varus (Noyes Classification)
- Metaphyseal varus
- Patella baja (CD<0.6)
- Excessive poster tibial slope(>10˚)

OW



- MCL laxity
- Varus Thrust (Triple Varus)
- Nomal PTS and Patellar height
- In association to other procedures (ACL reconstruction, meniscal transplant…)

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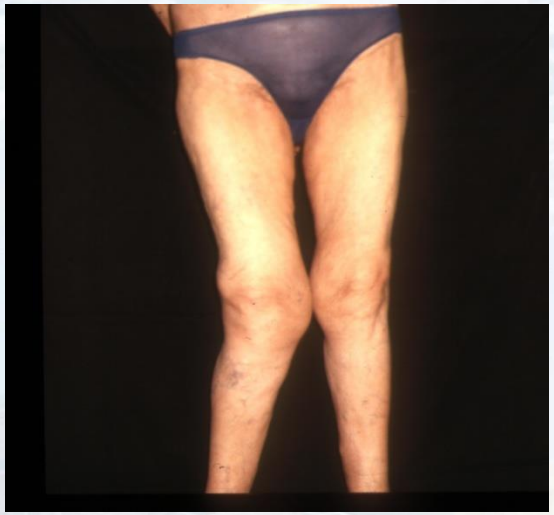

Femoral Osteotomy

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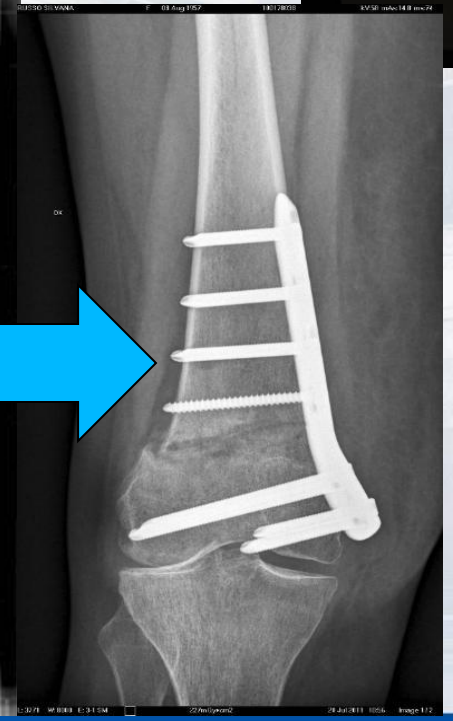
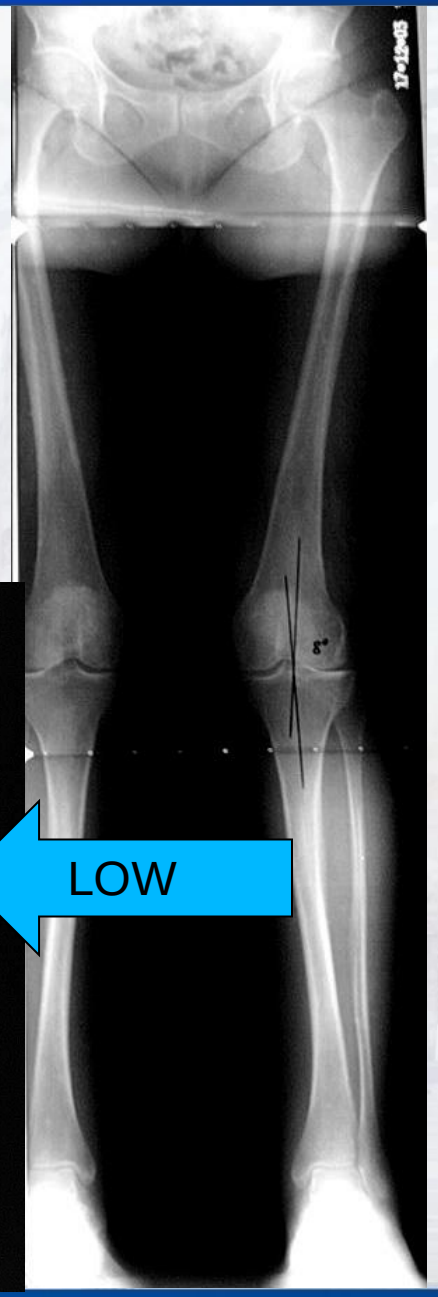
Femoral Osteotomy





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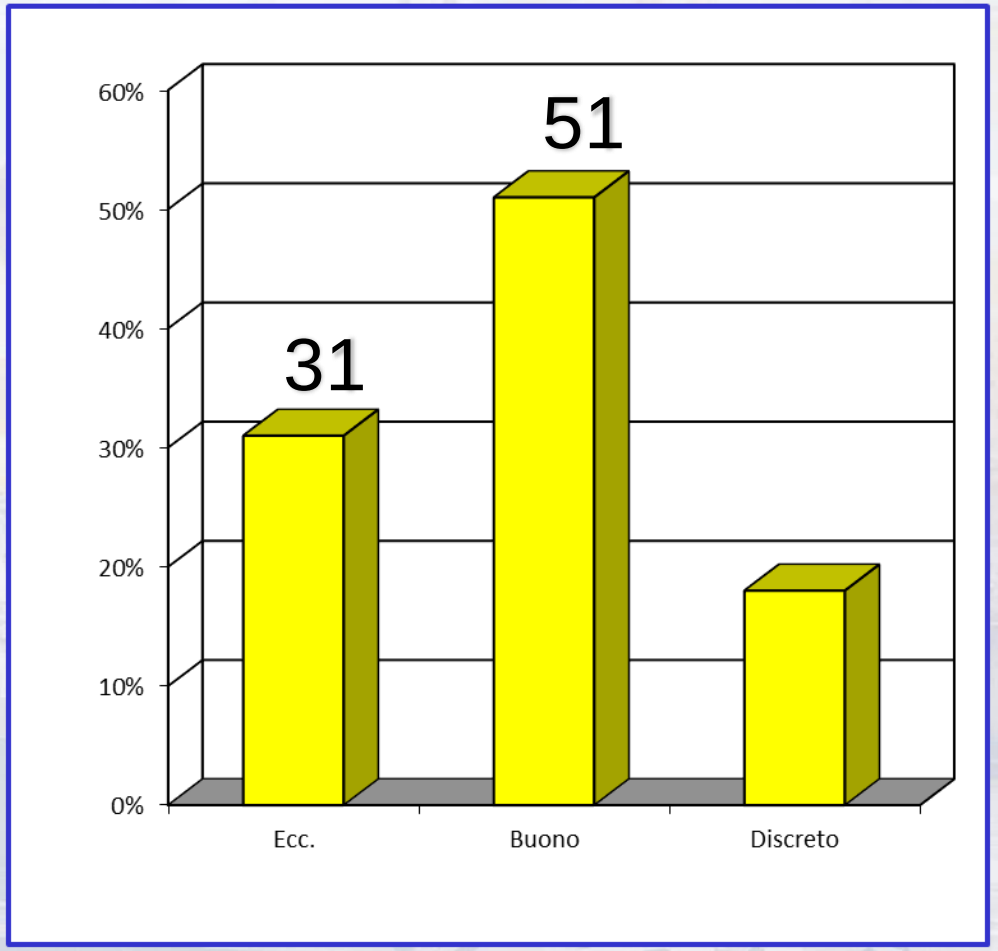
1983 - 1993
MCW FEMORAL OSTEOTOMIES : 50

- 48 patients
- females 34 / males 15
- age :min. 59 years (range 39-77)
- preop valgus : 12° (range 5-23°)

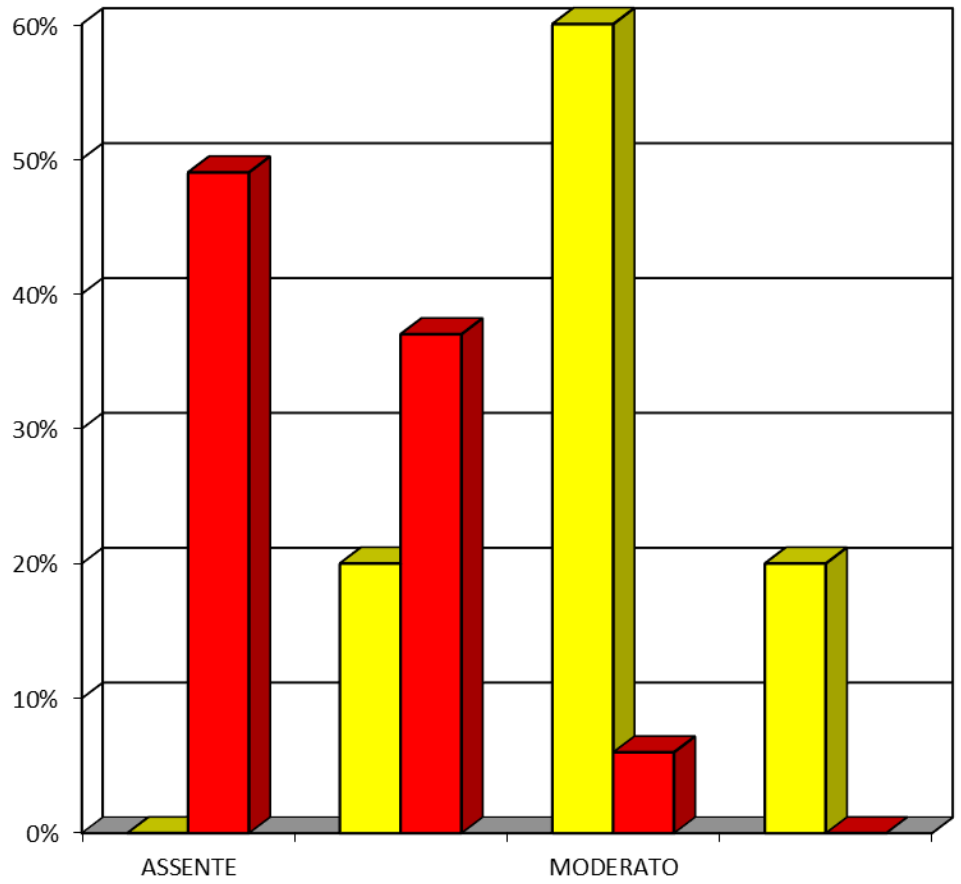
Mean Follow-Up : 8 yrs (5 – 15)

- Mean Preop HSS: 61 pt.
- Mean Postop HSS: 83 pt.



Berruto M. , Bianchi M. , Laurà G. , G.I.O.T , 1993

Results: Knee Pain and survivorship



Less pain in 83% of patients in comparison to the preoperative evaluation

25 Patients FU 20 yo

- Unvaried : 5
- Worsened : 12
- TKA: 8

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CURRENT DATA

1994-2014
MCW FEMORAL OSTEOTOMIES : 51

- 49 patients
- females 34 / males 15
- age :mean 36 years (range 16-60)
- preop valgus : 10° (range 3-19°)

Mean Follow-Up : 7 yrs (5 – 15)

- LastFU HSS: 83 pt
- LastFU HKA : 2.75° valgus
- LastFU IKDC: 60
- LastFU KSS: 88
- LastFU KOOS: 78.7
- LastFU NRS11: 4.2

Berruto M., Travi. M

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S.D. (F)
42 y.o.

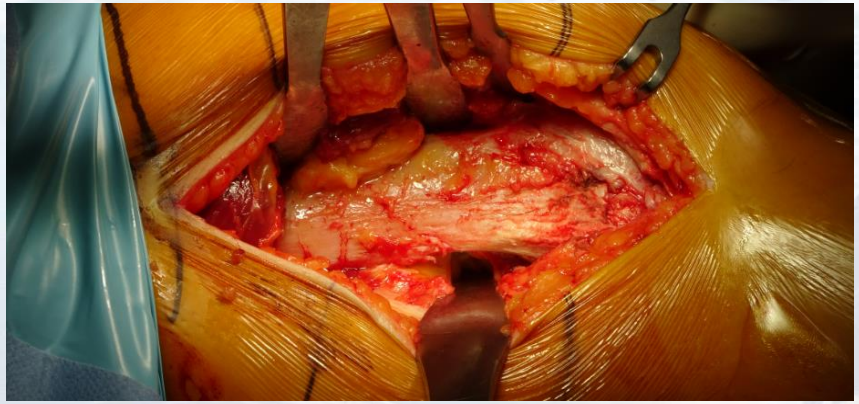
11 yo - patella fracture and right femur fracture, conservative treatment

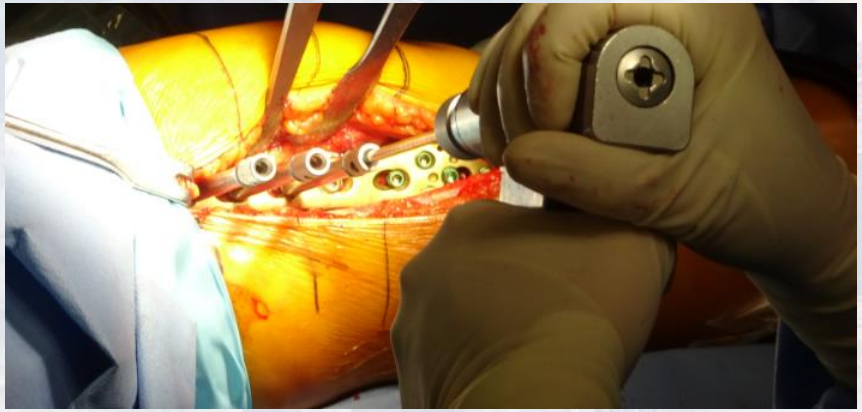
Mutilples episodes of patella dislocation, lateral knee pain

41 yo - arthroscopic lateral release
Lateral knee pain and OPI deterioration

Right knee: ROM 5-0-120, asymmetric valgus, apprehension test - , J sign +, reducible patellar tilt, no AP and varus-valgus stress laxities

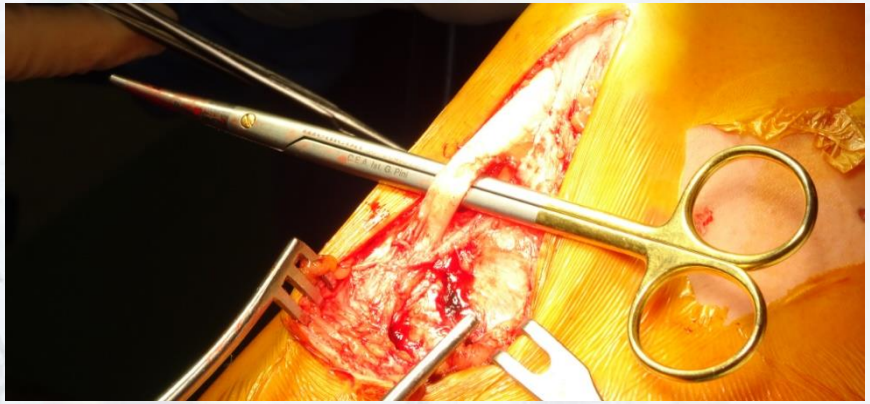
Laterl femoral osteotomy – opening wedge

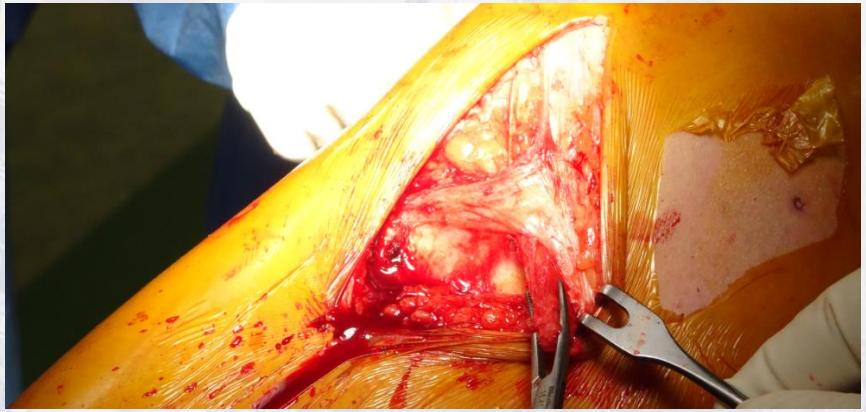


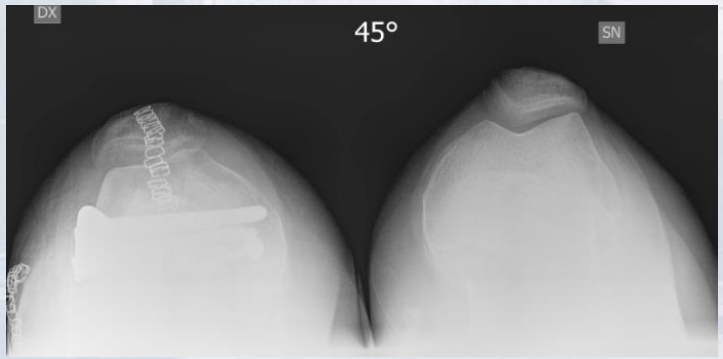


+

MPTL reconstruction

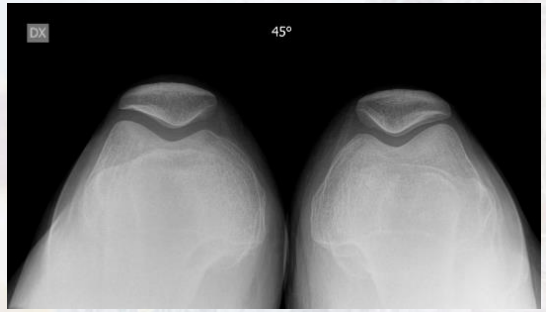





DX
45°
SN

A.F. (F)
35 yo

Post-traumatic valgus. Right knee: 15,0° Left knee: 1.2 °
Lateral knee pain, lameness, medial compartment laxity



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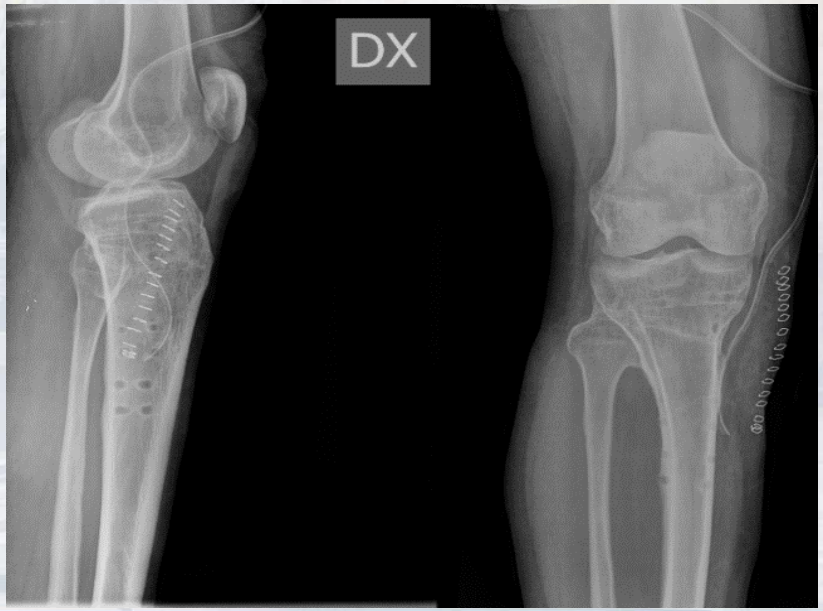
HTO closing wedge medial osteotomy

Asymptomatic
Tegner 4

Valgus:
- **Right → 2°**
- **Left→ 1°**



Early osteoarthritis: medial overload
NUSURFACE

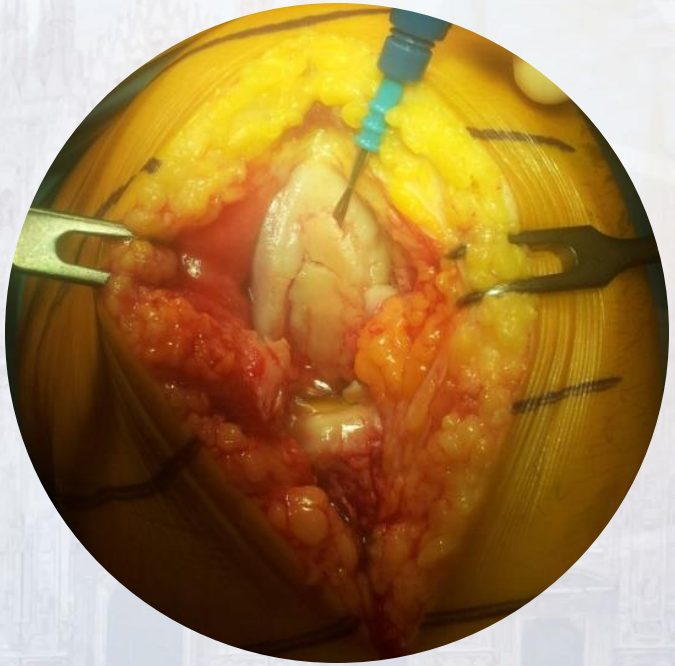
- The implant is made from polycarbonate-urethane (PCU)
- When medial meniscus wall is present

- Meniscal replacement redistributing loads transmitted across the knee joint
- Promising preliinary results

Spontaneous osteonecrosis of the knee (SPONK)

- FANS (Lotke)
- Magnetotherapy (Marcheggiani Muccioli)
- Bisphosphonates (Jureus, Breer)
-
- Microfractures (Akgun)
- Core decompression (Forst)
- OATS/Allograft (Duany, Sherman)
- + Tibial osteotomy (Aglietti, Takeuchi)
- Uni/Total Knee Arthroplasty (Radke)

Available therapeutic approaches.



Lotke P at al. Clin Orthop Relat Res 1982 - **Marcheggiani Muccioli** GM et al. Eur J Radiol 2013 - **Jureus** J et al. Acta Orthopaedica 2012 - **Breer** S et al. Knee Surg Sports Traumatol Arthrosc 2013 - **Akgun** I et al. Arthroscopy 2005 - **Duany** NG et al. Arch Orthop Trauma Surg 2010 - **Forst** J et al. Acta Orthop Trauma Surg 1998 - **Sherman** SL et al. J Am Acad Orthop Surg 2014 - **Aglietti** P et al. J Bone Joint Surg Br 1983 - **Takeuchi** R et al. Knee Surg Sports Traumatol Arthrosc 2009 - **Radke** S et al. Knee Surg Sports Traumatol Arthrosc 2005

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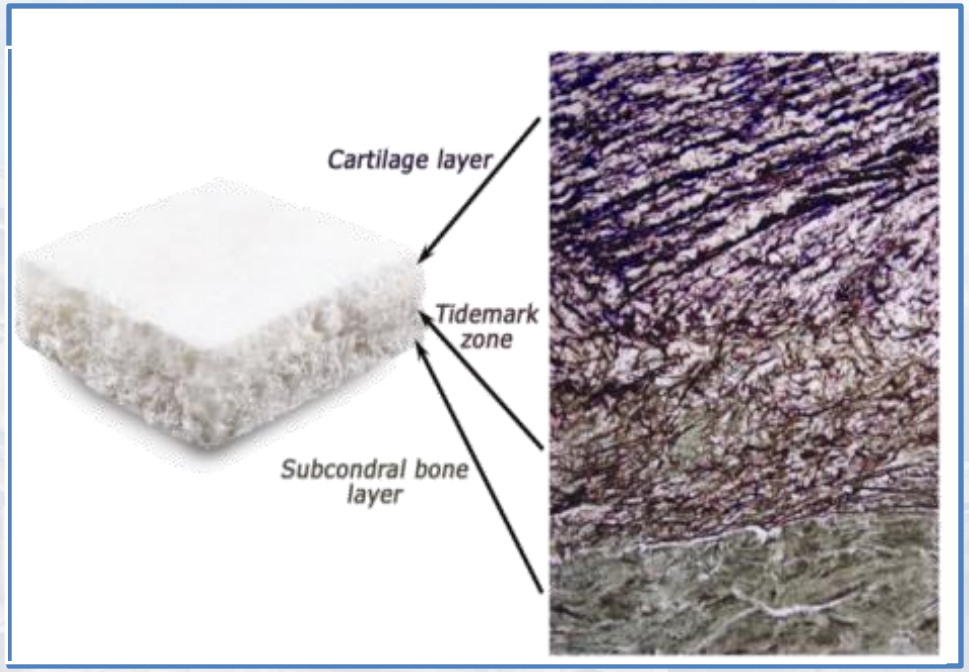
BIOLOGICAL PROSTHESIS as ALTERNATIVE TO UNI (ON)



Contents lists available at ScienceDirect

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[a] SSD Chirurgia Articolare del Ginocchio Istituto Ortopedico Gaetano Pini, Milan, Italy
[b] Ospedale Regionale di Lugano, Civico e Italiano, Reparto di Ortopedia e Traumatologia, Lugano, Switzerland

Knee 2016, Dec; 23 (6): 936-941

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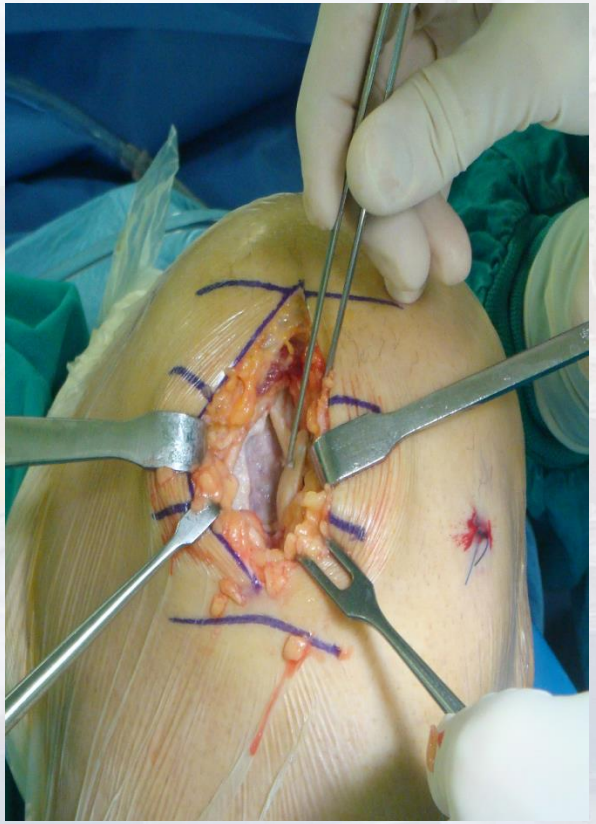
OSTEONECROSIS MEDIAL FEMORAL CONDYLE



- M.P.
- Male – 50 yo
- Manager – Tegner 1
- Area 2,9 x 1,8
- Lysholm 53
- IKDC 22
- VAS 8

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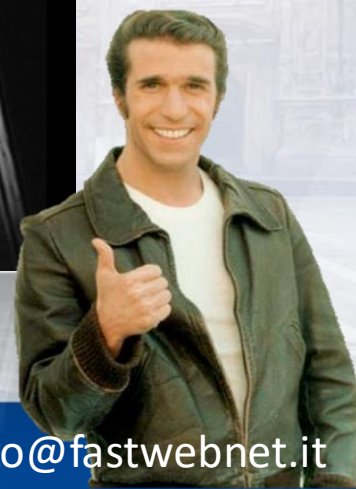
OSTEONECROSIS MEDIAL FEMORAL CONDYLE

- **FU 40 / 84 /120 MONTHS**
- **Lysholm 100**
- **IKDC 90**
- **VAS 0**



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Results

Short and medium term results are satisfactory, comparable as efficacy and safety with those obtained from the control group of patients with OCD disease, for which Maioregen was originally designed.

Population

Inclusion criteria: Active patients, under 65yo, ON Koshino grade III-IV.

Exclusion criteria: Low functional demand patients, over 65yo, secondary ON.

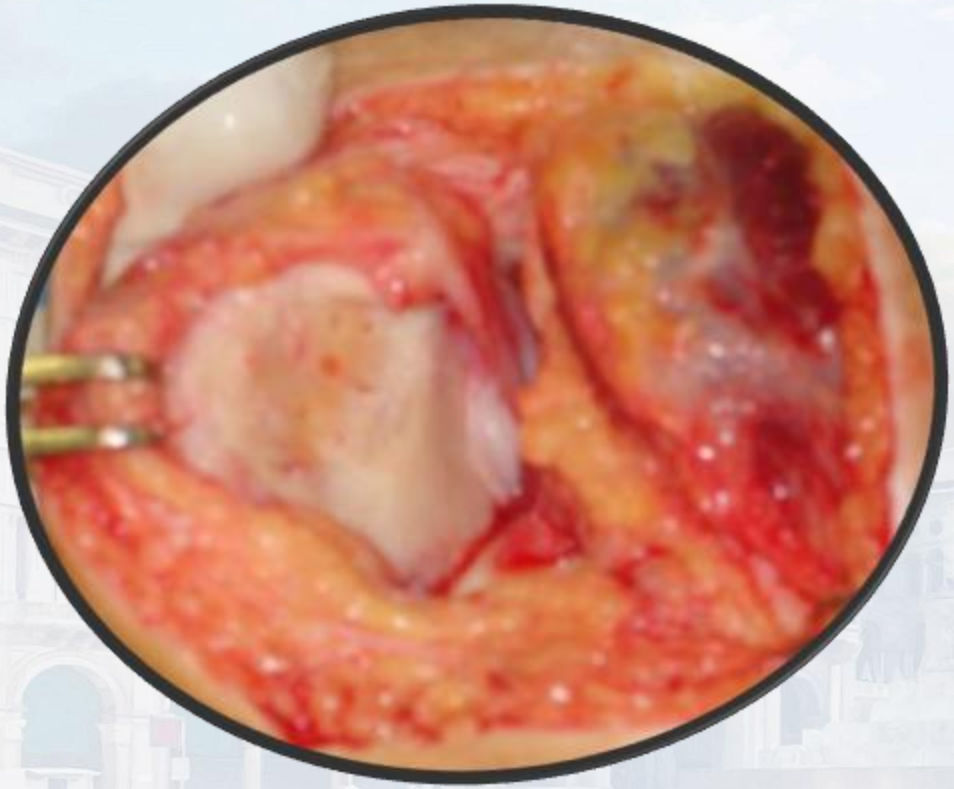
Minimum follow-up: **3 years (surgery procedures between 2009-2012)**

SPONK group MFC: **9** patients; 5F, 4M; **52yy**±9 (range 35-64)

Control group OCD MFC: **14** patients; 11M, 3F; **22yy**±7 (range 15-43)*

** In previous studies the best results were obtained in this category*

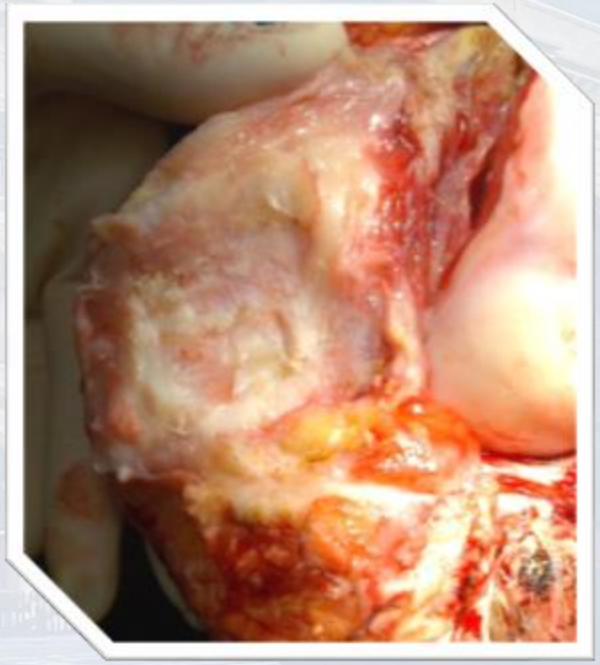
PATELLO-FEMORAL ARTHRITIS



AMIC: technique

CHIRURGIA RIGENERATIVA
Autologous Matrix Induced Chondrogenesis

- Micro –Fx associated with a collagenic membrane stabilizing and protecting the super-clot (one step)
- Arthrotomic technique
- Possibly arthroscopic for trochlear lesions (Hyalofast)



Exposition and preparation of the lesion

Sizing of the membrane

Microfractures

Implant of the scaffold

AMIC: surgical indications

- Patella (chondral-osteochondral) > 2,5 cm2
- Symptomatic lesions non responding to conservative treatment
- Post-traumatic (chondral)
- Lateral facet or distal pole localizations
- In symptomatic PPI (very selected cases) (associating anatomic factors correction)
- In OPI already treated for instability with residual pain related to chondral lesion
- In treating concomitant OPI and cartilage lesions (???)
- OCD (rare)

AMIC: Material and methods

10 patients: 3 females, 7 males

- **Isolated symptomatic chondral lesion of the patella**
- 5 posttraumatic
- 3 related to instability
- 2 overuse/degenerative

Associated procedures:

- 1 lateral release
- 1 tibia osteotomy
- 1 Maioregen LFC + MPFL reconstruction (LARS)

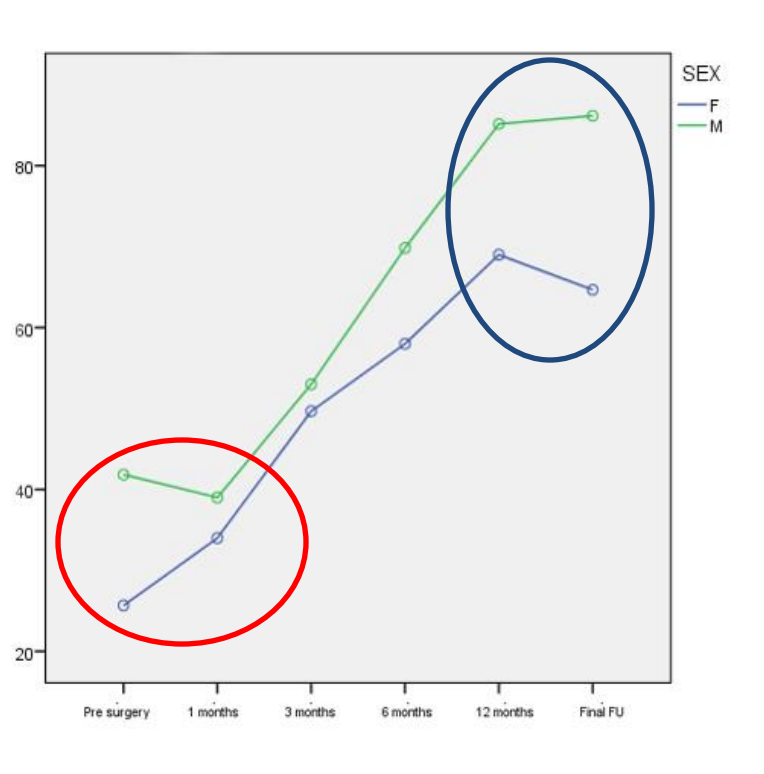
Mean age: 41,90 years(36-49)
Mean FU: 4,43 years (1,68-8,84)
Mean Lesion Area: 4,61 cm2 (0,81 -6,00)

Inclusion criteria:

- FU> 18 months
- No previous patellar cartilage surgeries
- Age min 16 ; max 50
- ICRS stage 3-4 isolated patellar lesion

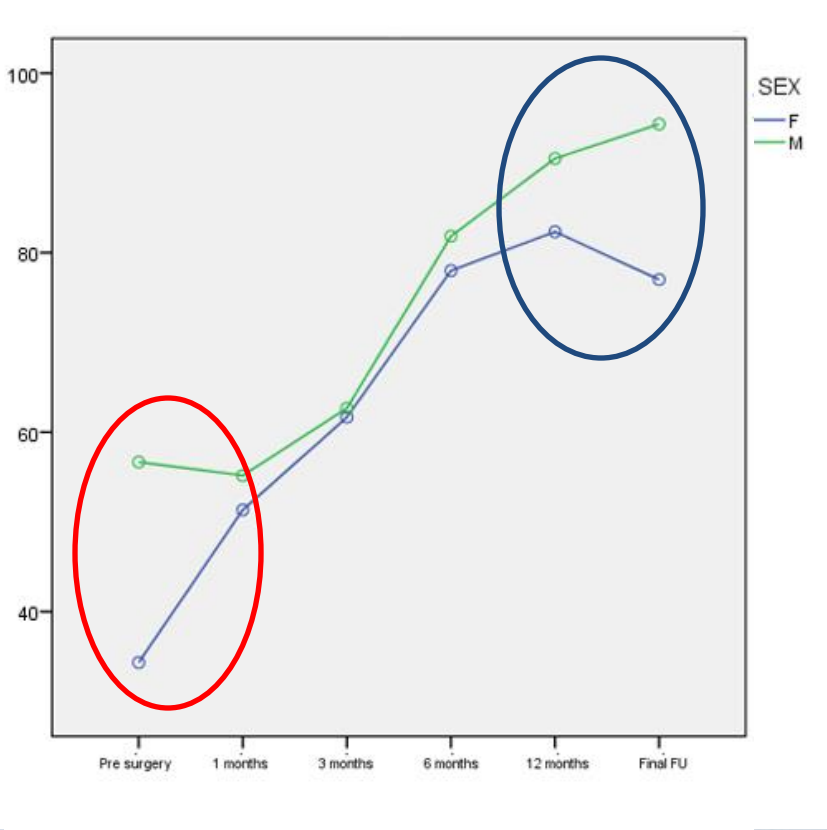
AMIC: sex subgroup analysis

IKDC score

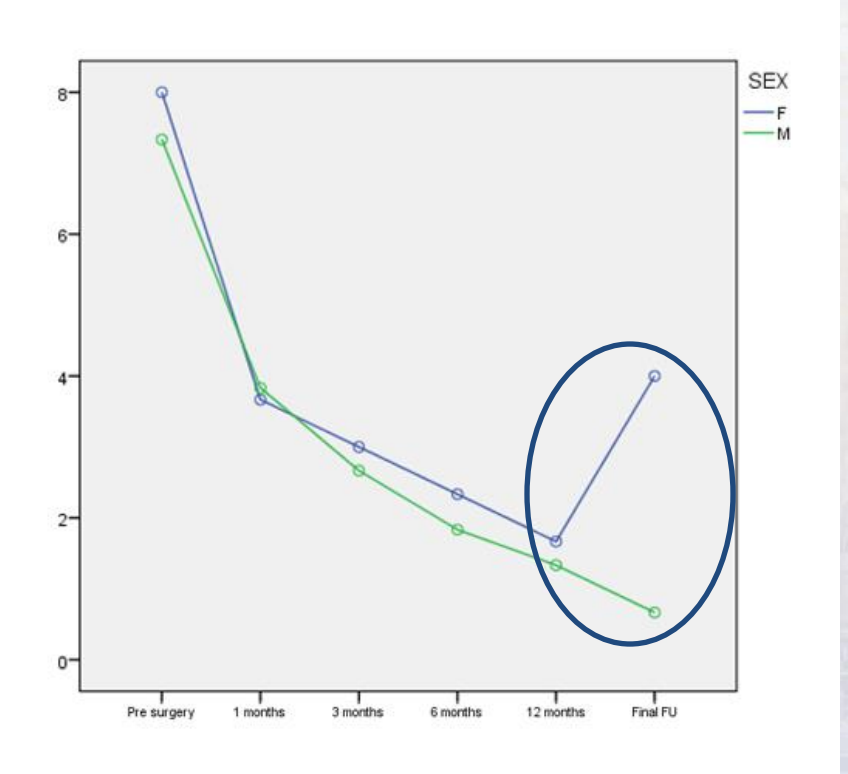


Significant lower score in females

Kujala score



VAS score



No significant difference, but worse trend in female patients

Risultati

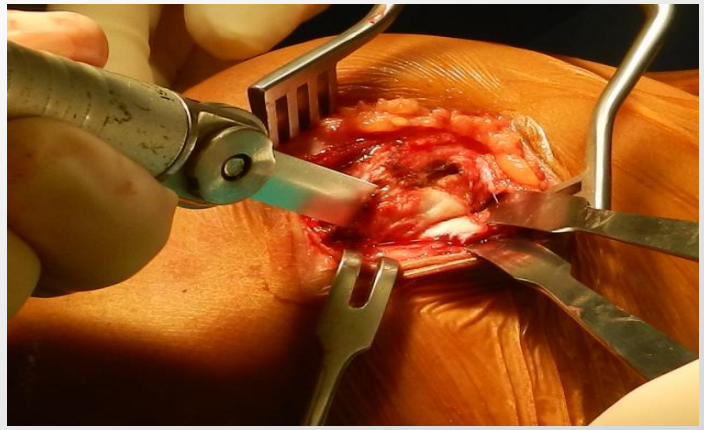
Population	Berruto et. al (2017) 	Dhollander et. al (2014) 	Sadlik et al. (2017) All-Arthroscopic Autologous Matrix-Induced Chondrogenesis-Aided Repair of a Patellar Cartilage Defect Using Dry Arthroscopy and a Retraction System
• N. cases	10	10	12
• Age (years)	41,90 +4,72	37,2+ 7,1	36 (22-52)
• Sex	7 M ; 3 F	8 M ; 2 F	7 M ; 5
• Lesion size (cm2)	4,62 + 2,01	4,2 + 1,9	/
• Localization	10 patella	8 patella 2 trochlea	12 patella
•FU (years)	4,68 (1,68-8,83)	2	3 (2-6)
•Surgical techniques	Microfractures + Chondro-gide (fibrin glue)	Microdrilling + Chondro-gide (sutures)	Microfractures + Chondro-gide (fibrin glue) Dry-arthroscopy
•Scores	Mean Kujala pre-op: 48.60 + 14.82 Mean Kujala F-FU: 88.56 + 14.32 Mean VAS pre-op: 7.67 + 1.43 Mean VAS F-FU: 2.33 + 2.22 Mean IKDC pre-op: 36.10 Mean IKDC post-op: 79.00	Mean Kujala pre-op: 41.9+15.1 Mean Kujala F-FU: 59.8+21.2 Mean VAS pre-op: 7.39 + 2.08 Mean VAS pre-op: 3.94+2.88 / /	/ / Mean VAS pre-op: 7.8 Mean VAS post-op: 2.3 Mean IKDC pre-op: 37.4 Mean IKDC post-op: 90.1

CHIRURGIA NON PROTESICA

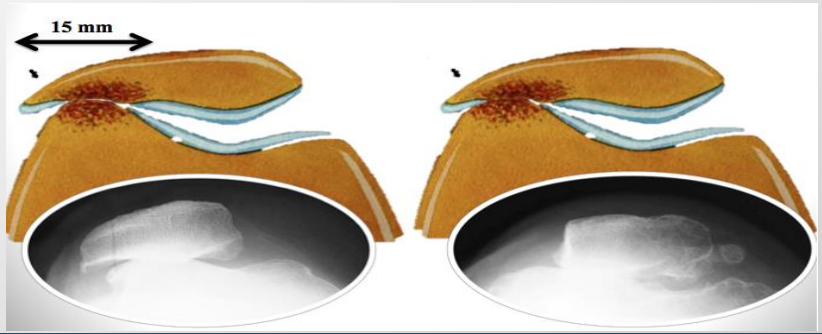
FACCETTECTOMIA VERTICALE ESTERNA

- *Yercan ,CORR 2005*: 11 pazienti con buon risultato clinico a 14 anni-KSS da 150 a 176
- *Paulos , Arthroscopy 2008*: 66 ginocchia- 80% dei pazienti migliorati a 5 anni (+allungamento LPFL)
- *Wetzel , Knee 2012:*

50% di mantenimento scores clinici a 10 anni (155 pazienti)



CHIRURGIA PONTE



- Biology
- Prevention
- Less aggressive in indications (surgery cannot resolve all the problems)
- Less invasive and more anatomical surgery
- Be carefull in the choice of materials
- And never forget …….

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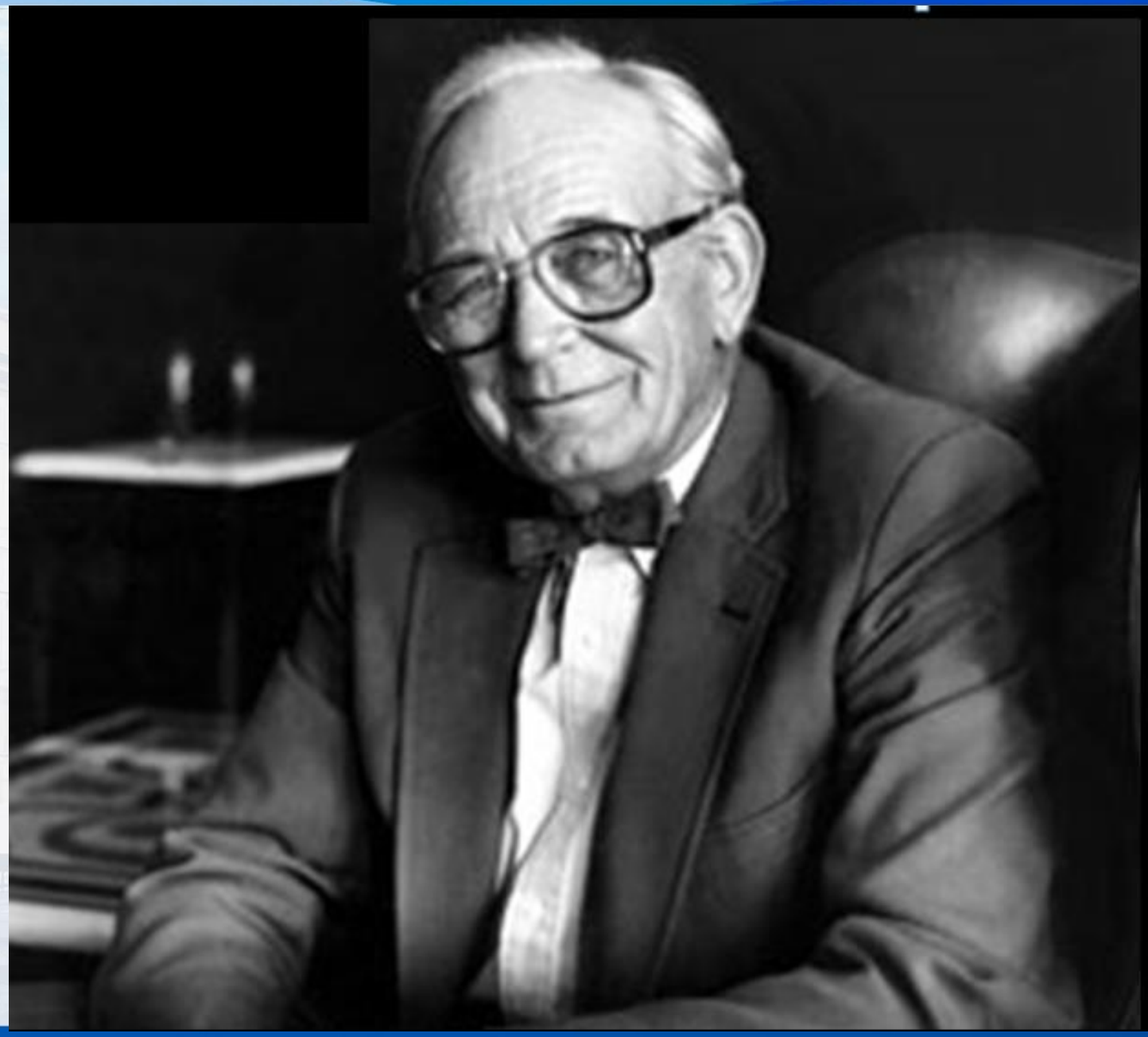

There is no problem that cannot be made worse by surgery.

Jack C. Hughston, M.D.

We wait for you..
We are ...

SIAGASCOT