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Università degli Studi di Pavia

Fondazione IRCCS
Policlinico S. Matteo

Chairman: Prof. F. Benazzo



Multi UKA for post-trauma arthritis

F. Benazzo

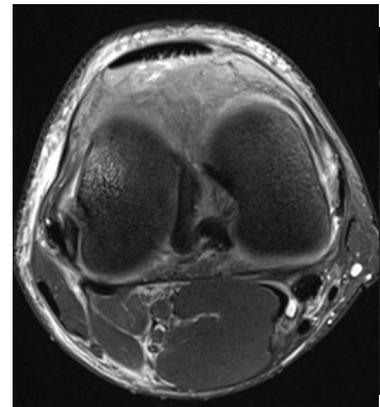
Post-traumatic arthritis

- Arthritis develops following a known injury
- High energy fracture in young patients, low-energy fracture in older patients
- 2,29 knee injuries/1000 individuals in the USA
- Patients with PT-OA are 10,4 years younger than those with primary OA
- Functional disability in a young population



Pathogenesis: not only a bone fracture

- Articular cartilage damage: impaction, apoptosis, caspase pathway, matrix metalloproteinasi 3
- Inflammatory cytokines: $\text{TNF}\alpha$, IL-1, IL-6 and IL-7
- Meniscal and ligaments injuries: subsequent instability
- Subchondral bone: bone marrow lesion with osteocytes necrosis



Our experience since 2004

Injury, Int. J. Care Injured 45S (2014) S98–S104



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Total knee replacement in acute and chronic traumatic events



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ABSTRACT

Total knee replacement (TKR) is a widely used procedure for the treatment of post-traumatic arthritis. This type of solution has also been used recently for the treatment of acute fractures around the knee, particularly in joints that were already arthritic before the trauma. The purpose of this paper is to present our experience with TKR in both acute and chronic traumatic events, highlighting the main problems associated with these conditions and focussing on the indications, principles of technique, tips, tricks and pitfalls of this procedure. The main issues related to post-traumatic arthritis and the problem of TKR in acute fractures are discussed, and our case series of both groups of patients is presented.

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Our experience since 2004

From 2004 to 2013

54 patients with post-traumatic knee arthritis

- 24 NEX GEN LPS
- 22 NEX GEN LCCK
- 1 ZSS
- 4 Uni ZUK, 1 PFJ, 1 Uni+PFJ, 1 UNI Accuris

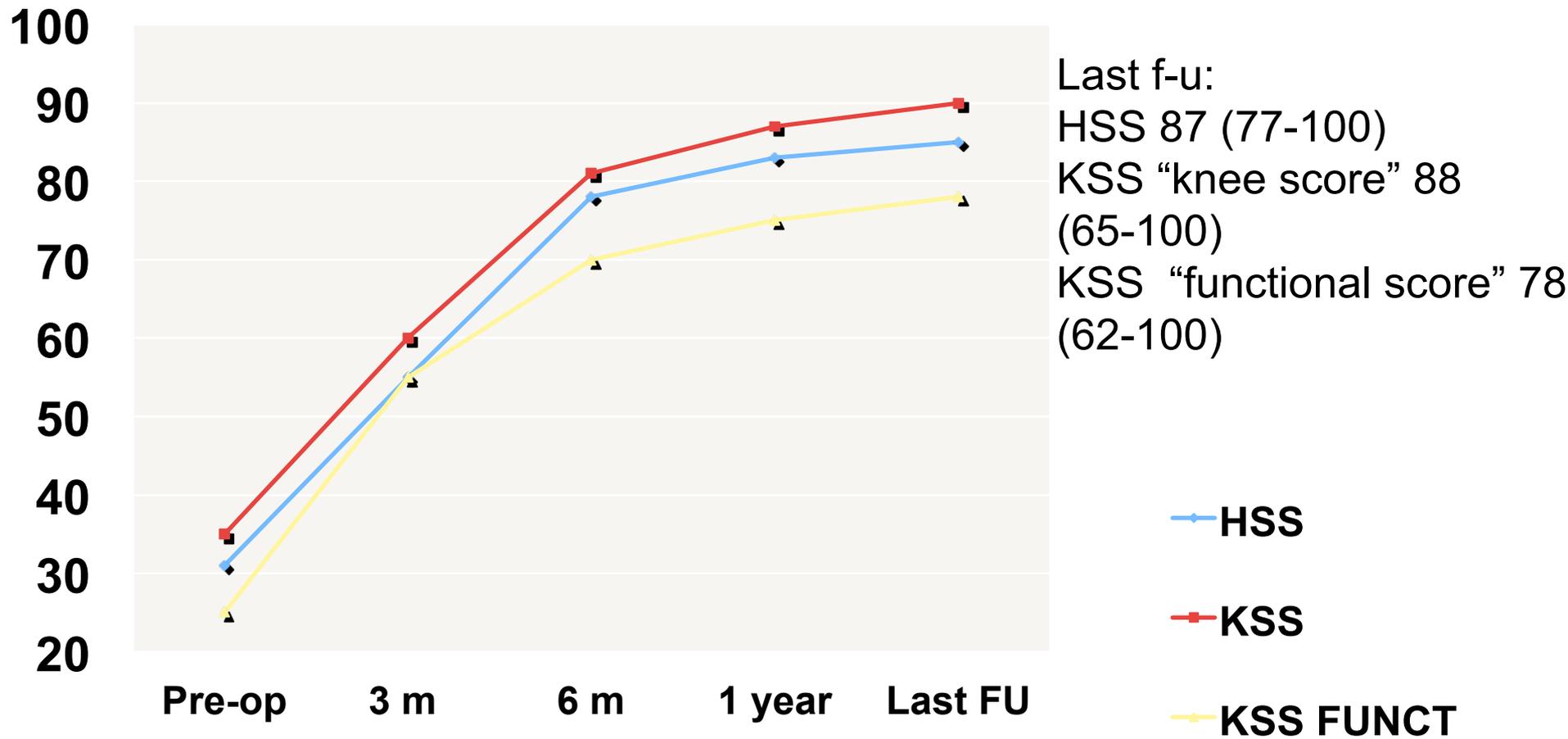
Mean age 65 years (33-84)

28 women and 25 men

Mean follow-up of 5 years (3-7)



Our experience since 2004



Articular deformities:

Is there an algorithm? Our proposal



Articular deformities
(bone loss)



Correctable deformity - acute/chronic

Structural deformity - chronic



Good
ligaments

Ligament
incompetence

Ligament
release

Bone losses



UNI / TKA

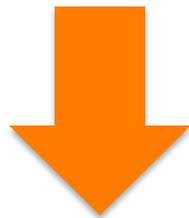
Upgrade the
constraint

Bone reconstruction/
substitution (augments)
TKA with STEMS



Indications for (Bi-)Unicondylar knee

- Only one compartment involved
- Correctable deformity
- Good ligaments
- → Uni or bi-compartmental

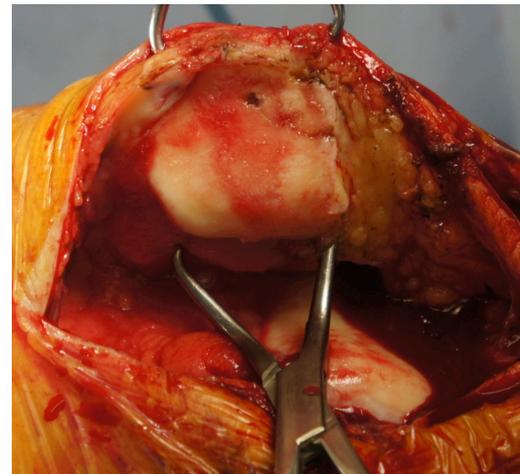
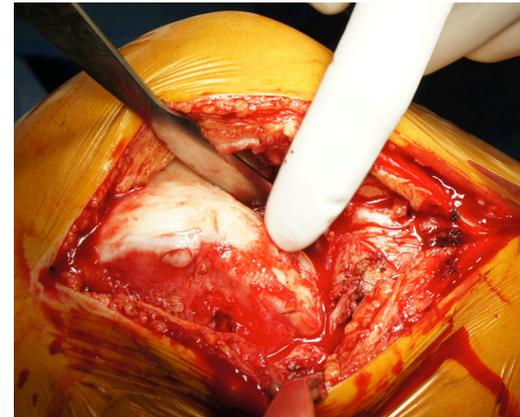


TKA can be considered an overkilling solution



Classic PF and UKA indications

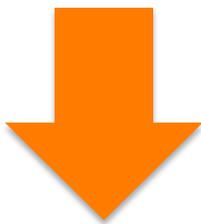
- Unicompartmental disease ...associated with patellofemoral OA with evident clinical symptoms
- Arthritis of the patella lateral facet associated with even poor/ mild symptoms in association with unicompartmental disease
- Post-traumatic patellofemoral OA associated with overload of one compartment (medial or lateral)
- Deformity $< 10^\circ$, flexion contracture $< 10^\circ$, ROM $> 90^\circ$



Bicompartmental Knee Arthroplasty

The ideal patient

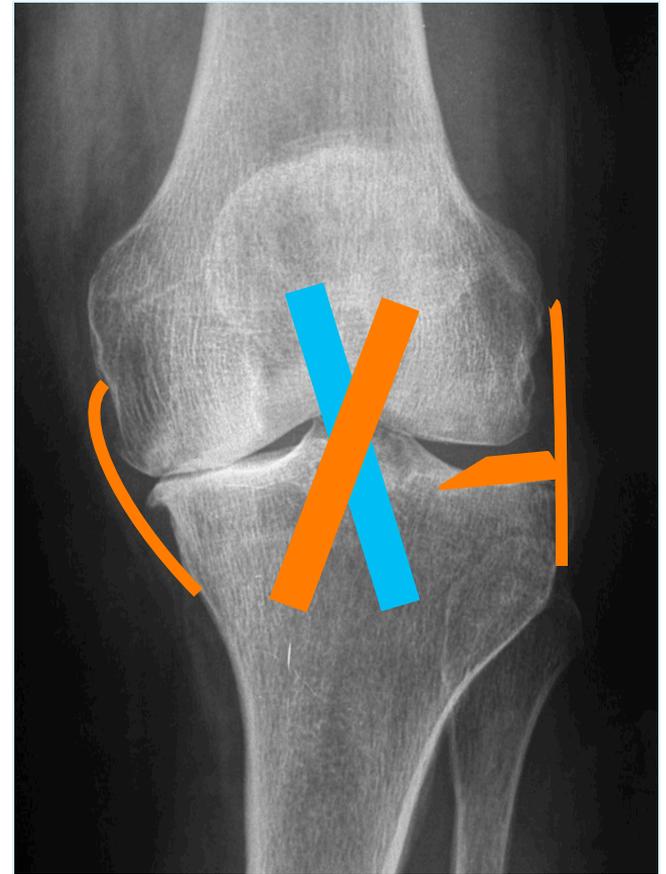
- Young and active patients
- Elderly patients with “normal” functional demand



- Both intact cruciate ligaments maintain physiological stability
- Proprioception is essential for the knee function
- Respect the feeling of “self”

Uni and combined: advantages

- Both collateral ligaments
- Both cruciate ligaments
- Lateral/medial meniscus healthy
- PFJ affected



SURGICAL TECHNIQUE

Rules

- Divide the surgical procedure into two parts
- Perform both procedures, from a technical point of view, independently
- Adhere to the principles and techniques of the specific implant in use
- Choose the approach according to the compartment involved (medial or lateral)

SURGICAL TECHNIQUE

Rules

- In our experience it is best to perform the PFA after the UKA procedure
- By UKA preparation realigned the knee and rebalance the forces on the extensor mechanism
- The PFA is performed with the trial implant inside

SURGICAL TECHNIQUE

Rules

- The deformity undercorrection rule is of paramount importance also in UKA + PFA
- Preserve 2 mm of cartilage between throdlea and femur
- Cement first the UKA implant



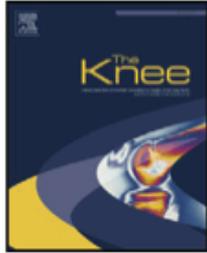
Our experience

The Knee 21 S1 (2014) S43–S46



Contents lists available at [ScienceDirect](#)

The Knee



Partial knee arthroplasty: patellofemoral arthroplasty and combined unicompartamental and patellofemoral arthroplasty implants – general considerations and indications, technique and clinical experience

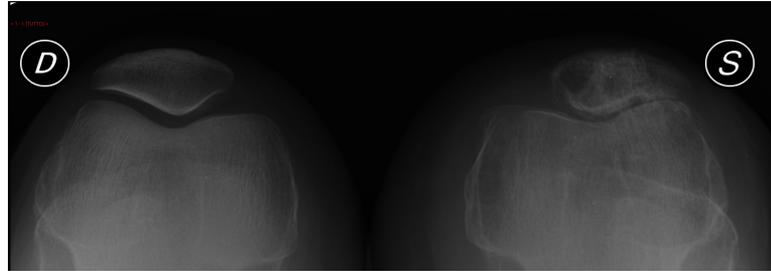
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- 25 cases of isolated PFA with mean follow-up of 56,5 months
- 30 cases of combined PFA and UKA with mean follow-up of 59 months
- Significant improvement of HSS, KSS and OKS scores with results at final follow-up ranging from good to excellent

Clinical case

- Female
- 57 ys
- Jehovah religion
- Patellar fracture



Clinical case

- Attention to patellar shape (magna) and bone quality!
- Always patellar button!



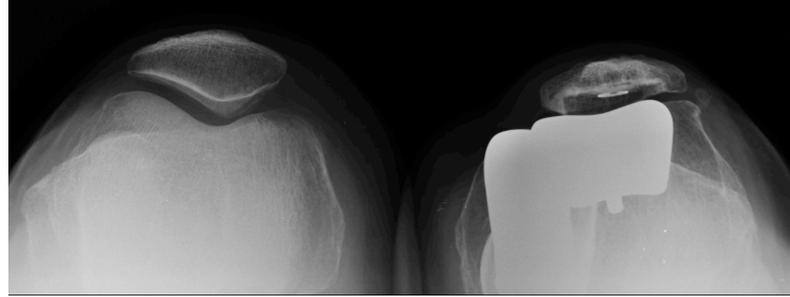
Clinical case

- Follow-up 3 ys



Clinical case

- After 6 ys



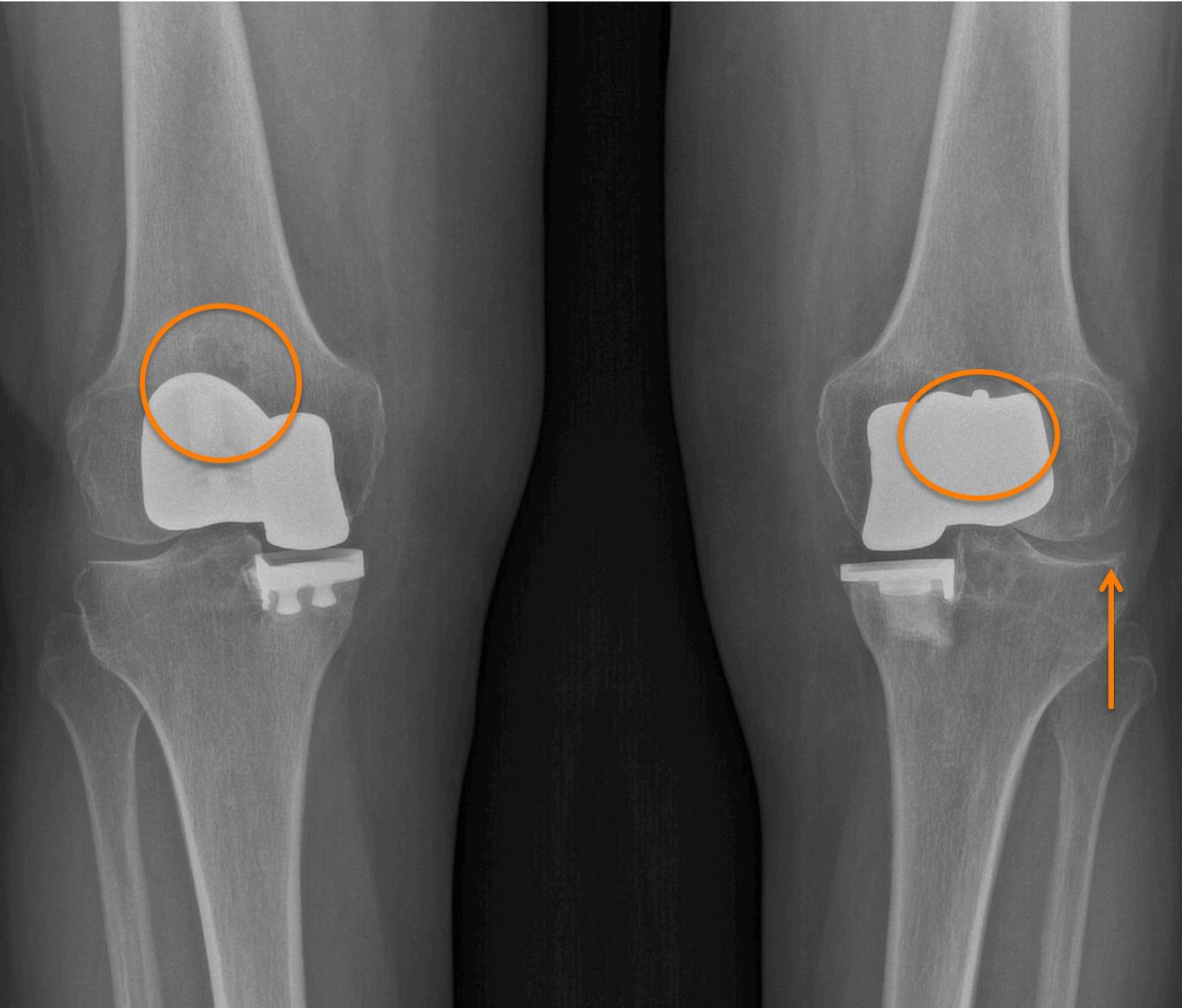
Clinical case

- Post-op



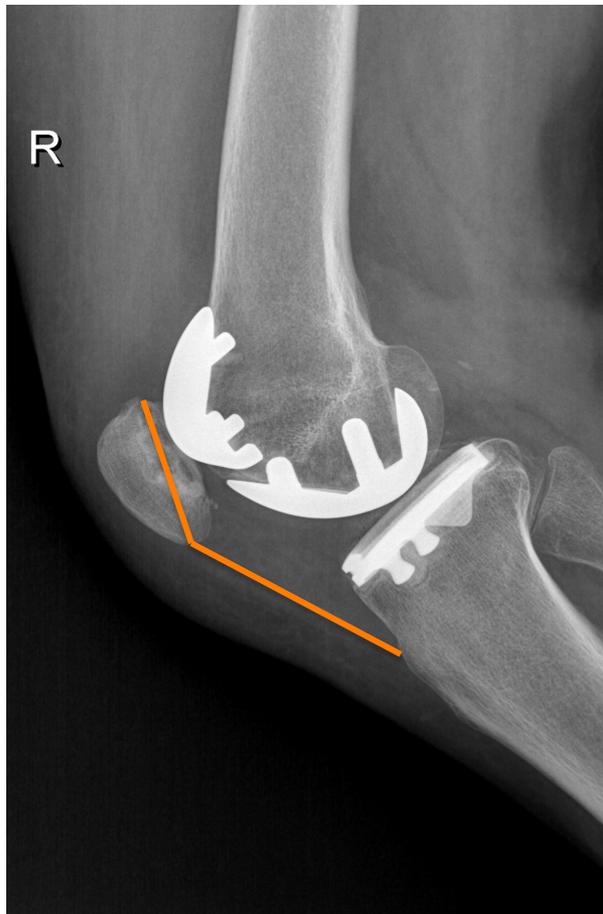
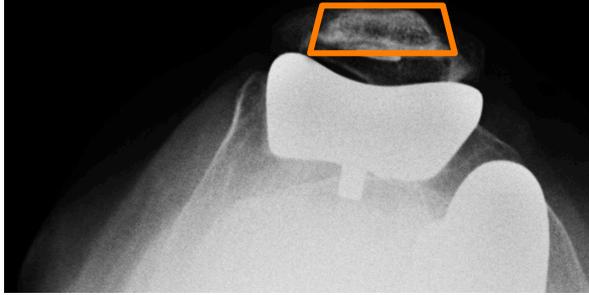
Clinical case

- Follow up 6 months and 6 years and half



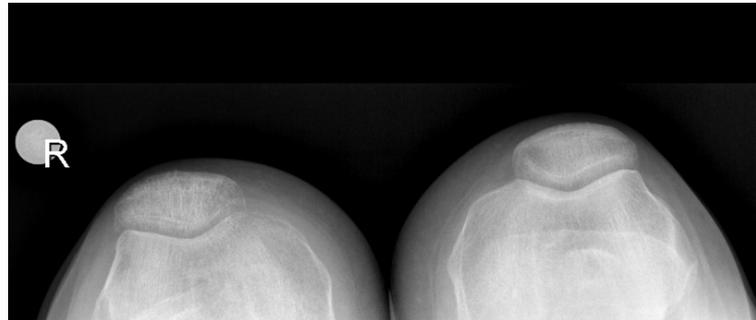
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BALDINI
ORTOSTASI



Clinical case 2

- F, 62 ys
- Road accident
- THA (f-u 3 ys)



Post-operative x-rays

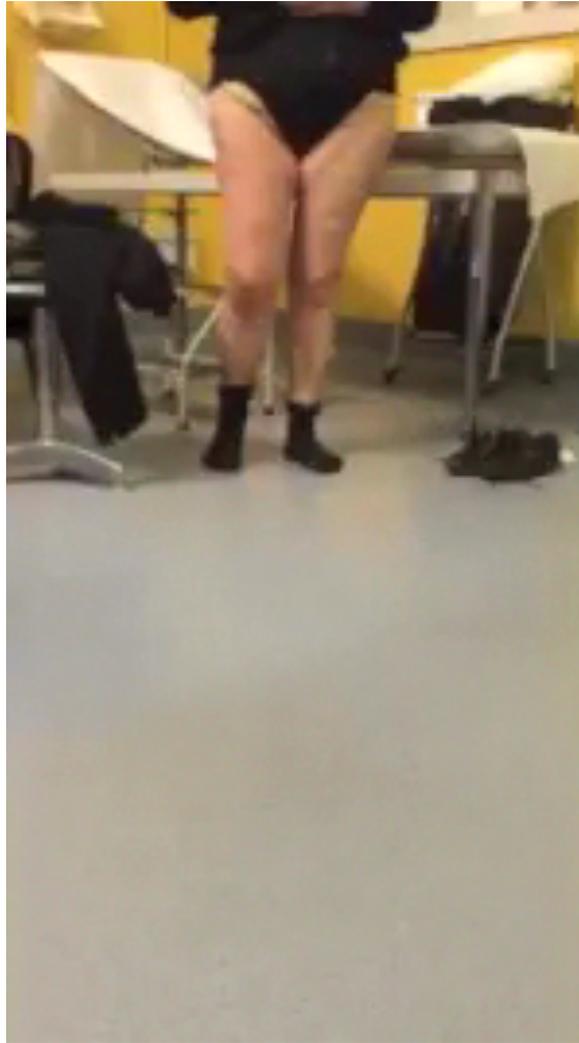
- 1° step: UKA
(correct axis)
- 2° step: PFJ
- Preserve 2 mm
of cartilage
- Check patellar
tracking



Follow-up at 3 months

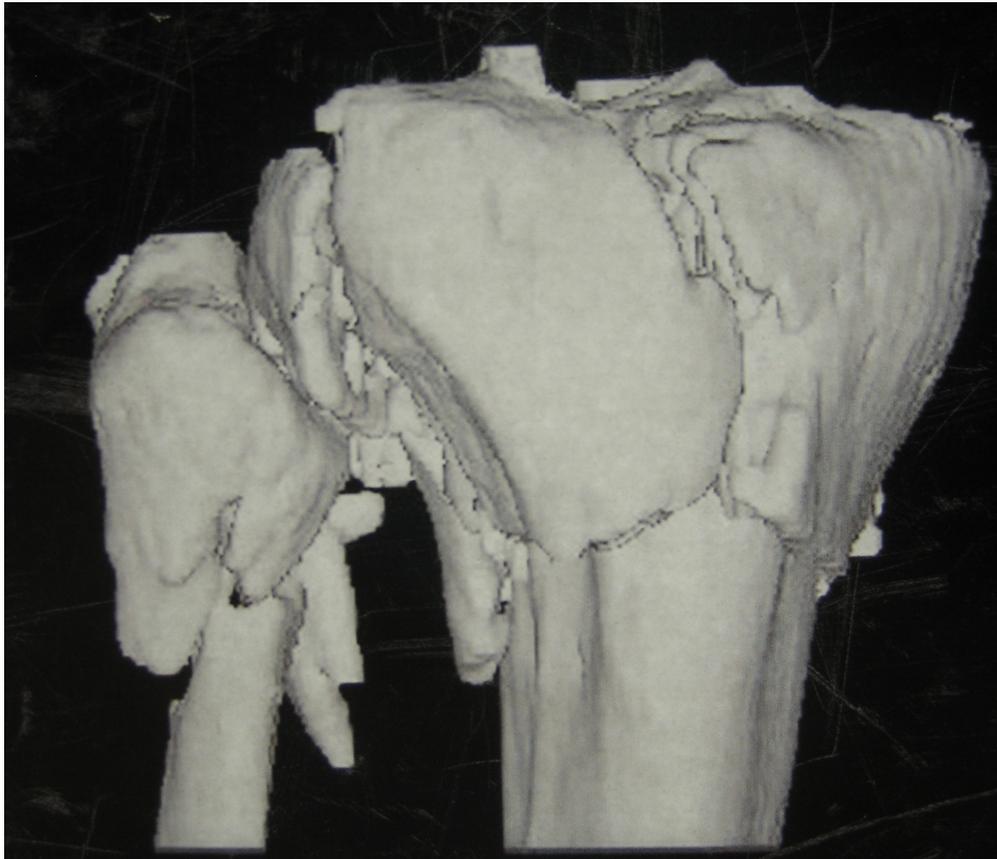


Follow-up at 3 months

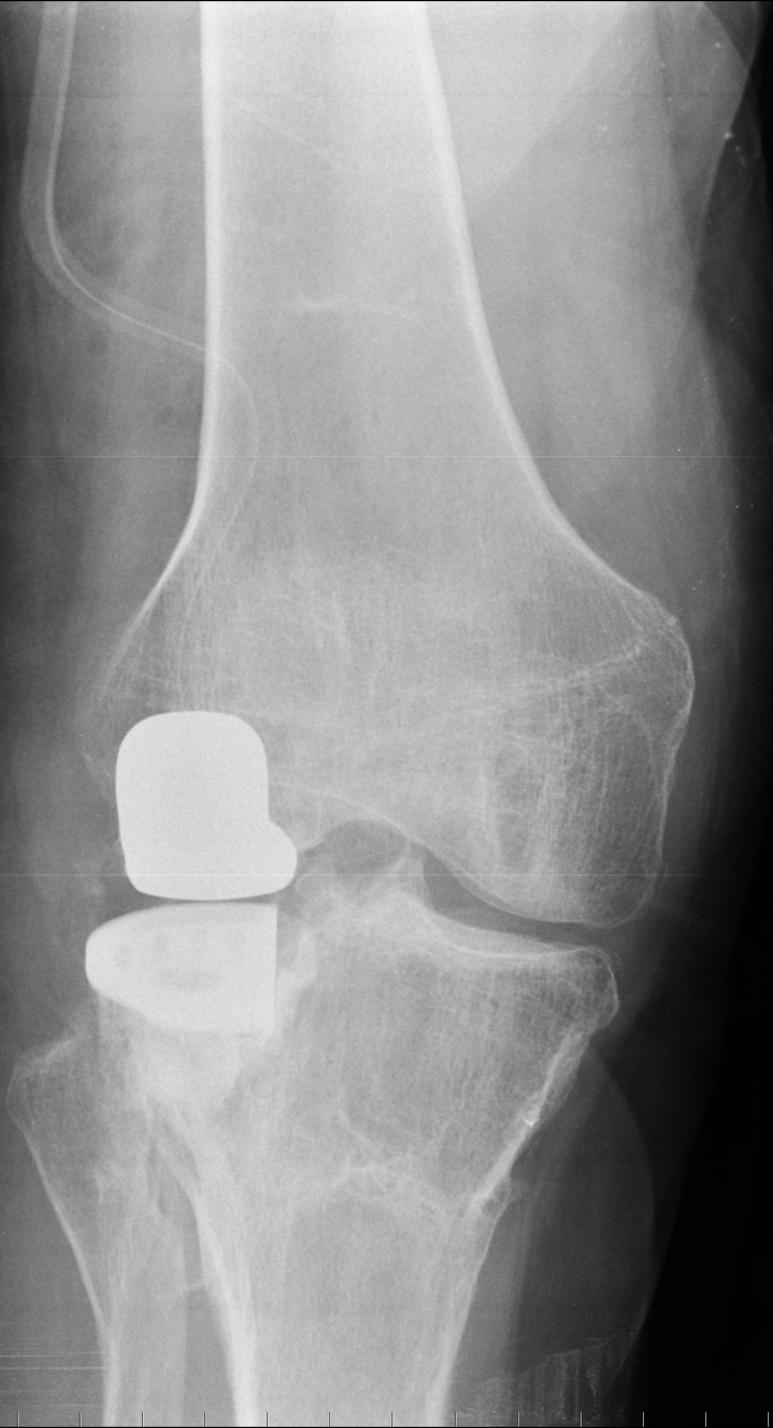


Clinical Case 3: trick

- B.F., f, 53 y
- 6 years before, motorcycle accident → tibial plateau fracture → fixation → non-union, 1 year later 2nd surgery with bone graft



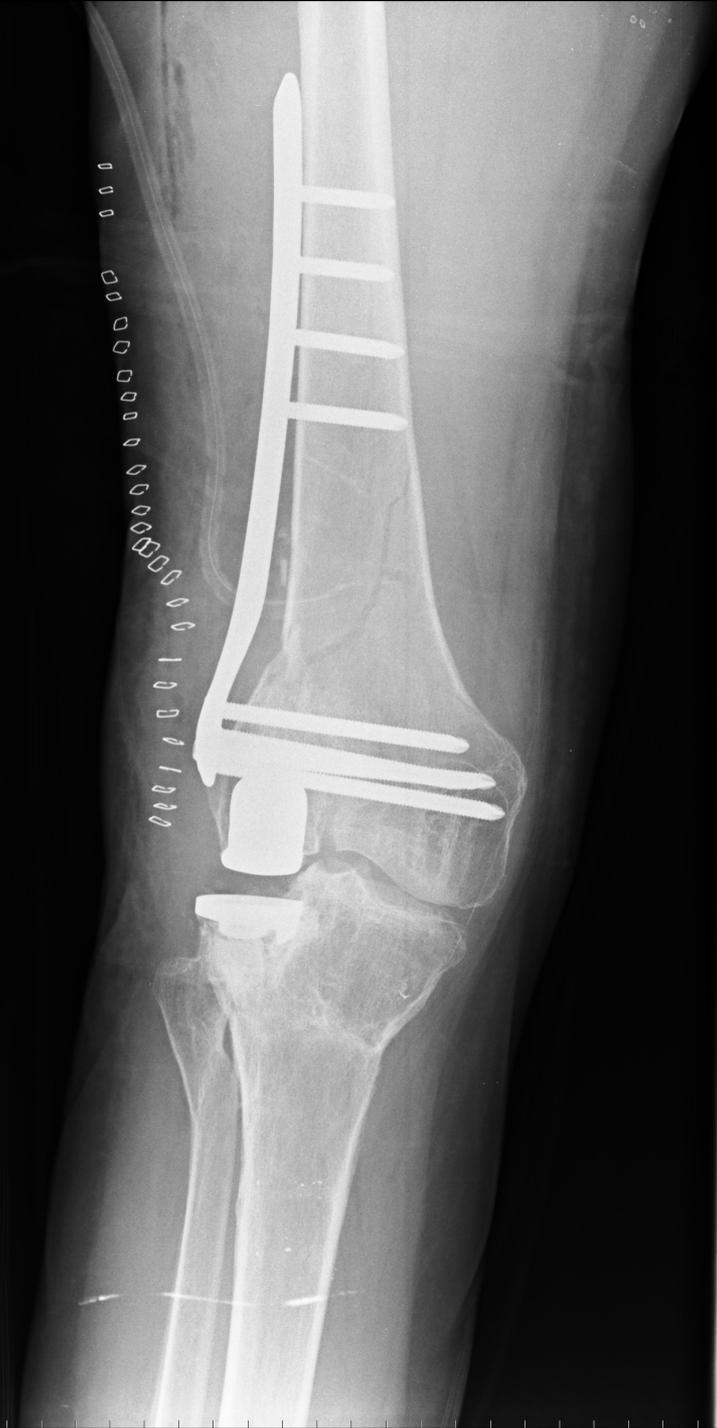
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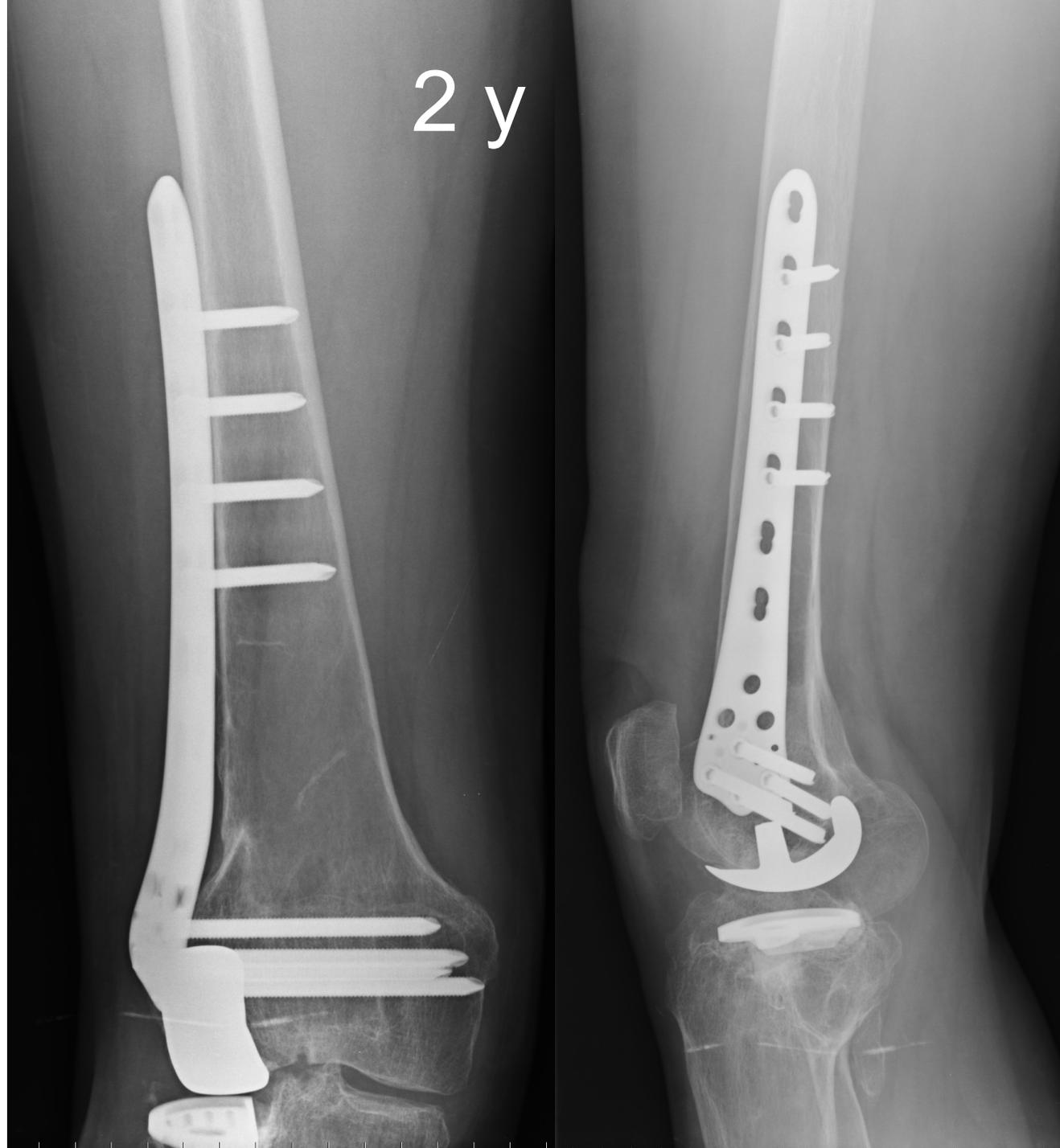


5 m



D

Periarticular bone
could be
osteoporotic!



Surgical tip



Remove only the necessary!

Tri-uni



Tri-uni: 5 days after surgery

Too much in post-traumatic arthritis?



Conclusions

- Post-traumatic arthritis treated by multi-UKA is challenging for the surgeon, but it is feasible
- The trauma damaged the joint, but we can find some portion/ structures healthy and save it/them
- Bi-UKA preserves proprioception, particularly in young and elderly patient with a history of knee trauma
- Respect the indications
- Correct technical execution
- Our experience very satisfactory, reproducible and encouraging