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TKA for fracture in elderly patient

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# Post-traumatic deformities

- Distal femoral and proximal tibial fracture are relatively common in young patients (high energy trauma) and old patients (low energy trauma)
- Risk of malunion or non-union
- Bone defects
- Limb alignment
- Latent infection
- Compromise of soft tissue envelope



# Post-traumatic deformities

Surgical treatment is demanding:

- Diagnosis (exclude latent infection)
- Approach
- Axis
- Bone loss
- Choice of implant and level of constraint



# Our experience

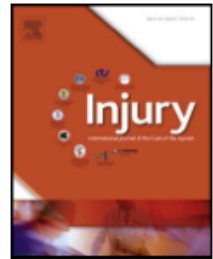
Injury, Int. J. Care Injured 45S (2014) S98–S104



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## Injury

journal homepage: [www.elsevier.com/locate/injury](http://www.elsevier.com/locate/injury)



## Total knee replacement in acute and chronic traumatic events



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### ARTICLE INFO

#### Keywords:

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Knee injuries  
Trauma  
Acute  
Chronic

### 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

## Instructional Lecture

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[www.eort.org/openreviews](http://www.eort.org/openreviews)



**EORT** open reviews

## Knee replacement in chronic post-traumatic cases

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is to give an overview of the various associated problems, and the surgical options available for dealing with this type of articular degeneration.

### Planning

Planning is of utmost importance when approaching this



## Protesi di ginocchio in acuto

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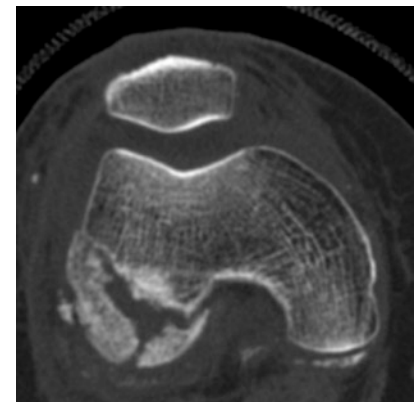
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### ABSTRACT – TOTAL KNEE ARTHROPLASTY IN ACUTE

*Total knee arthroplasty is a reliable solution not only for the primary arthritic knee but also for severe knee fractures, either affected by osteoarthritis or not, or in case of severe bone loss in young patients. In this paper we present our experience and we suggest different technical solutions related to different segmental bones involved.*

# Decision making in acute

- Patient's age, often > 50 years-old
- Poor bone quality
- Pre-existing arthritis
- Comminution
- Osteochondral damage
- Need of early mobilization
- Prevention of further surgery



# Treatment options

Reconstruction (TKA) *VS* Substitution (segmental)

- ➔ Extensor mechanism must be preserved
- ➔ If open fracture, accurate protocol for prevention of infections

# Treatment options

Reconstruction (TKA) *VS* Substitution (segmental)

- Extension of the fracture
- Bone stock
- Epicondyles



# Reconstruction

- Use of Stems cones/sleeves and augments
- CCK or Hinge

When:

- Extension: be able to bypass the fracture with a stem
- Still enough bone stock to support the implant
- Presence of epicondyles

# Treatment options

## Why the epicondyles?

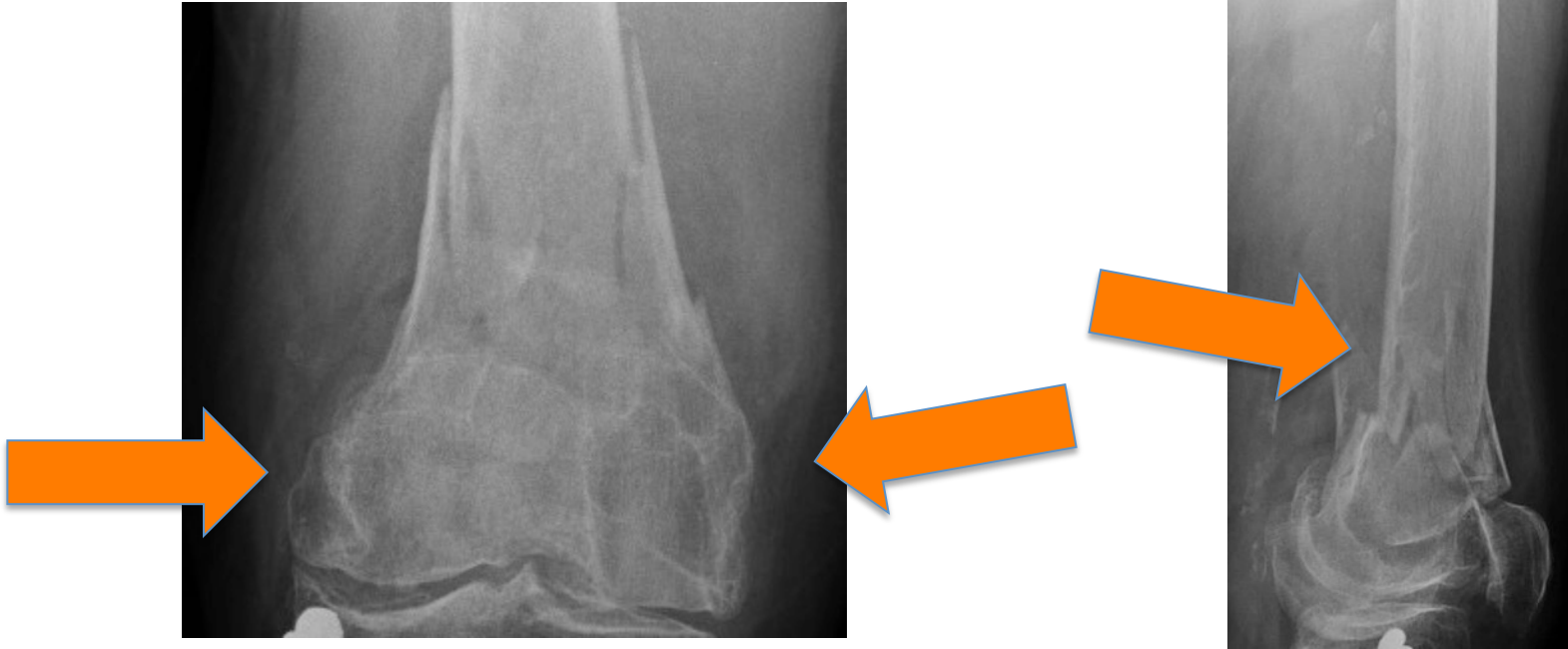
- Ligaments insertion
- Length
- Joint line
- Rotation
- Support for hardware

# Reconstruction

- F, 64 y
- road accident
- ORIF tibial plateau (1987)
- left TKA (2 years before)



# Reconstruction



- Extension
- Enough bone stock
- Presence of epicondyles

# Reconstruction

After 3 months





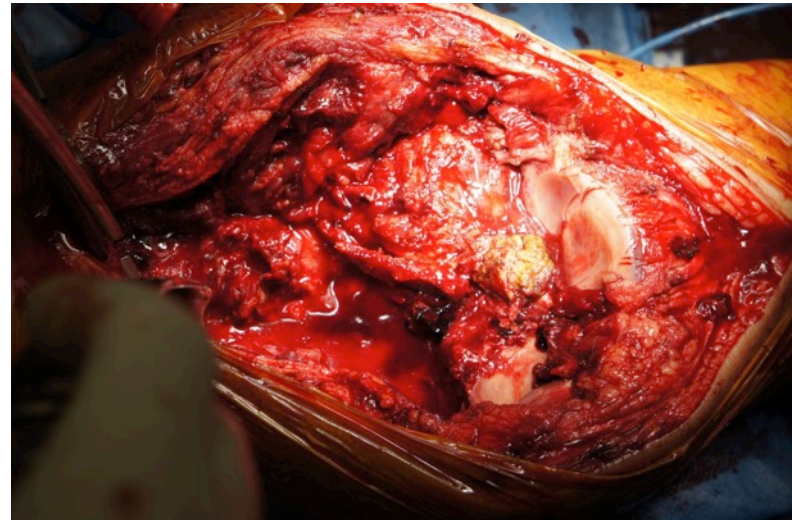
# Surgical difficulties in acute

## Femur:

- No landmarks for rotational alignment
- Restoration of the joint line
- Preparation of a free-floating distal fragment to accommodate the femoral component

## Tibia:

- “less difficult”
- TTA fracture



# CASE

- Men, 70y, 112 kg, 175 cm
- Fracture of the tibial plateau with concussion of the popliteal artery





- Ex Fix
- Vascular surgeon advice and doppler



## 2<sup>nd</sup> step

- ORIF, MCL reinsertion
- By-pass of the popliteal artery

# 6 months later

- Pain
- Laxity of the medial compartment
- Valgus deformity
- 112 kg
- 175 cm



# TKA:

- LCCK
- Augment and Cone





# Substitution (segmental TKA)

➔ No return indication

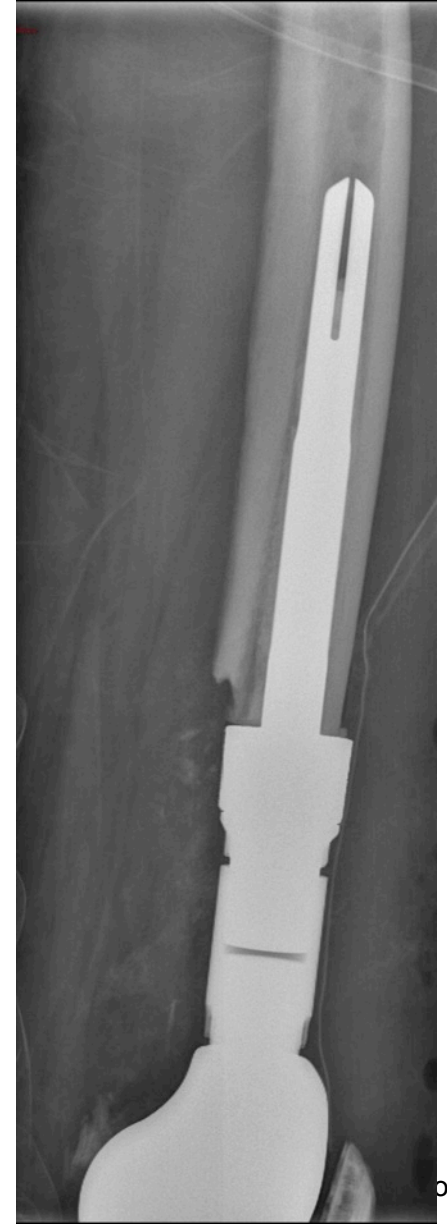
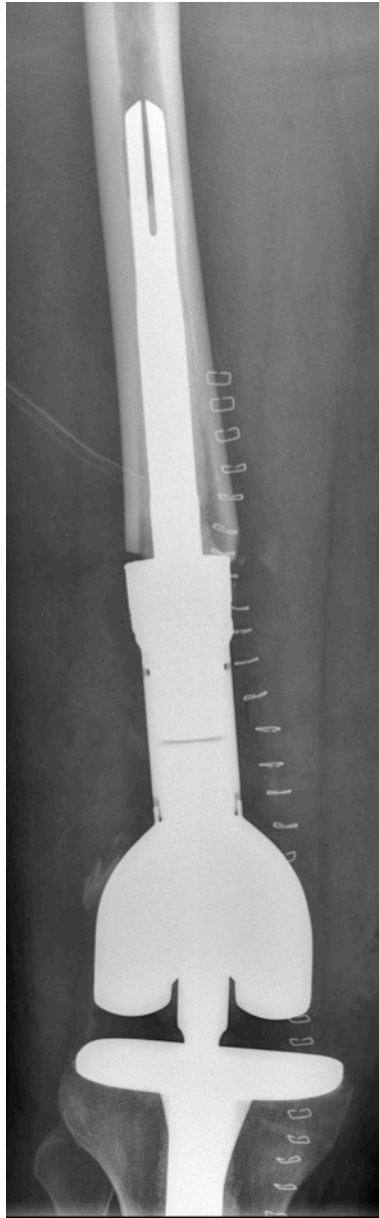
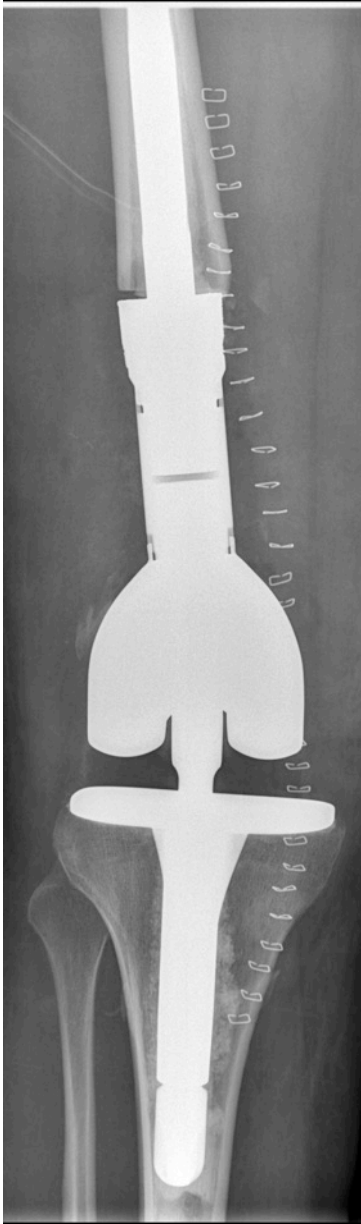
- No bone stock
- High risk of non union or failure of an ORIF or a CREF
- Articular fractures with high risk of development of an arthritic and stiff knee
- Need for an early recovery

# Decision making in acute: segmental TKA

- Male
- Road accident
- AO 33-C3



# Decision making in acute: segmental TKA



# Decision making in acute: segmental TKA

Post-op



# Decision making in acute: segmental TKA

Follow-up 7 months





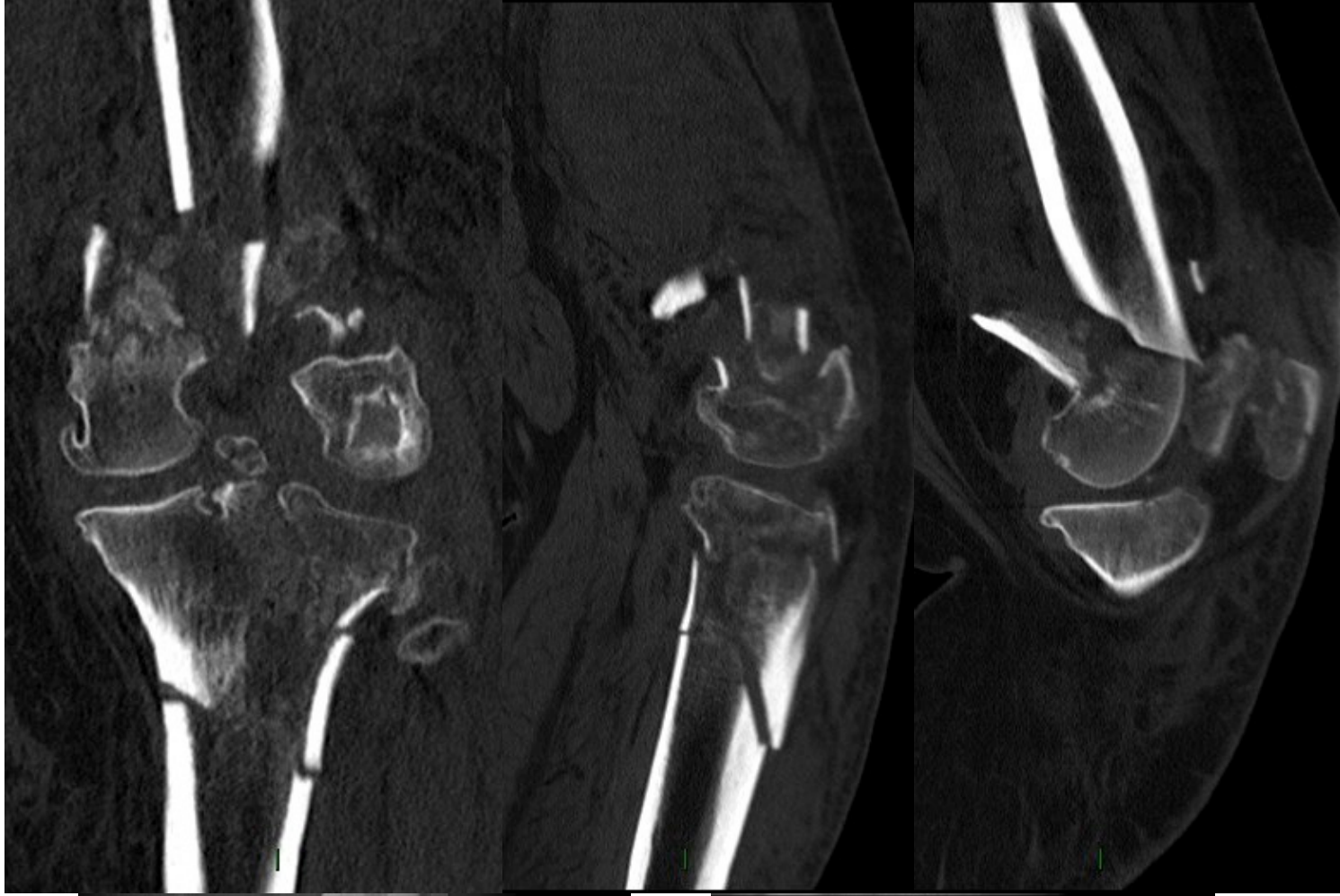
# Decision making in acute: segmental TKA

Follow-up 7 months



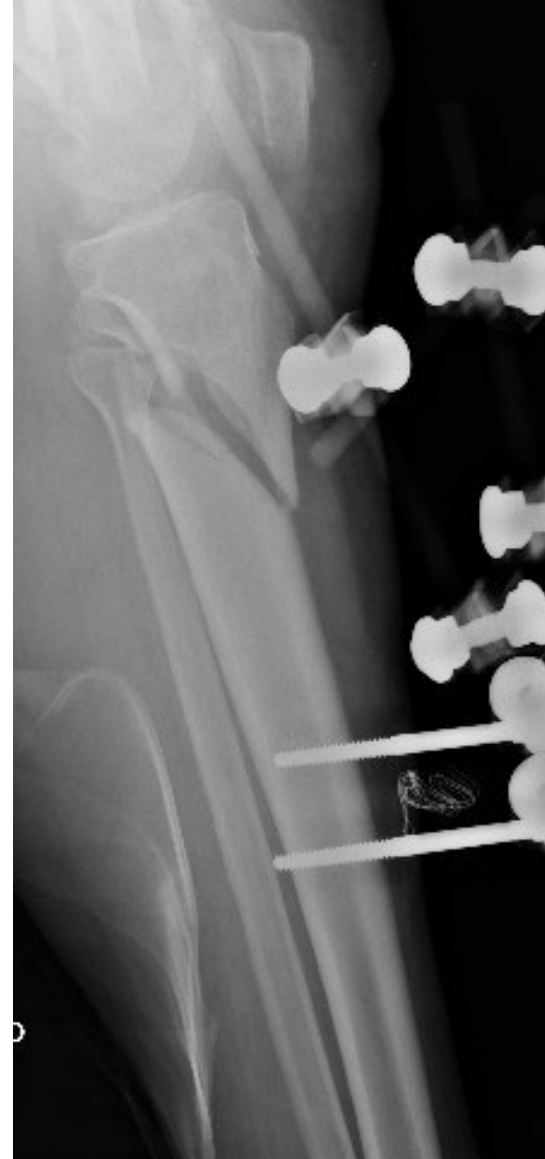
# Floating Knee

- Male
- Diabetes
- Panipopitui  
tarism
- Obesity
- 33-C3
- 41-C2

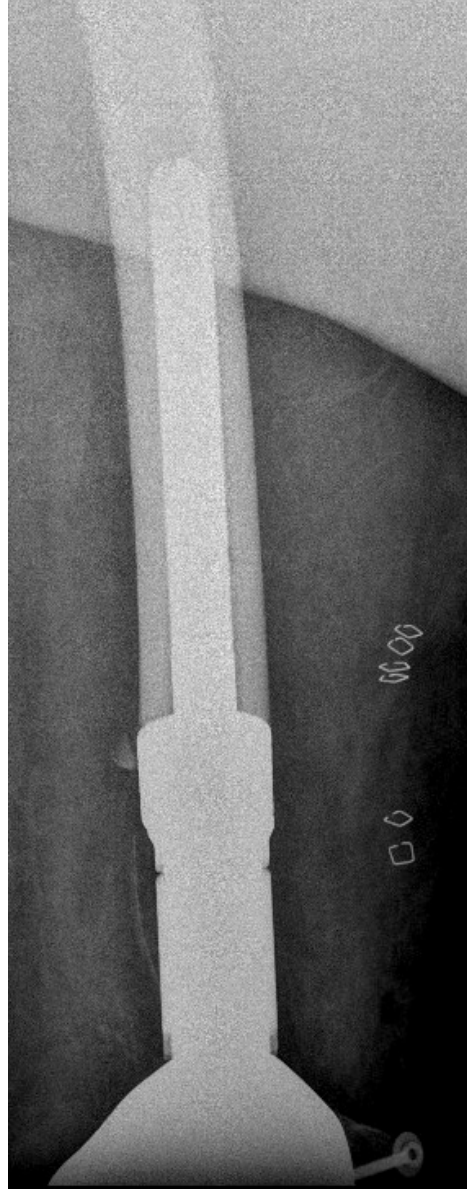
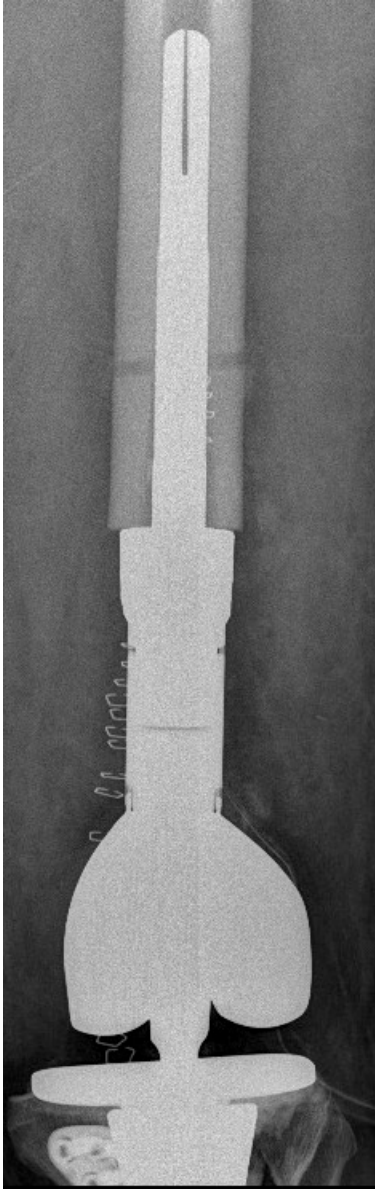


# Floating Knee

- "Damage control":  
External fixation



# Floating Knee





# Floating Knee

- Fu 6 months



# Floating Knee

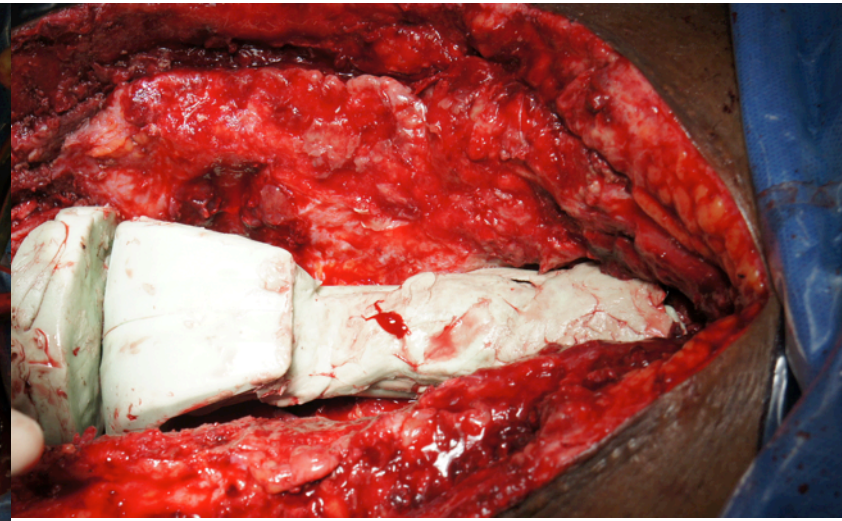
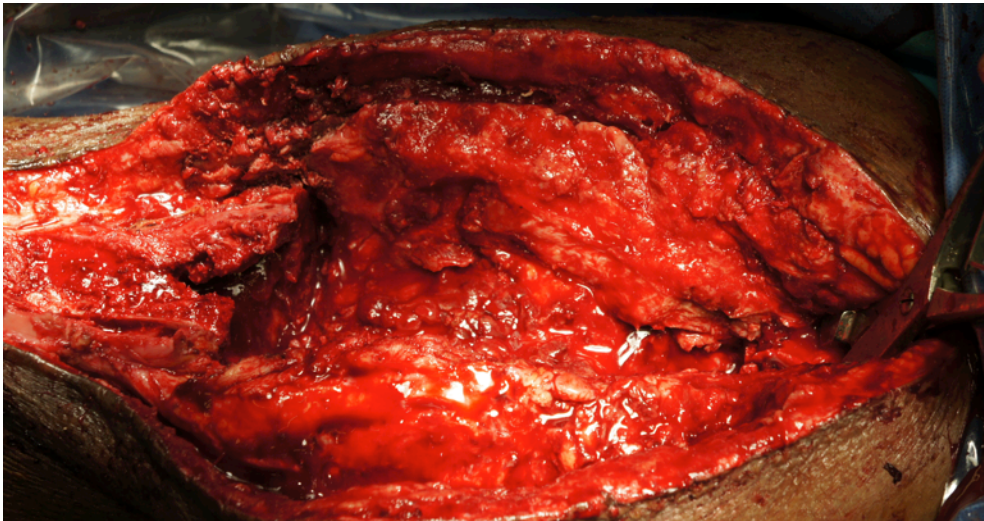
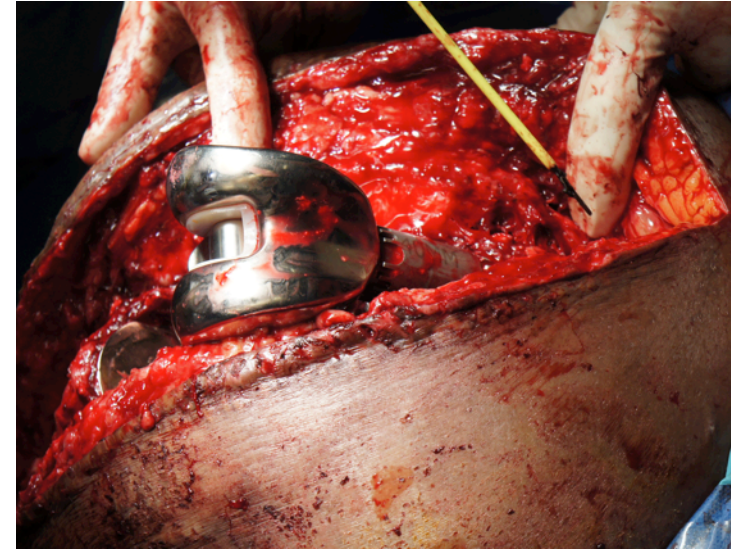
- Follow-up a 6 months





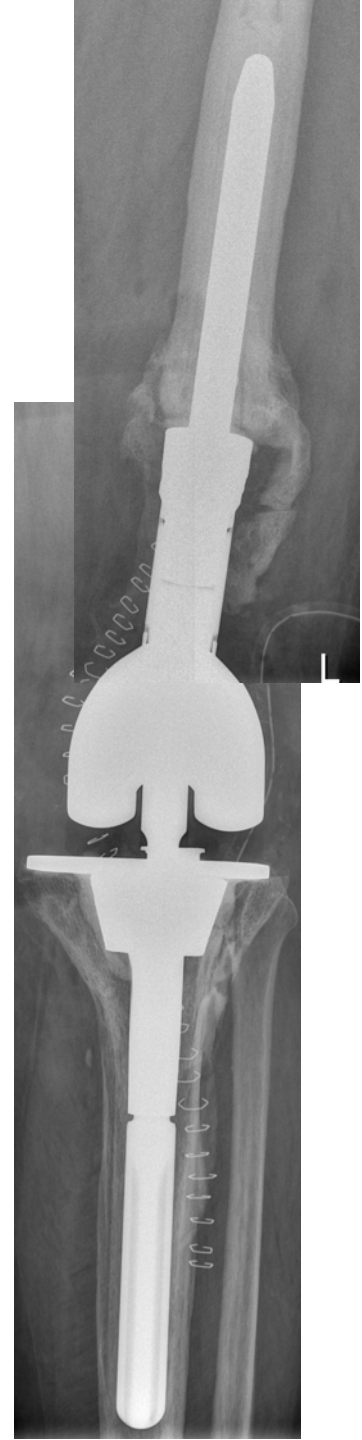
# 1 year later

- Patient went back to Senegal
- Comes back with uncontrolled diabetes and infection of the implant and isolation of *Citrobacter koseri*
- Positioning of a cement spacer (Stage one with rods in the femoral canal)



# 8 months after

- New implant
- ZSS
- Cone in the tibial plate





# Acute fracture in post-traumatic distal femoral deformity



# Acute fracture in post-traumatic distal femoral deformity



# Our experience 2012-2016

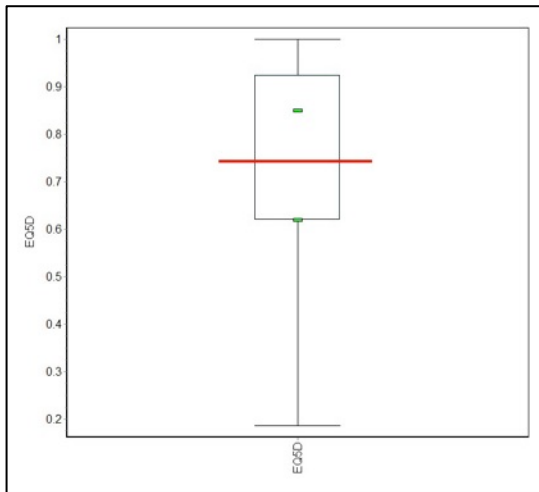
- 19 patients (1 subacute after failed ORIF)
- 13 females and 6 males
- Mean age 67 years-old (47-84 ys)
- Femur: 8 cases (33-A2: 1 case; 33A3: 1 case; 33-B1.3: 1 case; 33-C2: 2 cases; 33-C3: 3 cases)
- Tibia: 10 cases (41-B2: 2 cases; 41-B3: 4 cases; 41-C1: 1 case 41-C3: 1 case)
- Floating knee: 1 case (+Patella)
- Mean follow-up: 16 months (range 4-37 months)

# Our experience from June 2012

- PS/CPS: 4 cases
- CCK: 7 cases
- RHK: 2 cases
- Distal femoral resection prosthesis: 6 cases
- Good and encouraging results
- Three complications:
  - ✓ Chronic persistent pain (1 case)
  - ✓ Infection (1 case)
  - ✓ stiffness (flexion less than 90°, 1 cases)

# PROMS RESULTS

## EQ-5D



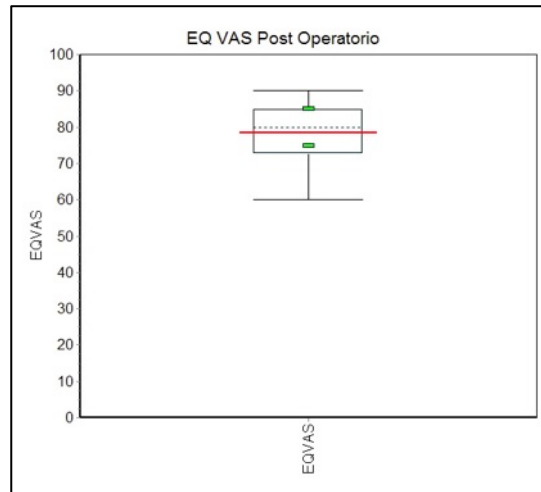
Mean	0,704
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Median 0,743

Standard deviation	0,215
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**Range Score: -0,594  
- 1**

## EQ-VAS



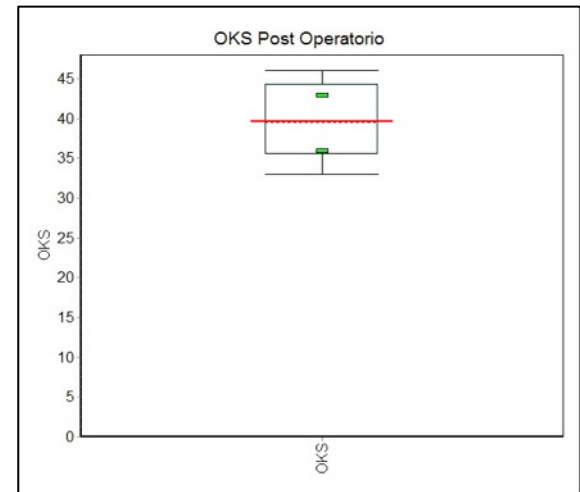
Mean	78,43
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Median 80

Standard deviation	8,702
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**Range Score:  
0-100**

## OKS



Mean	39,625
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Median 39,5

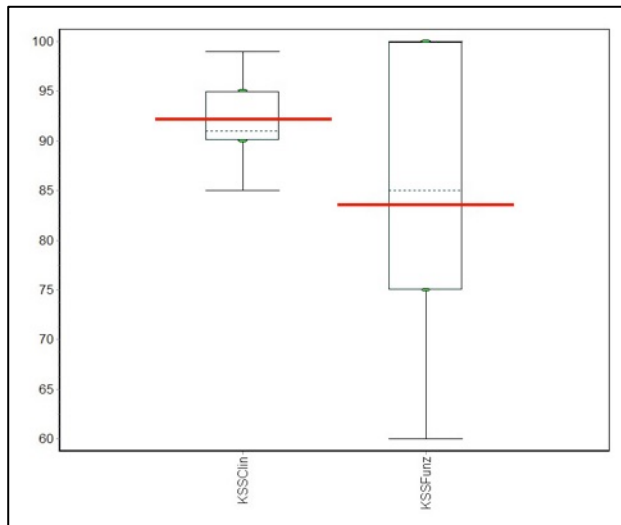
Standard deviation	4,787
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**Range Score:  
0-48**

# CLINICAL-FUNCTIONAL KSS

	Mean	Median	Min.	Max	Standard Dev
KSS Clinical	92,14	91	85	99	4,240
KSS Functional	83,57	85	60	100	14,335

## Post Op Clinical and Functional KSS



Range Score: 0-100



# Conclusions

- Demanding surgery
- Need of good planning and experience
- Exclude latent infection
- Bone reconstruction for implant stability is a mandatory surgical step (bone grafting augments, cone, stems)
- Clinical results satisfactory at follow up in our specific cohort of patients

# Conclusions

- Think of TKA in acute fracture with severe articular crush and bone loss
- Selected cases
- It is not a short and easy surgery
- Encouraging experience