



How to manage the stiff knee

Sébastien LUSTIG MD, PhD

Orthopaedic surgery and sport medicine department
Lyon University Hospital, France



Teaching objective

Stiff Knee :

- Diagnosis,
- Management.

Very Stiff Knee :

- Understand the challenges,
- How to manage unusual situation.



N. S. Kalson,
L. A. Borthwick,
D. A. Mann,
D. J. Deehan, for the
Knee Joint Fibrosis
Working Group

From Newcastle
University, Newcastle
upon Tyne, United
Kingdom



■ KNEE

International consensus on the definition and classification of fibrosis of the knee joint

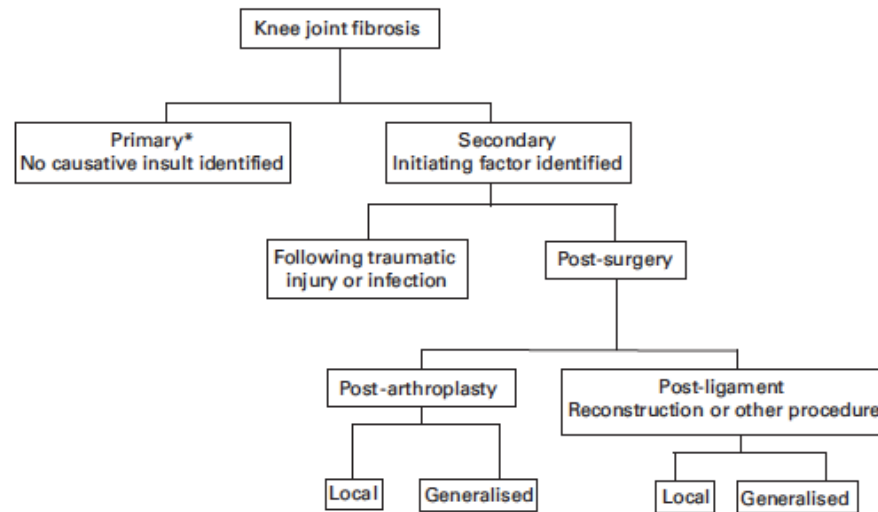


Fig. 2

Classification system for fibrosis of the knee. * Extremely rare in the knee

Definition :

Stiffness in extension :
flexion contracture >
20°

Stiffness in flexion :
Flexion < 90°

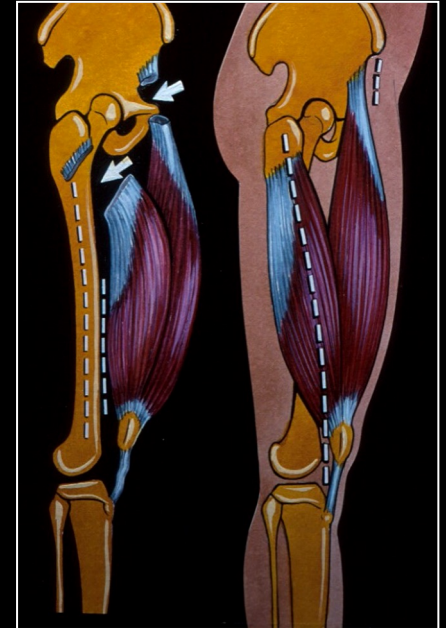
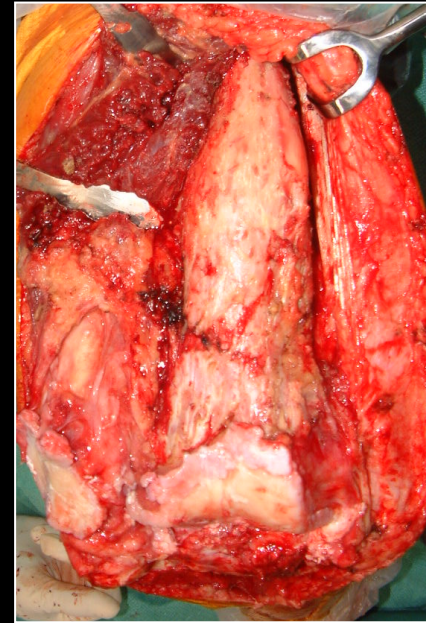
Stiffness in Flexion

- 1) Medial parapatellar approach
- 2) Release of the patellar tendon, the suprapatella pouch and the condylar recesses.
- 3) “quad snip »
- 4) in case of patella infera, a TTO could be performed, with a view to fixation in a more proximal position at the completion of surgery.



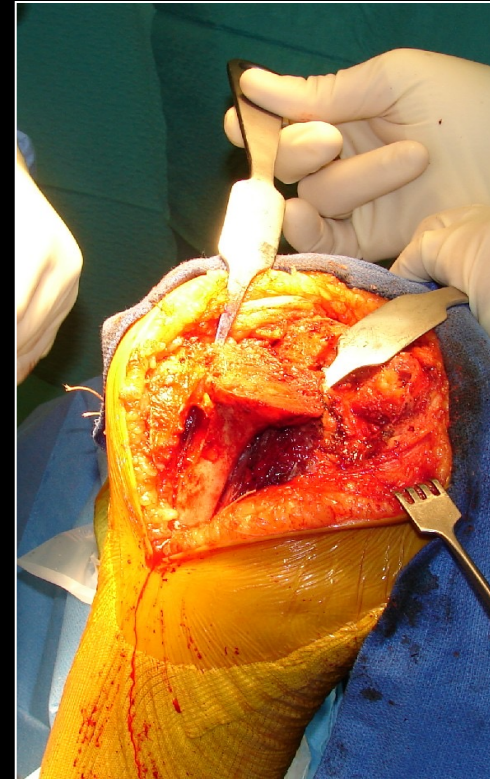
Stiffness in Flexion

5) If the origin of the pre-operative deficit of flexion is extra articular due to quadriceps adhesions, a release may be performed as described by Judet et al.



Stiffness in extension

- 1) Medial surgical approach,
- 2) Generous enough behind the tibia to reduce the flexion contracture, including release of the semimembranosus tendon insertion medially,
- 3) Sacrifice of the PCL,



Stiffness in extension

4) Posterior femoral release
after the posterior femoral
cuts,

5) Remove posterior
osteophytes,

6) In cases of flexion
contracture, increasing the
distal femoral cut.

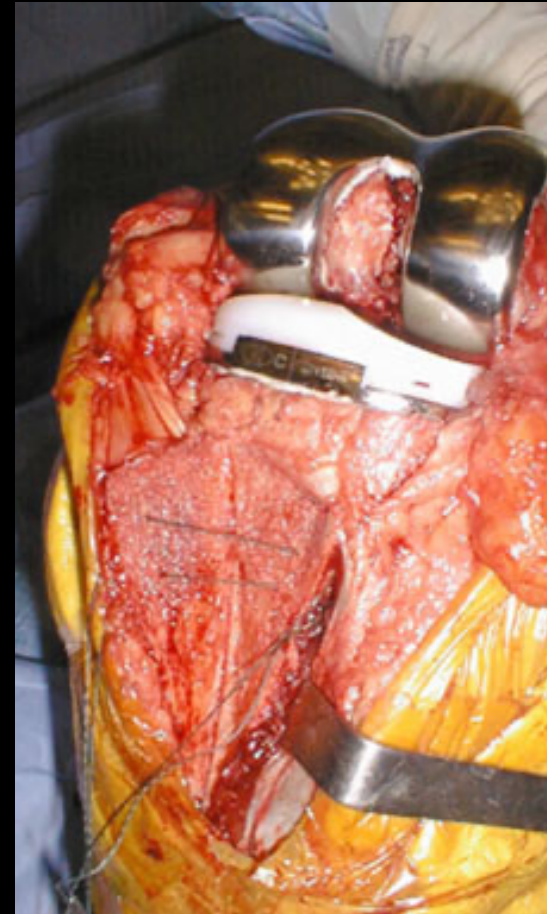


Total knee arthroplasty of the stiff knee: three hundred and four cases

Caroline Debette • Sébastien Lustig • Elvire Servien •
Timothy Lording • Vincent Villa • Guillaume Demey •
Philippe Neyret

Stiffness in extension :
flexion cuntracture $> 20^\circ$ $n= 65$

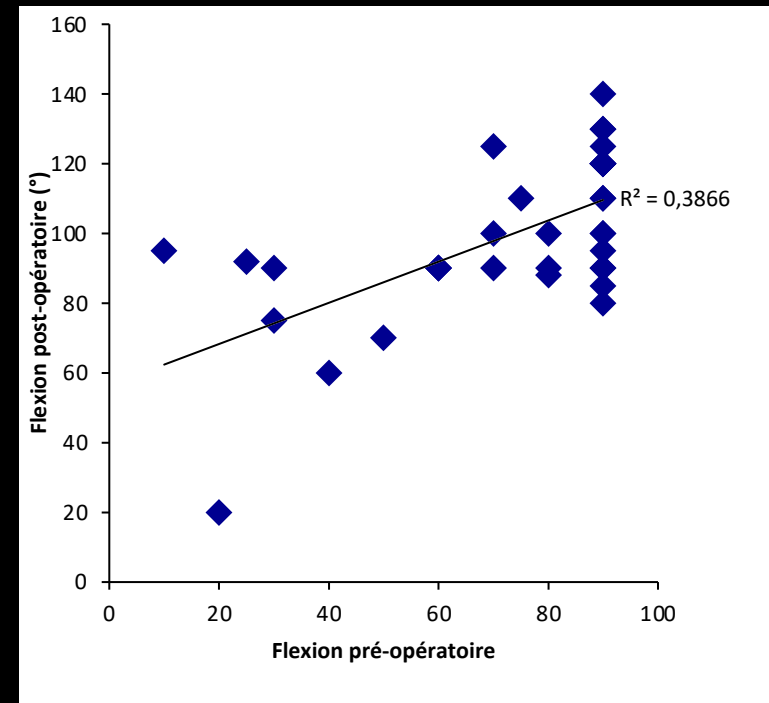
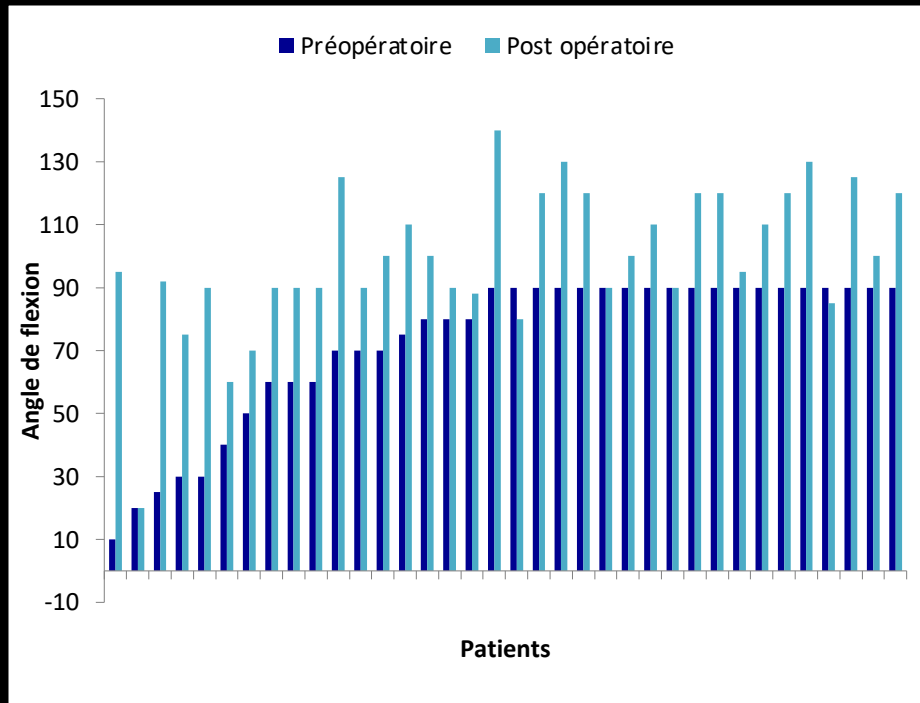
Stiffness in flexion :
Flexion $< 90^\circ$ $n= 239$



Preop = $72.7^\circ \pm 24$

Preop= $72.7^{\circ} \pm 24$
Post op= $99.4^{\circ} \pm 23$

GAIN= $26.7^{\circ} \pm 20$



International Orthopaedics (SICOT)
DOI 10.1007/s00264-013-2252-3

ORIGINAL PAPER

Total knee arthroplasty of the stiff knee: three hundred and four cases

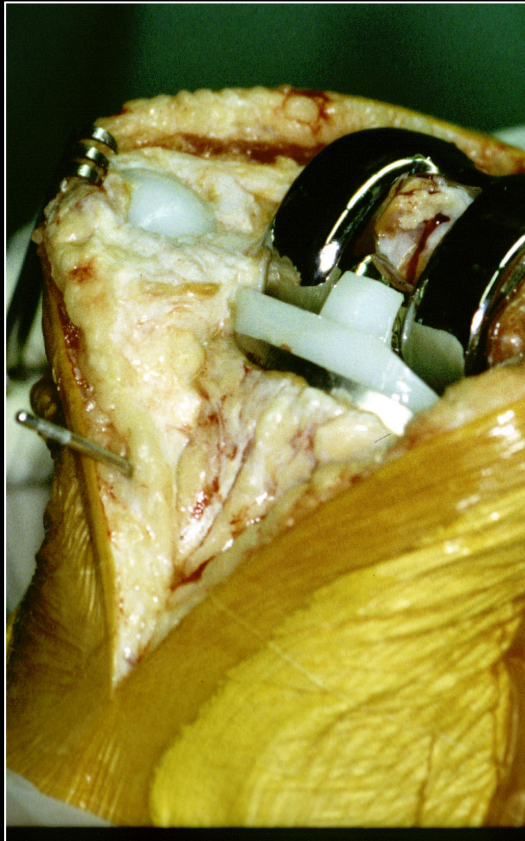
Caroline Debette • Sébastien Lustig • Elvire Servien •
Timothy Lording • Vincent Villa • Guillaume Demey •
Philippe Neyret

$r = 0,62$ $p < 0.05$

SUBGROUP ANALYSIS

PREOP < 60°

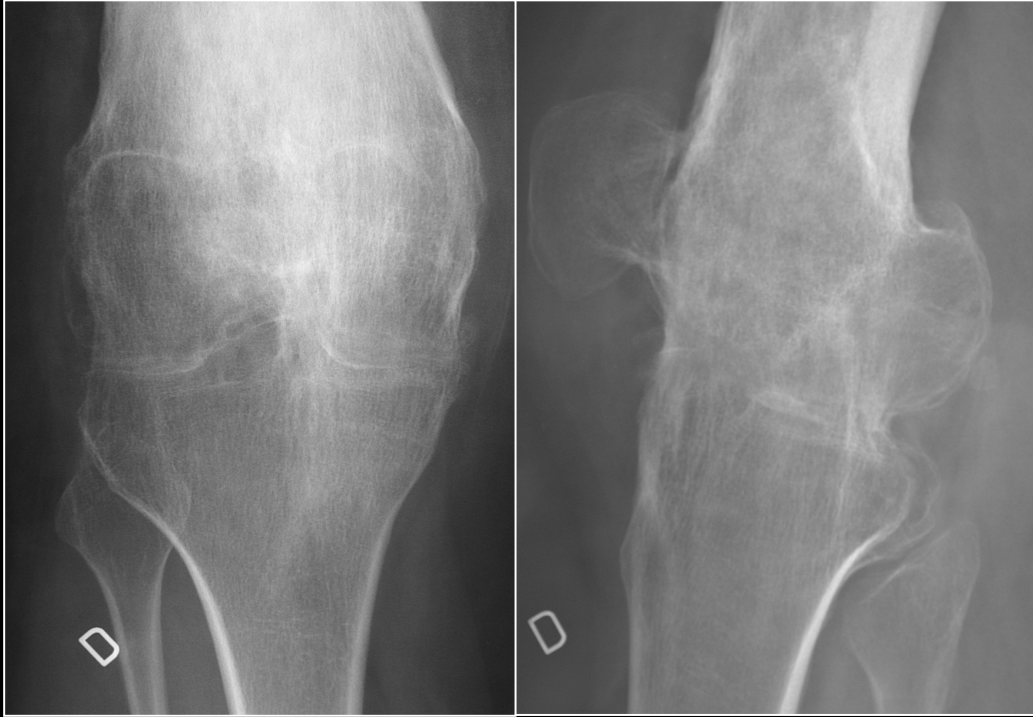
Extensor mechanism



Ski necrosis



Very stiff ?

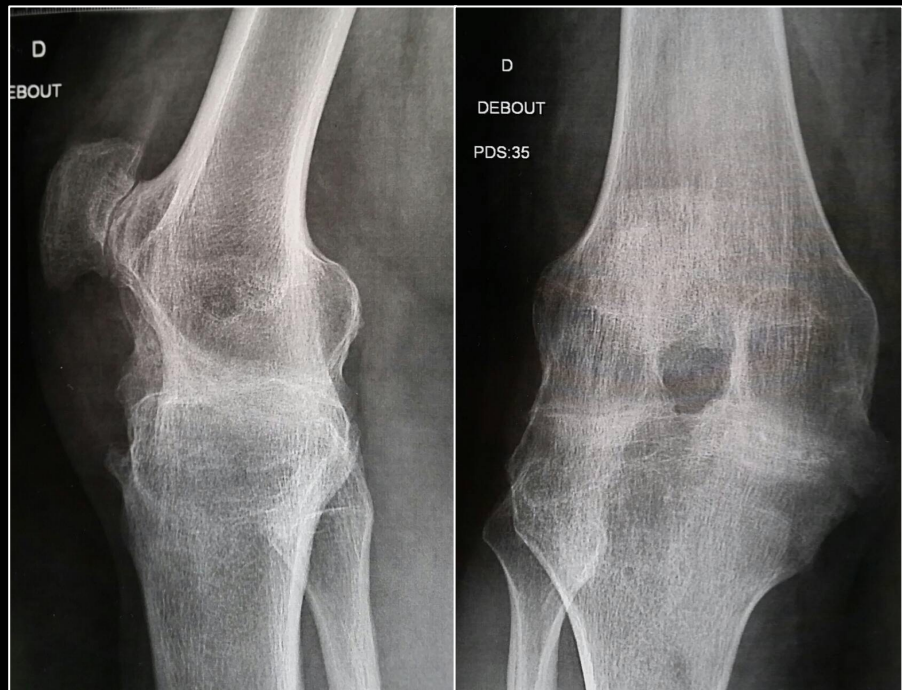


*Ankylosis
(spontaneous)*



*Fusion
(induced)*

Clinical Assessment



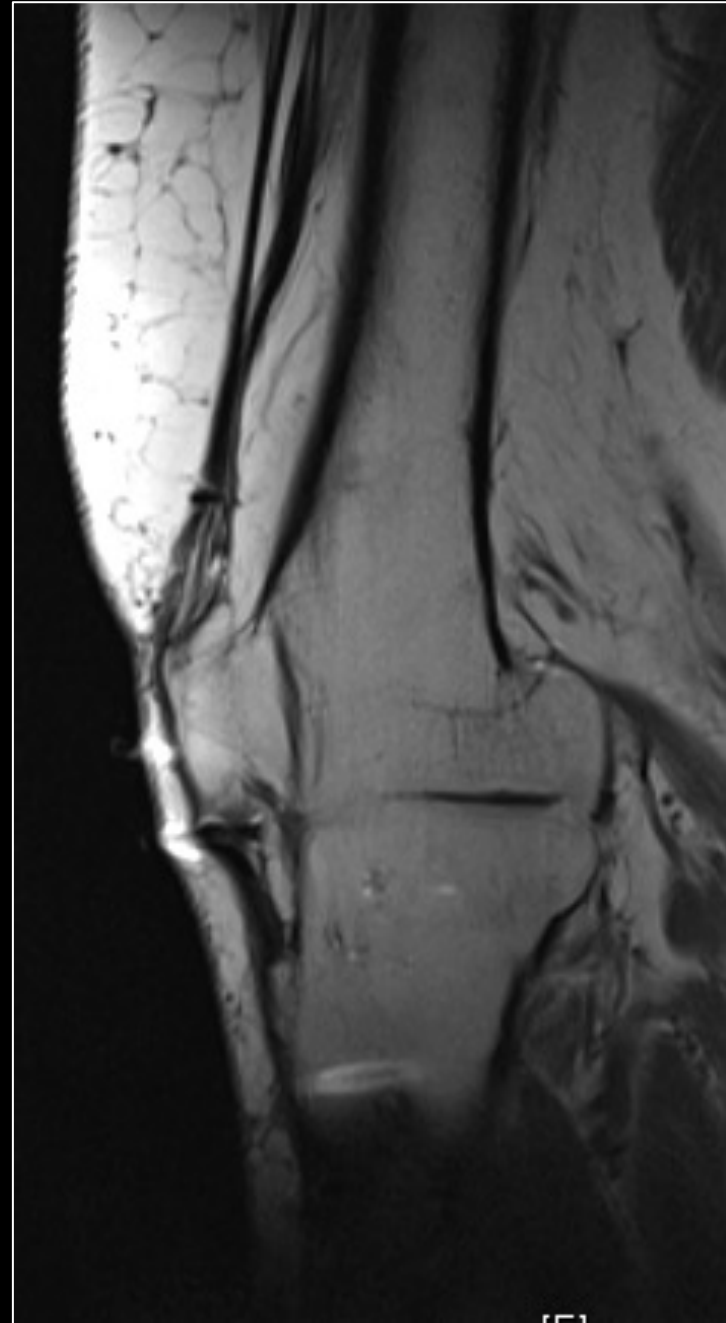
Strategy

- Local aspect
- previous scar, flaps ...



MRI :

- muscular atrophy (quadriceps)
- Extensor mechanism
(Patellar tendon ?)



Challenging situation...

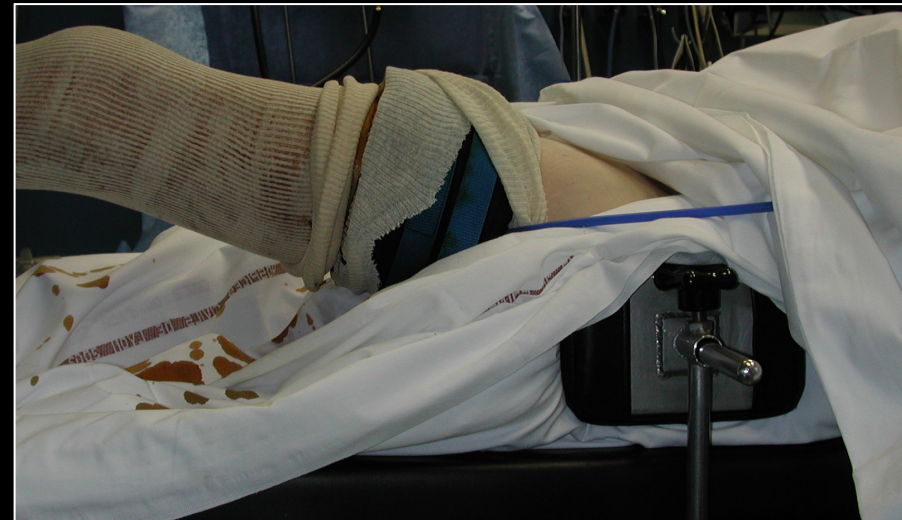
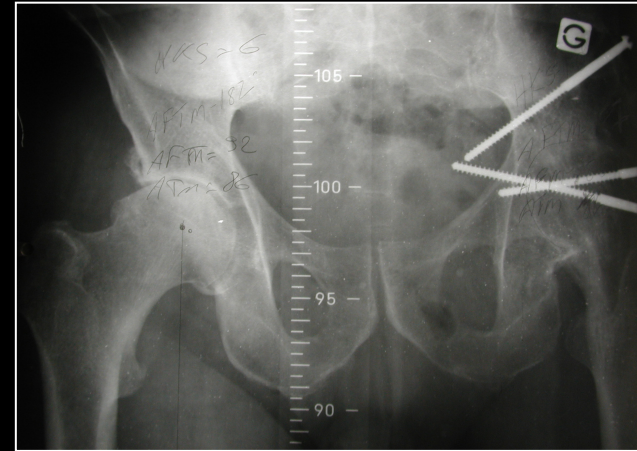
- Skin necrosis
- Infection
- Thrombo-embolic issues
- Vascular issues

STRATEGY

- Approach ?
- Joint line ?
- Implant / Constraint ?
 - Postero-stabilized TKA
 - Constraint → CCK, Rotating-Hinge ?
 - Customized

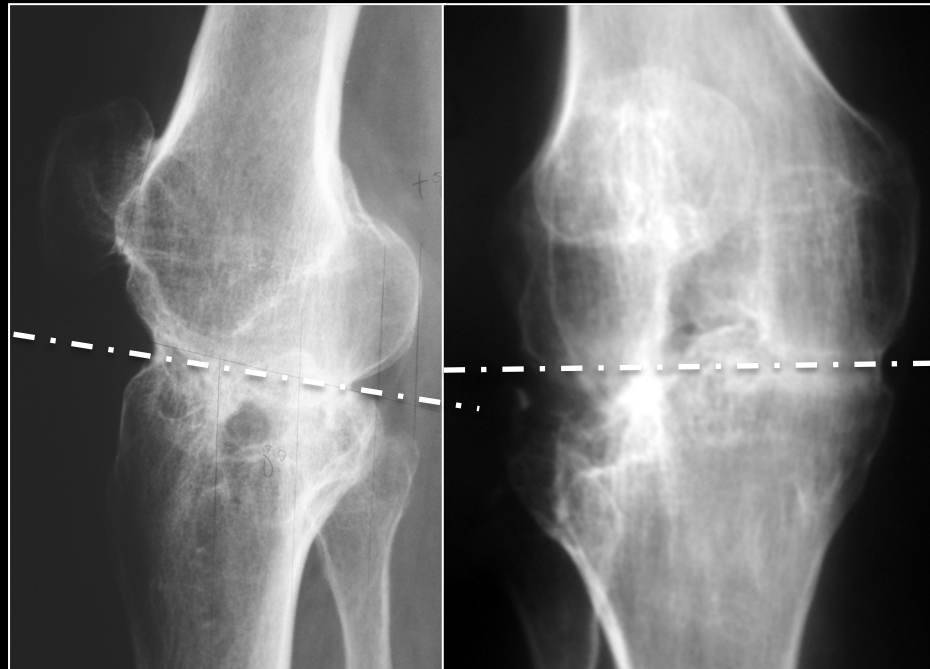
1. Setting /Draping

- No mobility...
- Hip ?
- Tourniquet ?
 - Not so straight forward ...

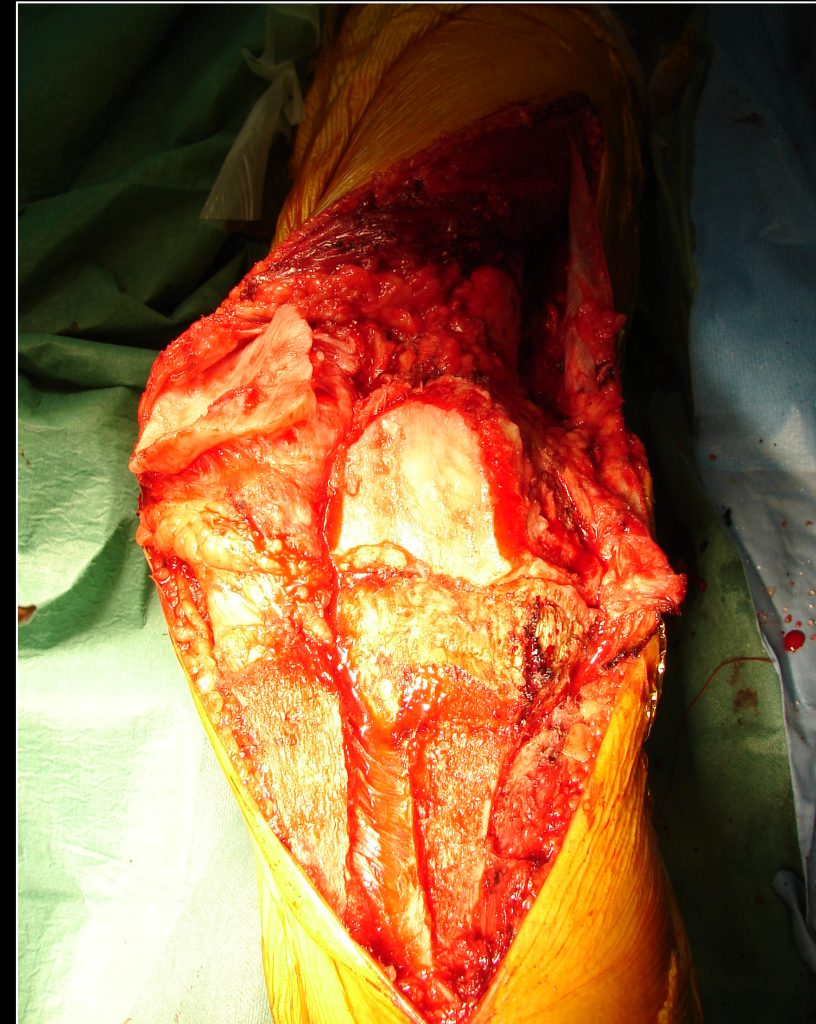
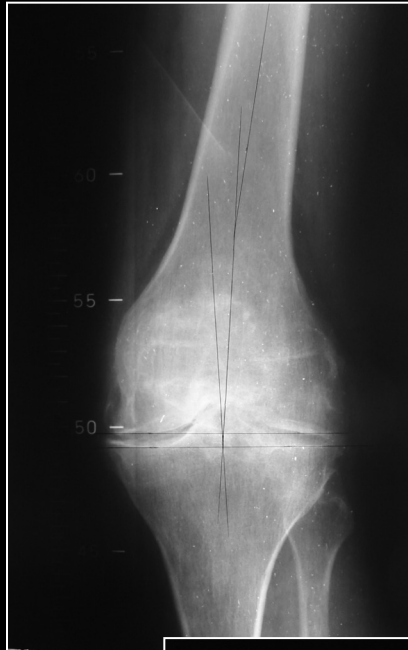


2. Approach

- Incision ?
- Lat vs medial approach (Quad release ?)
- Joint Line ? → PEROP XRAYS



Quad Snip / TTO



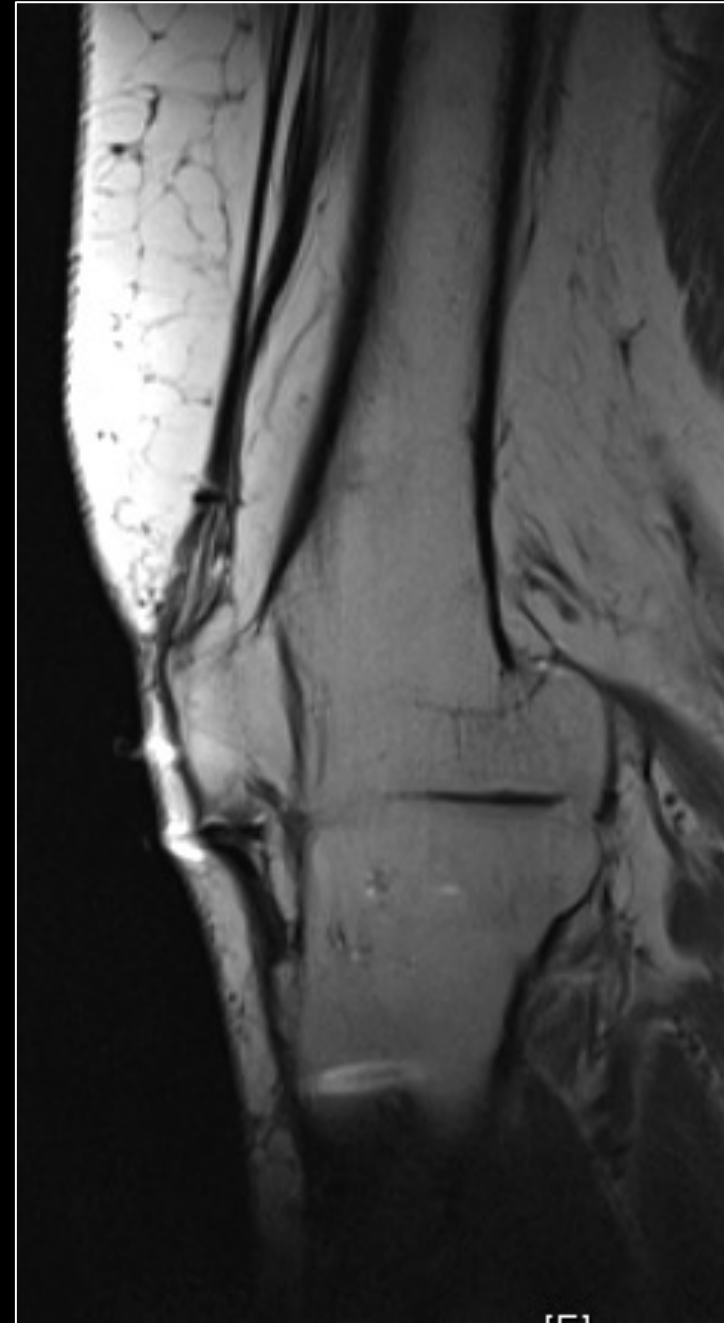
3. Calcifications ?

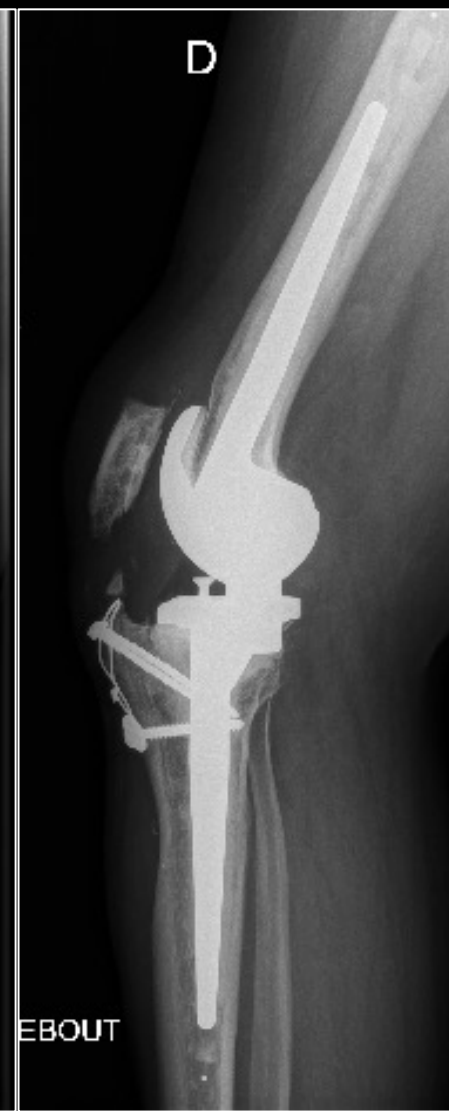
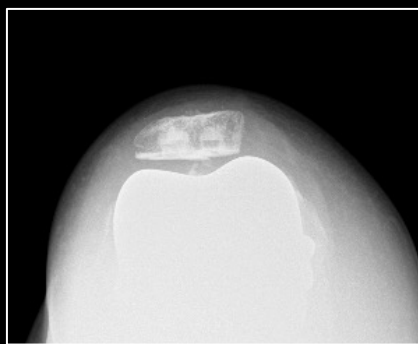
- 60ys old woman

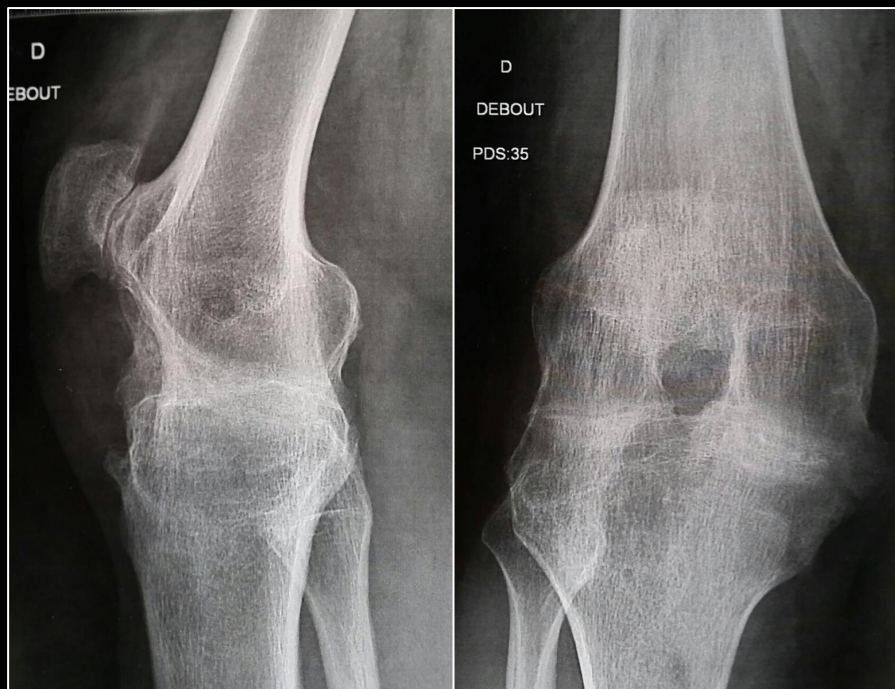


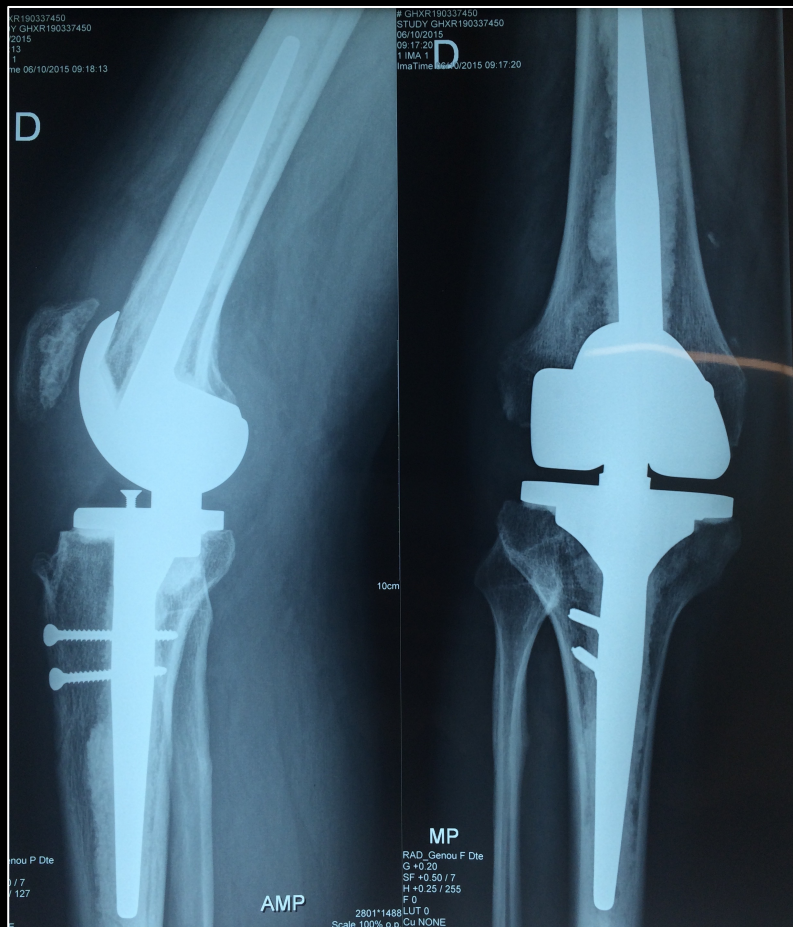


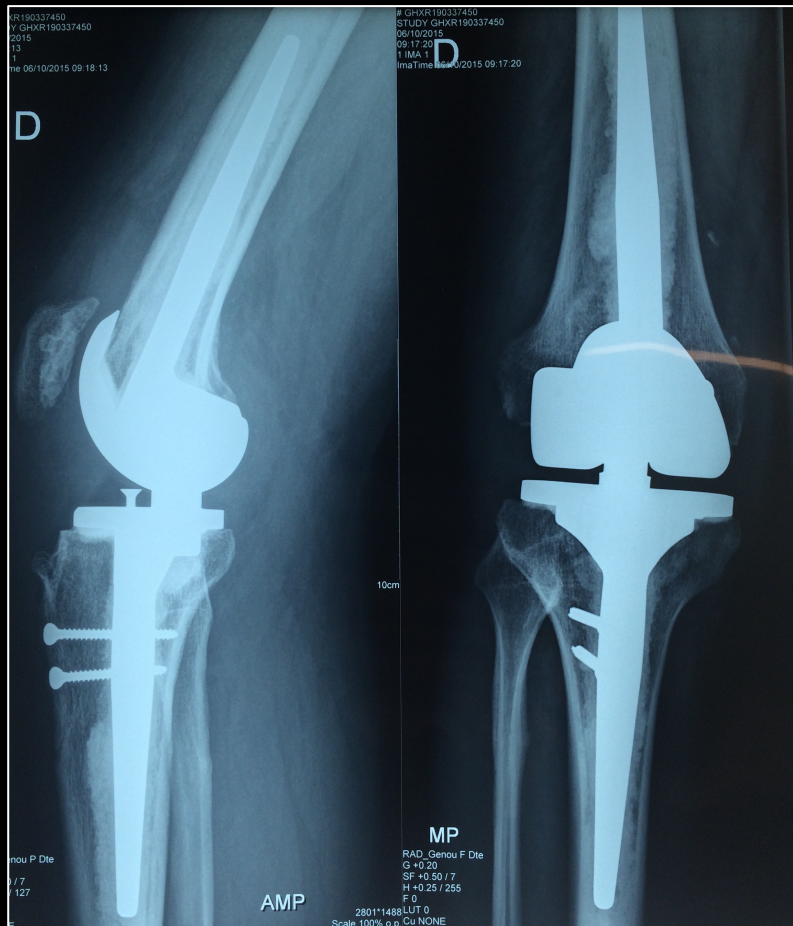
4. Constraint ?











Need for customized implant

Still disease



Literature

Limited

Bradley (*J Arthroplasty* 1987) : n=9 64°
Aglietti (*J Arthroplasty* 1989) : n=20 68°
Naranja (*Clin Orthop* 1996) : n=35 53°
Rajgopal (*J Arthroplasty* 2005) : n=84 75°
Rajgopal (*J Arthroplasty* 2017) : n= 115 86°

→ Complications ++ (up to 20%)
Stiffness
Skin necrosis



Conclusion

TKA and very stiff knee

- Challenging situation.
- Cautious and step by step approach.
- Appropriate constraint
- Complication rate is high
- Limited improvement in ROM





Thank you

sebastien.lustig@gmail.com

