

**Large Malalignment :**  
TKA in valgus deformity  
*Stages of release*  
*Lateral condyle osteotomy*

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## VALGUM

- “bad reputation” : more difficult, more instability complications
- Quite different from varus
- Influenced by hip and foot condition
- NEEDS a PRE OPERATIVE PLANIFICATION

## THREE KEY POINTS

- How to evaluate (surgical) difficulty ?  
Which Classification to use ?
- Technical CHOICES ?:  
Ligamentous balance : which options ?
- Implant choice?  
May be influenced (Constrained Implants?)

## Deformity components

Each should be addressed

- Intra-articular: posterior wear
- Ligament:
  - Lateral and Postero-lateral retraction
  - Medial distension+++
- Extra articular : Osseous deformity femoral / tibial / both

## CLASSIFICATION: 2 OBJECTIFS

- 👉 Predict difficulties
- 👉 adapt the prosthesis strategy

- Wear assessment (# Alhback) = **DO NOT FIT**
- Ligamentous status:  
Krackow & al. CORR 1991 273 : 9-18 :
  - Type I : intact LCM
  - Type II : LCM Distension >> LCM retensioning
  - Type III : sequelae of HTO
- Lombardi A. & al JBJS 86-A - SUPPLEMENT 2 - 2004
  - 3 Types close to TECHNICAL REALITY

## An Algorithmic Approach to Total Knee Arthroplasty in the Valgus Knee

BY ADOLPH V. LOMBARDI JR.,

Variant I =      variant-II ≈      Variant-III #

JBJS VOLUME 86-A - SUPPLEMENT 2 - 2004

**G. Deschamps 11èmes Journées Lyonnaises du Genou  
in Sauramps medical, La Prothèse du Genou : 191, 2004**

**New CLASSIFICATION : 3 TYPES of DEFORMATIONS depending of VALGUS ETIOLOGY more than degree of wear and MFT joint**

Type I (wear) # 10%  
Type II (Constitutional bony defect) # 85%  
Type III # 5% (Malformation Syndrome)

Débats Orthopédiques Parisiens 2007

### LIGAMENT / CLASSIFICATION

- **TYPE I (10%): Cartilage WEAR (Laxity)**
- **TYPE II (85%) : Constitutional deformity**
  - Contracture +/- but...
  - NO MEDIAL LAXITY
  - = only secondary to bone cuts
  - NO RECURRENCE!**
- **TYPE III (5%): "Complex Malformation Syndrome"**
  - Contracture + Flessum
  - MEDIAL LAXITY RECURRANCE EVER!!!
  - ≠ A. Lombardi Jr / G. Deschamps

DESCHAMPS G. : La Prothèse du Genou in Sauramps Medical 2004; 191; LOMBARDI A Jr & al. : J Bone Joint Surg [Am] 2004; 86-A: 62-71

### SOFT TISSUE BALANCING

- Which release?
- Which Cases ?
- How to anticipate difficulties???

### Degree of SEVERITY

- Not (only) AXIAL DEVIATION. Flessum and rotatory changes affect the measurement.
 

AFTM 198°
AFM 96°
ATM 92°
- **STRESS X-Rays +++**  
">>>> anticipate soft tissue balancing

### NO Contracture & Full Correction

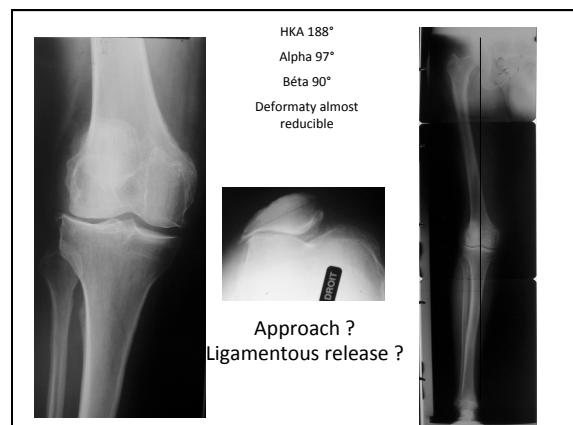
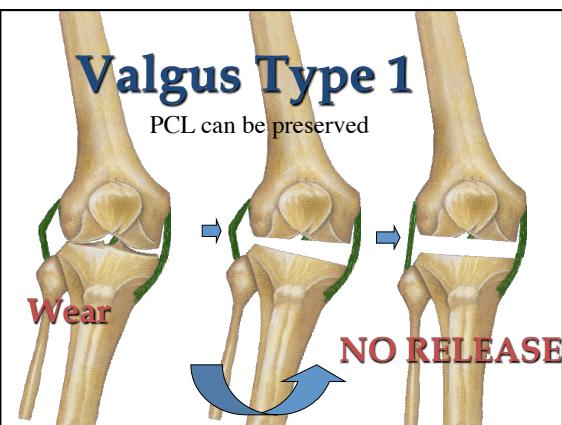
### CONTRACTURE +++ Frontal (STRESS X- Rays)

## Which approach in VALGUS KNEE ?

- Keblish : Lateral approach
- Insall , Krackow, Hungerford,Whiteside : antero\_medial approach
- Eclectique choice : antero\_medial approach if reducible
- Lateral approach in others cases : femoro-patellar...  
But
  - Be carefull with patela baja
  - Osteoporosis, obisity

## TYPE I VALGUS Lateral wear

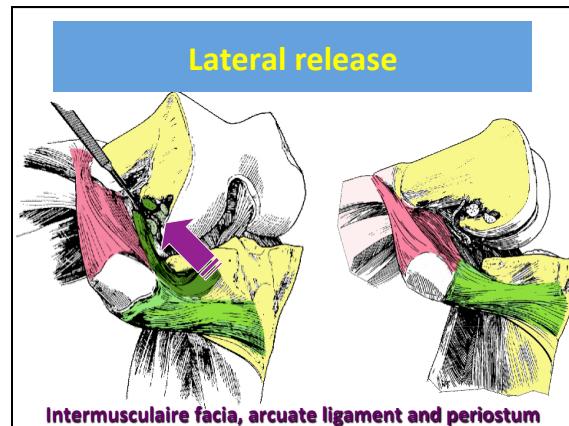
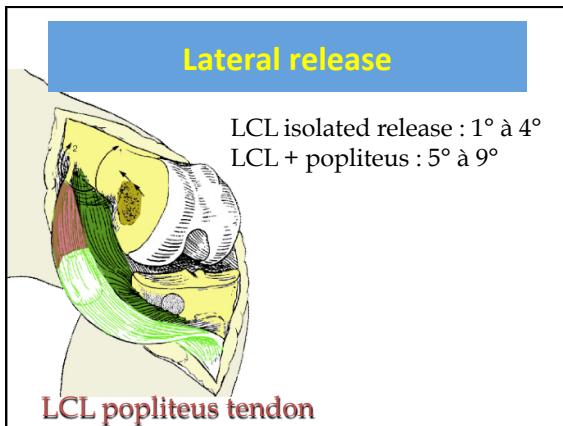
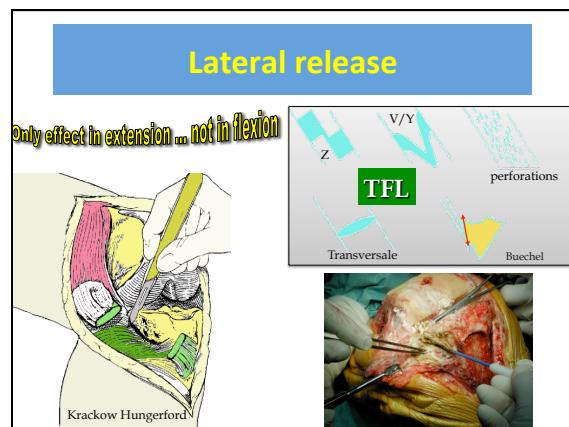
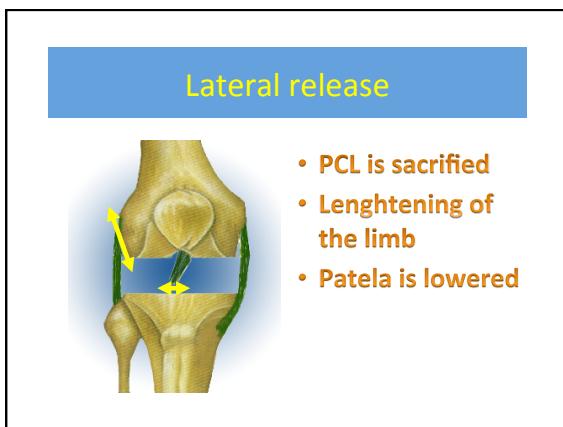
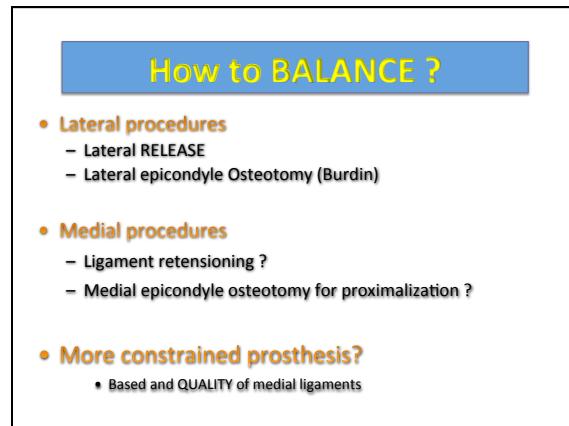
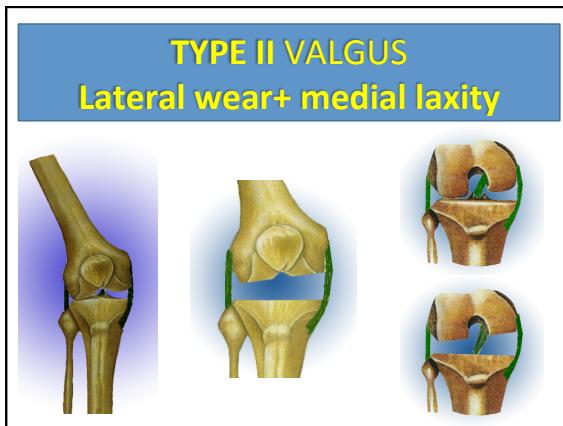
- Ligamentous balancing?
- Which implants ?

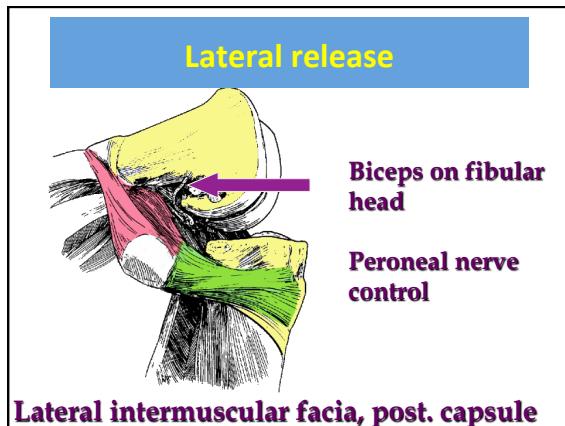


## Lateral COMPARTMENT wear

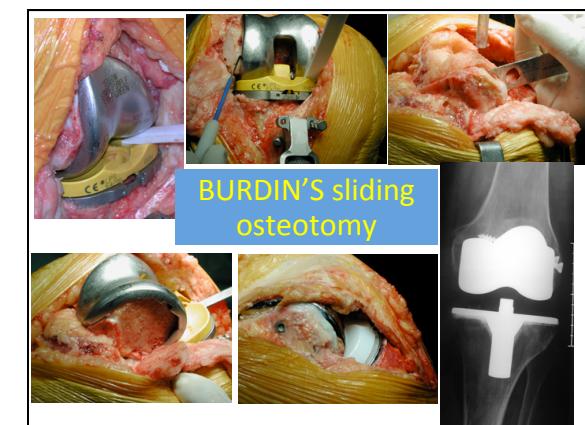
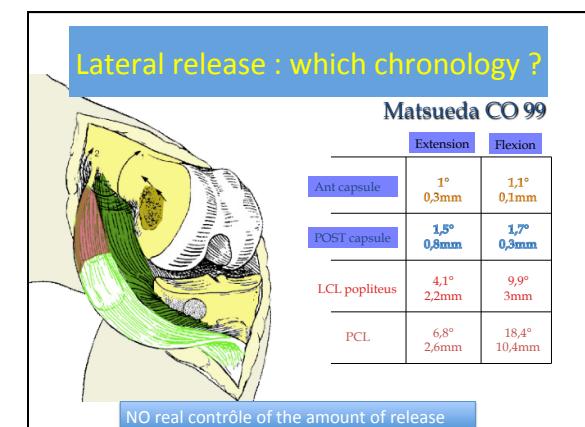
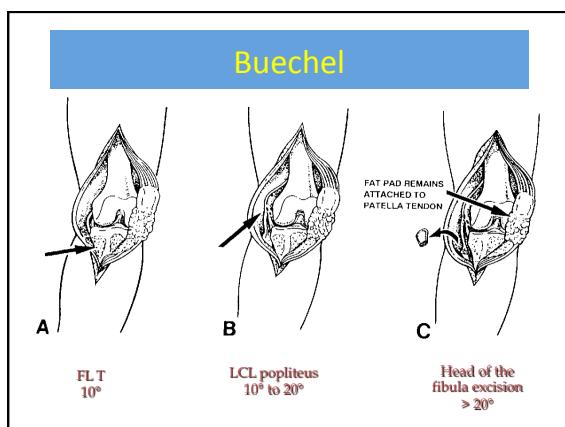
- Lateral plateau reconstruction
  - Bone grafting
  - (from the cut)
  - Metalic wedge

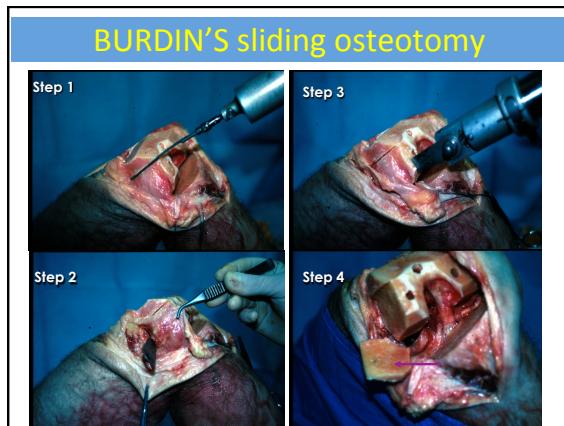






- Lateral release : which chronology ?**
- Krackow et Hungerford
    - FLT ➤ LCL ➤ capsule PL ➤ popliteus T ➤ biceps
  - Insall
    - PL Capsule ➤ LCL ➤ popliteus T ➤ TFL ➤ IM Facia
  - Whiteside
    - LCL ➤ popliteus T ➤ F.L.T. ➤ capsule PE
    - If only tight in extension : FLT
    - If only tight in flexion: LCL, popliteus
  - Keblish
    - FLT ➤ LCL ➤ popliteus tendon ➤ PL capsule





**Practically SPEAKING**

- **LATERAL APPROACH** if valgus is fixed and not fully reducible
- Perform **ARTHROPLASTY**
  - Assess all the LAXITY
  - ASYMETRIC BETWEEN flexion & extension ----> Faris, Burdin
  - Otherwise
    - FL if retraction in EXTENSION
    - Lcl, popliteus T. (espacially FLESSUM and fixed ER)
    - Postero-lateral capsule
    - Intermuscular septum
    - MAXIMUM correction 15° ?
    - OR epicondyle osteotomy

**Alternative option: MCL retensioning?**

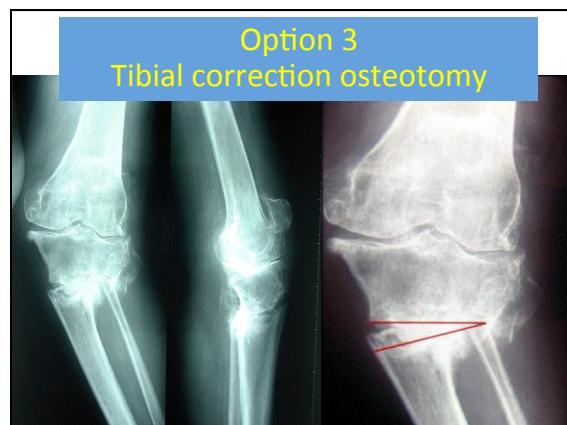
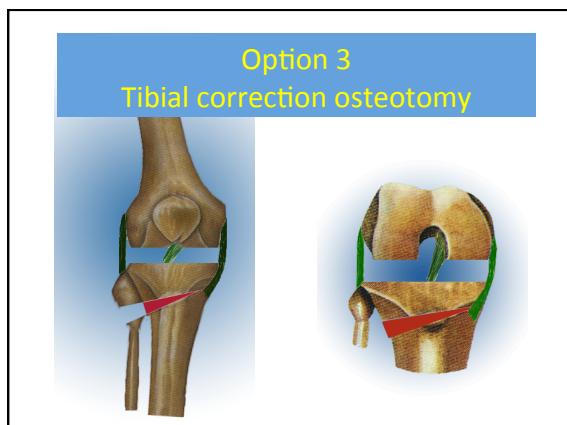
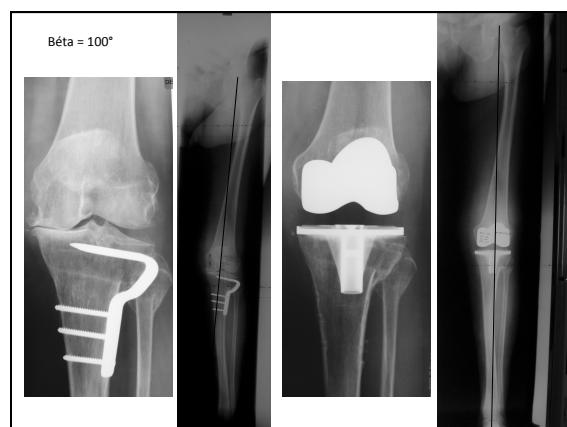
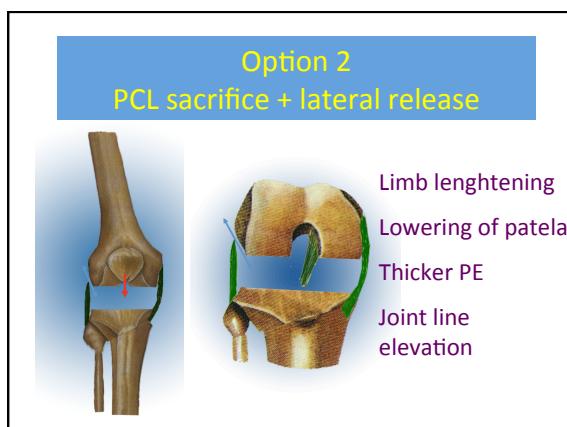
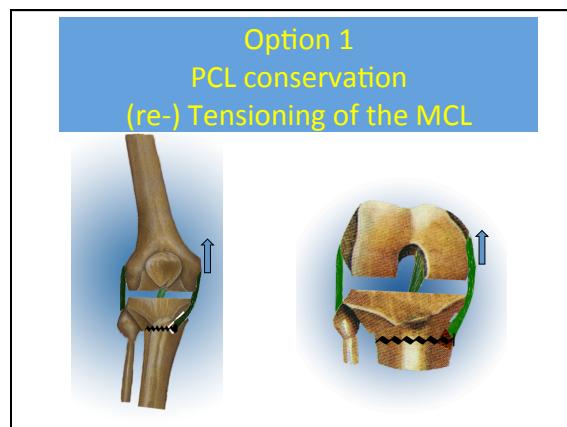
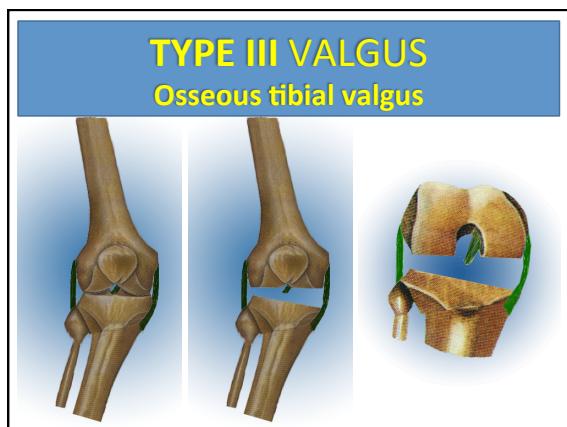
**Alternative option: IF NOTHING WORK or ... ?**

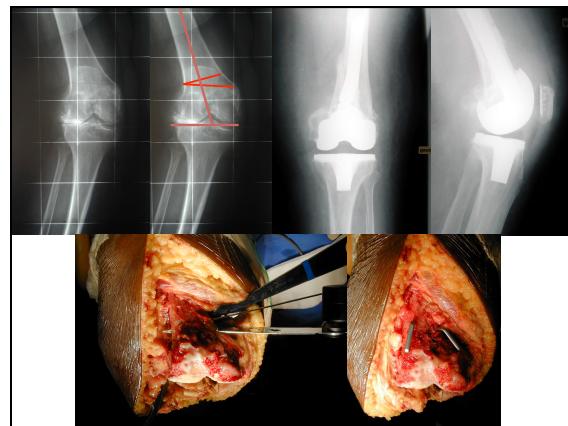
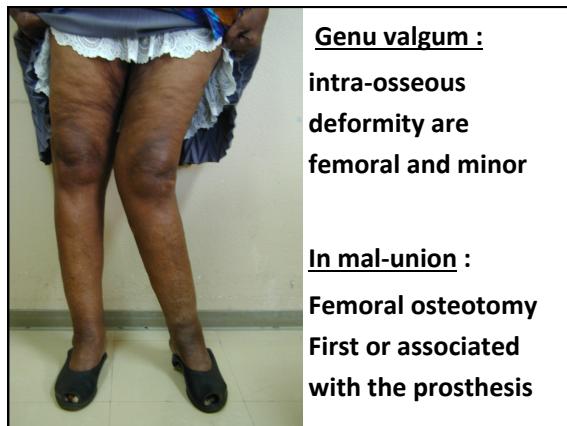
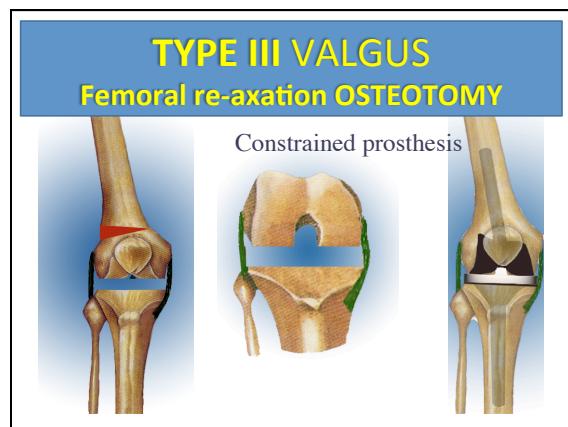
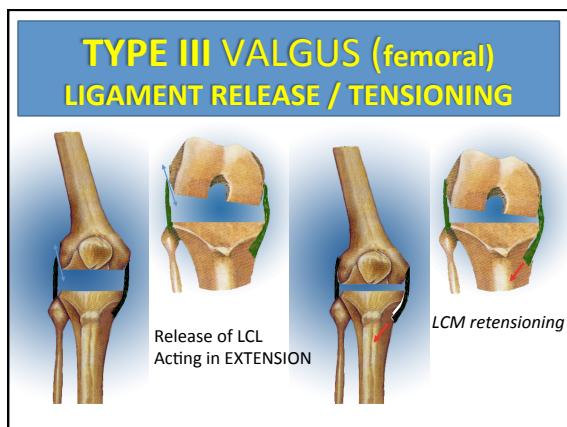
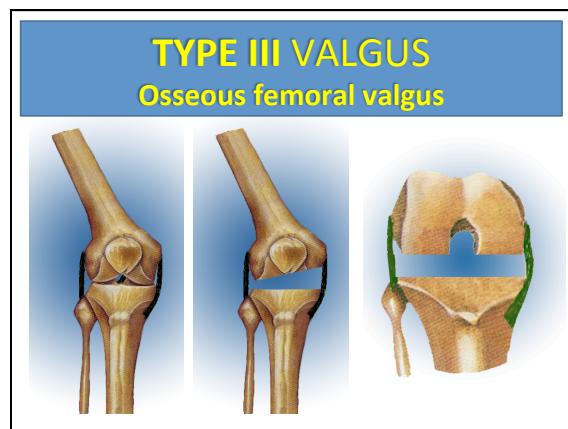
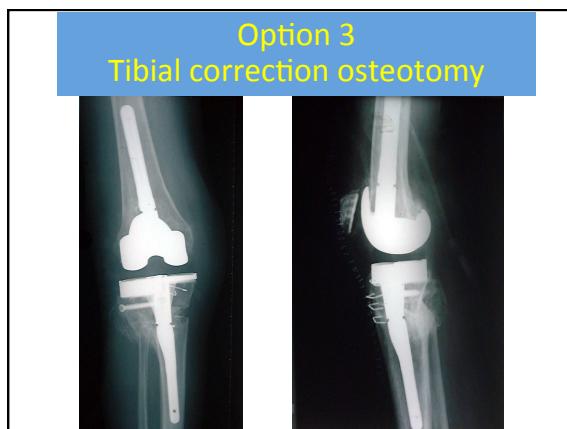
If you have a PERISTANT LAXITY after release and/or tensioning ... Change your mind.  
Maybe you have to consider to use :

- More constrained prosthesis with long keal and central came
- Hinged prosthesis

**TYPE III VALGUS**  
Lateral cartilage wear+ osseous deformity outside of ligamentous « box » (envelope)

- **Intra-osseous DIFORMITY**
  - Tibial : INFLUENCE SPACE in flexion AND extension
  - Femoral in frontal plane: INFLUENCE SPACE in extension NOT in flexion
- **NO LIGAMENTOUS LAXITY**





**TYPE III VALGUS**  
Intra-osseous deformity

Can be corrected by corrected by ligamentous release / tensioning

10° reported in the joint seem to be the maximum correction

Elderly patient : constrained prosthesis

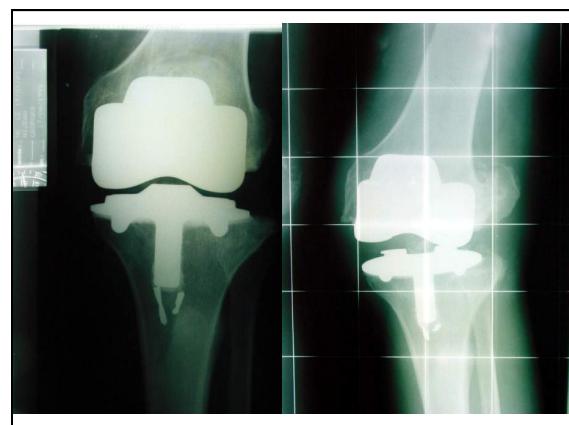
Young patient: osteotomy

**TYPE IV VALGUS**  
Lateral contracture + osseous deformity  
+ ligamentous medial laxity

- Combination of Type 2 + Type 3
- Osteotomy
- Constrained prosthesis

**TYPE IV VALGUS**  
Mal-union

STRESS X-RAYS + tracing



**TYPE IV VALGUS**  
When to release ?

- Lateral retracted structures
  - Frequent
- Medial laxity
  - Not rare
- Intra-osseous deformity : rare cases

**TYPE IV VALGUS**  
**What to release ?**

- Osteophytes
- Fascia lata
- LCL and popliteus tendon
- Postero-lateral capsule
- Biceps and lateral gastrocnemius
- Intermuscular septum
- Peroneal nerve
- PCL

**Which approach?**

**CONCLUSION**



And I didn't speak about patella ...  
Techniques depends of experience  
Adopt a plan to avoid difficult situations

**Thank you**  
**Merci**

