

**Osteotomies and Knee Instabilities**

Val d Isère

Ph Neyret, V Duthon, E Servien

**O. and Knee Instabilities**

- **O. for Anterior Instabilities**
- 12 articles
- **O. for Posterior Instabilities**
- 2 articles
- "Effects of increasing tibial slope on the biomechanics of the knee" Am J Sports Med. 2004 Mar 32(2):376-382 Giffin JR, VogrinTM, Woo SL, Harner CD
- "Influence of high tibial flexion osteotomy on cartilage pressure and joint kinematics; A biomechanical study in human cadaveric knees" Acta Orthop Trauma Surg. 124(9) 575-84 2004 JD Agnes kirschner, C Hurschler, C Stukenborg-Colsman, A.B Imhof, P Lobenhoffer.
- **O. for Antero-Posterior Instabilities**

**O. and Knee Instabilities**

2000

Monopodal Weight-Bearing Radiography of the Chronically Unstable Knee

H. Dejour, P. Neyret, and M. Besson

OPERATIVE

Roland P Jakob, Hans Ulrich Stäubli (eds.)

The Knee and the Cruciate Ligaments

Anatomy, Biomechanics, Clinical Aspects, Reconstruction, Complications, Rehabilitation

Fig. 2a,b. The slope of the tibial plateau is defined as the angle formed by the tibial shaft axis and the tangent to the medial tibial plateau, minus 90°. The angle on a normal knee would yield a negative slope angle (as in c) of -10° to -15°. When there is a strongly positive slope of the tibial plateau as in a and b, an anterior tibial wedge consisting of the proximal tibia will reduce anterior tibial subluxation by leveling the plateau, i.e. d. A negative slope promotes anterior gliding of the femoral condyles. This has an unfavorable effect in a knee with chronic ACL deficiency. An anterior slope wedge consisting of the proximal tibia is helpful in controlling the subluxation.

**O. and Knee Instabilities**

Long term follow-up ?

« Isolated » Complete Partial → Evolved → ACL Laxity with Pre-OA → OA due to Acl Laxity

ACL INJURY

Posterolateral < 5%

25-35y

**O. and Knee Instabilities**

Frontal imbalance

medial narrowing

lateral opening


Sagittal imbalance

**HTO combined with ACL Reconstruction**

The pre-operative clinical examination and radiological check-up allow to detect degenerative changes or Imbalance

**Frontal or Sagittal**

Female 27y: Failure of previous ACL reconstruction (hamstrings)



**Sagittal imbalance**



**O. and Knee Instabilities**

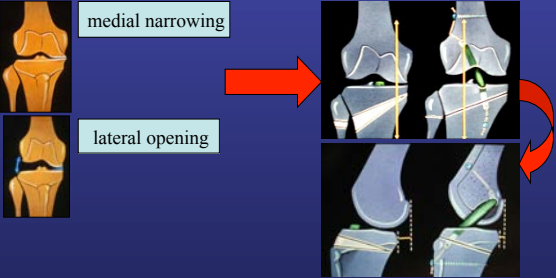
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**O. for Anterior Instabilities**

**Frontal imbalance**

medial narrowing

lateral opening



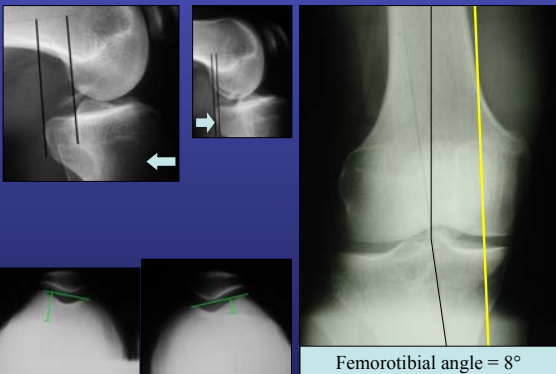
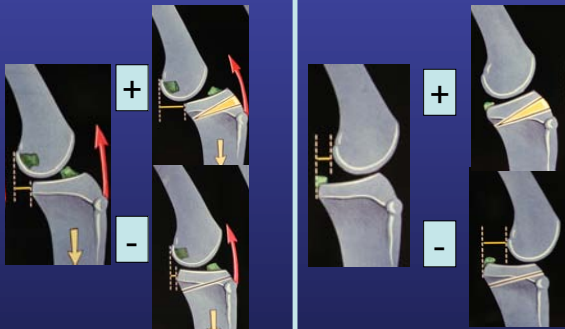
**Sagittal imbalance**

ESKA 2006

**HTO combined with Sagittal Instabilities**

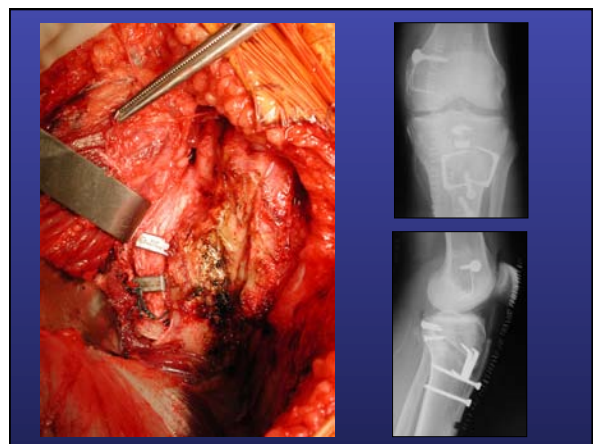
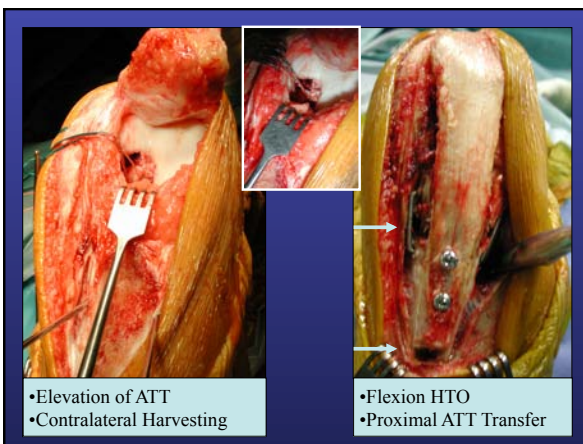
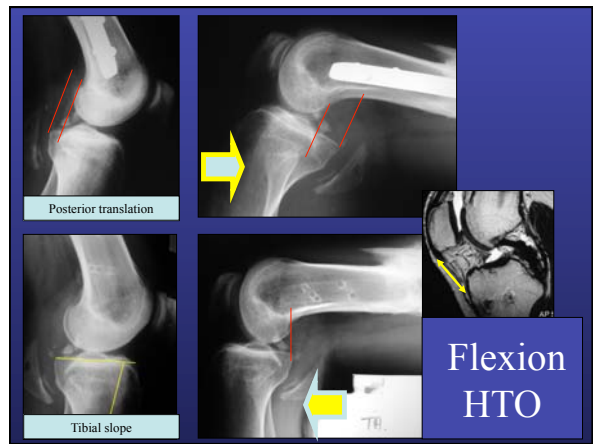
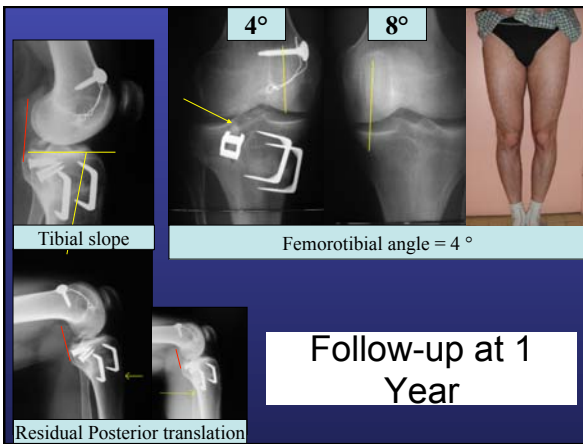
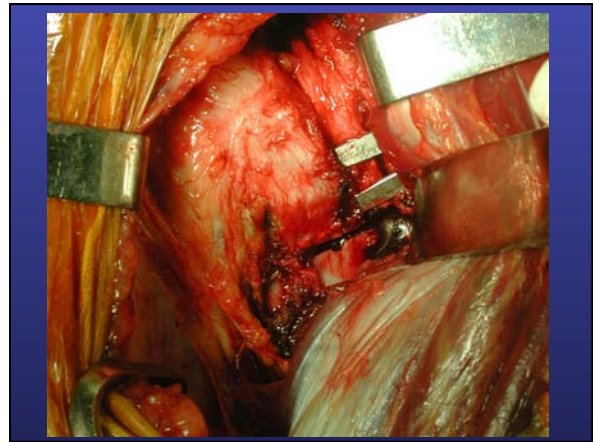
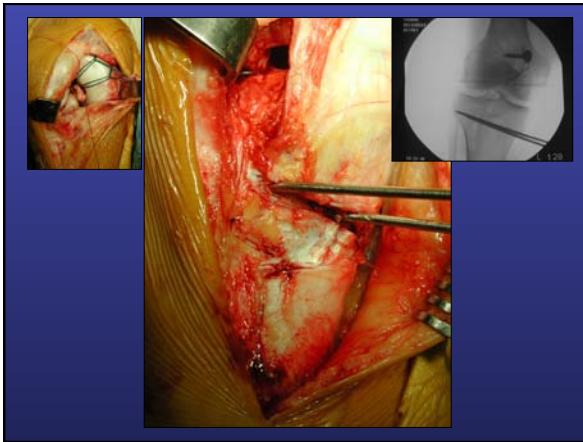
**Anterior**

**Posterior**



Femorotibial angle = 8°

**Valgus HTO**



### Posterior Translation

- PCL
- Posterolateral structures
- Tibial Slope

1°  
Tibial slope  
⇕  
2mm  
Posterior Translation

### Posterior translation with PCL intact

After Physeal Trauma

After tibial plateau fracture

To increase tibial slope can result in "fatigue fracture" of the ACL

Journées Lyonnaises de chirurgie du genou 1991

1978      1987

→      + 9Y      + 10Y

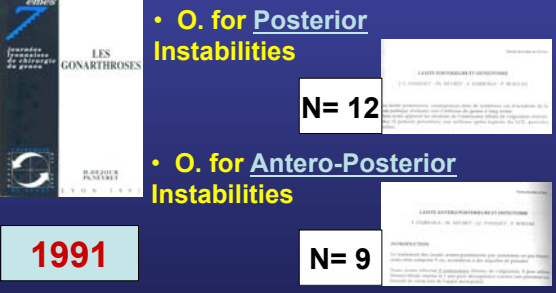
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- O. for Antero-Posterior Instabilities


### O. and Antero-posterior Instabilities

- O. for **Posterior Instabilities** N= 12
- O. for **Antero-Posterior Instabilities** N= 9

1991

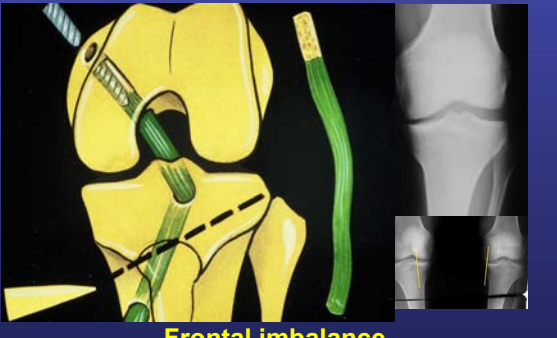


### Congenital insufficiency of the central pivot

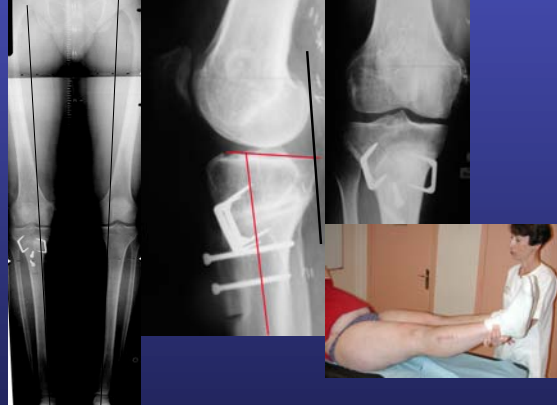
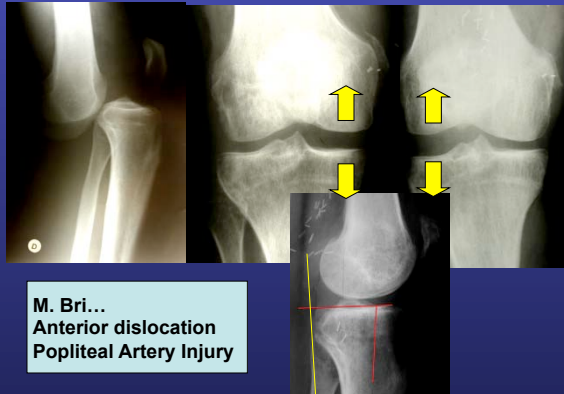


### M. Gau 24Y

#### Frontal imbalance

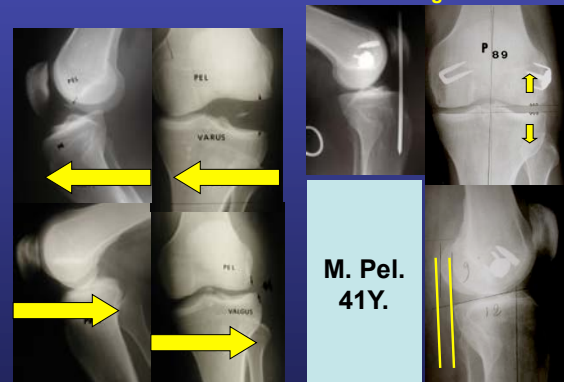


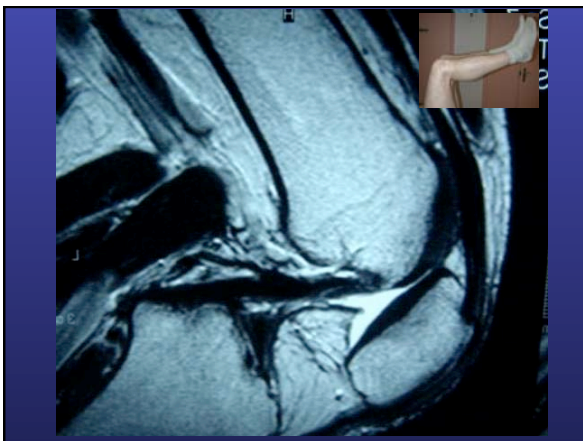
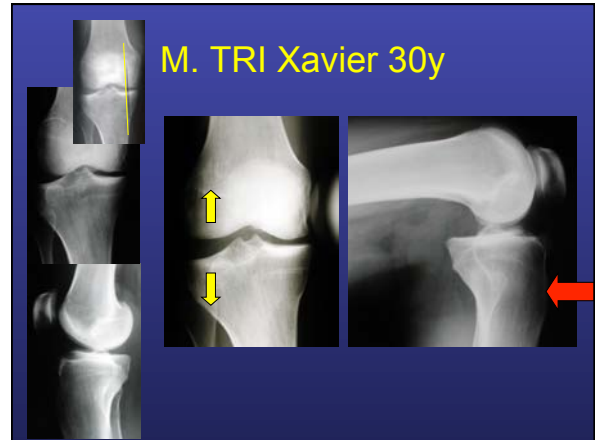
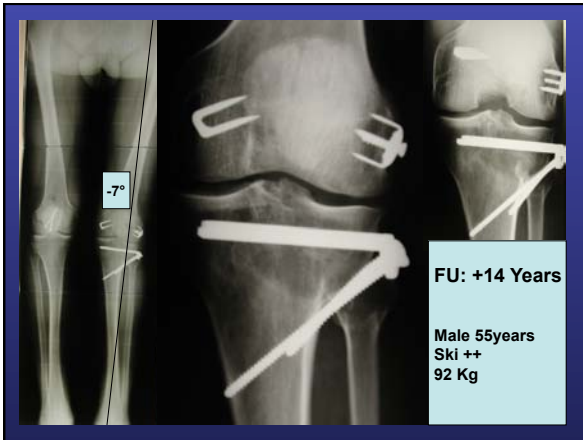
### M. Bri... Anterior dislocation Popliteal Artery Injury




### Frontal and sagittal imbalance

### M. Pel. 41Y.

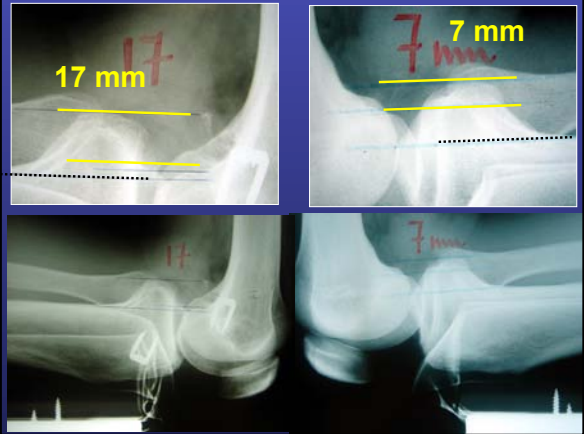




• M. Aug... Gérard, 42 Y.  
ACL and PCL Rupture (hand-ball)  
Synthetic ACL Lig 20 y. ago



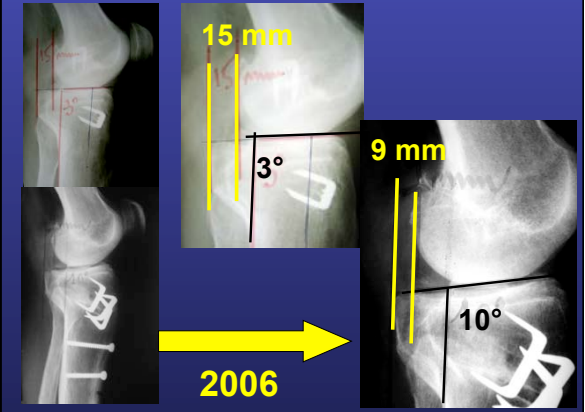
**2005**



17 mm  
7 mm  
7 mm  
17 mm



**2005 Arthroscopy + Flexion HTO**

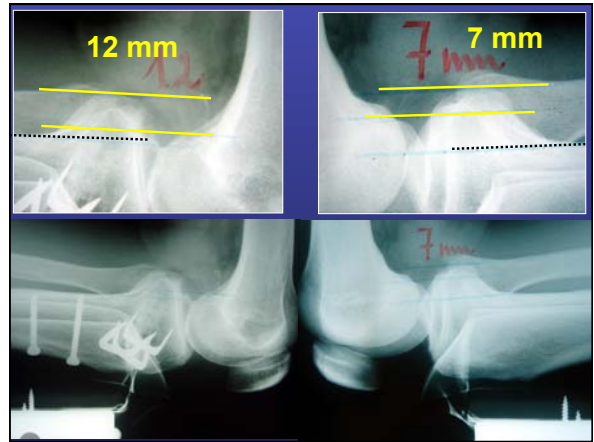
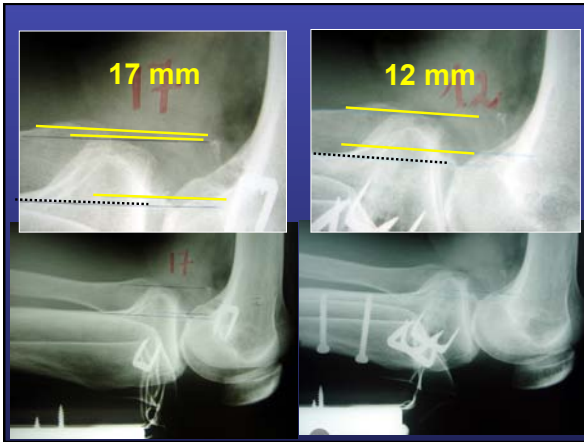


15 mm  
3°  
9 mm  
10°

**2006**



**2006**



 **O. and Knee Instabilities**

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- **O. for Antero-Posterior Instabilities**



• Chronic multiple ligament knee injuries are best treated using osteotomies about the knee  
 Ph Neyret, G Schuck de freitas, T Lootens, L Jacquot and T Ait si selmi  
 Sports injuries to the knee, edited by Rose James, David Johnson

**Osteotomies  
and  
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**Thank you**