



LA PATHOLOGIE FEMORO-PATELLAIRE

LYON 1987

6^{èmes}
JOURNEES
LYONNAISES
DE
CHIRURGIE
DU GENOU

organisées par
H. DEJOUR
G. WALCH



1987



LA PATHOLOGIE FEMORO-PATELLAIRE

6^{èmes} JOURNEES LYONNAISES DE CHIRURGIE DU GENOU

25 years later...



organisées par
H. DEJOUR
G. WALCH



15^{èmes} Journées Lyonnaises de Chirurgie du Genou



La Patella

D. Dejour, M. Bonnin
E. Servien, J-M. Foyard
G. Demey, F. Trouillet
N. Bonin, B. Sonnery-Cottet, J. Barth



25 ans après... 25 years later..

2012

ALRM Since 1969
Past presidents : Albert Trillat, Henri Dejour,
Pierre Chambat, Philippe Neyret.

1987



1987 Findings *(1800 patients X Rays analysis)*

4 Instability factors *(Statistical Threshold)*

- **Trochlear Dysplasia 96%**
- **Patella Alta > 1.2**
- **Excessive TT-TG > 20 mm**
- **Excessive Patellar Tilt $> 20^\circ$**

1987 Findings

Systematic use of true lateral view



1/ Crossing Sign

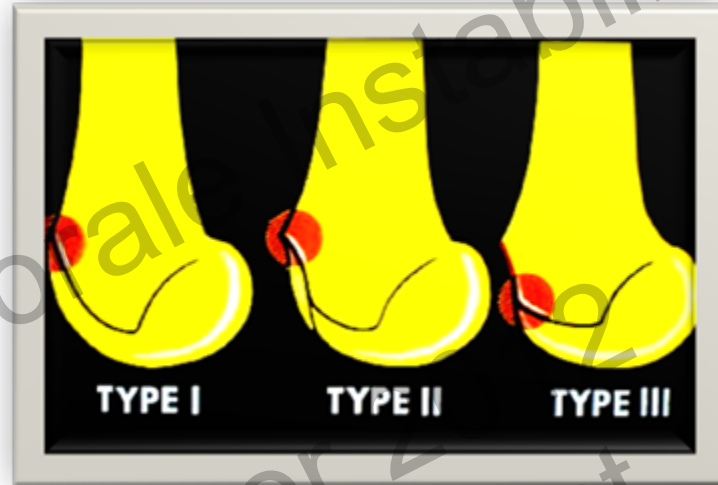
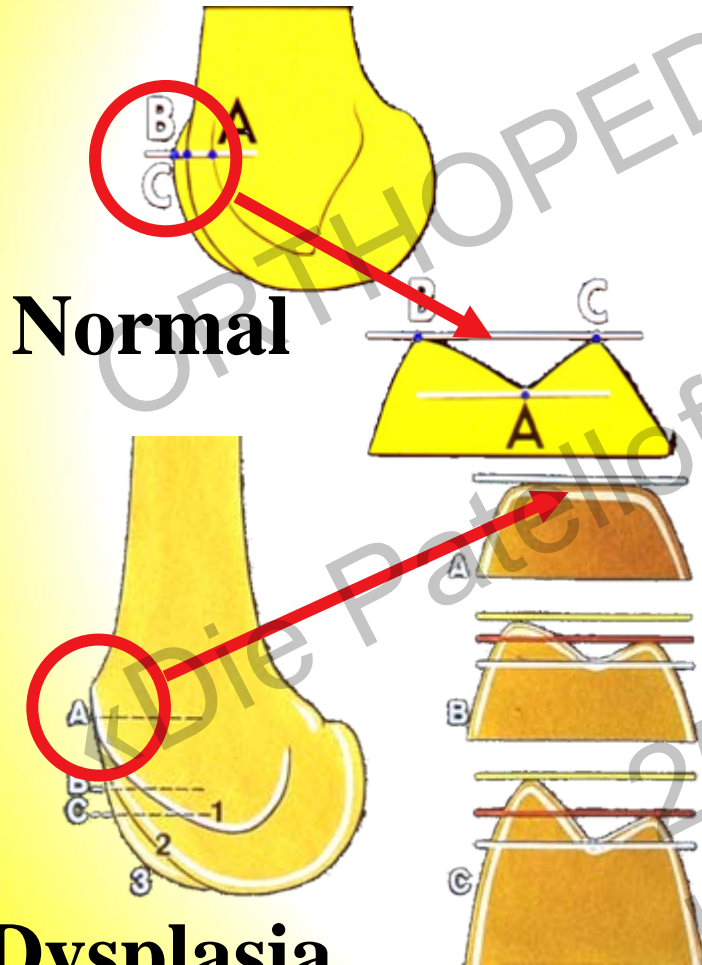
2/ Bump : "la saillie"

3/ Trochlear depth



1987 Trochlear Dysplasia classification

The first classification



Revue de Chirurgie Orthopédique
1990, 76, 45-54

La dysplasie de la trochlée fémorale
Dysplasia of the femoral trochlea

H. Dejour*, G. Walch, Ph. Neyret, P. Adeleine (Lyon)

* Clinique de chirurgie orthopédique et traumatologique, Centre Hospitalier Lyon-Sud, F-69310 Pierre-Benite

Patellar problems

Factors of patellar instability: an anatomic radiographic study

H. Dejour¹, G. Walch¹, L. Nove-Josserand¹, Ch. Guier²

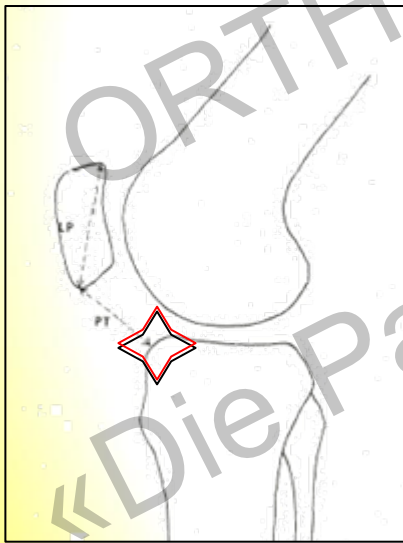
¹ Clinique Chirurgicale Orthopédique et Traumatologique, Centre Hospitalier Lyon-Sud, F-69310 Pierre-Benite, France

² Post Office Box 3129, Jackson, Wyoming 83001, USA

1987 Findings

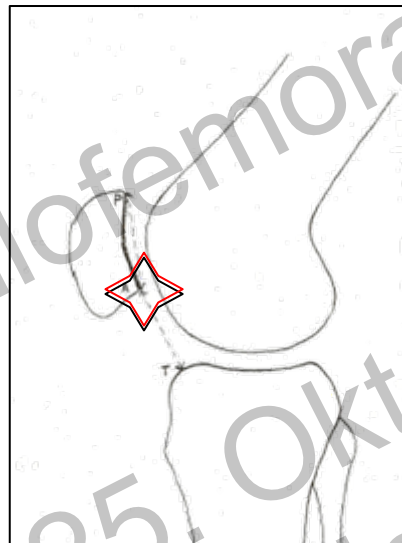
Patella Alta > 1.2

30% in dislocation population



J. Caton 1977

Tibial Landmark

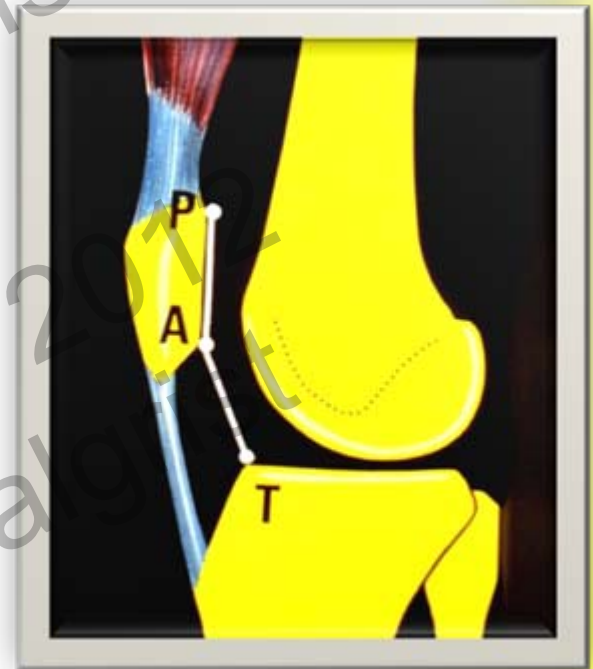


G. Deschamps 1982

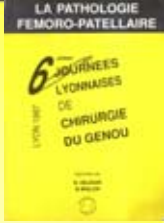
Patella Landmark

+

=



C&D Index AT/AP



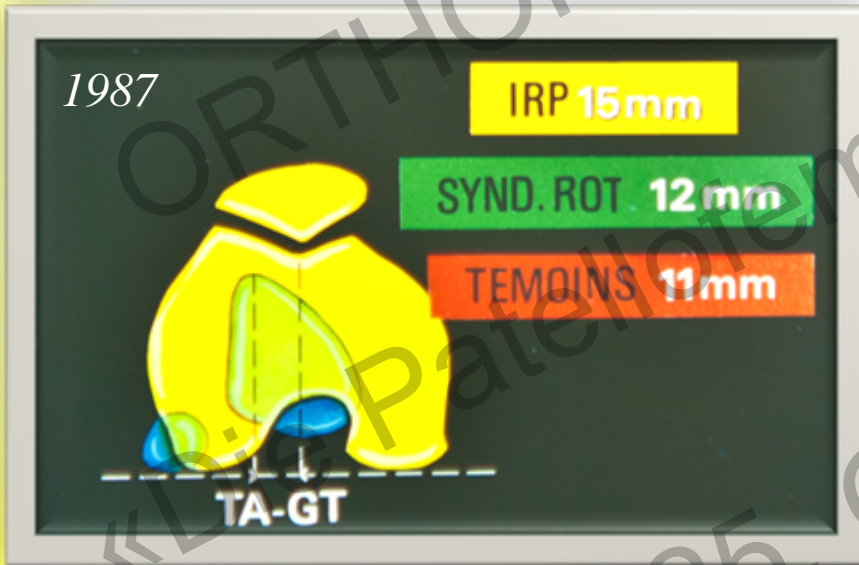
1987 Findings

Systematic use of CT Scan

Alignment – torsion measurements

TT-TG > 20 mm

56 % Dislocation population



1978 Goutallier & Bernageau TT-TG on axial view



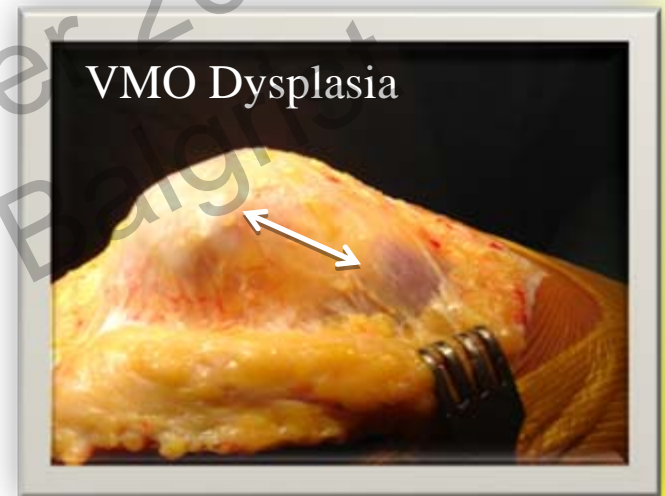
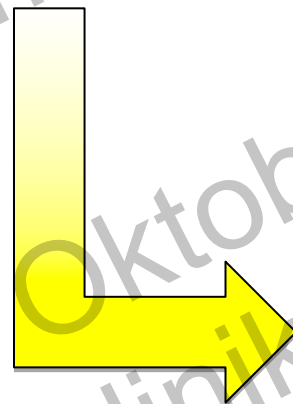
1987 Findings

Systematic use of CT Scan

Alignment – torsion measurements





Patellar Tilt $> 20^\circ$

83% in dislocation population





1987 "menu à la carte" for patella dislocation

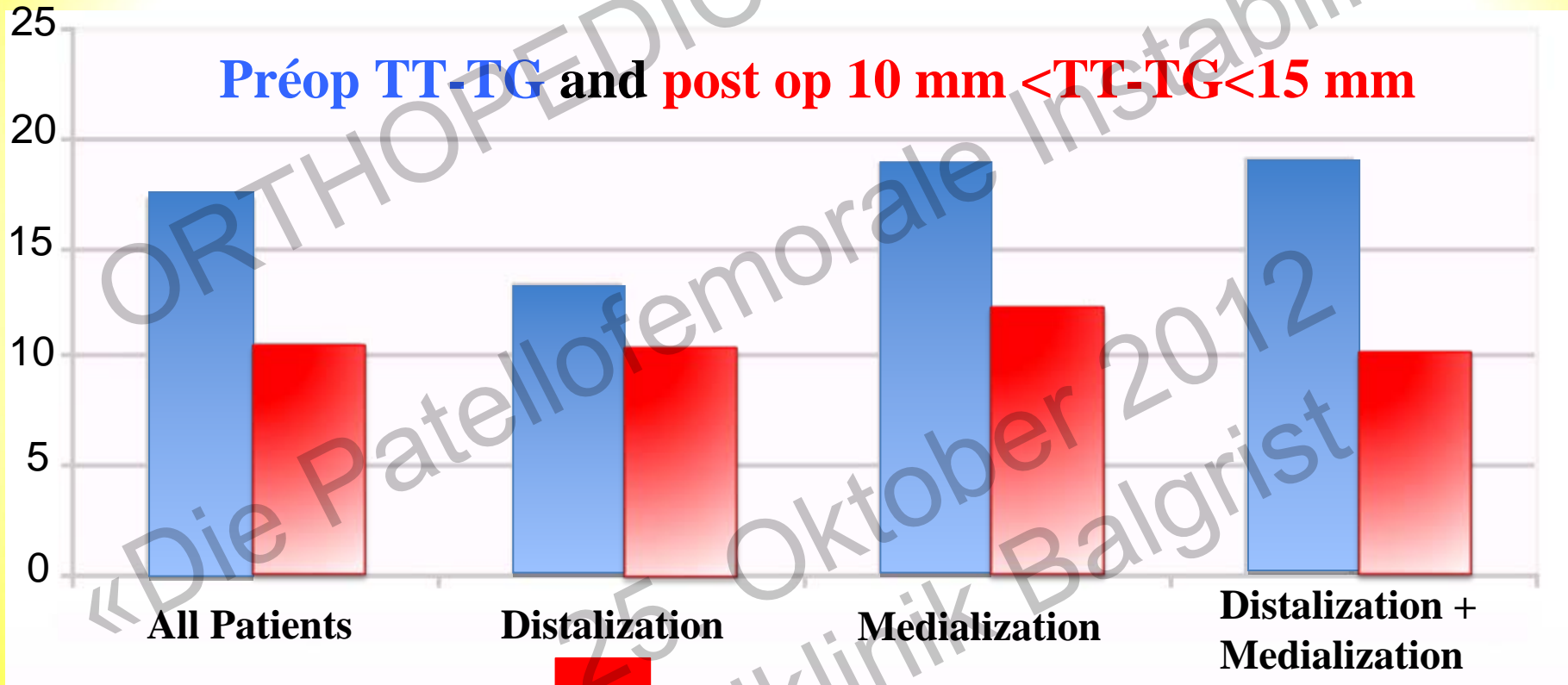
Instability factors	Knee side	Proposed procedure
Trochlear dysplasia	Type I, II, III	 ????
Patellar height	Index AT / AP	 Distalization Index = 1
TT-TG	> 20 mm	 Medialization 10 < TA - GT < 15
Patellar Tilt	> 20°	 VMO Plasty



What were the results...

Elvire Servien, Rev Chir Orthop Reparatrice Appar Mot. 2004

Préop TT-TG and post op 10 mm < TT-TG < 15 mm



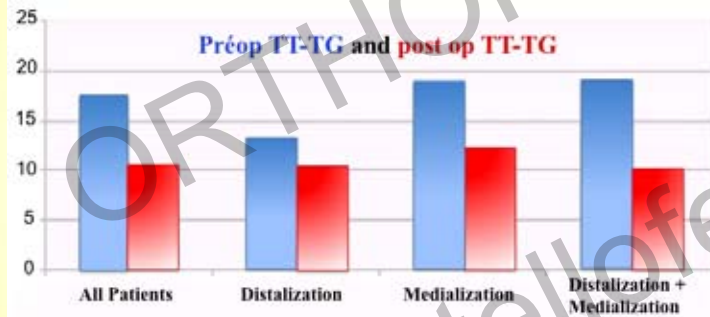
Isolated distalization → Leads to Automatic medialization of 4 mm



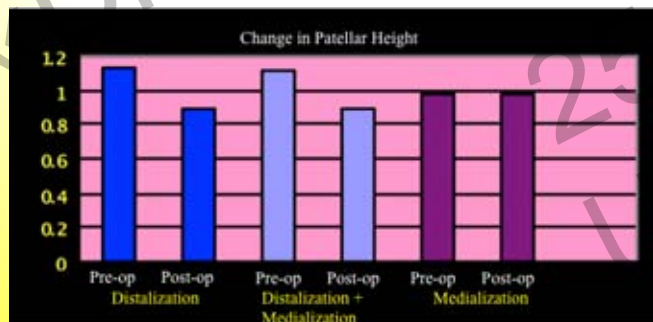
What were the results...

*Elvire Servien,
Rev Chir Orthop Reparatrice Appar Mot. 2004*

Good correlation between the planned TT-TG & the post op TT-TG



No patellar tendon shortening after TT Osteotomy (*immediate mobilisation*)





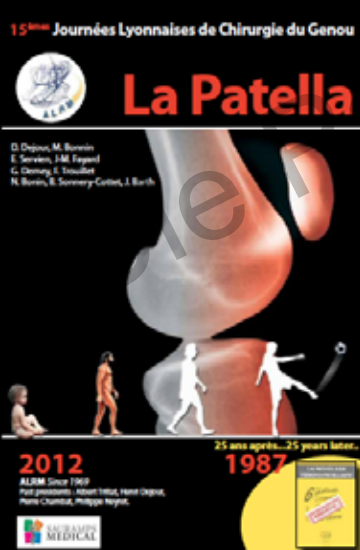
2012



WHAT REMAINS ?

WHICH UPDATE ?

WHICH CHANGES ?





La PATELLA Lyon 2012 "ALRM"



WORLDWIDE WORK

41 Countries...



2012

Patellar Instability

Clinical Evaluation

“some particular features”

- **Torsional anomalies**
- **Foot angle**
- **Pelvis and back position**



CT scan for Femoral & Tibial rotation measurement

Clinical Evaluation

“some particular features”

Apprehension sign



Clinical Evaluation

“some particular features”

Patella Alta



Clinical Evaluation

“some particular features”

J sign

Muscular unbalance

+

Upper trochlear dysplasia



Normal tracking in flexion

Normal patellar engagement

Abnormal tracking

Trochlear dysplasia ++



Extension

if normal quadriceps length



Clinical Evaluation

“some particular features”

Abnormal tracking

Trochlear dysplasia +++

Flexion

if SHORT extensor mechanism



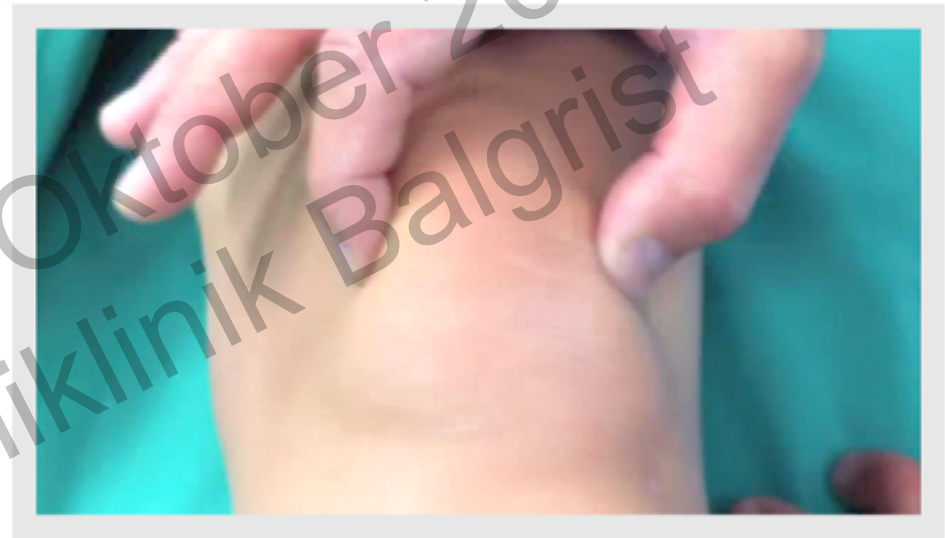
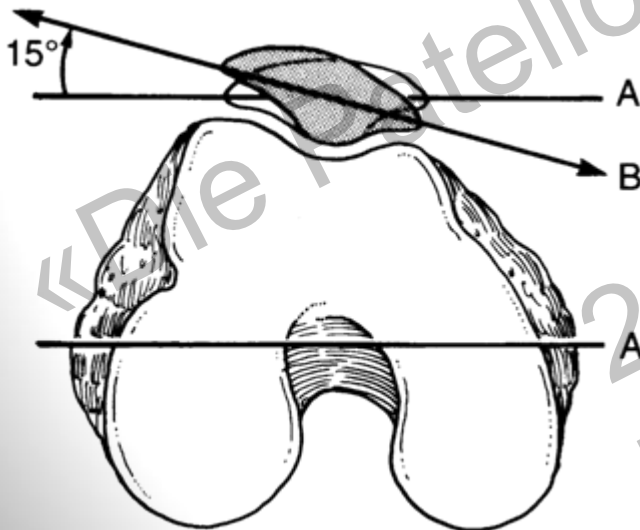
Clinical Evaluation

“*some particular features*”

Medial-Lateral Tilt Test



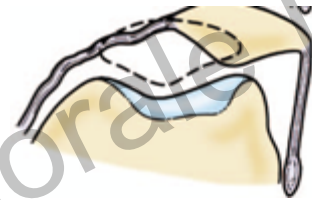
Soft tissue structures evaluation



Clinical Evaluation

“some particular features”

Quadrant Test “Patellar mobility”



Extension

Medial structures resistance
MPFL competency



Flexion

Patella engages the trochlea
Gives a reference point



Clinical Evaluation

“some particular features”

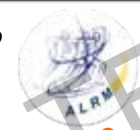
Don't forget...

To look to your patient patient ...



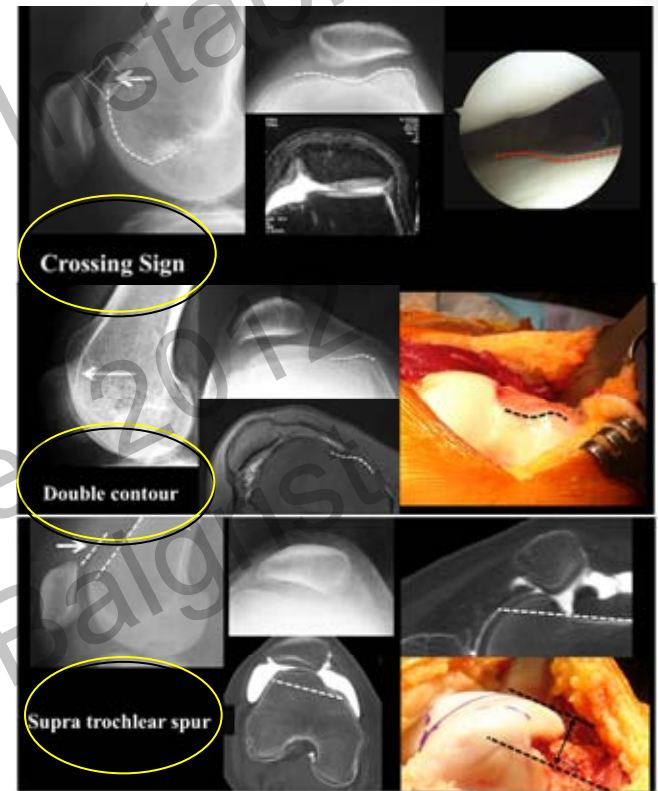
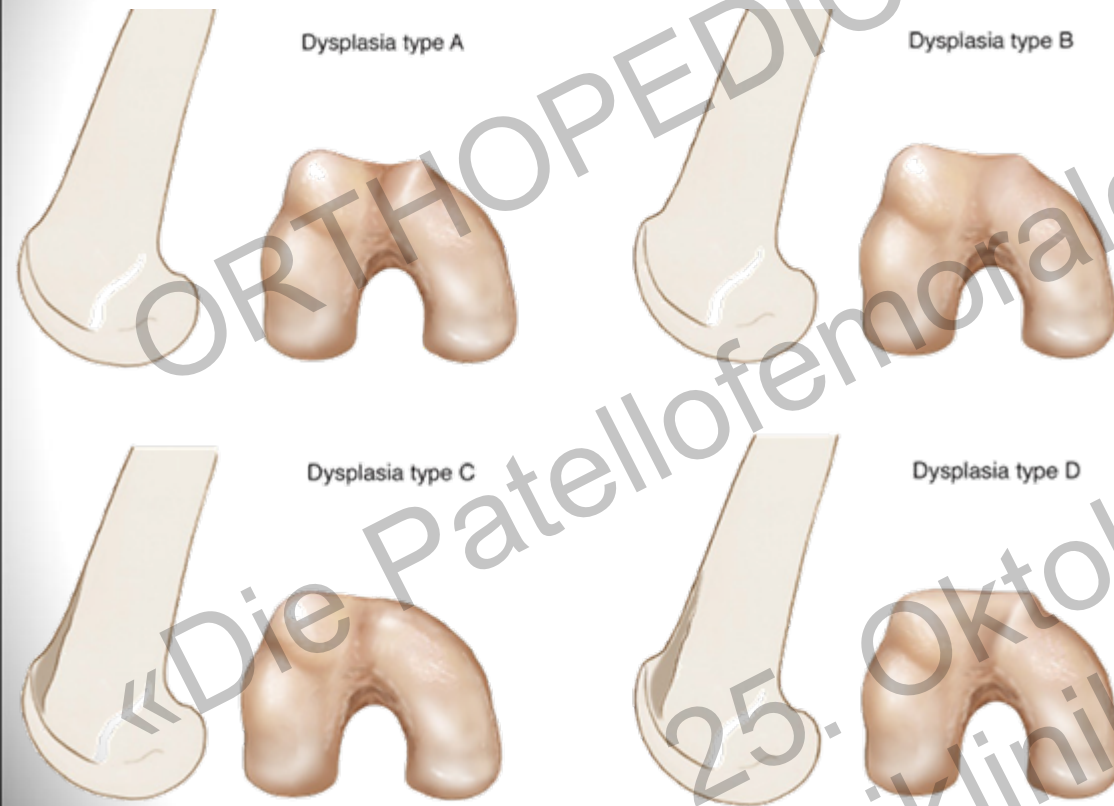
Nail Syndrome...
Down syndrome...





Trochlear Dysplasia Classification

4 types (2 new landmarks)



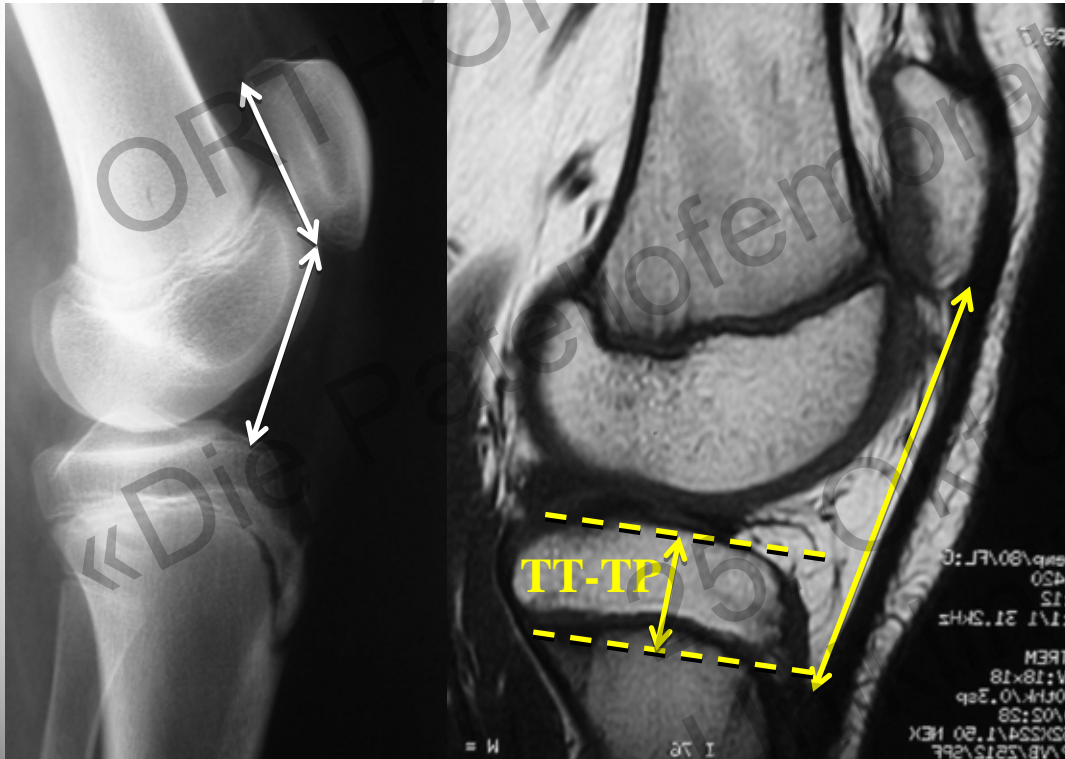
Inter and intra observer reliability +++



Patellar height

Caton & Deschamps = X rays

Patellar tendon length = MRI



$C\&D = AT/AP > 1.2$

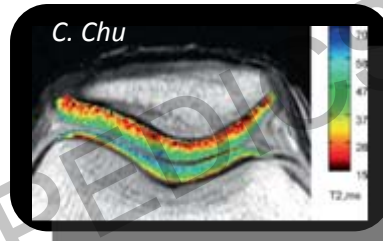
PT length > 52 mm

TT-TP length > 29 mm

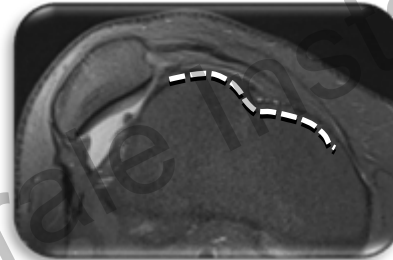


MRI ANALYSIS

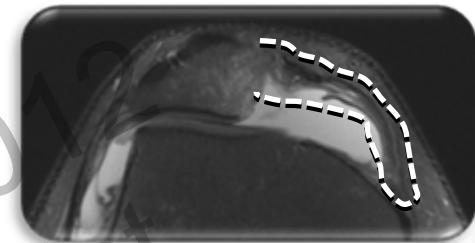
Cartilage —



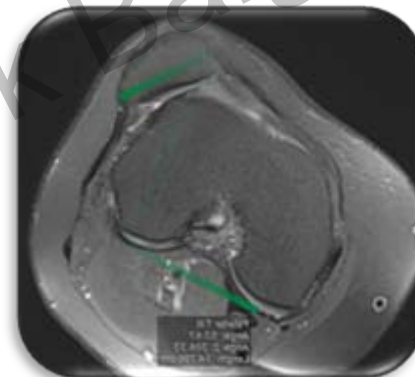
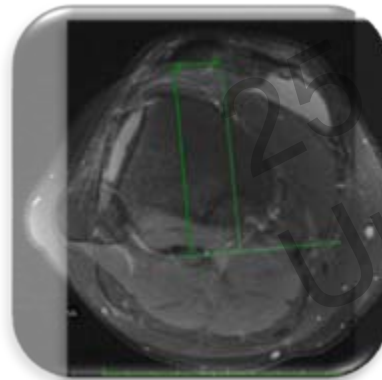
Trochlear Shape —



Soft tissue (MPFL) —



Classic measurement (TT-TG, Patellar Tilt)





	CT Scan	MRI
TT-TG	Yes	Yes PT reference++
Patellar Tilt	Yes + dynamic	Yes static
Torsional anomalies	Yes	No
Bilateral Evaluation	Yes	No
Irradiation	Yes +/-	No
Cartilage Evaluation	No	Yes
Patellar height	No	Yes +/-
Patellar tendon length	No +/-	Yes
MPFL (soft tissue)	No	Yes

**The CT scan when bilateral pathology +/- Torsion anomalies
CT Scan or MRI need a specific prescription with a protocol**



2012 Instability factors = 3

Trochlear dysplasia : YES

Patella Alta : YES

TT - TG: YES

Patellar Tilt : NO

Resulting factor of all the others



2012 Surgical Algorithm ...



~~VMO Plasty + LR~~
~~for the Patellar Tilt~~



MPFL isolated or combined

All cases

Lateral release if : Medial Tilt test negative
"Possible option"





MPFL has to be reconstruct

Restore "torn anatomy"

Primary restraint

Always torn or no competent after the first dislocation

Positioning rules :

Fluoroscopy: lateral views+++

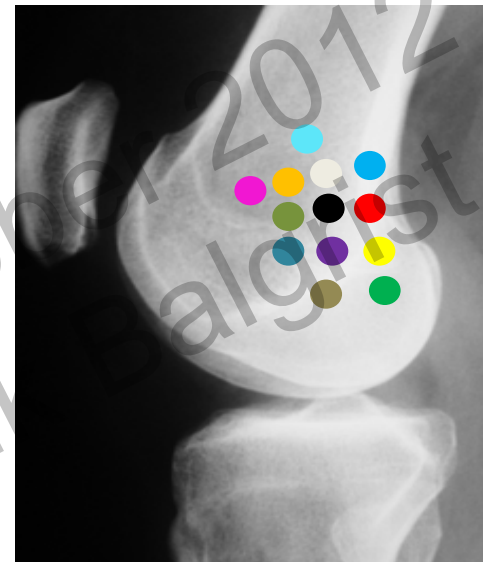
Avoid femoral malpositioning

Indication for isolated:

C&D < 1.2

Avoid hypercorrection and fixed patella

Graft: for primary surgery preserve extensor mechanism





TT osteotomy

Correct "abnormal alignment"

CT or MRI mandatory : objective measurement



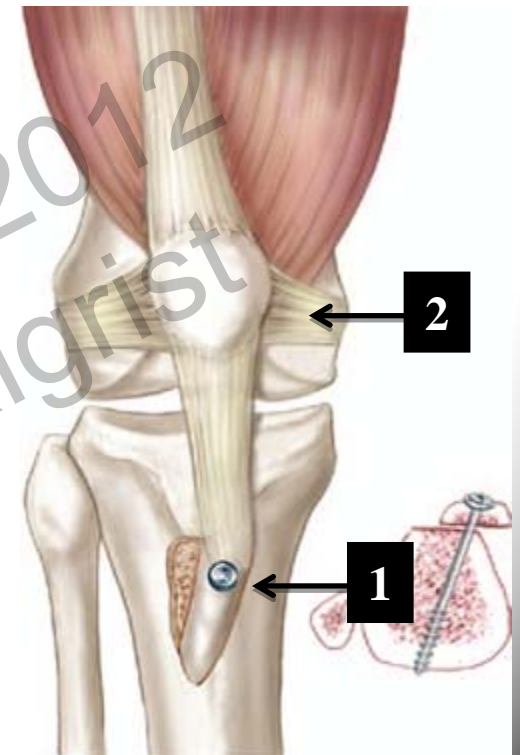
Medialization

→ $10 \text{ mm} < \text{TT-TG} < 15 \text{ mm}$

Procedure rules :

Prior to MPFL reconstruption

No over correction





TT osteotomy

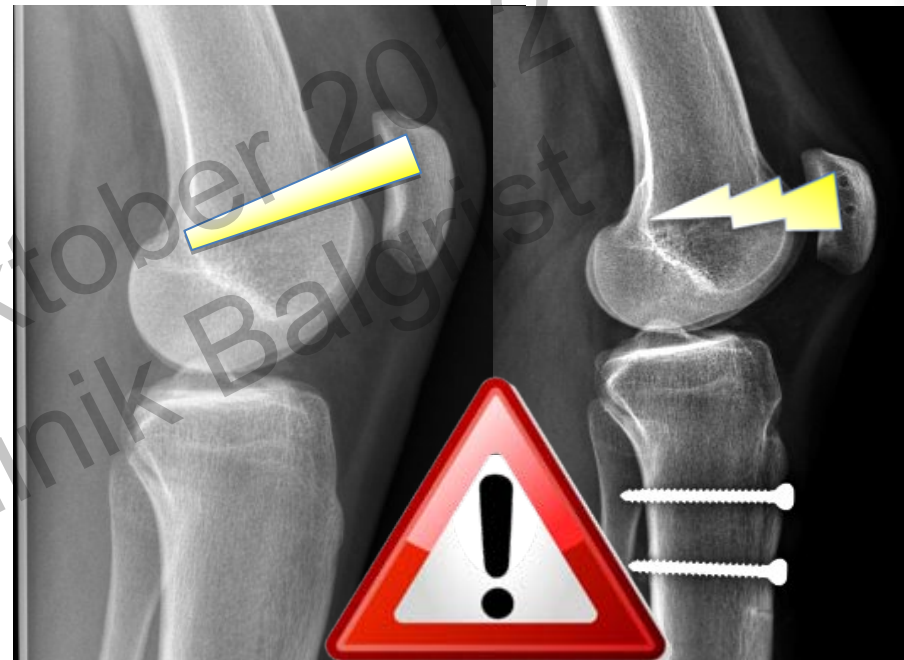
Correct "abnormal height"

Distalization → index C&D = 1

Procedure rules :

Adapted to trochlear shape

Prior to MPFL reconstruction





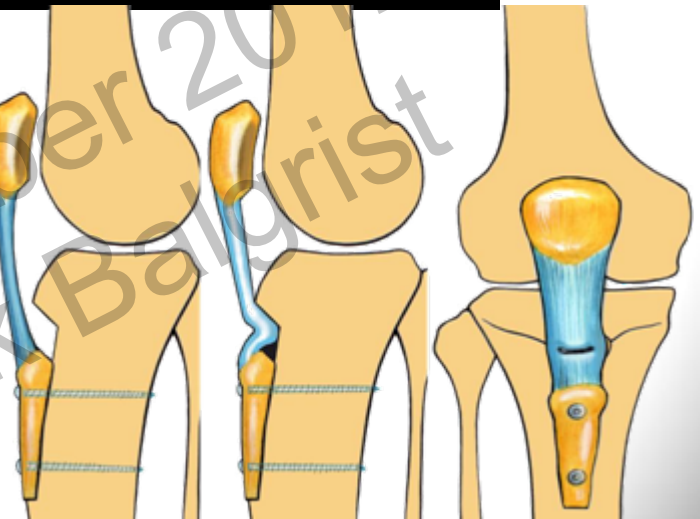
Patellar Tendon Tenodesis

Correct "Normal Anatomy"

If → PT length > 52 mm
"possible option"

Procedure rules :

Adapted to MRI analysis
2 anchors on the native insertion





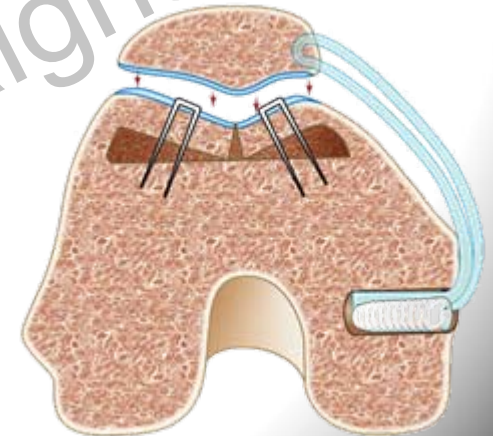
Deepening Trochleoplasty Restore "Normal Anatomy"



Proximal realignment + prominence removal

→ Dysplasia Type B or D

→ Abnormal patellar tracking



Conclusion...

Appreciate

new

“Menu à la carte”

