

ALL YOU NEED IS MPFL ?

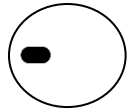


Indikation, Technik, Komplikationen

José Romero, Endoclinic Zurich

ORTHOPAEDIC UPDATE, BALGRIST, 25.10.2012
PATELLOFEMORALE INSTABILITÄT

ALL YOU NEED IS MPFL ?



It's not all, but it's a lot !

ORTHOPEDICS UPDATE

«Die Patellofemorale Instabilität»

25. Oktober 2012

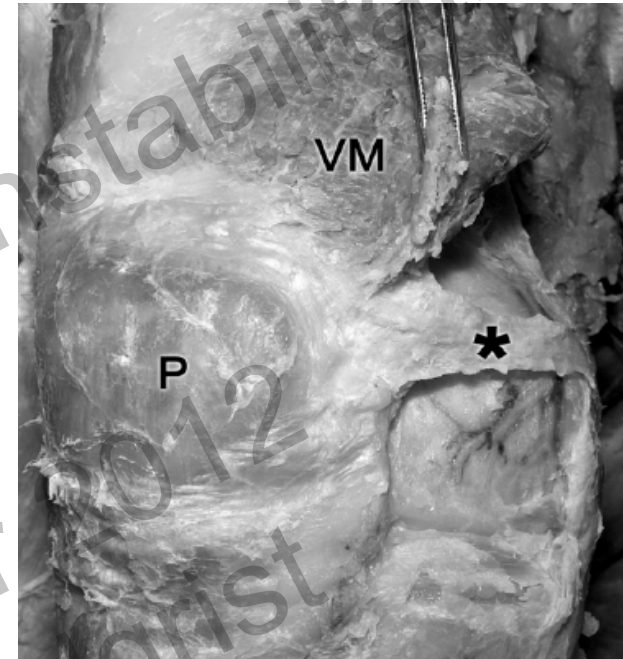
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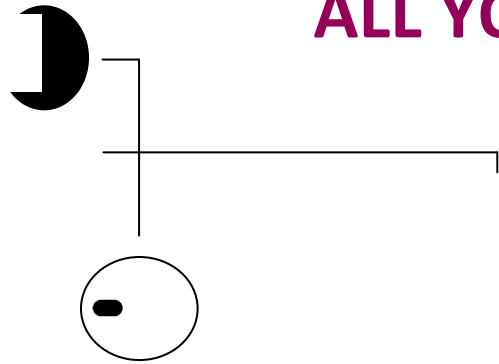
It's not all, but it's a lot !

Passive factor:

The medial patellofemoral ligament provides 50-80% of restraining forces to lateral displacement of the patella



ALL YOU NEED IS MPFL ?



Passive factor:

The medial patellofemoral ligament

Static factor:

The bony morphology



ALL YOU NEED IS MPFL ?

Passive factor:

The medial patellofemoral ligament

Static factor:

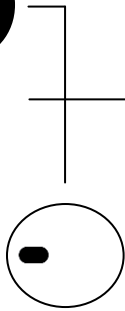
The bony morphology

Active factors:

The vector actuators

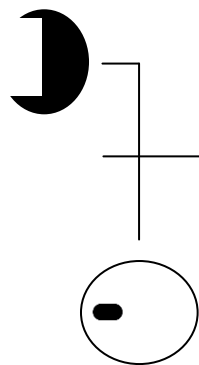


PATELLOFEMORAL STABILITY



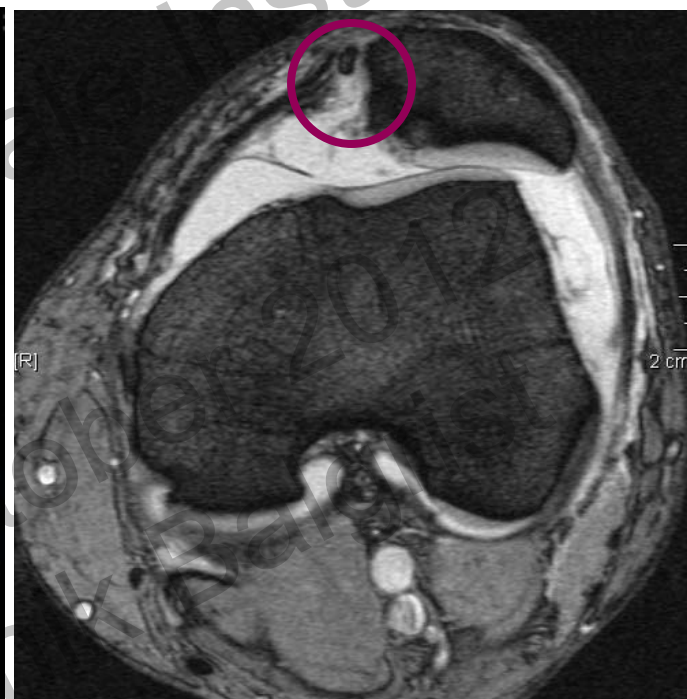
- 1. Bone morphology: Trochlea femoris 50%**
- 2. Passive restraints: Medial patellofem. Lig. 40%**
- 3. Active stabilizers: Vastus medialis muscle 10%**

SO IF IT TEARS



femoral site

patellar site

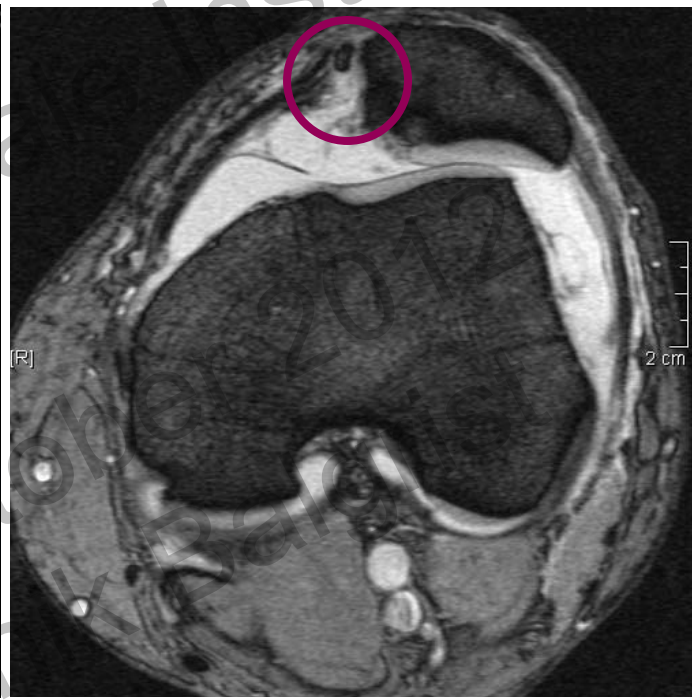
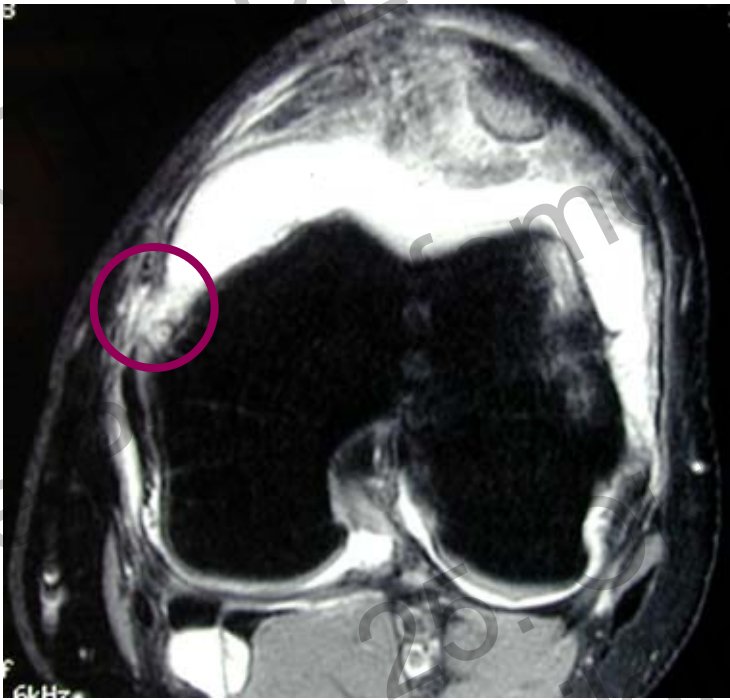


.... ALL YOU NEED IS TO FIX IT!

EVIDENCE

femoral site

patellar site



EVIDENCE

“Initial arthroscopic medial retinacular repair was not followed by improved patellar stability nor reduced incidence of redislocations compared with nonoperative treatment.”

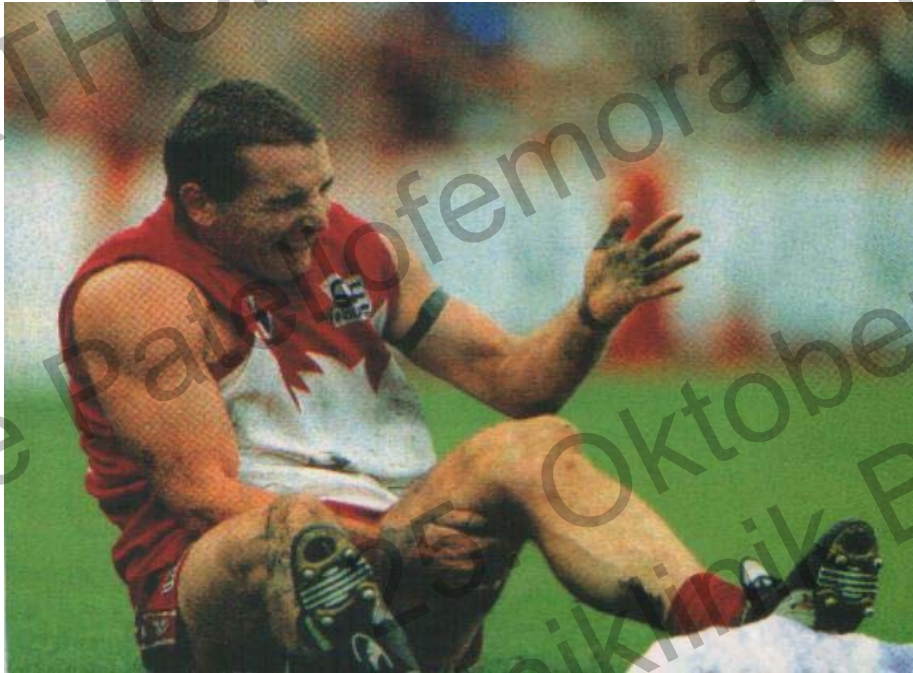
Cohort study, evidence level 2

- n = 30 repair, n= 47 no repair

- f-up = 6 yrs. (median, 7.5; range, 6-11).

NONOPERATIVE TREATMENT

... for acute patellar dislocation in an athletic population



NONOPERATIVE TREATMENT

... for acute patellar dislocation in an athletic population

Cases series study, evidence level 3

- n= 61 knees, f-up = mean 46.2 ms (min. 24 ms)

73 % satisfied

26 % recurrent instability

NONOPERATIVE TREATMENT

... for acute patellar dislocation in an athletic population

Cases series study, evidence level 3

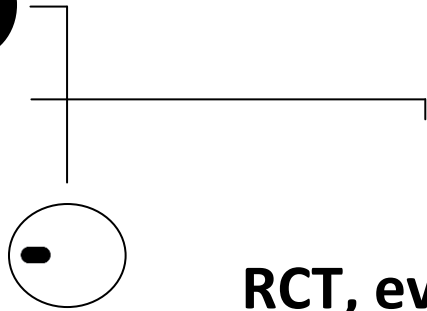
- n= 61 knees, f-up = mean 46.2 ms (min. 24 ms)

73 % satisfied

26 % recurrent instability

«Anatomic predisposition was associated with less favorable outcome»

NONOPERATIVE VS. MPFL RECONSTRUCTION



RCT, evidence level 1

(randomization method: draw at arrival at ER)

- n = 41 knees with primary patellar dislocation
- f-up = 44 ms (24-61 ms)

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NONOPERATIVE VS. MPFL RECONSTRUCTION

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«MPFL reconstruction produced better results (less recurrences, higher Kujala scores).»

NONOPERATIVE VS. MPFL RECONSTRUCTION

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- n = 41 knees with primary patellar dislocation
- f-up = 44 ms (24-61 ms)

«MPFL reconstruction produced better results (less recurrences, higher Kujala scores).»

Recurrence rate: **35 % after nonoperative treatment**
0 % after MPFL reconstruction

NONOPERATIVE VS. MPFL RECONSTRUCTION



Prevalence of bony predisposing factors:

33 % for the reconstruction group

95 % for the nonoperative group

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NONOPERATIVE VS. MPFL RECONSTRUCTION

Prevalence of bony predisposing factors:

33 % for the reconstruction group

95 % for the nonoperative group

Crossing sign



most common

NONOPERATIVE VS. MPFL RECONSTRUCTION

Prevalence of bony predisposing factors:

33 % for the reconstruction group

95 % for the nonoperative group

} groups were
not comparable:
nonoperative group
had more cases of
trochlear dysplasia

Crossing sign



NONOPERATIVE TREATMENT GROUP

... yielded poorer results for primary dislocation in the presence of trochlear dysplasia



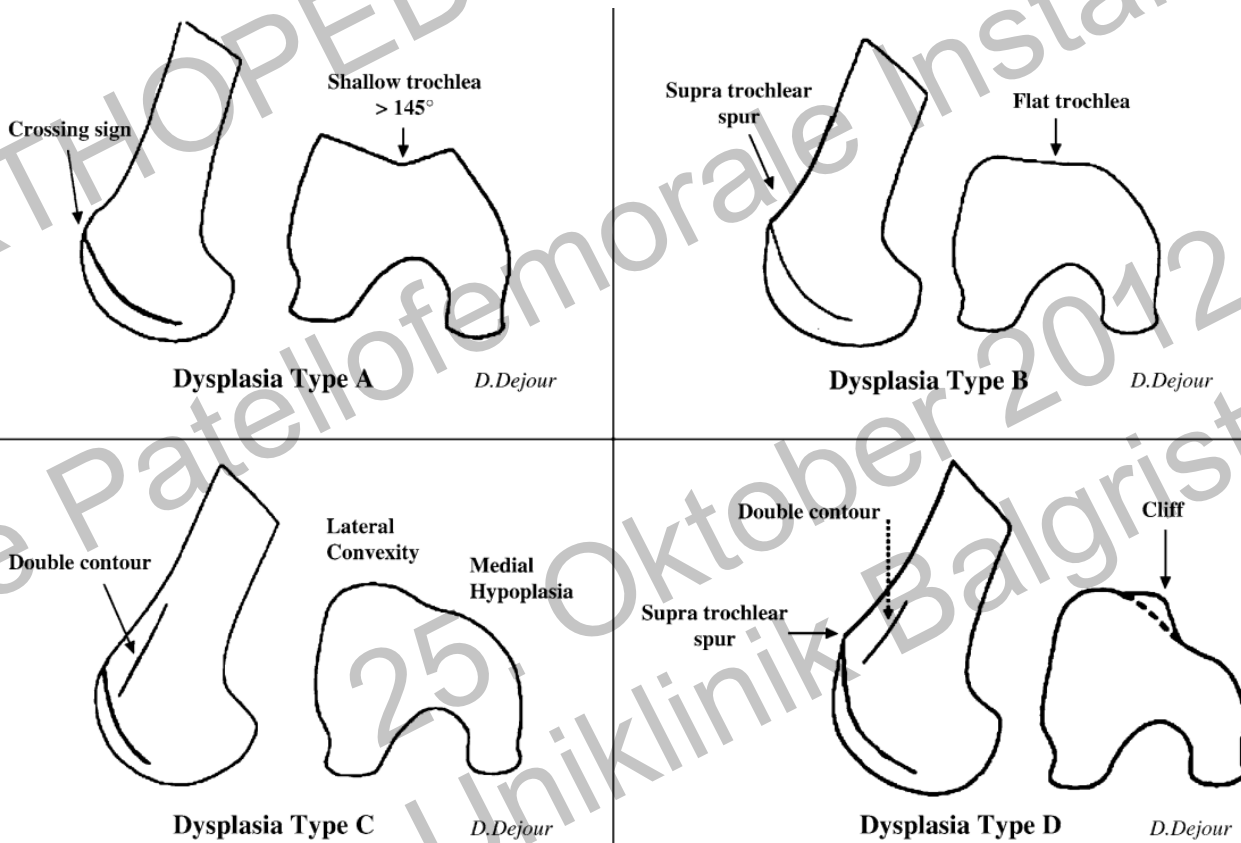
MPFL RECONSTRUCTION GROUP

... yielded good results for primary dislocation even in the presence of trochlear dysplasia

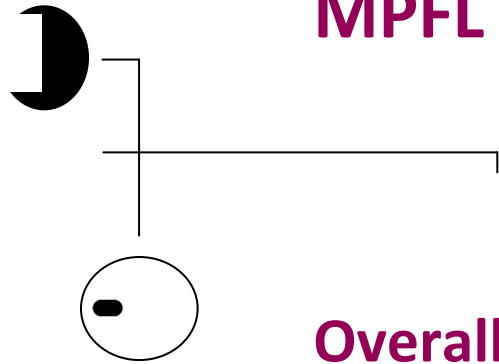


MPFL RECONSTRUCTION

... favorable for all types of trochlear dysplasia?



MPFL RECONSTRUCTION



Overall outcome not correlated to degree of dysplasia

Prospective outcome assessment, evidence level 3

n = 219 knees

f-up = 16 ms (6-42 ms)

Recurrency rate 0%

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MPFL RECONSTRUCTION

Overall outcome not correlated to degree of dysplasia

Prospective outcome assessment, evidence level 3

n = 219 knees

f-up = 16 ms (6-42 ms)

Recurrency rate 0%

«It should be noted that in our series this does not include patients with severe trochlear dysplasia, for whom MPFL reconstruction is not felt to be an appropriate procedure.»

MPFL RECONSTRUCTION

Knee Surg Sports Traumatol Arthrosc
(2005) 13: 516–521

KNEE

DOI 10.1007/s00167-005-0659-0

PB Schöttle
SF Fucentese
J Romero

Clinical and radiological outcome of medial patellofemoral ligament reconstruction with a semitendinosus autograft for patella instability

**First report on MPFL reconstruction (minimal f-up 2 yrs.)
Case series study, evidence level 4
n=15 knees (3 knees with trochlear dysplasia, not severe)**

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Case series study, evidence level 4
n=15 knees (3 knees with trochlear dysplasia, not severe)**

Recurrency: 2 knees (non with trochlear dysplasia)

Mild/moderate trochlear dysplasia did not affect outcome

MPFL RECONSTRUCTION

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(2005) 13: 516–521

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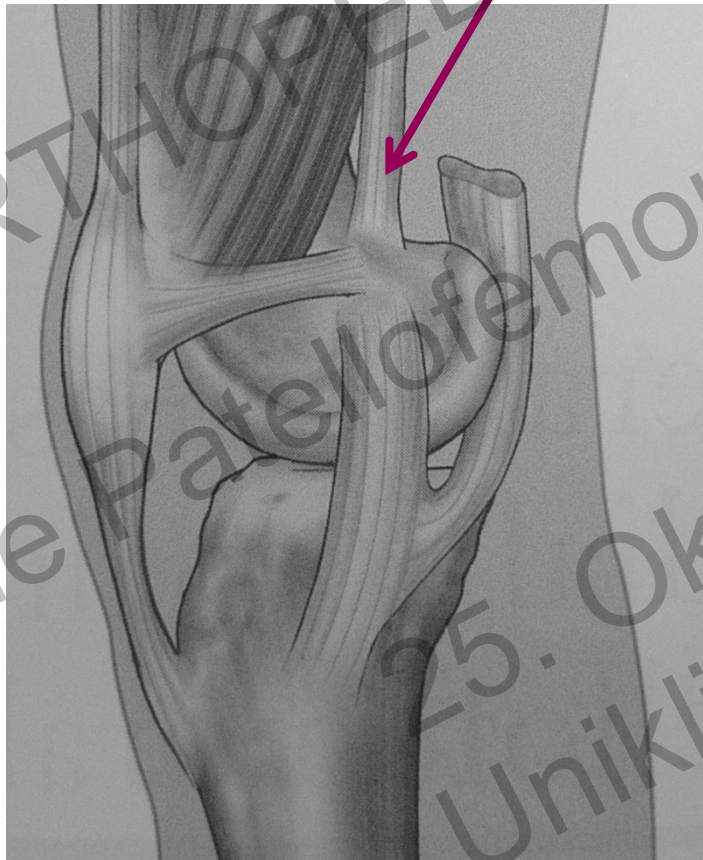
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Clinical and radiological outcome of medial patellofemoral ligament reconstruction with a semitendinosus autograft for patella instability

Reliable MPFL Technique in use for 10 years

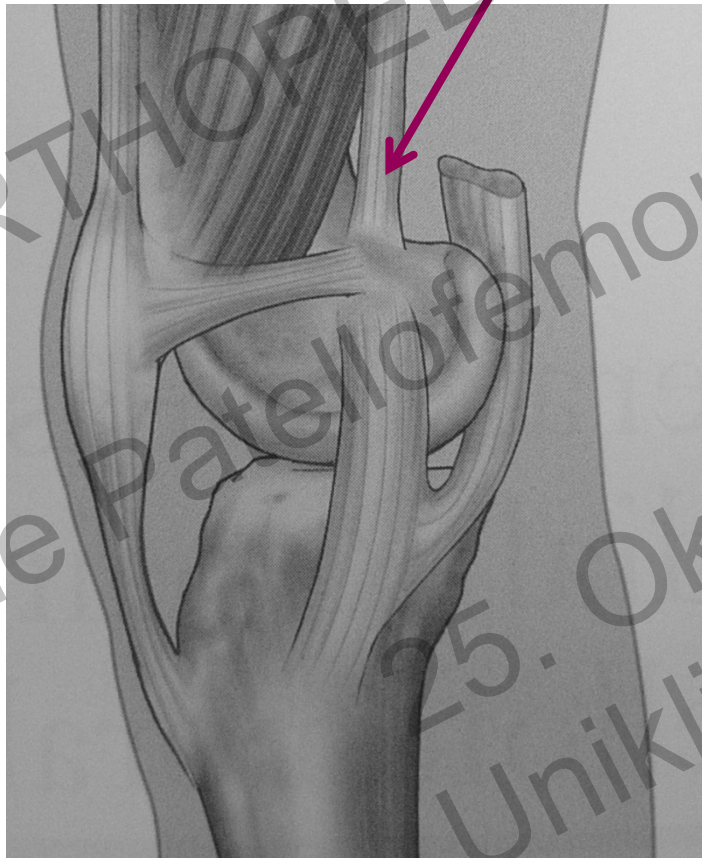
FEMORAL INSERTION SITE

Key structure:
adductor magnus tendon

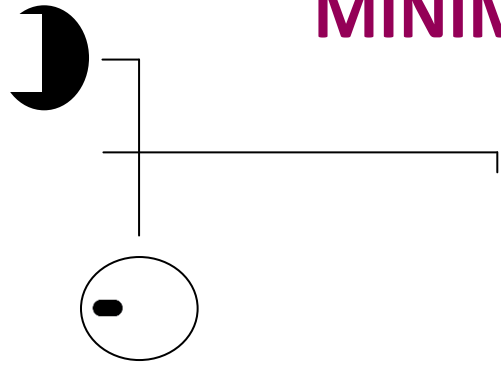


FEMORAL INSERTION SITE

Key structure:
adductor magnus tendon



MINIMAL-INVASIVE MPFL RECONSTRUCTION



proximal medial
patellar pole



pes anserine:
harvest the
semitendinosus
tendon

medial epicondyle

TROPH SUPEROMEDIAL PATELLAR EDGE

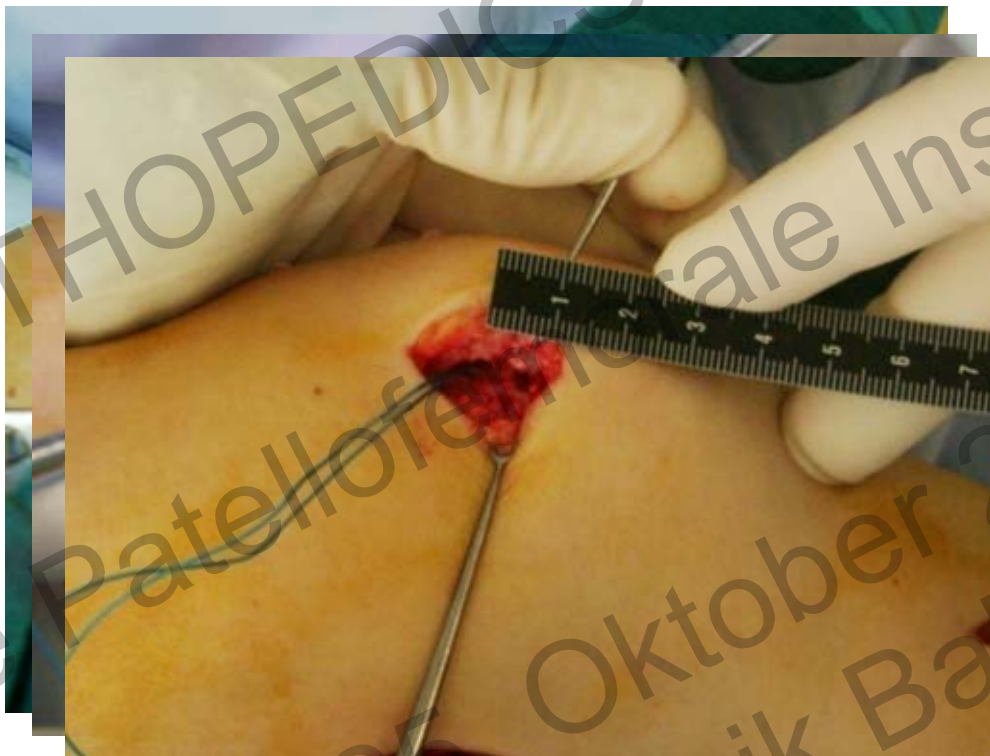


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SUTURE ANCHORS IN THE PATELLAR TROPH



2 AT A DISTANCE OF 1 CM



DRILL HOLE 8 MM IN ADDUCTOR TUBERCLE



PASS SEMI-T UNDER VASTUS MEDIALIS



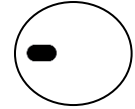
LOOP OF SEMI-T FIXED INTO PATELLAR TROPH



ENTER BOTH FREE SEMI-T BUNDLES IN HOLE



FIX WITH INTERFERENCE SCREW IN HOLE



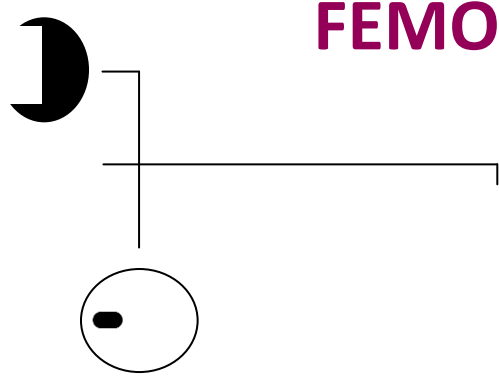
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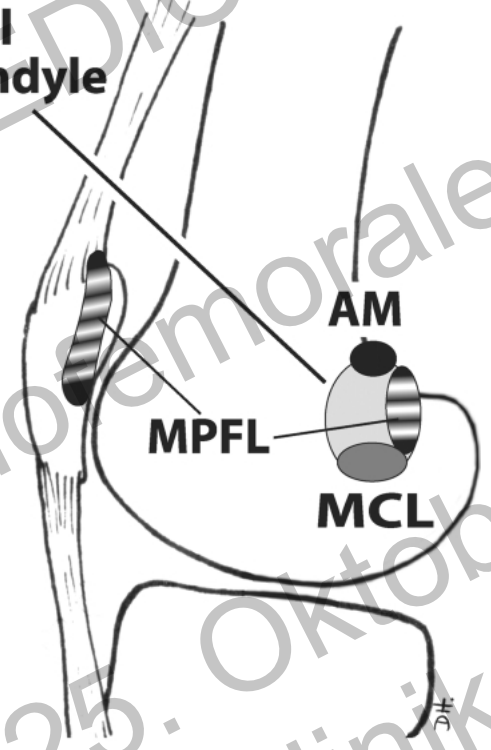
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FEMORAL FOOT PRINT



Medial Epicondyle



AM

MPFL

MCL

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MAIN DRAWBACKS OF MPFL RECONSTRUCTION



Preoperative factors:

- female with atraumatic recurrent dislocation
- previous surgery for patellar instability

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Postoperative factors:

- loss of flexion (overtensioned or non-isometric graft)

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- female with atraumatic recurrent dislocation
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Postoperative factors:

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personal view

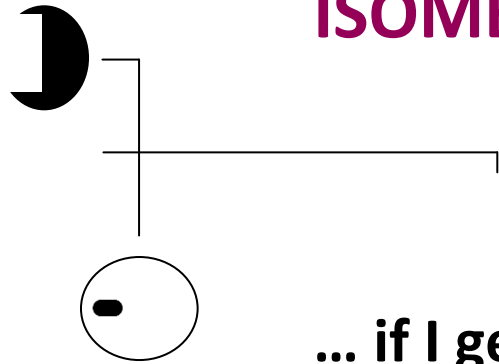
ISOMETRY TESTING WITH THE SUTURES



before drilling into the adductor tubercle



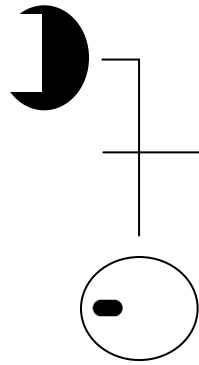
ISOMETRY



... if I get it right, I fix it at 30° of flexion
(but it may not matter)

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ISOMETRY

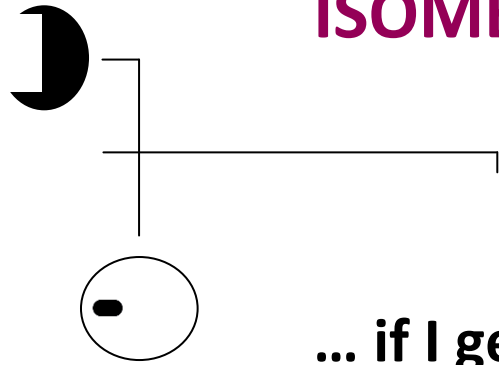


**... if I get it right, I fix it at 30° of flexion
(but it may not matter)**

**... is sometimes difficult to obtain, and the tendency is to
be to tight in flexion**

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ISOMETRY



... if I get it right, I fix it at 30° of flexion
(but it may not matter)

... is sometimes difficult to obtain, and the tendency is to
be to tight in flexion

to avoid loss of flexion I tighten it at higher flexion angle

MY ALGORITHM (BASED ON CURRENT EVIDENCE)

First time dislocation w/o trochlear dysplasia
- **nonoperative**

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- **nonoperative** (loose body: **arthroscopy**)

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First time dislocation w/o trochlear dysplasia
- **nonoperative** (loose body: **arthroscopy**)



week 1 and 2:
10° immobilized

week 3 and 4:
0° - 60° mobil

week 5 and 6:
0° - 90° mobile

Palumbo functional brace

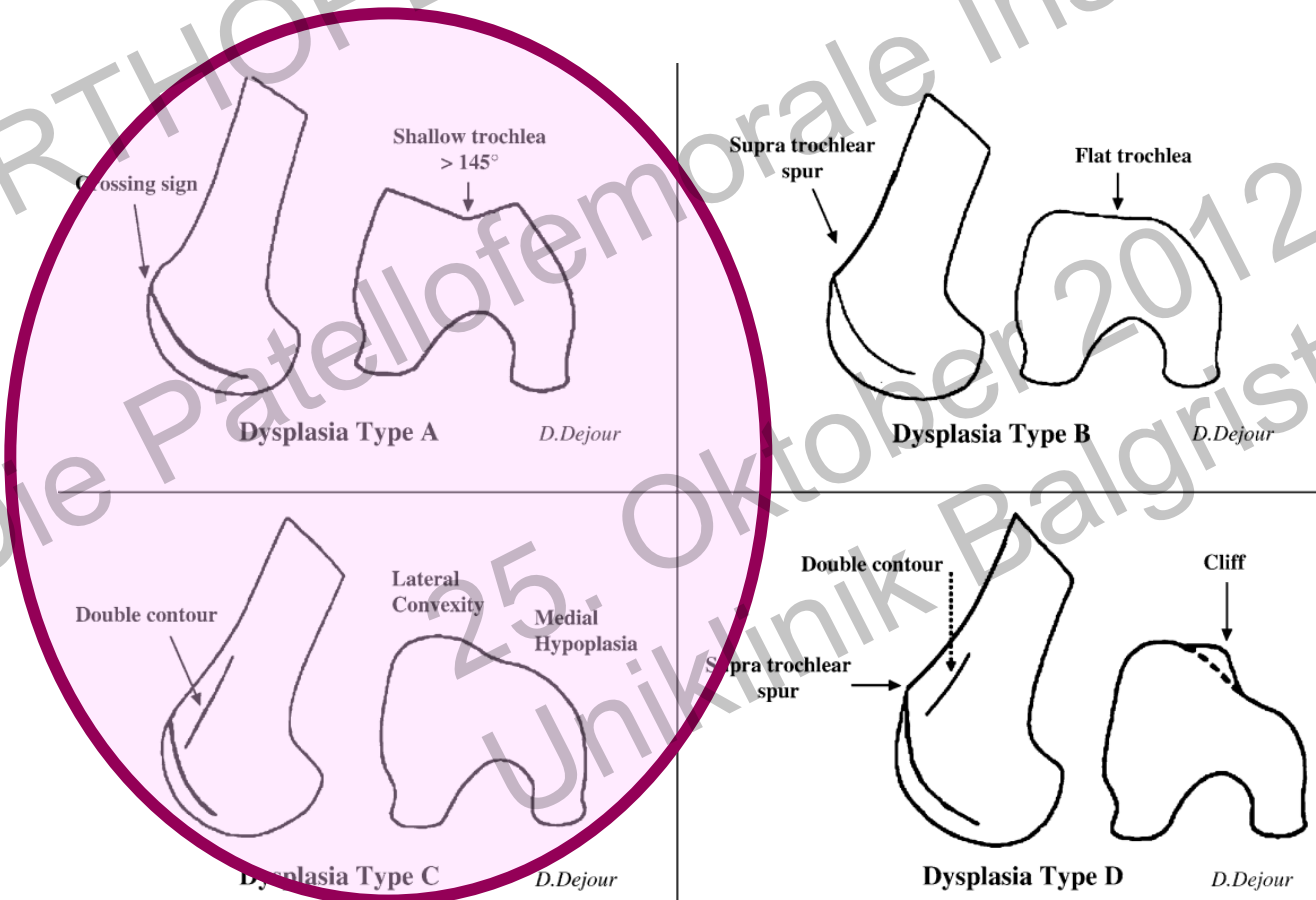
MY ALGORITHM (BASED ON CURRENT EVIDENCE)

First time dislocation with trochlear dysplasia
- **MPFL reconstruction**

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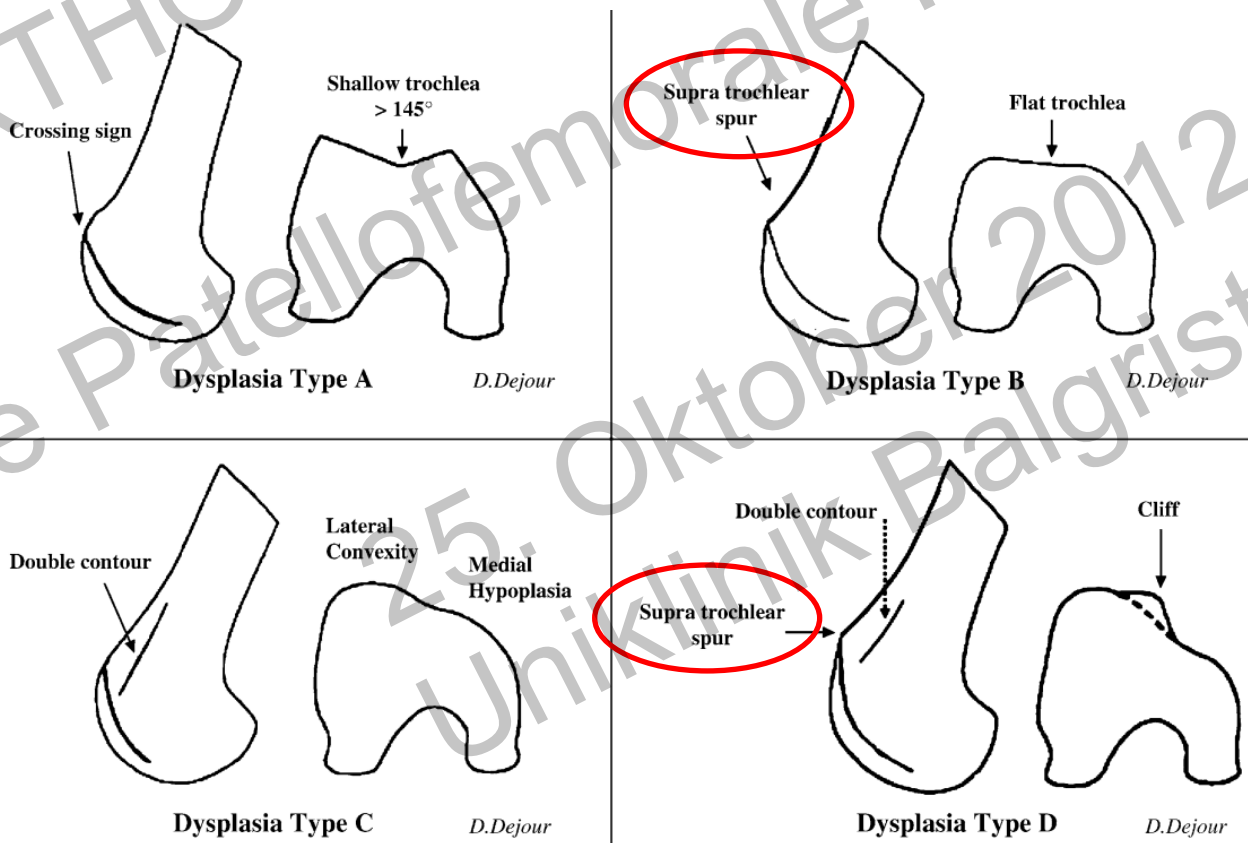
MY ALGORITHM (BASED ON CURRENT EVIDENCE)

First time dislocation with trochlear dysplasia
- **MPFL reconstruction** for Type A/B



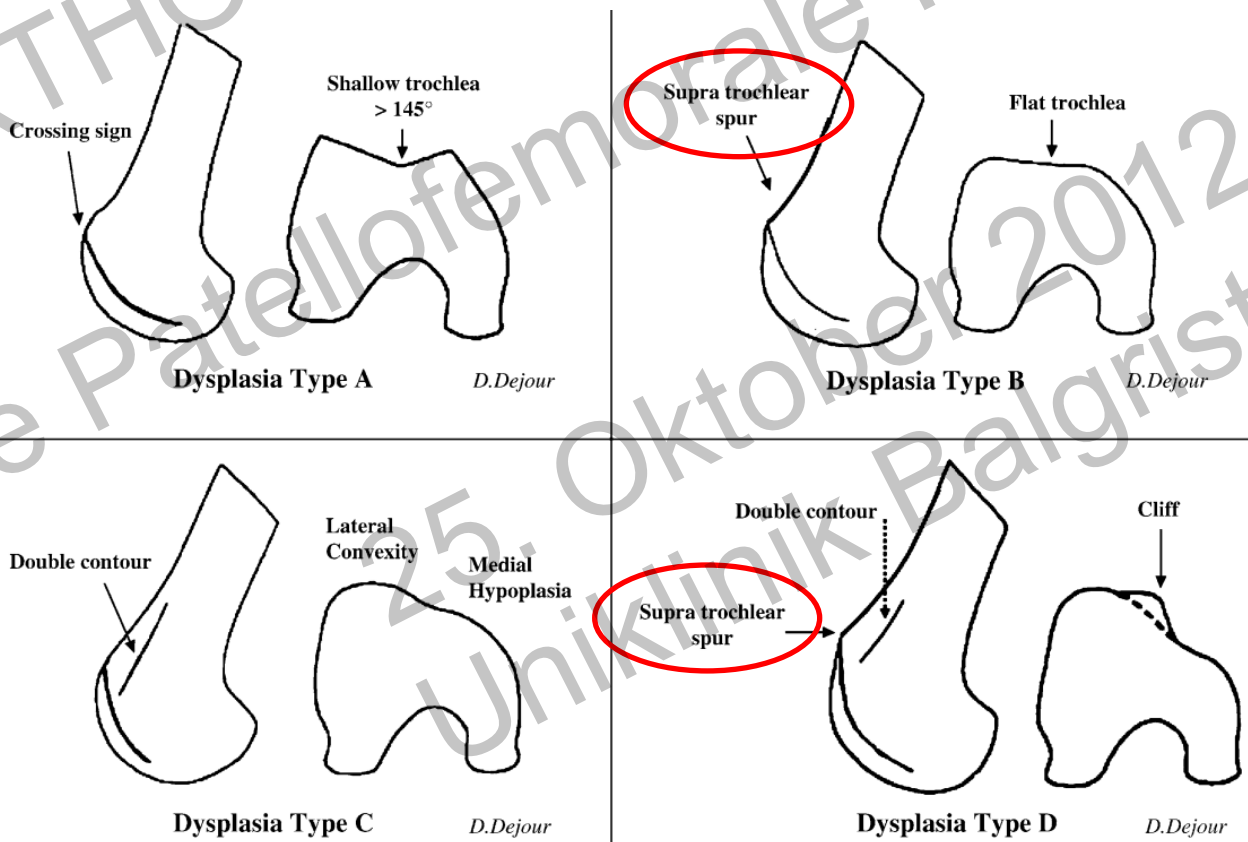
MY ALGORITHM (BASED ON CURRENT EVIDENCE)

First time dislocation with trochlear dysplasia
- MPFL reconstruction alone for Type B/D **questionable**



MY ALGORITHM (BASED ON CURRENT EVIDENCE)

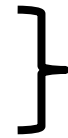
First time dislocation with trochlear dysplasia
- MPFL reconstruction alone for Type B/D questionable
(combined procedure: MPFL and proximal trochlear plasty ?)



MY ALGORITHM (BASED ON CURRENT EVIDENCE)

Recurrent dislocation or subluxation

- w/o dysplasia
- dysplasia Typ A/C



MPFL reconstruction

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MY ALGORITHM (BASED ON CURRENT EVIDENCE)

Recurrent dislocation or subluxation

- w/o dysplasia
- dysplasia Typ A/C

} **MPFL reconstruction**

Indication for operation:
positive apprehension sign



← **Lateral pressure to patella**

MY ALGORITHM (BASED ON ...)

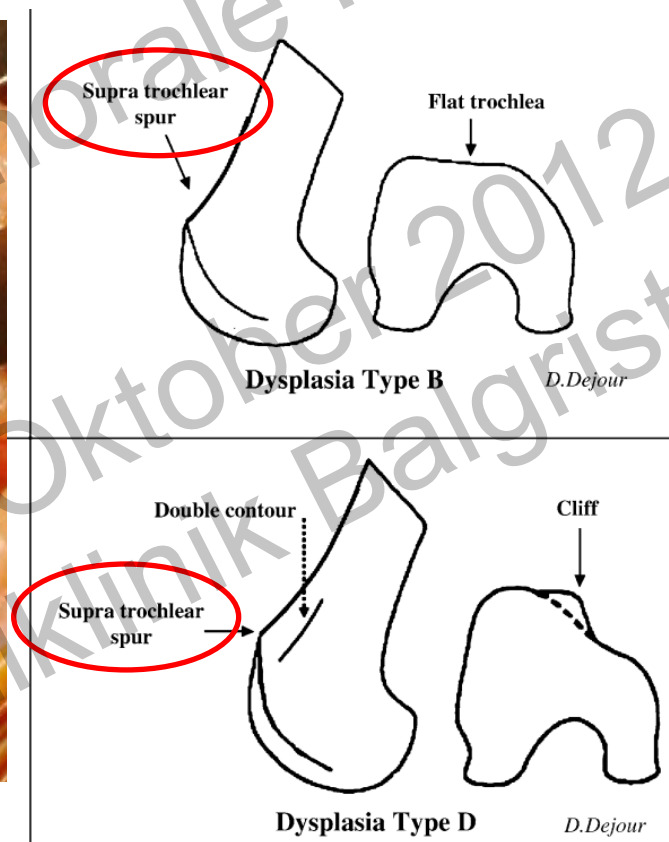
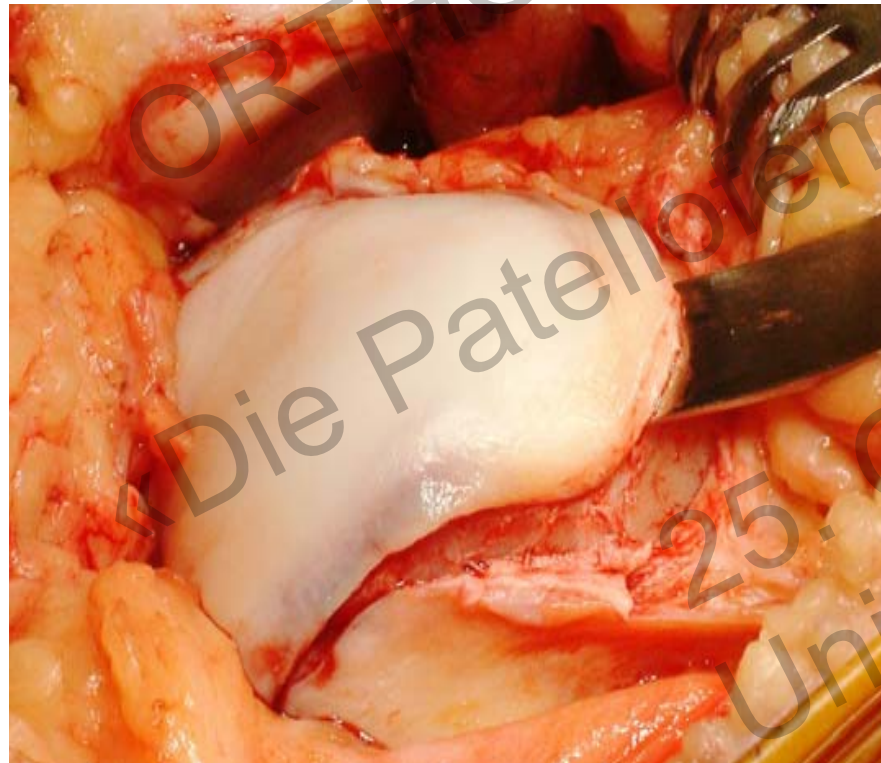
Recurrent dislocation or subluxation
- dysplasia Type B/D

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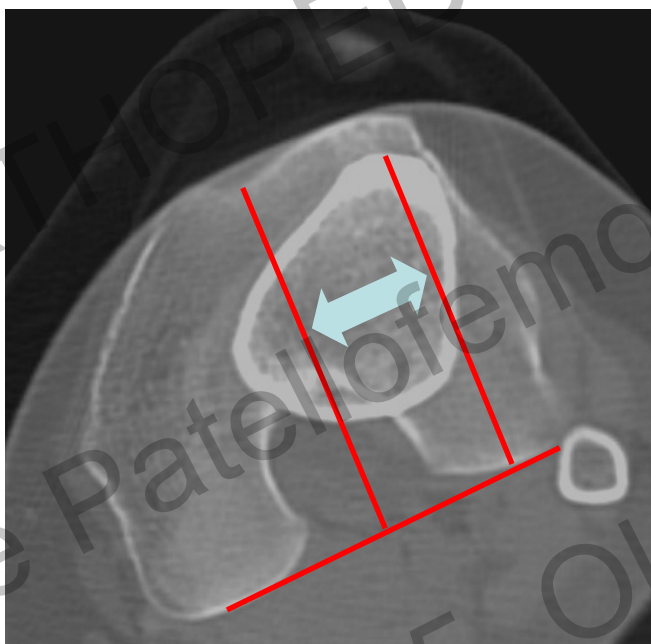
MY ALGORITHM (BASED ON HYPOTHESIS)

Recurrent dislocation or subluxation

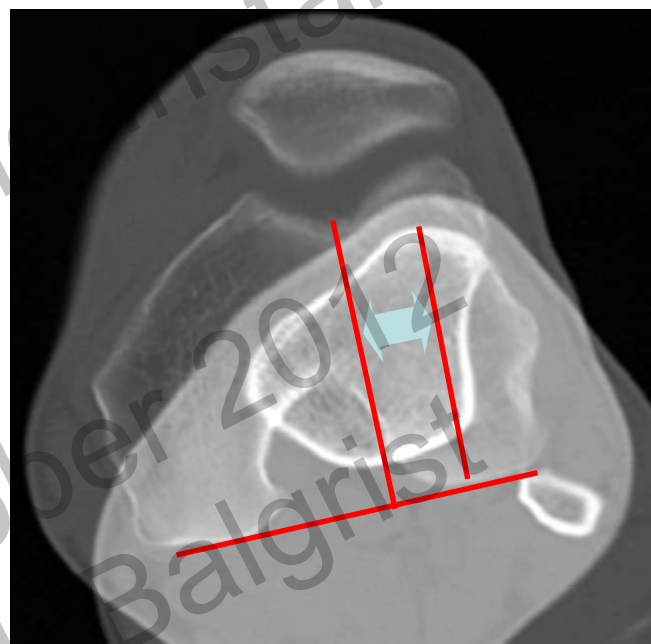
- dysplasia Type B/D: **minor trochlear plasty for the spur**
+ MPFL for patellar stability



TROCHLEAR PLASTY CORRECTS ABNORMAL TA-TG



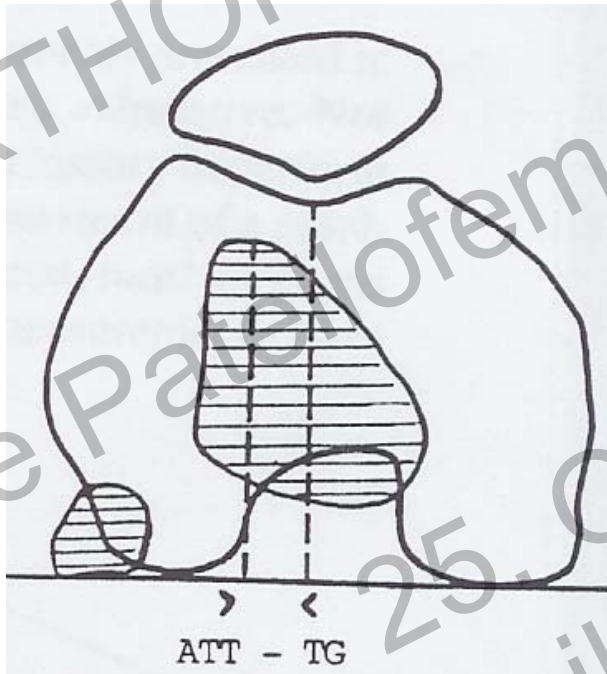
Preop: 18.8mm



postop: 9.9mm

TIBIAL TUBEROSITY TRANSFER?

Only if Tibial tuberosity is lateralized > 20 mm and in the absence of other bony abnormality

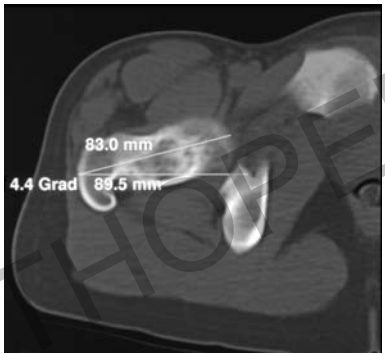
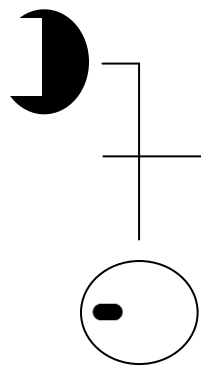


CT Scans:

Projection of the the trochlea over the tibial tuberosity:

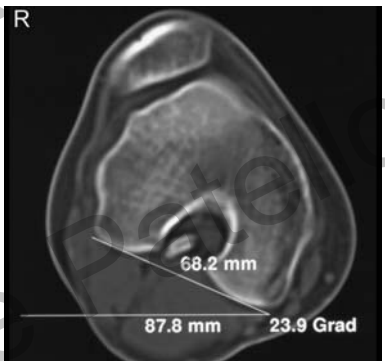
Measurement of the distance of anterior tibial tuberosity (ATT) to trochlear groove (TG)

PERMANENT ATRAUMATIC DISLOCATION

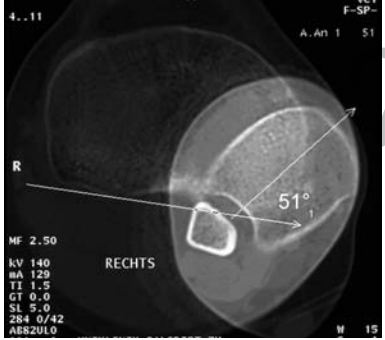


Rotational malalignment:

hip antetorsion



femur internal rotation



tibia external rotation

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MY CHOICE (IF SURGERY IS NEEDED)

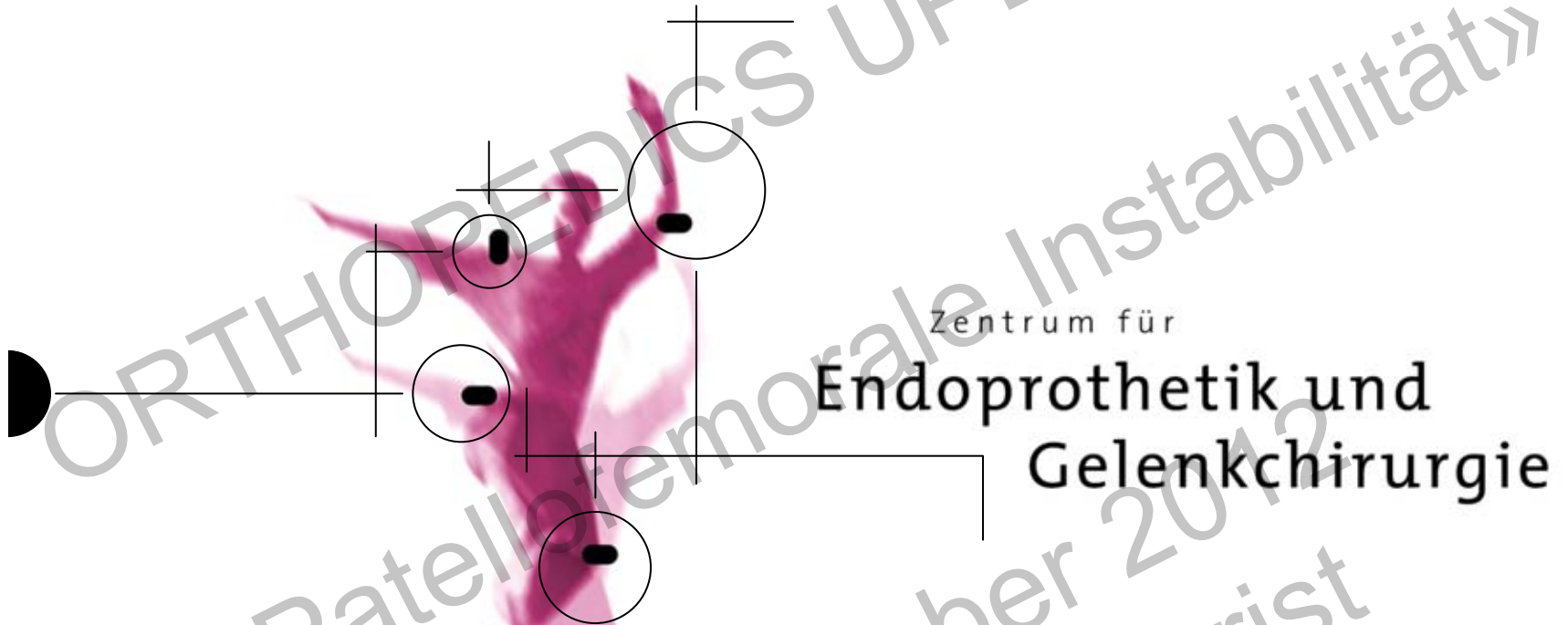
1. MPFL reconstruction w/o dysplasia or dysplasia A/C
2. Trochlear plasty for dysplasia B/D
(maybe minor trochlear plasty + MPFL reconstruction)
3. Tibial tuberosity transfer (very selected cases)
4. Femoral rotational osteotomies (very rare)

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2. Trochlear plasty for dysplasia B/D
(maybe minor trochlear plasty + MPFL reconstruction)
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No choice:

- arthroscopic repair: not superior to nonoperative
- lateral retinacular release: may increase instability



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