

Treatment of the Stiff Knee

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Classification

According to

- ⊕ Anatomy
- ⊕ Range of Motion
- ⊕ Etiology
- ⊕ Timing

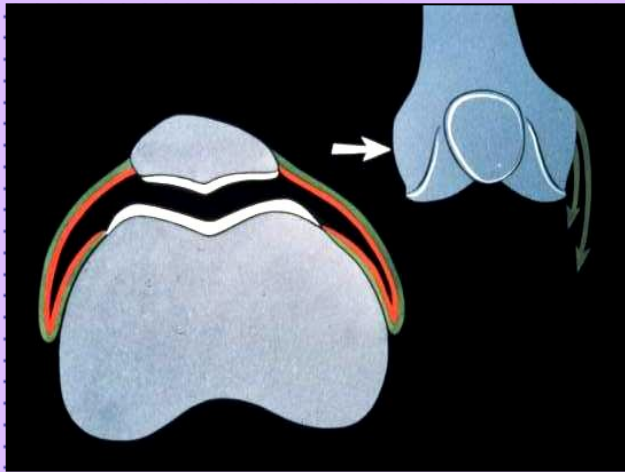
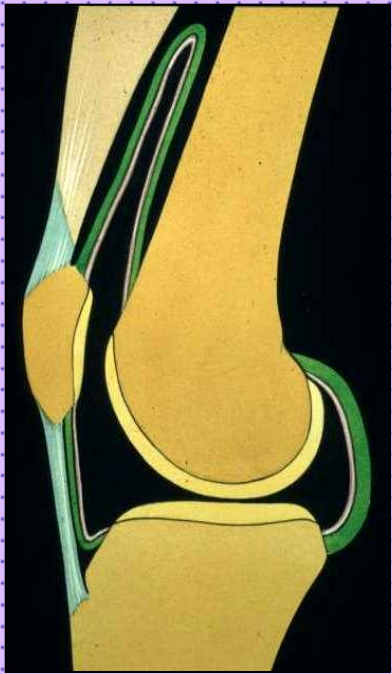
Classification

⊕ Anatomy

❖ Articular

the cavity (adhesences, prosthesis)
the capsule (patellar tendon)

❖ Extra-Articular (muscle)



Articular



Extra articular

Classification

⊕ Range of Motion

❖ Clinical examination

Stiffness after TKA: 10-90

TKA on stiff knee: 30-60

❖ Dynamic evaluation: $< 5^\circ$ / week



Classification

⊕ Etiology

RSD

Infection



❖ NON Prosthesis dependant

Pre op: Multiple surgery, Hip

Post op: Rehabilitation and Pain

❖ Prosthesis dependant

Design and Size

Constraint: Pcl R, Bicruciate R

Positioning: Gap

Classification

⊕ Timing or Duration of symptoms

❖ Per-op stiffness

❖ Post-op stiffness

● Early Stiff TKA < D 45

● Late D 45 < stiff TKA < 6 months

● Chronic after 6 months

Our series: 1188 Primary TKA

From 1987 to 2004 Mean FU: 31 (3-122)

Posterior stabilized HLS-Noetos
n=63 (F:49, M:14)

5.3%

Infection and RSD were ruled out and excluded

1. Manipulation under anaesthesia 46
2. Arthroscopic release 3
3. Open arthrolysis 5
4. Component revision 2

N= 56

PreTKA ROM : 113° (50-140)

During TKA : 122° (min 110°), no flexum

1. Manipulation under Anaesthesia

- ◆ N=46
- ◆ Time between TKA and MUA 30 days (10-90)

	During TKA	Before MUA	During MUA	At FU
ROM	122 \pm 5	67 \pm 11	117 \pm 8	114 \pm 16
Extension deficit	0	2 \pm 3		1 \pm 3

- ◆ Pain score at FU 44: (\pm 8)

1. Mobilisation under anaesthesia

WHEN ?

Within 2 weeks: Fox JL JBJS Am 1981

After 3 weeks: Esler CN JBJS Br 1999

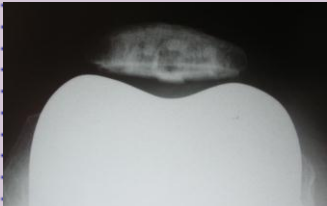
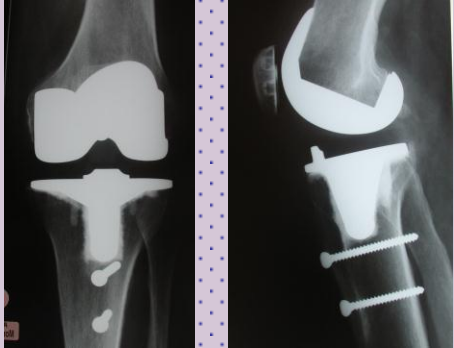
Within 3 weeks: Daluga J J Arthroplasty 1991

No consensus in literature

For us, if there is a good ROM before TKA and completed wound healing is achieved and if we observed no progression or regression we recommend MUA within 10-90 days period.

1. Mobilisation under anaesthesia

How ?



Xrays control +++

1. Mobilisation under anaesthesia

How ?



2. Results of Arthroscopic Release

- ◆ N= 3
- ◆ No retinaculum release

cases	Preop ROM	Final FU	Pain score
Case 1	0/0/70	0/0/125	45
Case 2	0/0/75	0/0/120	40
Case 3	0/5/45	0/0/120	30

2. Arthroscopic release

Technique

How ?

- o Tourniquet, Pump, Shaver, Smillie-like
- o 4 approaches
- o Medial and Lateral Retinaculum releases
- o PCL release ?
- o Complementary Mobilisation
- o To close carefully, Drainage ?

2. Arthroscopic release

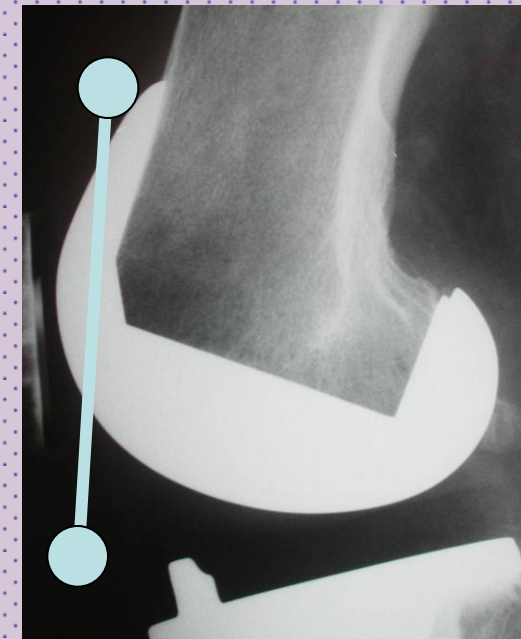
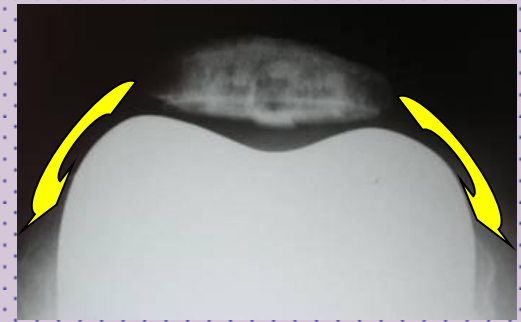
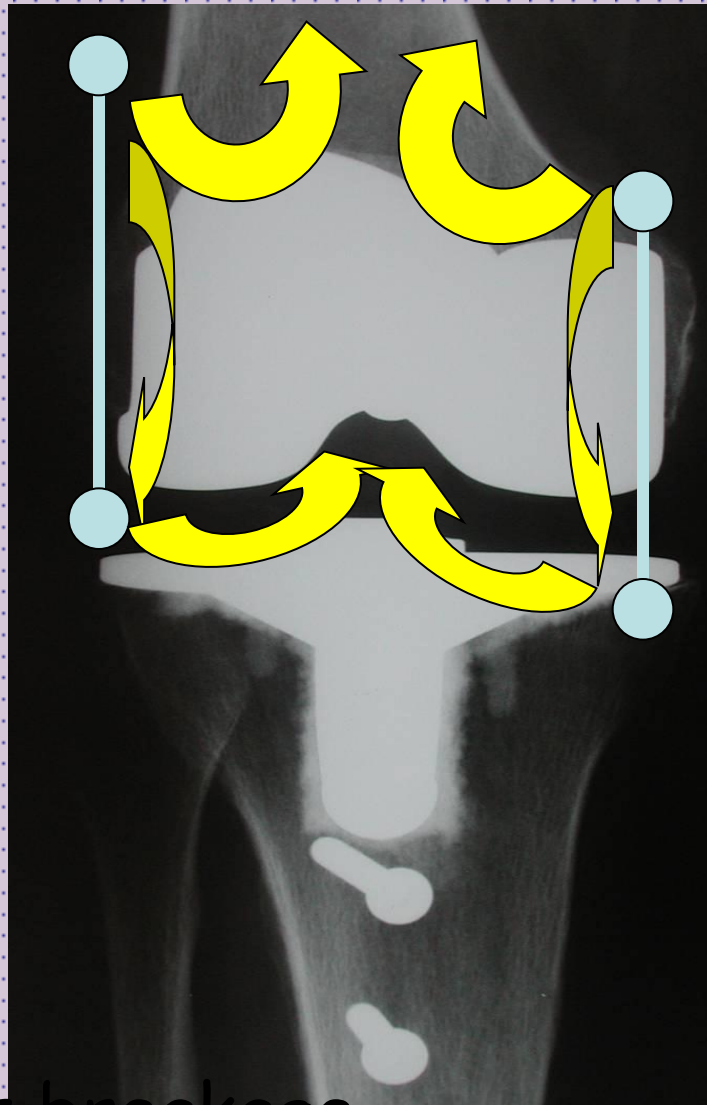
Technique

- Mirror effect



P.
Burdin

- Prosthesis
 - o Instrument breakage



2. Arthroscopic release

Post operative cares

- o Post-operative pain control (femoral nerve)
- o Posture or CPM
- o Avoid excessive doses of LMWH
- o Rehabilitation +++

2. Arthroscopic release

⊕ Our Results (n:3)

- ❖ ROM: Flexion + 30°
Extension + 5°
- ❖ No severe complication

2. Arthroscopic release

⊕ Indications

- ❖ Non Prosthesis dependant
- ❖ Technically difficult
- ❖ No ... complication
- ❖ Incomplete improvement
- ❖ Period: D45...D90D180 (except if PCL section)

3. Open Arthrolysis

- ◆ Previous scars: one or two approaches
- ◆ Supra patellar poach and Gutters
- ◆ Removal of tibial insert

Allows to reach posterior capsule or retroL arthrotomies

Facilitates patellar eversion and management of patellar complications

Thinner tibial insert (?? Babis 2001 JBJS Am)

3. Results of open arthrolysis

- ◆ N= 5
- ◆ Retinaculum release +++

	Gesture	Preop ROM	ROM at FU	Pain Score
Case 1	Arthrolysis	0/0/70	0/10/70	45
Case 2	Arthrolysis	0/0/90	0/0/90	45
Case 3	Arthrolysis	0/0/40	0/0/115	40
Case 4	Arthrolysis + clunck	0/0/60	0/0/130	50
Case 5	Arthrolysis + clunck	0/0/70	0/0/130	40

4. Results of component revision

- ◆ N= 2
- ◆ Arthrolysis + -----

	Gestures	Preop ROM	At FU	Pain Score
Case 9	+ patellar component removal	0/0/70	0/0/120	50
Case 10	+ Revision of Tibial component + clunck	0/15/70	0/0/120	50

4. Component revision

Prosthesis dependant

- o Extension deficit (Incomplete posterior capsule release and osteophytes excluded)

 tightened Extension Gap

- ⊕ Improper distal femoral cut
- ⊕ Too thick tibial component

4. Component revision

Prosthesis dependant

- o Flexion deficit (Incomplete posterior capsule release and osteophytes excluded, excessive tightness of PCL)



Tightened Flexion gap



Tightened Anterior gap



Patellar problems



Tibio-femoral
gap in flexion

Tibio-femoral
gap in extension



Femoral GAP

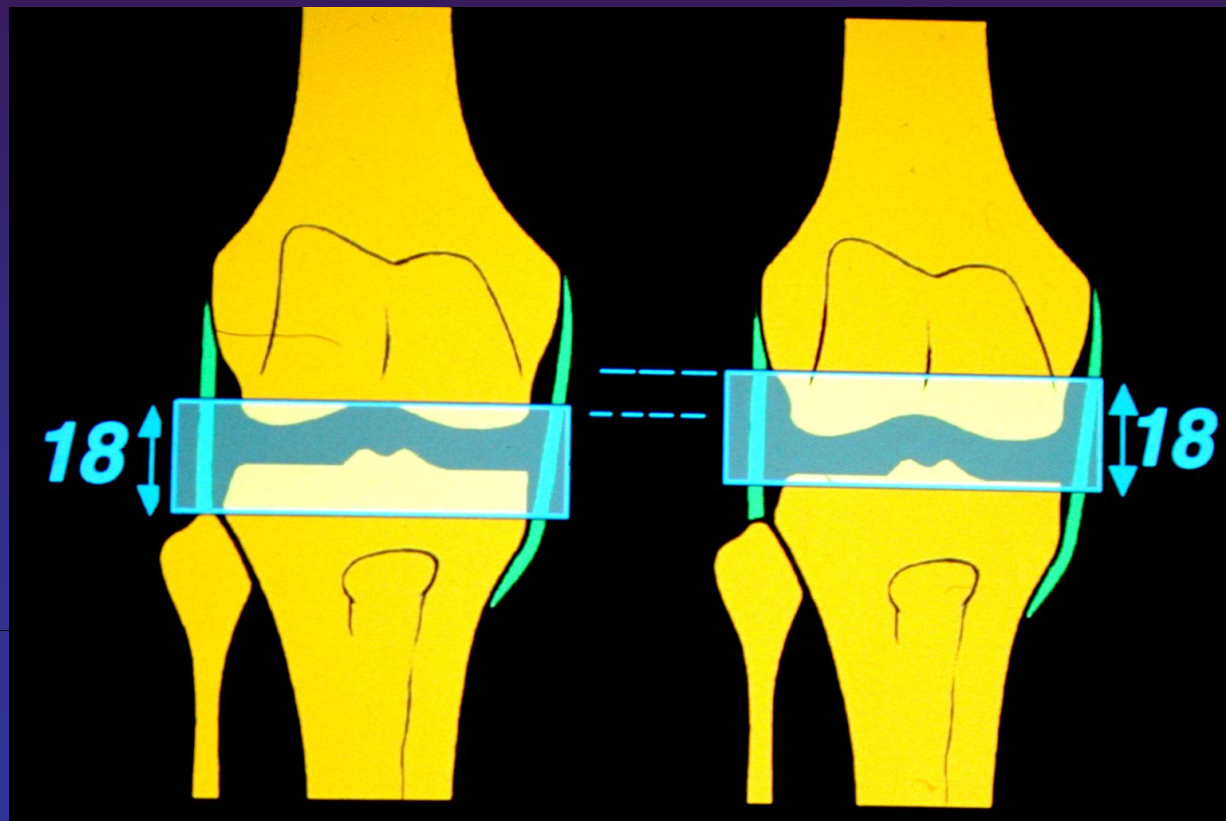
Tibial GAP

Femoral GAP

Tibial GAP

Prosthetic joint line

“Influence of the height of the joint space on the three-dimensional kinematics of total knee prostheses and behavior of the lateral collateral ligaments: an in vitro study”



4. Component revision

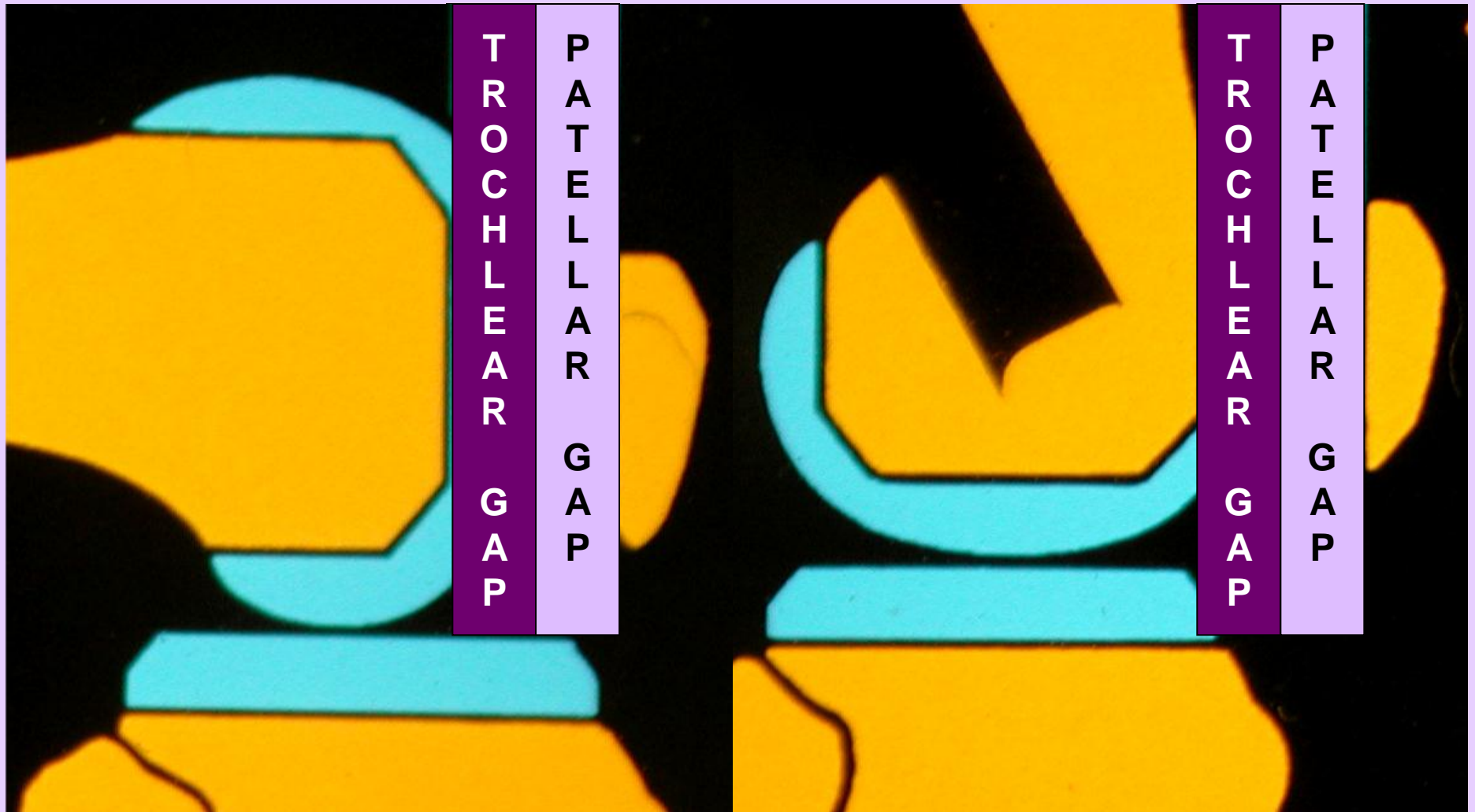
◆ Lack of Flexion

- tightened Flexion gap
- tightened anterior gap

“Anterior gap” described by C. Vielpeau and P. Rivat maitrise orthopedique

Anterior Gap in flexion

Anterior Gap in extension



4. Component revision

◆ Flexion deficit

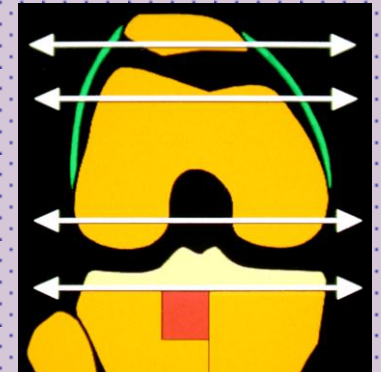
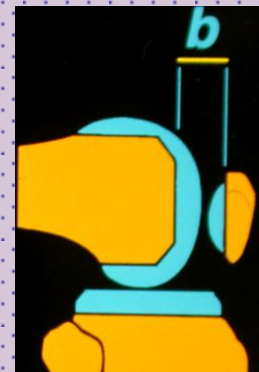
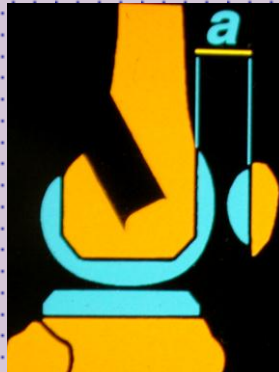
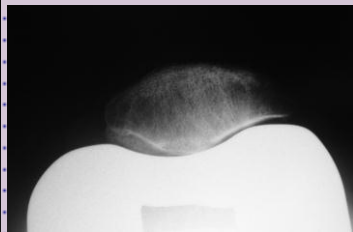
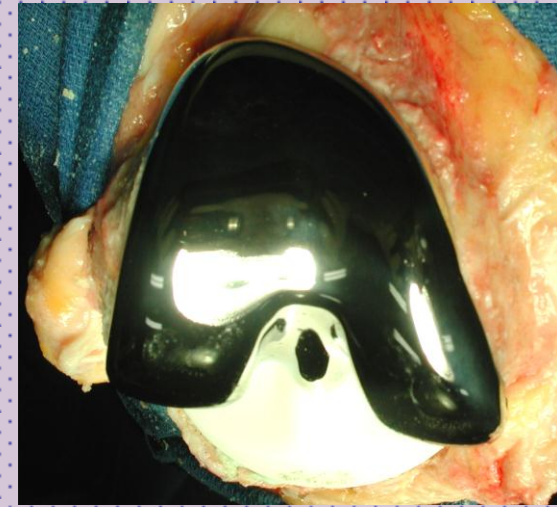
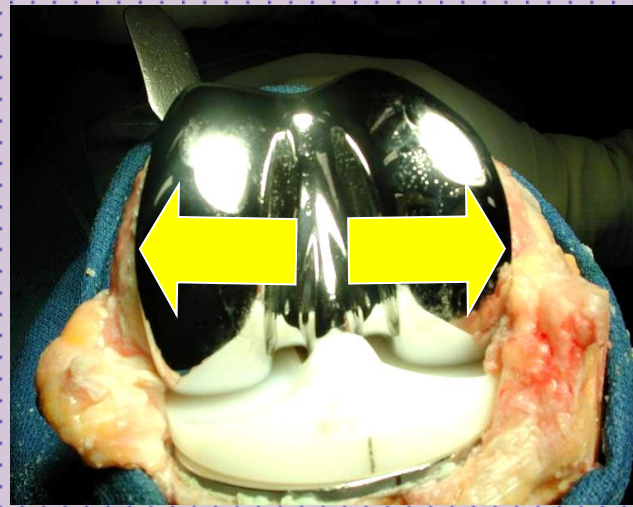
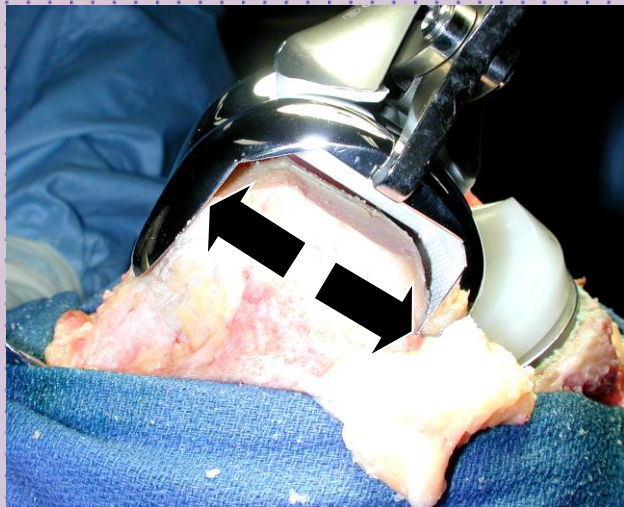
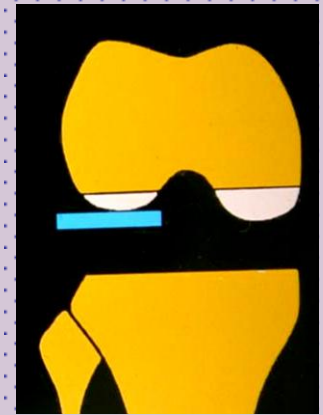
→ tightened flexion gap
→ tightened anterior gap
→ Patellar problems (55%)

- ◆ Patella infera
- ◆ Too thick patella
- ◆ Too prominent femoral component
- ◆ Unsurfaced Patella ??
- ◆ Lateralized patellar component
- ◆ Patellar tilt due to femoral component malrotation

Good prognostic factor for revision of stiff knee

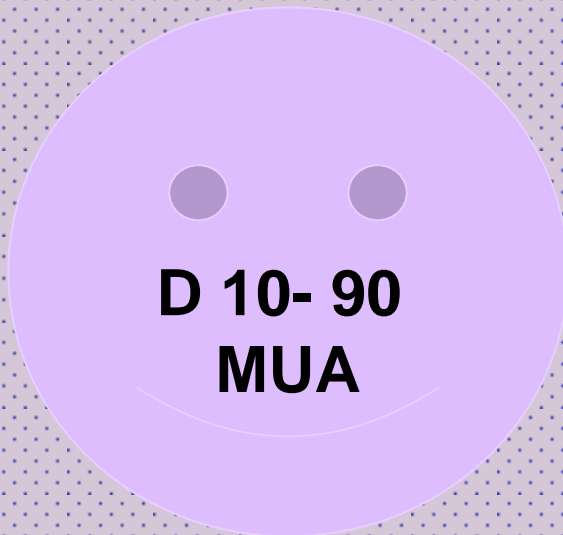
Bonnin M, Deschamps, Neyret Ph and al RCO 2000

4. Component revision



Conclusion

◆ Non Prosthesis dependant



◆ Prosthesis dependant Ext= Flexion Gaps

