

4th Advanced Course on Knee Surgery Val d'Isère 2012

Infra-Patellar Contracture Syndrome

Ph. COLOMBET

Bordeaux Merignac Sports Medicine Center

Definition

- abnormal **fibro sclerotic healing** response through:
 - The **anterior retinaculum**,
 - **Patello-menisal ligaments**, and
 - **Fat pad** tissues,
- which entraps the patella and leads to **loss of extension and flexion** of the knee and
- in advanced stages, to patella baja and **patello-femoral arthrosis**.

C. Prodromos The ACL 2007

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Definition

- It is a **localized form of arthrofibrosis**
- A large majority complain of **anterior knee pain**
- Common in anterior **knee pain Athletes**
- Associated with **Quad weaknesses**

DeHaven94

Biedert RM. Sources of anterior knee pain. Clin Sports Med. 2002;21:335-347

Göçus, A., Lobenhoffer, P. (1993) Arthroskopische Therapie der Arthrofibrose des Kniegelenks Unfallchirurg 96(2), 392-6

Lobenhoffer, P., Göçus, A., Gerich, T. (1993) Die Therapie der Arthrofibrose nach Bandeingriffen am Kniegelenk Orthopäde 22 (6), p. 392-399

J. Richard Steadman, AJSM 2009, 36,9, 1763-69

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Etiology

I.P.C.S can occur:

- **Primarily** as an **exaggerated pathologic fibrous hyperplasia** of the anterior soft tissues of the knee beyond that associated with normal healing.
- **Secondarily** to prolonged immobility and lack of extension associated with knee surgery, particularly intra-articular **ACL reconstruction** or **TKR**

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The anterior intervale

- Normal anatomy of the anterior interval (A) and
- retraction of the patellar tendon with anterior interval scarring (B).

Richard Steadman, AJSM 2009

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The anterior intervale

- **MRI**


Low T1-signal on the posterior border of fat pad, is related with scar tissue

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The anterior interval

The Hoffa test:

- the thumb was placed at the margin of the infra-patellar fat pad and the patellar tendon with the knee bent 30°. Pressure was applied with the thumb, and the knee was fully extended. Increased pain in the fat pad indicated a positive test result



Richard Steadman, AJSJ 2009

Treatment

Consist in different **isolated or combined techniques:**

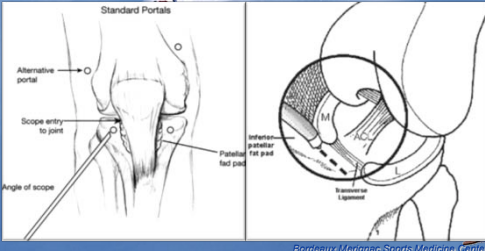
- Arthroscopic or open Anterior **arthrolysis**
- Patellar tendon “**Z-plasty**”
- Transposition** of Anterior Tibial Tuberosity
- Patellar tendon **distraction**

Richard Steadman, AJSJ 2009

Arthrolysis for flexion deficit

Arthroscopic Fat Pad resection

Richard Steadman, AJSJ 2009



Richard Steadman, AJSJ 2009

Arthrolysis for flexion deficit

Arthroscopic Fat Pad resection

Richard Steadman, AJSJ 2009



Richard Steadman, AJSJ 2009

Arthrolysis for flexion deficit

Arthroscopic Fat Pad resection

Richard Steadman, AJSJ 2009

Results

- 25 patients were identified with isolated scarring of the anterior interval
- All patients had a minimum of 2 previous surgical procedures, and 11 (44%) of the patients had a previous ACL reconstruction.
- average follow-up of 4.0 years (range, 2.0-7.2)

Richard Steadman, AJSJ 2009

Arthrolysis for flexion deficit

Arthroscopic Fat Pad resection

Richard Steadman, AJSJ 2009

Results

- 21 patients had full range of motion of the patella in all directions and a negative Hoffa test.
- All patients recovered a normal range of motion, no complication
- Four patients (16%) had a failure and required a second surgical release

Richard Steadman, AJSJ 2009

Arthrolysis for flexion deficit
Z-plasty patellar-tendon (Dejour)

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Arthrolysis for flexion
Z-plasty patellar-tendon (Dejour)

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Arthrolysis for flexion
Transposition of T.A.Tuberosity

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Arthrolysis for flexion
Transposition of T.A.Tuberosity

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Technique - Flexion
Transposition of T.A.Tuberosity
 F. 26 y. post infection, 15 mm. Cranial. tibial Tub.

preop 0/0/90° preop MR 6 mo.postop 0/0/125°

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Technique - Flexion
 M.17 y. Infection post arthroscopy, 7 revisions,
 0 / 10/ 30°
 Transposition ~~tibia~~ tuberosity 2 cm.
 resection M.vastus intermedius (Thompson)

postop 6 Mo, 0/0/130° 12 Mo, 0/0/130°

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Technique - Flexion

M.17 y. Infection post arthroscopy, 7 revisions,
0 / 10/ 30°
Transposition ~~tubal~~ tuberosity 2 cm.
resection M.vastus intermedius (Thompson)




12 Mo, 0/0/130°

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Technique - Flexion

Patellar tendon distraction (D. Paley 2000)




F. 26 y. 0/0/85°

Caton-Index 0.6

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Technique - Flexion

Patellar tendon distraction (D. Paley 2000)



3 weeks: 0/0/100° 9 weeks: 0/0/125°, Caton-Index 0,9

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Results

Flexion arthrolysis

D. Freiling et al, Unfallchirurg 4/2006

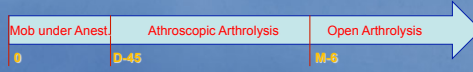
- 19 pat., all salvage cases, fu min. 6 months
- Pre-op flexion min. 30°, max. 90°
- Post-op flexion min. 120°, max. 130°
- mean flexion increase 26°
- no complication

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IPCS and TKR

Symposium SFA 2002 P.Djian, C.Hulet

- Early action, in cases without technical error
- Beware of Complex Regional Pain Syndrome
- Arthroscopy is better then Open surgery



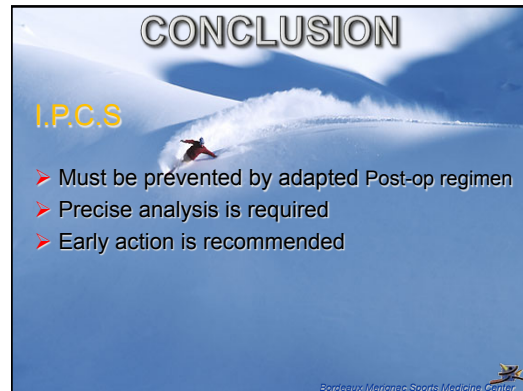
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Rehabilitation

- Painful exercises are prohibited
- Program are specifically tailored to each patient
- initial phase focused on range of motion exercises and patellar mobility
- CPM can be helpful
- Femoral nerve block
- Fight against Quad inhibition
- Return to Sport after 4 months



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CONCLUSION

I.P.C.S

- Must be prevented by adapted Post-op regimen
- Precise analysis is required
- Early action is recommended

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Thanks for your attention!

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