Is Deep MCL Reconstruction an Effective Option for Treating Chronic Grade 2 MCL Laxity in Combined ACL-MCL Injuries?

A Comparative Cohort Study with Over Two Years of FU

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ACLSG Iguazu
February 5, 2026

Disclosure

Consulting for FH, SBM, Stryker

Royalties from FH

Introduction

Combined MCL-ACL injuries are frequent : 20-67%

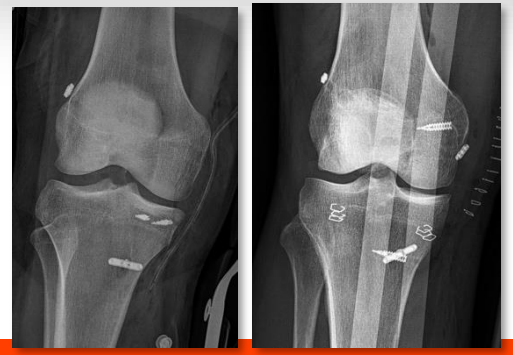
MCL GRADE I

ACLR
+ medical TT
for MCL

MCL GRADE II

Acute

ACLR + MCL Repair



Chronic

MCL GRADE III
Avulsion
Stener-like

ACLR
+ MCL
SURGERY

Guenther et al. OJSM, 2021
Chahla KSSTA, 2020
Wierer et al., KSSTA, 2021
Willinger et al., KSSTA, 2022

Introduction

Chronic Combined MCL-ACL grade II = What to do ?

- Residual valgus laxity after ACLR = Increased forces in ACL… Rerupture

Shapiro JBJS 1991, Beel AJSM 2024, Svantesson KSSTA 2019

Introduction

Chronic Combined MCL-ACL grade II = **What to do ?**

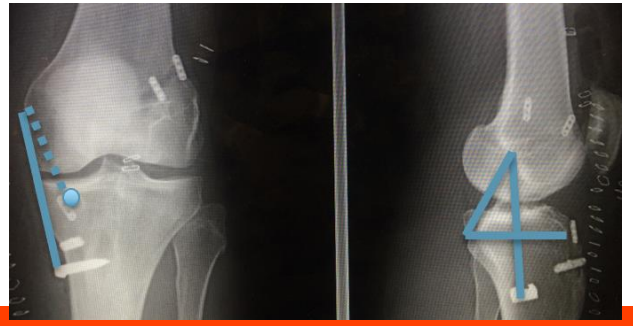
- Residual valgus laxity after ACLR= Increased forces in ACL… Rerupture

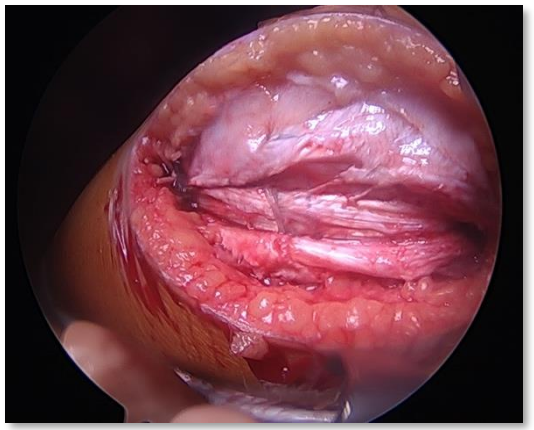
- Open surgeries for MCL reconstruction = Good results and control of laxity

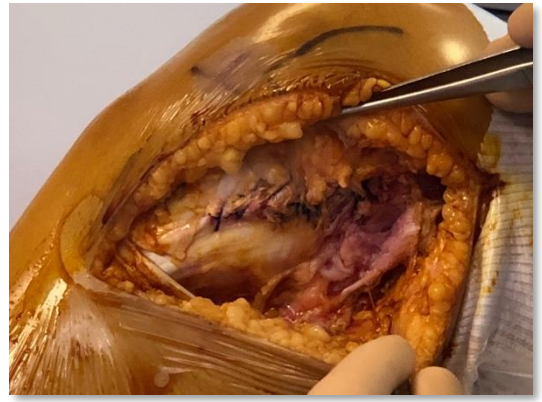
BUT increased risk for :

- Pain and Stiffness
- Decreased functionnal scores

Ramakanth, Arthroscopy, 2025
Wright, ASMR, 2023
Funchal, KSSTA, 2025



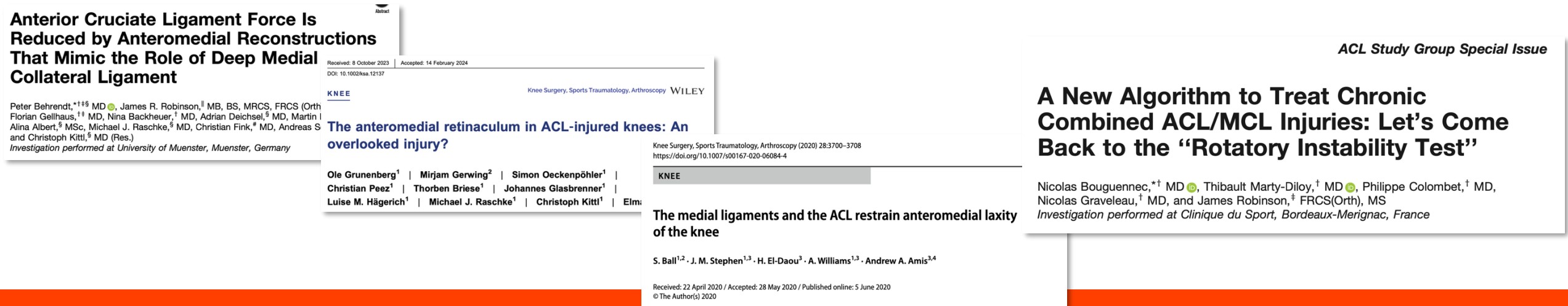




Introduction

Chronic Combined MCL-ACL grade II = **What to do ?**

- Residual valgus laxity or AMRI after ACLR= Increased forces in ACL… Rerupture
- Open surgeries for MCL reconstruction = Good results and control of laxity BUT…
- Recent studies emphazised the role of **dMCL**



Anterior Cruciate Ligament Force Is Reduced by Anteromedial Reconstructions That Mimic the Role of Deep Medial Collateral Ligament

Peter Behrendt,*†‡§ MD, James R. Robinson,‖ MB, BS, MRCS, FRCS (Orth
Florian Gellhaus,†‡ MD, Nina Backheuer,† MD, Adrian Deichsel,§ MD, Martin
Alina Albert,§ MSc, Michael J. Raschke,§ MD, Christian Fink,# MD, Andreas S
and Christoph Kittl,§ MD (Res.)
Investigation performed at University of Muenster, Muenster, Germany

Received: 8 October 2023 | Accepted: 14 February 2024
DOI: 10.1002/ksa.12137

KNEE

Knee Surgery, Sports Traumatology, Arthroscopy WILEY

The anteromedial retinaculum in ACL-injured knees: An overlooked injury?

Ole Grunenberg[1] | Mirjam Gerwing[2] | Simon Oeckenpöhler[1] | Christian Peez[1] | Thorben Briese[1] | Johannes Glasbrenner[1] | Luise M. Hägerich[1] | Michael J. Raschke[1] | Christoph Kittl[1] | Elma

Knee Surgery, Sports Traumatology, Arthroscopy (2020) 28:3700–3708
https://doi.org/10.1007/s00167-020-06084-4

KNEE

The medial ligaments and the ACL restrain anteromedial laxity of the knee

S. Ball[1,2] · J. M. Stephen[1,3] · H. El-Daou[3] · A. Williams[1,3] · Andrew A. Amis[3,4]

Received: 22 April 2020 / Accepted: 28 May 2020 / Published online: 5 June 2020
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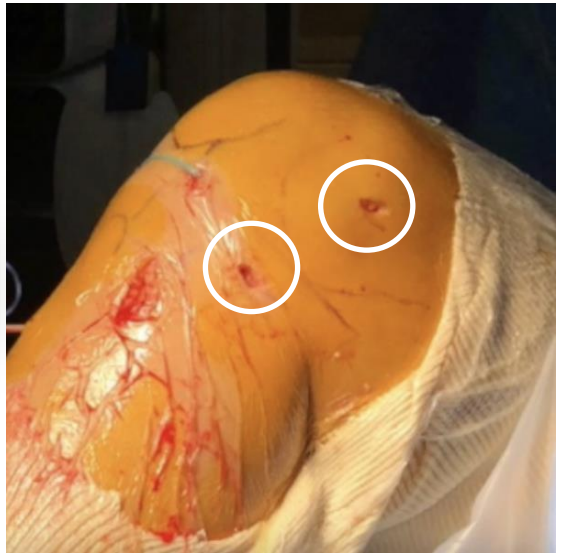
ACL Study Group Special Issue

A New Algorithm to Treat Chronic Combined ACL/MCL Injuries: Let's Come Back to the "Rotatory Instability Test"

Nicolas Bouguennec,*† MD, Thibault Marty-Diloy,† MD, Philippe Colombet,† MD, Nicolas Graveleau,† MD, and James Robinson,‡ FRCS(Orth), MS
Investigation performed at Clinique du Sport, Bordeaux-Merignac, France

Introduction



Chronic Combined MCL-ACL grade II = **What to do ?**

- Lot of techniques described for the medial plan !

Including « Mirror ALL » technique

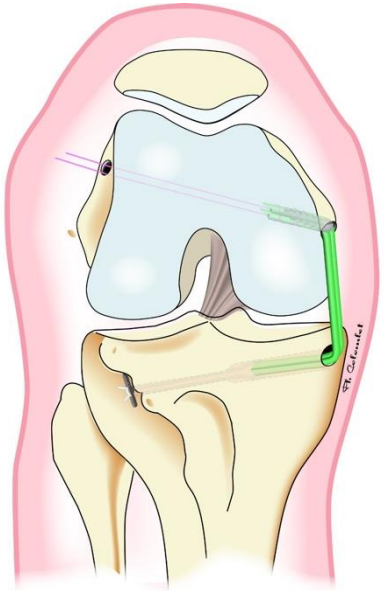
(because same implants and instruments than ALL)

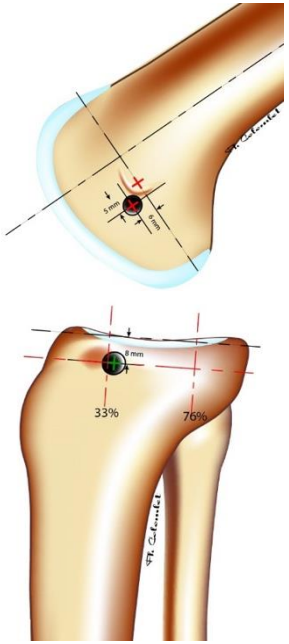
= dMCL reconstruction

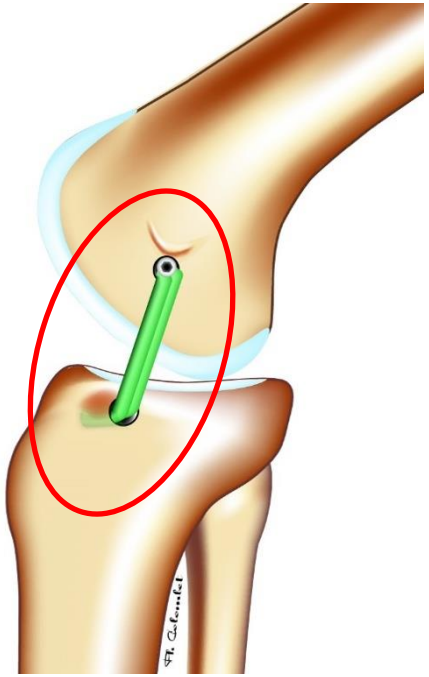
The Mirror Anterolateral Ligament: A Simple Technique to Reconstruct the Deep Medial Collateral Ligament Using the Gracilis Associated With a Four-Strand Semitendinosus for Anterior Cruciate Ligament Reconstruction

Jérémy Daxhelet, M.D., Nicolas Bouguennec, M.D., and Nicolas Graveleau, M.D.

Arthroscopy Techniques, Vol 11, No 8 (August), 2022: pp e1419-e1424







Purpose

→ Evaluate whether « Mirror ALL » performed with ACLR could correct medial laxity in chronic combined Grade II MCL ACL injuries

- Clinical effectiveness and patient satisfaction
- Return to Sport
- Comparison with isolated ACLR

Material & Method

Population

Primary ACLR

July 2020 to April 2023

2 Surgeons NB-NG

Same indications
Same techniques
Same postoperative

> 2 years FU

Selection

Combined ACL MCL
Chronic (> 6 w)
Grade II
ACLR + « Mirror ALL »

Matched ACLR 1:1
- Age
- Sex
- BMI
- Meniscal lesion

FU

ACL RErupture
PROMs
- IKDC
- ACL-RSI
- Tegner
- SKV

Return to sport

Medial side control

Rotational control (AMRI)

Results

2,248 ACL-R during the studied period

79 patients in each group

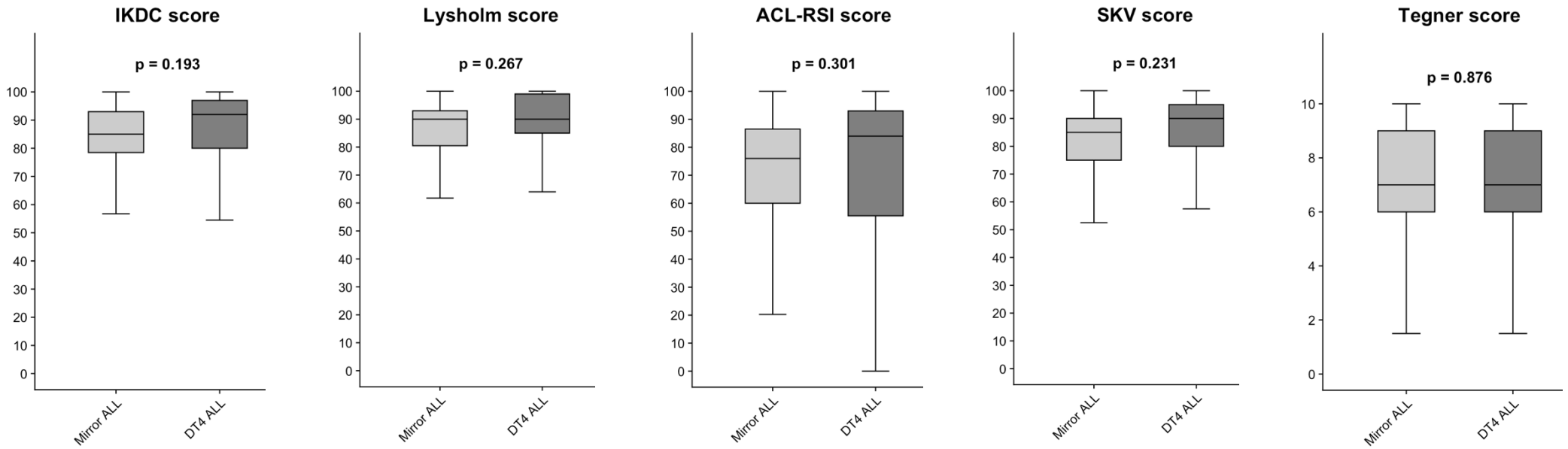
Frequency Mirror ALL ? = **3.5%** of primary ACL

Mean FU = **2.8 y**

	« Mirror LAL » group	ACL + ALL group
	N = 79	N = 79
Age	27,9 ± 10,2 ans	27,8 ± 10,3 ans
Male	68 (86,1%)	67 (84,8%)
BMI	25,1 ± 4,3	24,9 ± 3,8
Time injury-surgery	5,2 ± 10,7 mois	5,6 ± 10,6 mois
≥ 1 meniscal lesion	62 (78,5%)	62 (78,5%)

Results - PROMS

Functionnal scores not worse for the Mirror ALL group



NO Statistical Difference at the maximum FU

Results - RTS

Same RTS for Mirror ALL group

	« Mirror LAL » (n = 79)		ACL + ALL (n = 79)		*p*
	N (%)	Mean Time	N (%)	Mean Time	
Work	77 (97,5)	3,5 ± 3,2 mois	79 (100)	3,3 ± 3,0	0,786
Return to sport	74 (93,7)	10,9 ± 4,4 mois	71 (89,9)	9,9 ± 4,0 mois	1,000
Level of RTS vs preop					0,12
Superior	0 (0)		8 (10,1)		
Same	50 (63,3)		50 (63,3)		
Inferior	11 (13,9)		11 (13,9)		
Other sport	13(16,5)		2 (2,5)		
No sport	5 (6,3)		8 (10,1)		

NO Statistical Difference at the maximum FU

Results - REOPERATION

No more ACL RERUPTURE in the Mirror ALL Group

	« Mirror LAL » (n = 79)		ACL + ALL (n = 79)		*p*
	N (%)	Mean Time	N (%)	Mean Time	
ACL RERUPTURE	8 (10)	16,6 ± 5,2 mois	6 (7)	16,5 ± 8,7	0,786
Anterior arthrolysis	4 (5)	9 ± 2,1 mois	4 (5)	14,2 ± 10,4 mois	1,000
Contralat. rupture	3 (3)	18 ± 12,1	5 (6)	27 ± 9,8	0,719
Postop Infection	0 (0)		1 (1)	0,5 ± 0	1,000

NO Statistical Difference

Results
Control of the medial Laxity ?

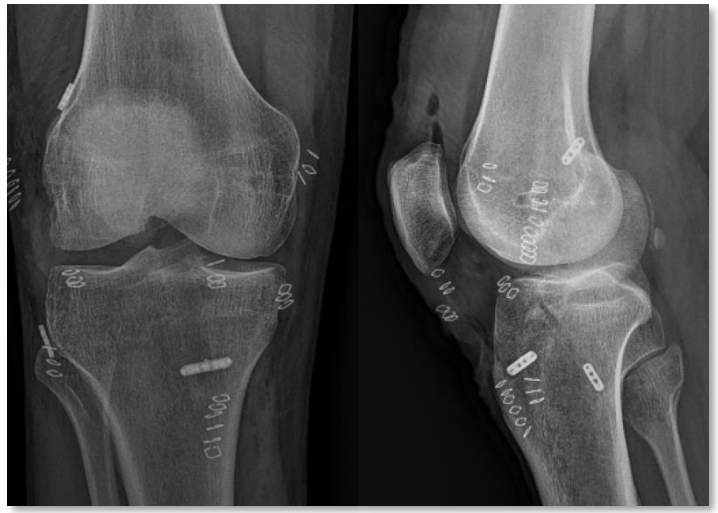
- 2 (2,5%) résidual valgus laxity at 2 y FU

- **13%** of residual laxity in ER at 90°

  (without any valgus laxity)

- **20%** of patients had residual pain…

  Tibia ++ >> Femur



Discussion

Control of the valgus OK ! ✓

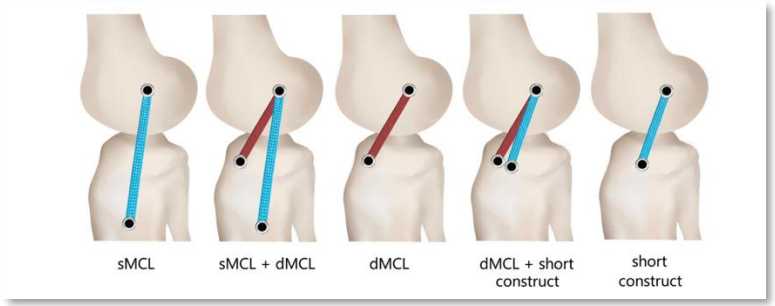
But 13% of residual ADER test at 2.8 y

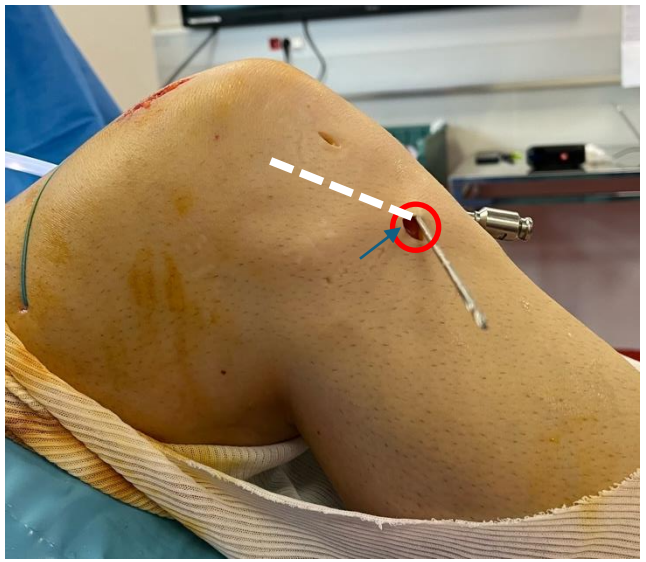
AOL ? *Jorge, JOR, 2022*

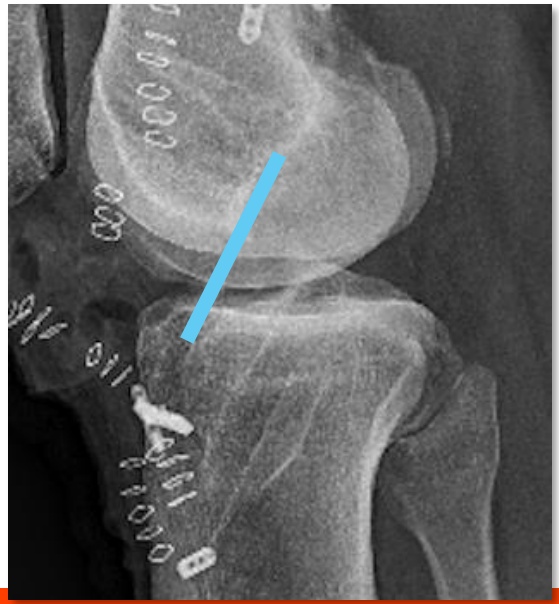
Move anteriorly at the tibial side of the MCL reconstruction

A Comparative Biomechanical Study of Alternative Medial Collateral Ligament Reconstruction Techniques

Jobe Shatrov,*† MB, BS, FRACS, Petra Bonacic Bartolin,* PhD, Sander R. Holthof,* MEng, Simon Ball,† MA, FRCS(TR & Orth), Andy Williams,† MB, BS, FRCS (Orth), and Andrew A. Amis,*‡ FREng, DSc(Eng)
Investigation performed at Imperial College London, London, United Kingdom







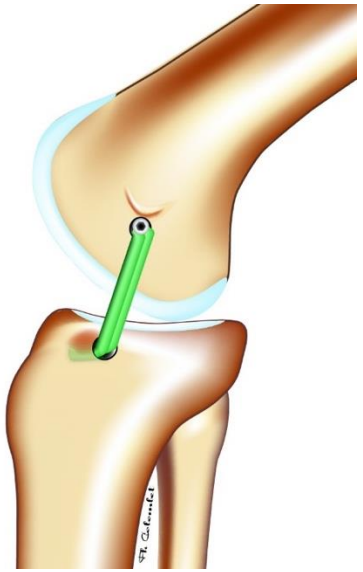
Discussion

20% residual pain medial side of the knee
5% anterior arthrolysis

- Criteria « pain » in the literature : comparison difficult
- 10 to 19% anterior arthrolysis in literature *Svantesson KSSTA 2018, Halinen AJSM 2006*
- Warn patients in case of combined ACL-MCL injury

  ➡ potential residual pain… even if stabilized

CONCLUSION



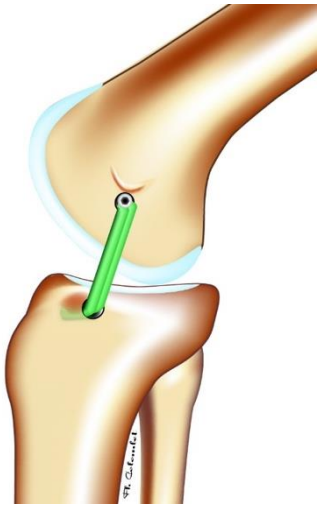
- « Mirror ALL » works clinically and functionnally

  <u>Control valgus laxity for grade II chronic MCL ACL injuries</u>

- Tibial insertion more anterior to decrease ER laxity ?
- Anterior pain = it remains a medial plan injury…
- Cohort of the same technique but short FU

  ➡ To confirm with longer FU

CONCLUSION



- Simple and percutaneous
- 3,5% of our primary ACL cohort … It’s not all the ACL !
- *Yes*, you’re right !

It’s different of biomechanical theory (sMCL+dMCL) … but…

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[Guest Editorial]

Isn’t It Time to Stop Pretending Ligament Reconstructions Are “Anatomic”?

—Andy Williams, MBBS, FRCS (Orth), FFSEM (UK)
Fortius Clinic, London, UK
—Kyle Borque, MD
Houston Methodist Hospital, Houston, Texas, USA

(1) Anatomic compromise in properly biomechanically evaluated techniques may be preferable to “anatomic” techniques (that are not truly anatomic and not biomechanically sound).
(2) It is time to stop using the misleading term “anatomic” to describe surgical techniques, as most are “pseudo-anatomic.”
(3) Good science wins! “Road-testing” in the laboratory to fine-tune procedures that are then followed up in clinical studies is the way to go.