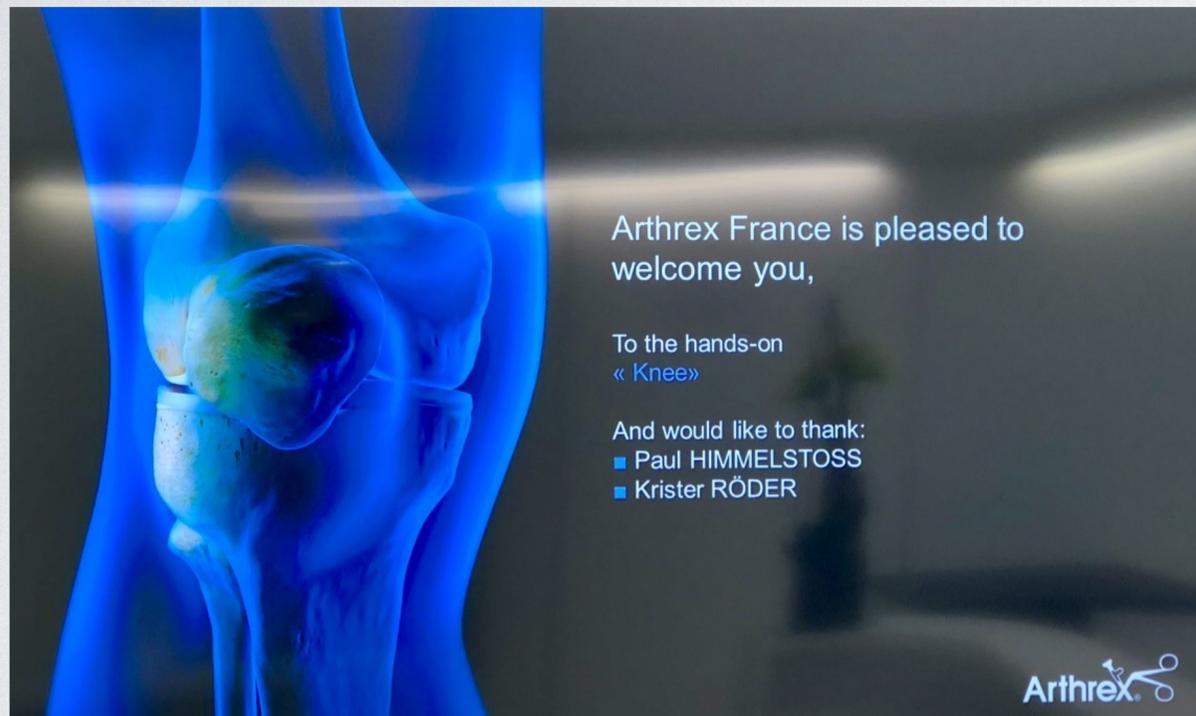


KLINISCHES OUTCOME NACH VKB REKONSTRUKTION???

- Im eigenen Patientenkollektiv - vermehrte Reruptur-Raten und folglich Revisionen (12% 2018-2019)
- Literatur: 18-28% Rerupturrate
- Pre injury level 50-65%
- Re-Operationsrate 19-27% (2-6 Jahre FU)



1.HOSPITATION BEI BERTRAND SONNERY-COTTET, LYON (NOVEMBER 2019)



...CA. 12000 VKB REKONSTRUKTIONEN KOMBINIERT MIT ALL



Dr Bertrand Sonnery-Cottet is a world-renowned consultant Orthopaedic Surgeon from Lyon, France specializing in the management of knee ligament injuries and sports trauma.

Born and raised close to Lyon, he completed medical school and received the academy degree of "Doctor of Medicine" in 1993 in Lyon. After his orthopaedic residency training in Paris with Pr G. Saillant at La Pitie Salpetriere Hospital, he participated in two sports medicine fellowships: the first in Edinburgh, Scotland at The Princess Margaret Rose Hospital and the second in Lyon with Dr P. Chambat, a pioneer and leader in France on ACL reconstruction.

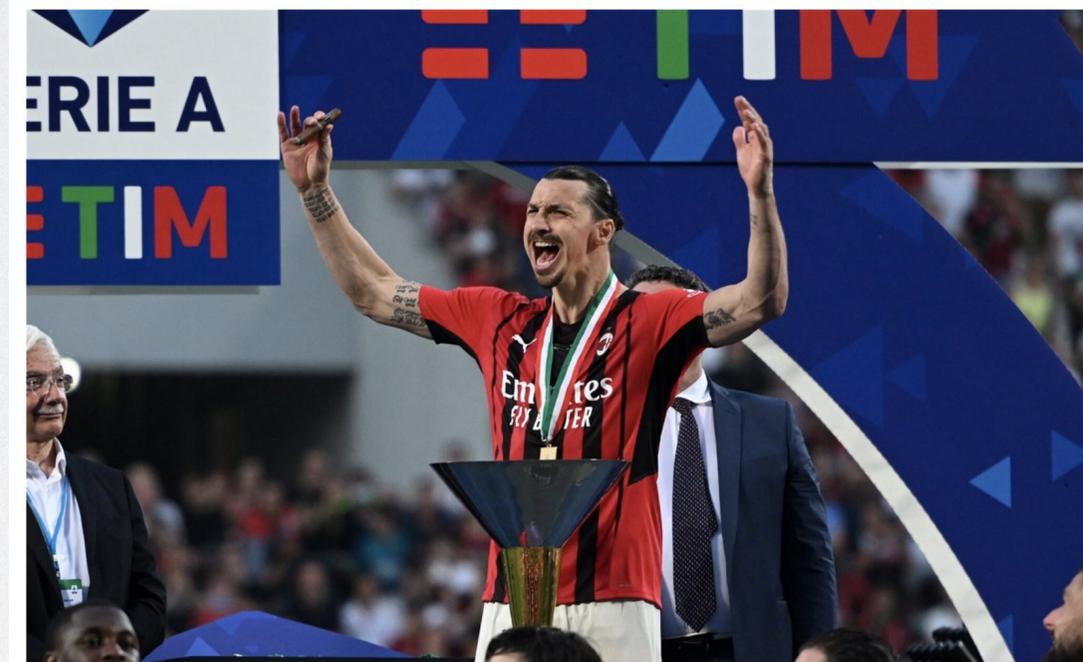
Currently, Dr Sonnery-Cottet holds a position of Consultant Orthopaedic surgeon at the Centre Orthopedique Santy, FIFA medical Center of Excellence in Lyon, France. His practice is focused on the exclusive treatment of knee soft tissue and muscle injuries. Performing more than 600 ACL and multi-ligament reconstructions per year including professional athletes from all sports, he is considered a global leader in the treatment of knee injuries.

He is also recognised as an active member of numerous national and international societies like ISAKOS, ESSKA and ACL Study Group. By Running an international fellowship program, his involvement in education and training of the young generation of surgeon is well known all around the world.

He is the founder of the SANTI (Scientific Anterior Cruciate Ligament Network International) Study Group, bringing together surgeons from 4 continents and participating in numerous of publications advancing the treatment of knee injuries.

He was awarded with the AANA Richard O'Connor Award in 2017, the AOSSM David Sisk Award and the AGA Best Research Award (3rd place) in 2019. With more than 200 publications and more than 300 presentations worldwide, he is recognised as one of the international leaders in his field.

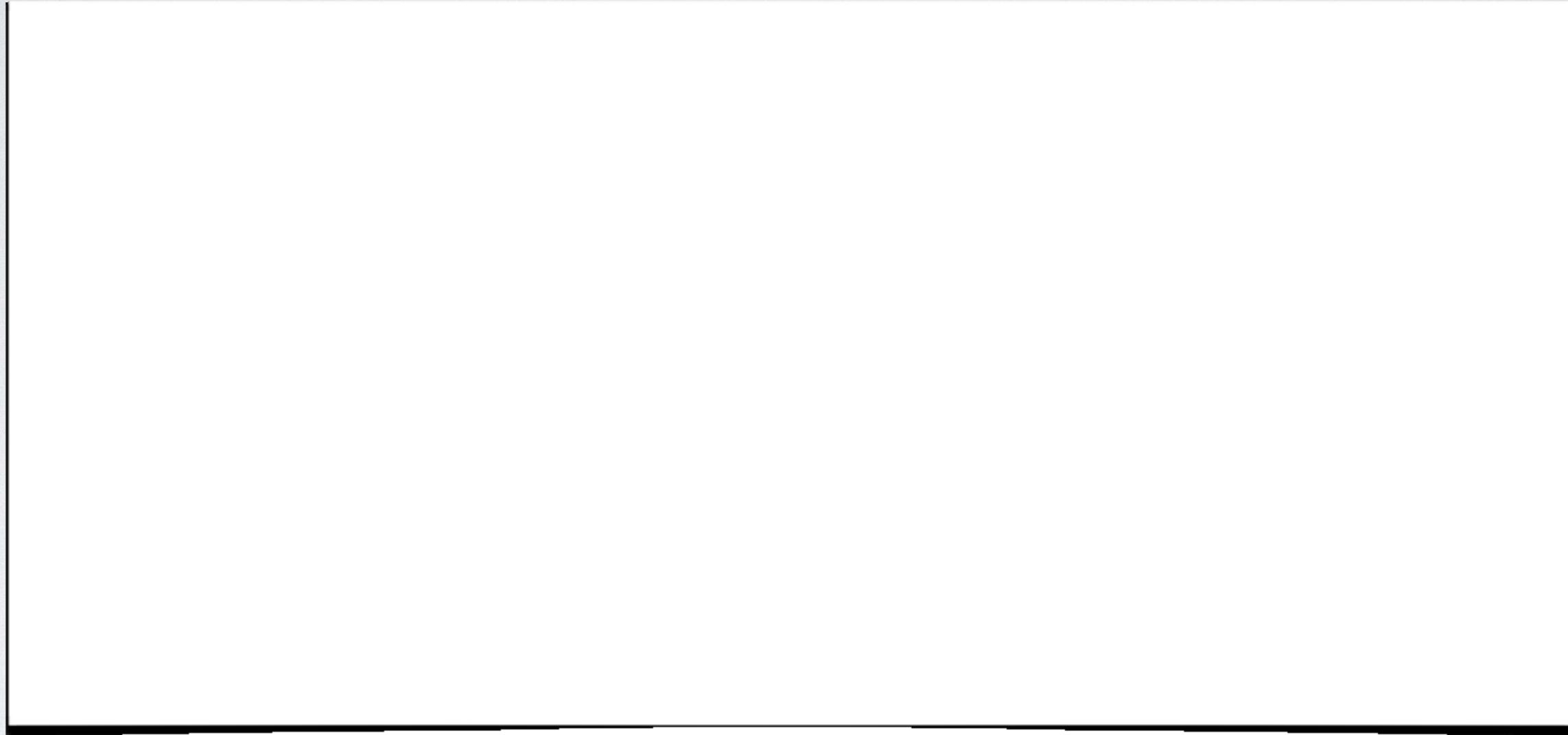
"Swollen knee for six months. I was only able to train with the team 10 times in the last six months. Took more than 20 injections in six months. Emptied the knee once a week for six months.

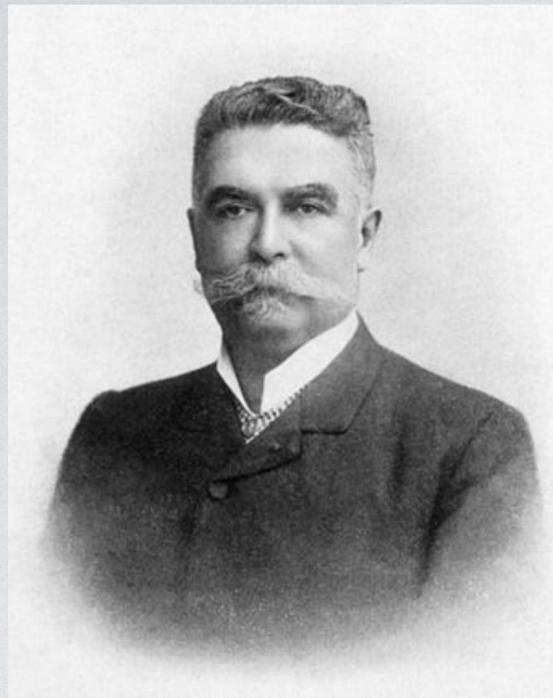


"Painkillers every day for six months. Barely slept for six months because of the pain. Never suffered so much on and off the pitch.

"I made something impossible to something possible. In my mind I had only one objective, to make my team-mates and coach champions of Italy because I made them a promise. Today I have a new ACL and another trophy."

GESCHICHTE DES ALL...





1879 Paul Segond: Bandartige Struktur im Bereich der anterolateralen Gelenkscapsel

1979 Jack Hughtson: Korrelation Segond Fraktur mit ausgeprägter Instabilität

1982 Werner Müller: beschrieb im Handbuch "Das Knie" das Band als "Lig. femorotibiale anterius"

1989: AOSSM Meeting in Snowmass Canada

VORLÄUFIGES ENDE

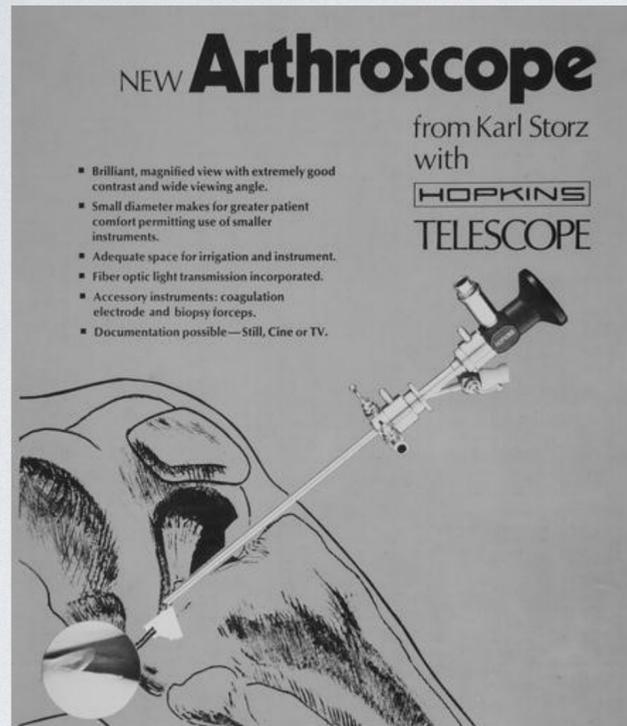
History of lateral extra-articular procedures



Widely abandoned after the 1989 AOSSM Snowmass consensus meeting

1. Lack of significant proven clinical benefit
2. Concerns regarding poor outcomes and high complication rates
 - donor site morbidity
 - overconstraint
 - cosmetic problems
 - stiffness
 - increased risk of septic arthritis
 - long-term chronic pain and swelling
 - poor long-term functional outcomes with lower subjective and objective results

FOKUS ARTHROSKOPIE



Welche Fixation? Schrauben, Button, Pins?
Transplantat? Double bundle? C-shaped? Flat?

LET 2.0

AUFBRUCH IN DIE NEUZEIT

- 2013 Claes u. Bellemanns: beschreiben ALL mit Ursprung am lateralen Epikondylus und Insertion am anterolateralen Tibiakopf (ALL in 97% der untersuchten Kniepräparate N=41)

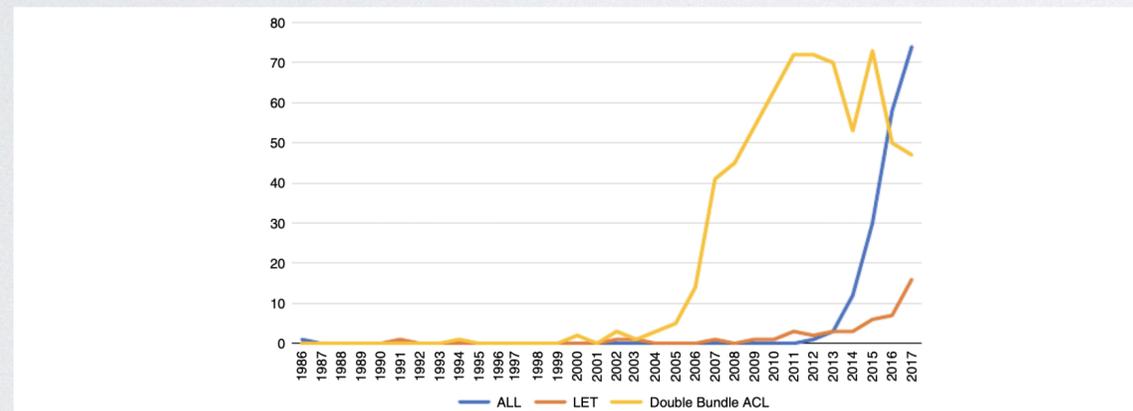
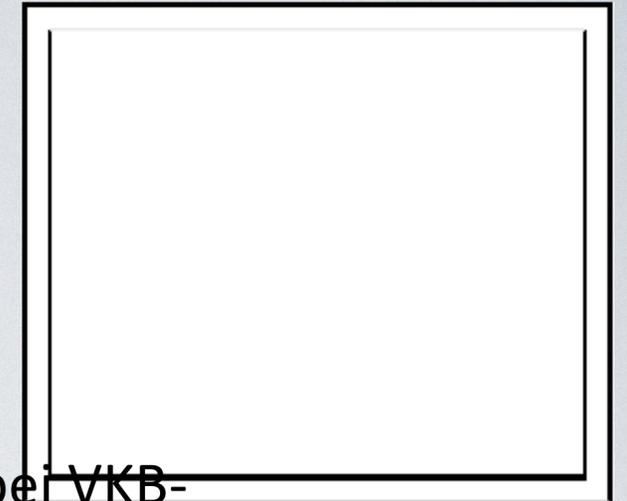


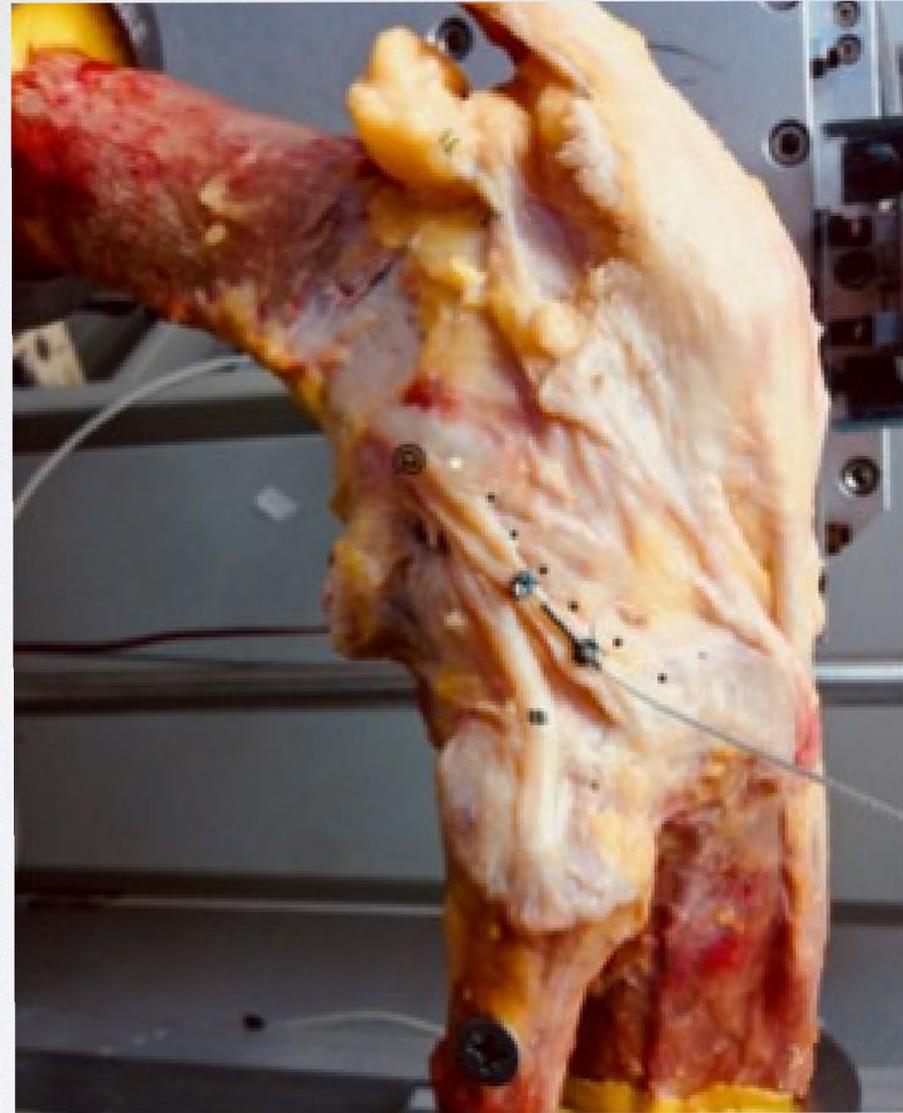
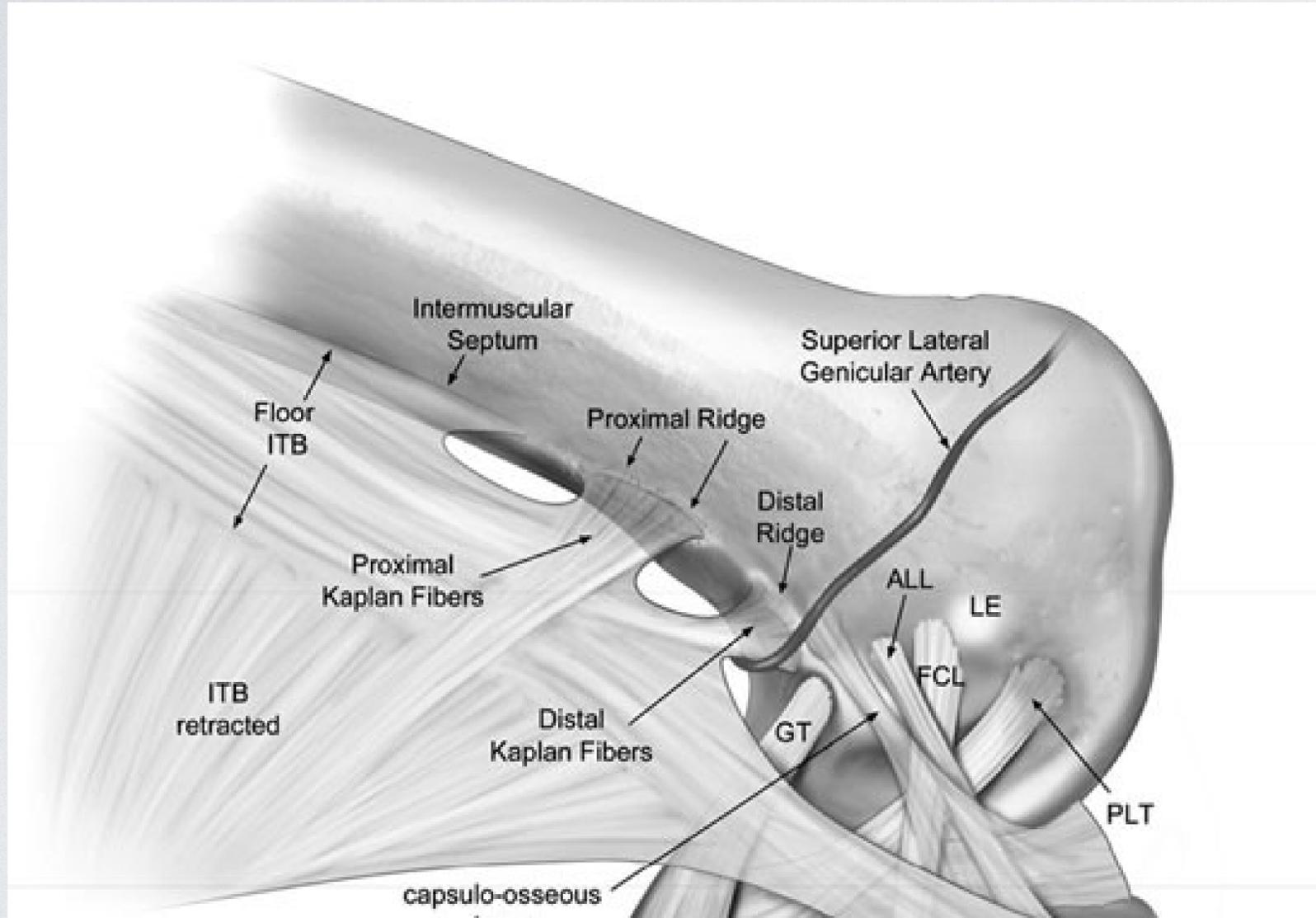
FIGURE 2. Publishing trends. ACL indicates anterior cruciate ligament; ALL, anterolateral ligament; LET, lateral extra-articular tenodesis.



ANATOMIE

- Der primäre Stabilisator gegen die anterolaterale Rotationsinstabilität ist das vordere Kreuzband
- Der anterolaterale Komplex bestehend aus mehreren Schichten bildet den Sekundärstabilisator bei VKB-Defizienz
- Das ALL ist Teil der tiefsten Schicht des anterolateralen Komplexes (Seebacher Schicht 3)
- Das ALL inseriert femoral knapp posterior und proximal der LCL- Insertion und tibial mittig zwischen Tuberkulum gerdii und dem proximalen Tibiofibulargelenk
- Aufgrund der engen anatomischen Verhältnisse und der Verbindungen zwischen den Schichten muss bei einer anterolateralen Rotationsinstabilität nicht nur von einer ALL-Läsion sondern von einer Verletzung mehrerer Anteile des anterolateralen Komplexes ausgegangen werden.





Verlauf des ALL (*schwarz) mit femoraler Insertion (@) posterior und proximal der LCL(#)-Insertion © 2020 AGA-Komitee-Knie- Ligament

Biomechanical Results of Lateral Extra-articular Tenodesis Procedures of the Knee: A Systematic Review

Erik L. Slette, B.A., Jacob D. Mikula, B.S., Jason M. Schon, B.S., Daniel C. Marchetti, B.A.,
Matthew M. Kheir, B.S., Travis Lee Turnbull, Ph.D., and Robert F. LaPrade, M.D., Ph.D.



Lemaire



McIntosh



Losee



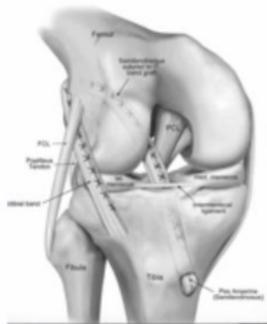
Arnold-Coker



Ellison



Wilson-Scranton



Zarins-Rowe



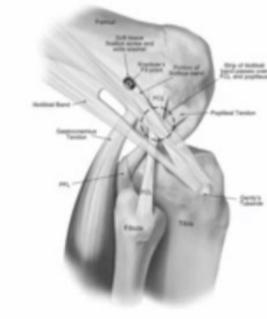
Andrews



Benum



Muller



Mod. Andrews

*Editorial Commentary: Anterolateral Ligament
Augmentation for the Anterior Cruciate
Ligament–Deficient Knee Debate—The Proof Is in
the Pudding*

Michael J. Rossi, M.D., M.S., Assistant Editor-in-Chief



Abstract: The highly debatable and contentious anterolateral ligament (ALL) and its use as an augmentation for the anterior cruciate ligament (ACL)–deficient knee during ACL reconstruction continue to flourish in the literature, but the proof will be in the clinical outcome. Despite the ALL controversy, what clearly stands out from authors on either side of the debate is that there is much more going on than just the ACL in the ACL-deficient knee. Techniques of ALL augmentation or lateral extra-articular tenodesis continue to show promise that the lateral soft-tissue structures may provide the answer for the residual pivot and for better outcomes, higher return-to-sport rates, and lower rupture rates. Many authors and researchers believe that this may be a critical adjunct in high-risk situations during ACL reconstruction. But the proof of the pudding will be in the eating.

> [Arthroscopy](#). 2021 Apr;37(4):1194-1201. doi: 10.1016/j.arthro.2020.11.024. Epub 2020 Nov 18.

Role of Age on Success of Arthroscopic Primary Repair of Proximal Anterior Cruciate Ligament Tears

[Harmen D Vermeijden](#)¹, [Xiuyi A Yang](#)¹, [Jelle P van der List](#)², [Gregory S DiFelice](#)³

-Failure rate <21 Jährige 37%!!!!!!
(Reruptur, Reoperation, Komplikation, contralaterale Ruptur)

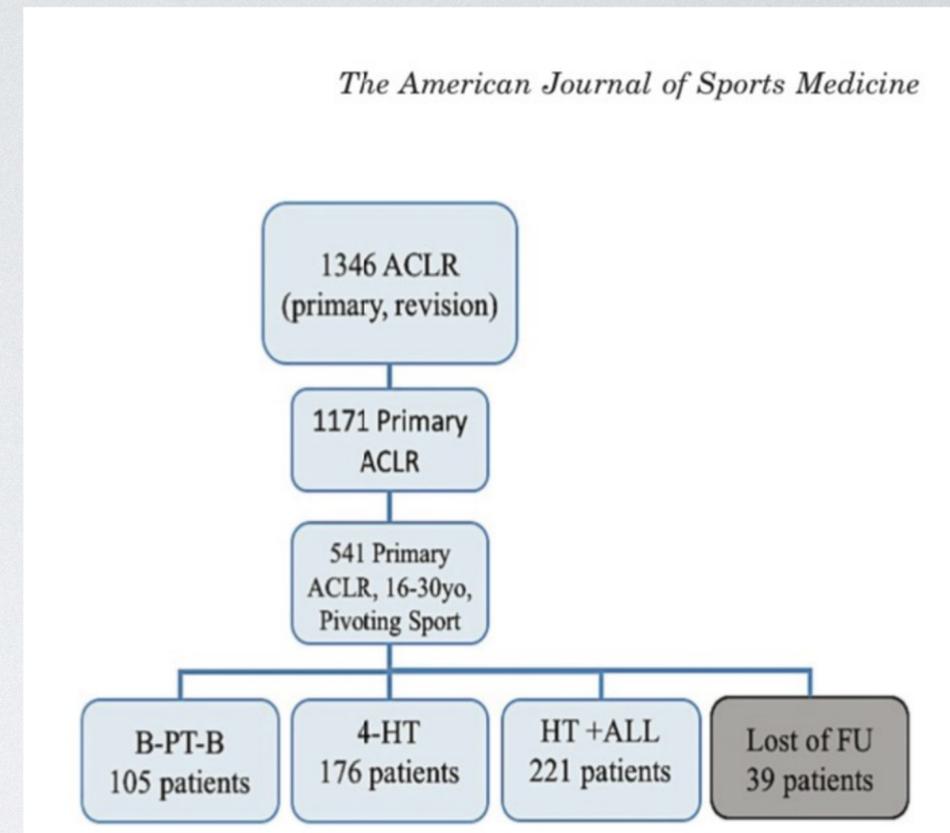
Risk of Secondary Injury in Younger Athletes After Anterior Cruciate Ligament Reconstruction

A Systematic Review and Meta-analysis

[Amelia J. Wiggins](#), DO,^{*} [Ravi K. Grandhi](#), MBA,^{†‡} [Daniel K. Schneider](#),^{‡§} [Denver Stanfield](#), MD,^{||} [Kate E. Webster](#), PhD,[¶] and [Gregory D. Myer](#), PhD^{§#**}

VERGLEICHsstudIE

- 38 Mo FU
- **3,1x** geringere Reruptur mit HT ACL +ALL kombiniert als 4-fach Hamstring ACL
- **2,5x** geringere Rerupturrate verglichen mit BTB
- ★ Failure rate: BTB 16,7%, ACL+ALL 4,13%
- keine vermehrte Komplikationsrate ALL spezifisch



Anterolateral Ligament Reconstruction Is Associated With Significantly Reduced ACL Graft Rupture Rates at a Minimum Follow-up of 2 Years

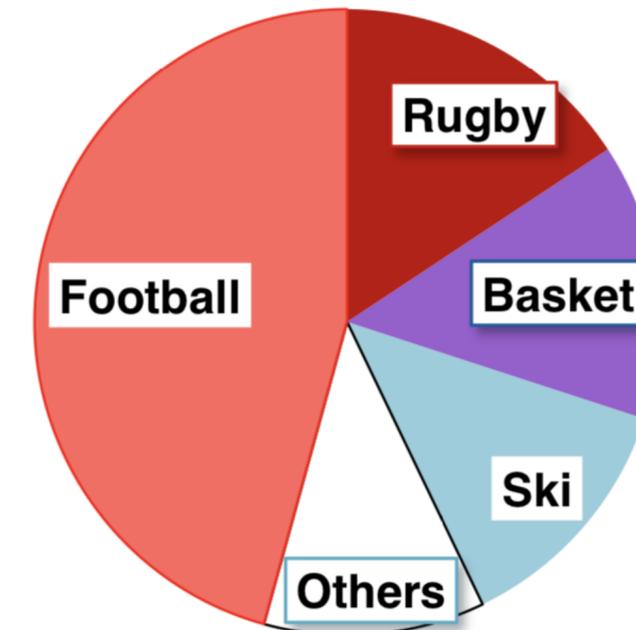
A Prospective Comparative Study of 502 Patients From the SANTI Study Group

Bertrand Sonnery-Cottet,^{††} MD, Adnan Saithna,^{‡§} MBChB, DipSEM, MSc, FRCS(T&O),
Maxime Cavalier,[†] MD, Charles Kajetanek,[†] MD, Eduardo Frois Temponi,^{||} MD,
Matt Daggett,[¶] DO/MBA, Camilo Partezani Helito,[#] MD, and Mathieu Thauinat,[†] MD
Investigation performed at the Centre Orthopédique Santy, Lyon, France

Combined ACL+ALL R in Pro Athlete

TYPE OF SPORTS

- 70 Pro Athletes
- Combined ACL + ALL with HG
- Mean FU : 3,9 years (2-7)



Graft Rupture Rate 5,7%

Combined ACL+ALL R in the Professional Athlete:
Clinical Outcomes from the SANTI Group in a Series of 70 Patients With a Minimum Follow Up of 2 Years
[Rosenstiel et al. Arthroscopy 2019](#)

Reoperation Rate after ACL+ALL R

Reoperation Rates After Combined Anterior Cruciate Ligament and Anterolateral Ligament Reconstruction

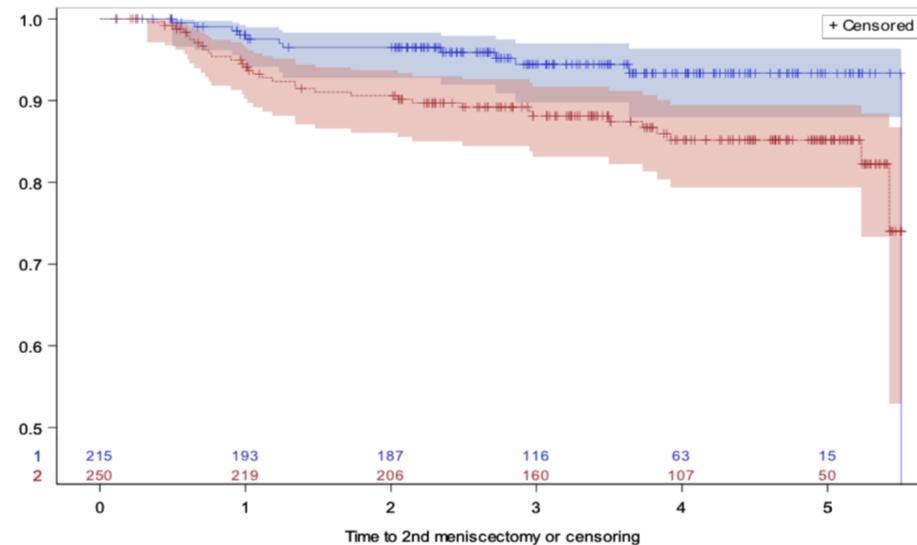
A Series of 548 Patients From the SANTI Study Group With a Minimum Follow-up of 2 Years

Mathieu Thauvat,* MD, Gilles Clowez,* MD,
Adnan Saithna,^{†‡} MBChB, DipSEM, MSc, FRCS (T&O), Maxime Cavalier,* MD,
Eric Choudja,* MD, Thais D. Vieira,* MD, Jean-Marie Fayard,* MD,
and Bertrand Sonnery-Cottet,*[§] MD

Investigation performed at Centre Orthopédique Santy, FIFA Medical Center of Excellence, Ramsay-Générale de Santé, Hôpital Privé Jean Mermoz, Lyon, France

Repaired Medial Meniscus and ALL = 465 patients

2nd Medial Meniscus Meniscectomy after PM repair: 10,8%
(Mean FU 45.6 months)



■ ACL + ALL R = 6,66%
■ ACL R = 14,82 %

**The combined procedure was associated with
a > 2 fold reduction in the failure rate of ramp repair (P = .021)**

Epidemiological Evaluation of Meniscal Ramp Lesions in 3214 ACL injured knee From the SANTI Study Group Database

Sonnery-Cottet et al. *Am J Sport Med* 2018

Anterolateral ligament reconstruction improves the clinical and functional outcomes of anterior cruciate ligament reconstruction in athletes

Fawzy Hamido^{1,4}  · Abdelrahman A. Habiba¹ · Yousef Marwan^{1,2} · Aymen S. I. Soliman³ · Tarek A. Elkhadrwe³ · Mohamed G. Morsi³ · Wael Shoaeb¹ · Ahmed Nagi¹

Received: 15 October 2019 / Accepted: 24 June 2020

© European Society of Sports Traumatology, Knee Surgery, Arthroscopy (ESSKA) 2020

Abstract

Purpose To compare the outcomes of anterior cruciate ligament (ACL) reconstruction with those of combined ACL and anterolateral ligament (ALL) reconstruction in ACL-deficient knees. The objective of this study was to improve knowledge regarding the treatment of ACL-deficient knees with combined ACL and ALL reconstruction. Combined ACL and ALL reconstruction has been hypothesized to result in better clinical and functional outcomes than isolated ACL reconstruction (ACLR).

Methods One-hundred and seven adult male athletes with ACL tears and high-grade pivot shifts were randomized into two groups. Those in group A ($n = 54$) underwent ACLR, while those in group B ($n = 53$) underwent combined ACL and ALL reconstruction. The median age was 26 (18–40) and 24 (18–33) years in groups A and B, respectively, and the median follow-up was 60 (55–65) months. Physical examination findings, instrumented knee laxity tested using a KT-1000 arthrometer, and International Knee Documentation Committee Scale (IKDC) scores were used to evaluate the outcomes.

Results One-hundred and two patients were available for follow-up: 52 in group A and 50 in group B. Postoperatively, the pivot shift was normal in 43 (82.7%) and 48 (96%) patients in groups A and B, respectively ($p < 0.001$). The median instrumented knee laxity was 2.5 ± 0.7 (1.2–6.1) mm in patients in group A and 1.2 ± 0.7 (1.2–3.2) mm in patients in group B ($p < 0.001$). Additionally, 44 (84.6%) patients in group A had normal IKDC scores and 3 (5.8%) had nearly normal scores, while 48 (96.0%) patients in group B had normal IKDC scores and 2 (4%) had nearly normal scores ($p < 0.001$).

Conclusion Combined ACL and ALL reconstruction, compared with isolated ACLR resulted in favourable clinical and functional outcomes, as demonstrated by decreased rotational instability and instrumented knee laxity, a lower graft rupture rate and better postoperative IKDC scores.

Level of evidence 1.

Review

> [Knee Surg Sports Traumatol Arthrosc.](#) 2017 Apr;25(4):1149-1160.

doi: 10.1007/s00167-017-4510-1. Epub 2017 Mar 13.

Combined anterior cruciate ligament reconstruction and lateral extra-articular tenodesis does not result in an increased rate of osteoarthritis: a systematic review and best evidence synthesis

Brian M Devitt ¹, Nicolas Bouguennec ², Kristoffer W Barfod ², Tabitha Porter ²,
Kate E Webster ³, Julian A Feller ²

Arthroscopy
The Journal of Arthroscopic
and Related Surgery



ORIGINAL ARTICLE | [VOLUME 32, ISSUE 10, P2039-2047, OCTOBER 01, 2016](#)

Combined Intra-articular and Extra-articular Reconstruction in Anterior Cruciate Ligament-Deficient Knee: 25 Years Later

[Andrea Ferretti, M.D.](#) • [Edoardo Monaco, M.D.](#) • [Antonio Ponzio, M.D.](#) • ... [Raffaele Iorio, M.D.](#) • [Ludovico Caperna, M.D.](#) • [Fabio Conteduca, M.D.](#) • [Show all authors](#)

Published: May 04, 2016 • DOI: <https://doi.org/10.1016/j.arthro.2016.02.006>



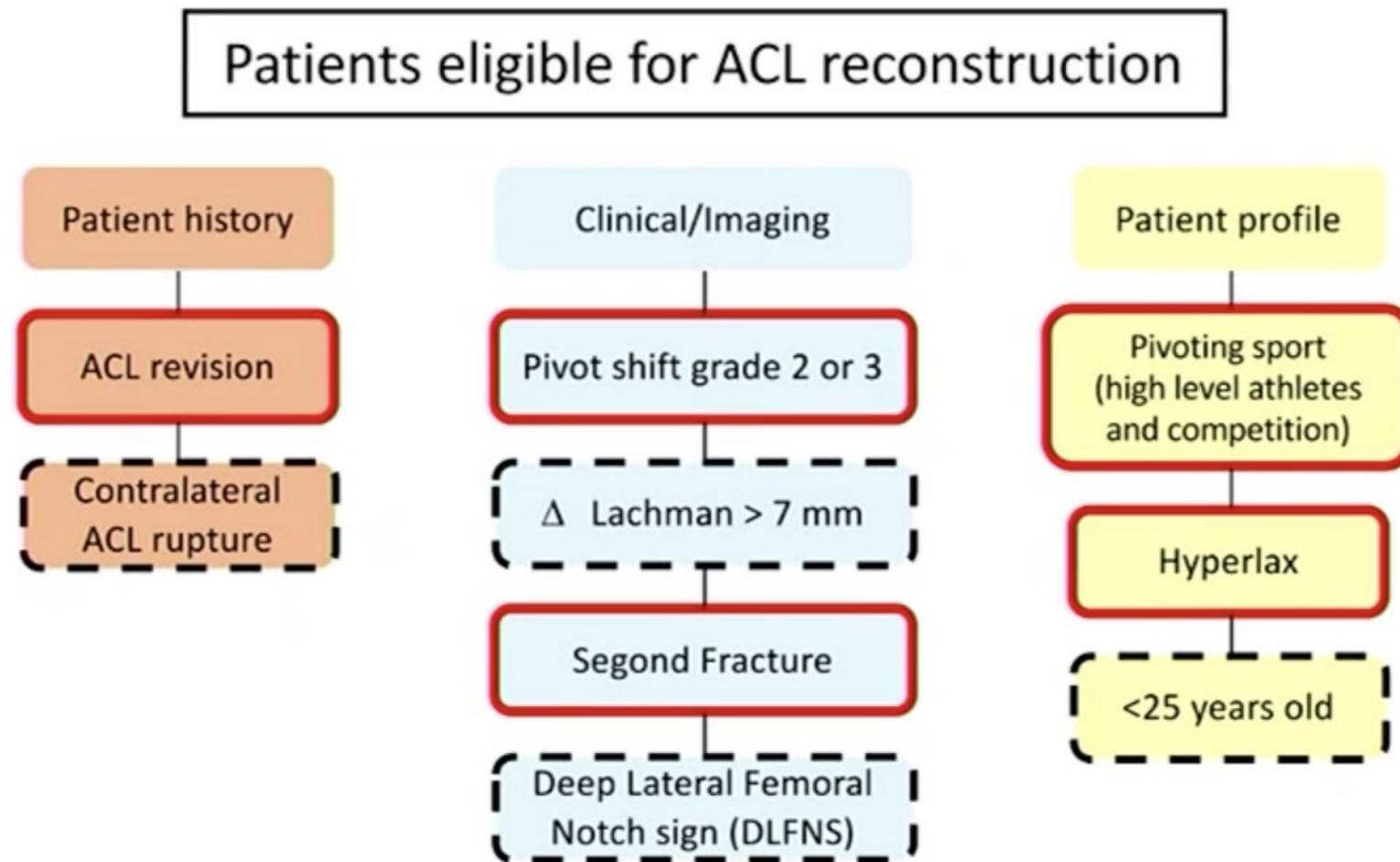
INDIKATIONEN

- Revisionen
- Chron. VKB- Instabilität
- High grade pivot shift
- Pivotierende Sportarten
- Alter <30 Jahre
- Begleitende (v.a. mediale) Meniskusverletzung
- Notch Sign
- kindliche VKB Versorgung
- Segond Fraktur
- Side to side >7mm (Lachmann)



Anterolateral Ligament Expert Group consensus paper on the management of internal rotation and instability of the anterior cruciate ligament - deficient knee

Bertrand Sonnery-Cottet¹ · Matthew Daggett² · Jean-Marie Fayard¹ · Andrea Ferretti³ · Camilo Partezani Helito⁴ · Martin Lind⁵ · Edoardo Monaco³ · Vitor Barion Castro de Pádua⁶ · Mathieu Thauinat¹ · Adrian Wilson⁷ · Stefano Zaffagnini⁸ · Jacco Zijl⁹ · Steven Claes¹⁰



*Minimal requirements for ACL + minimally invasive ALL reconstruction:
1 decisive criteria or 2 secondary criteria*

 Decisive criteria

 Secondary criteria

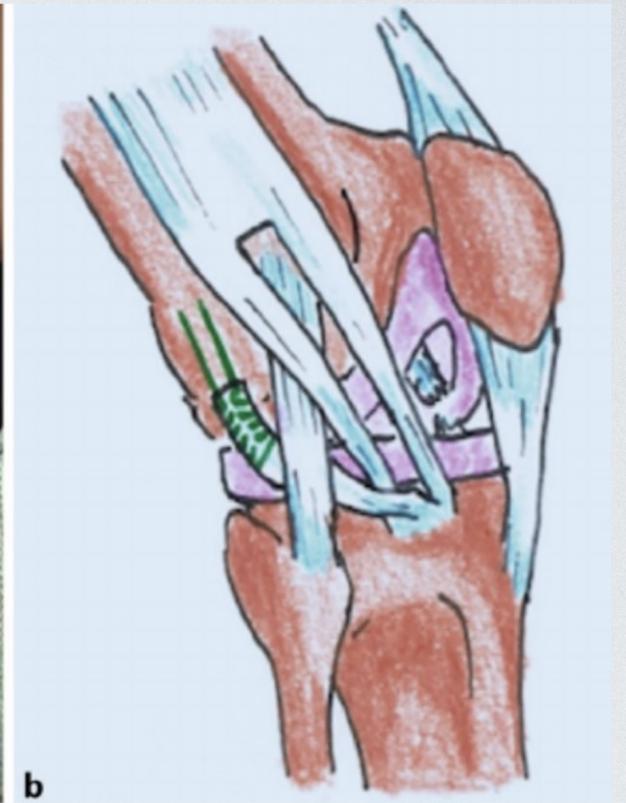
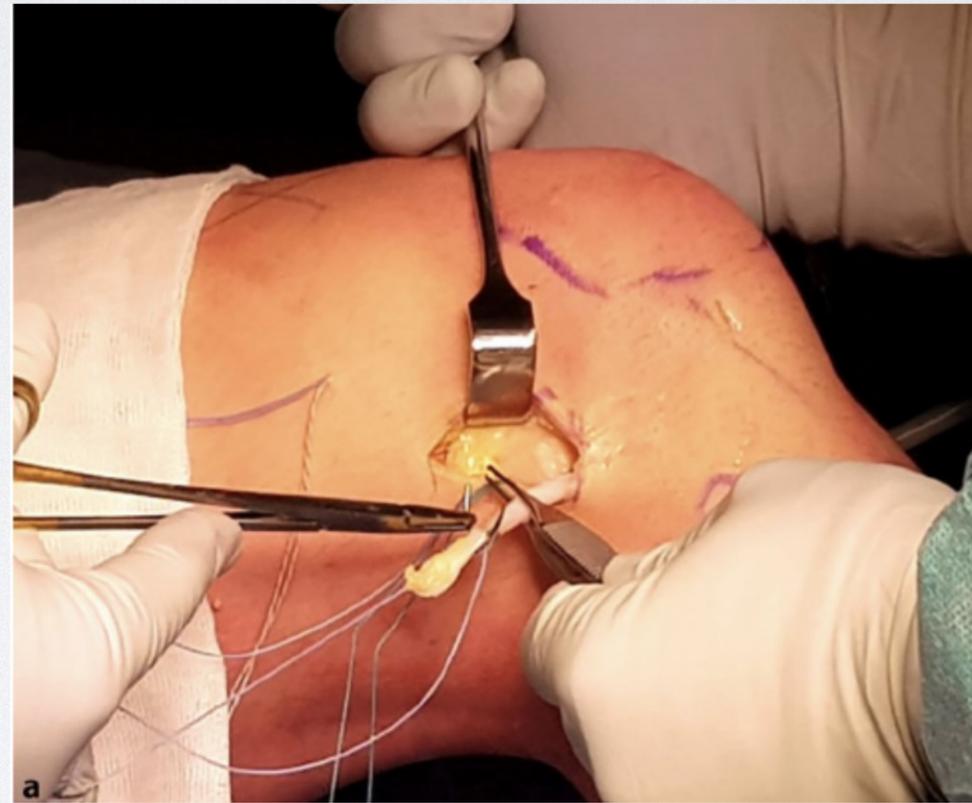
BEGLEITPATHOLOGIEEN

- Meniskusverletzungen
- Kapsel/Band - Rupturen
- Andere periphere Instabilitäten
- Slope
- Genu recurvatum
- Knorpel/Frakturen
- Beinachsenfehlstellungen
- Notch (A-shaped Notch)



LEMAIRE TECHNIK (MODIFIZIERTE)

- Extraartikuläre, nicht-anatomische Technik von 1967
- Reduktion einer ALRI
- heute modifizierte Lemaire-Technik
-> Zusätzliche laterale, extraartikuläre, nichtanatomische Rekonstruktion des ALL mit gestieltem Streifen des ITB



ALL ODER MOD. LEMAIRE?

- ALL ist in Extension straff und in Flexion etwas lockerer - nicht isometrisch - somit keine Einschränkung der Innenrotation
- Reduzieren jeweils Rerupturrate
- Klinisch jeweils keine degenerative Veränderungen beschrieben

