



ANTEROLATERAL LIGAMENT RECONSTRUCTION

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Disclosure

- Consultant: Arthrex, NewClip Technics
- Royalties: NewClip Technics, X Nov

Controversies around the ALL - 2013

Steven Claes = ALL of the knee

New ligament discovered in knee, Belgian surgeons say

By Smitha Mundasani
Health reporter, BBC News

**New Ligament In Human Knee
Discovered By Surgeons In Belgium**

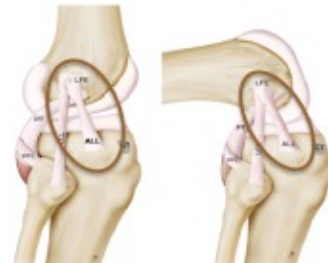
PHYS ED | NOVEMBER 13, 2013, 12:01 AM

By GRETCHEN REYNOLDS

Des chirurgiens belges ont découvert un « nouveau » ligament

Ce tissu, décrit par un médecin au XIX^e siècle puis oublié, est souvent involontairement lésé par les chirurgiens lors d'une opération des ligaments croisés.

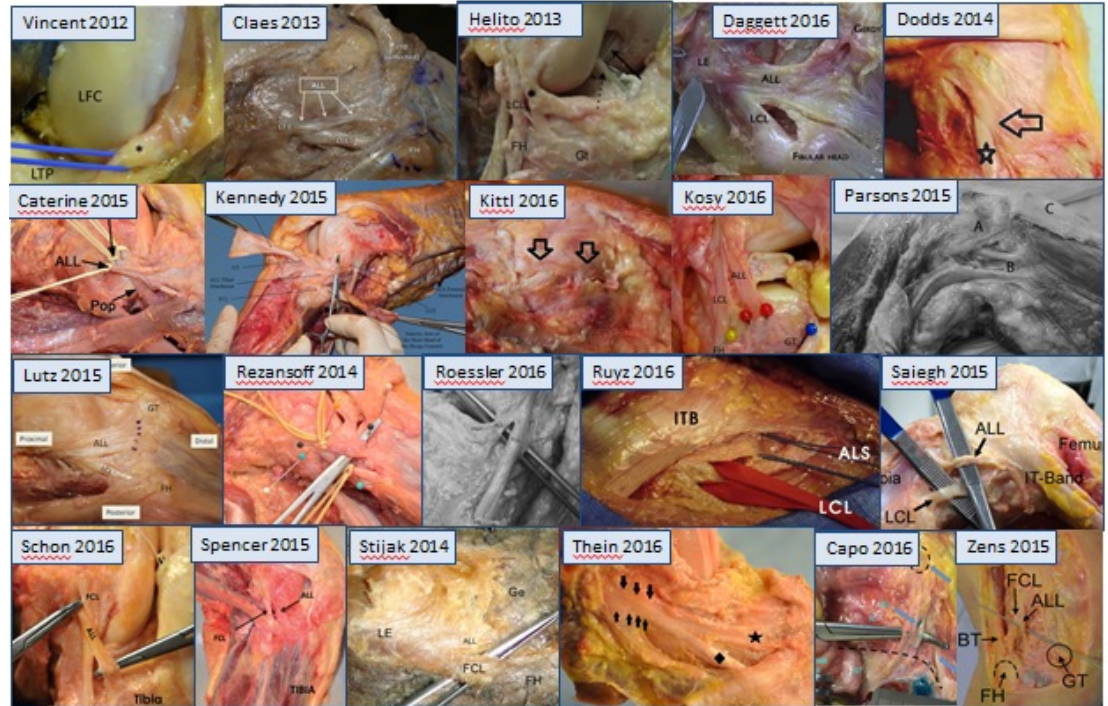
ligament



Biomechanical / Anatomical Studies...



Anatomy

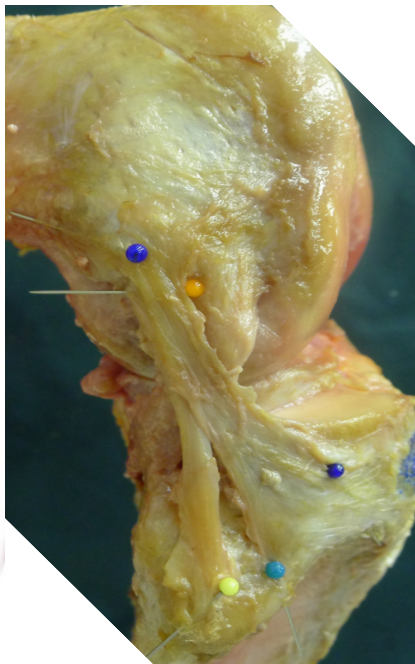


From Lemaire to ALL Reconstruction

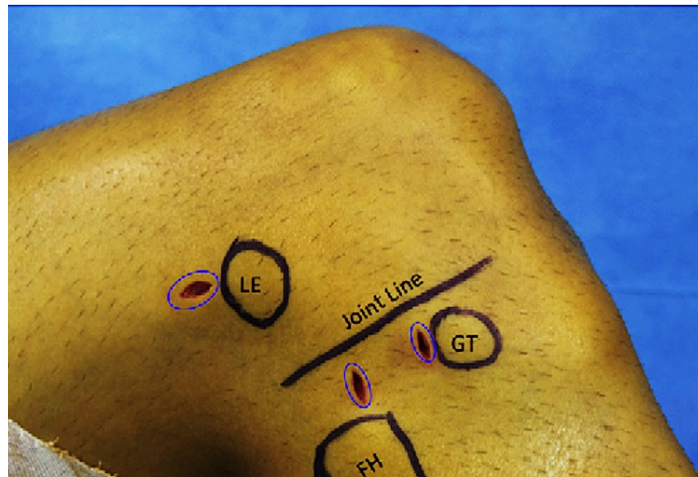
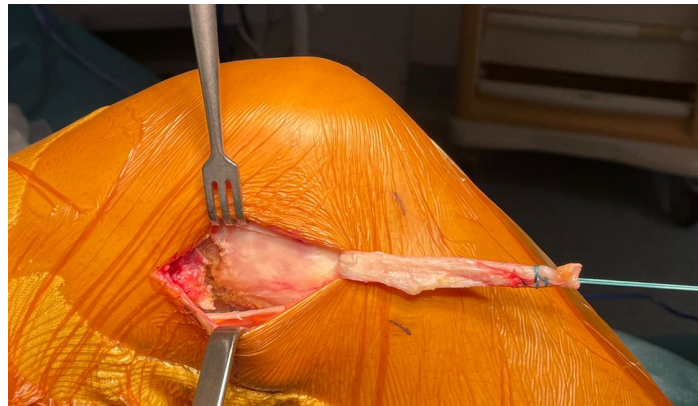
M. Lemaire, J. Chir 1967
P. Christel, RCO 2002



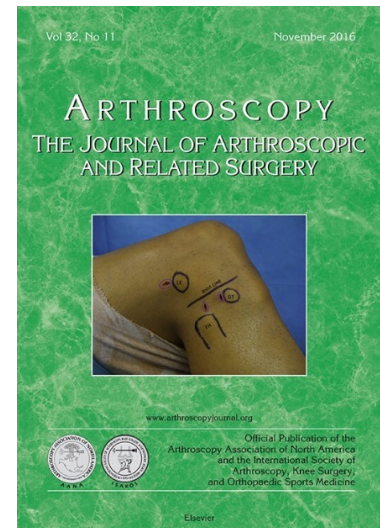
Courtesy Dr Chassaing



Courtesy Dr Claes



Surgical Technique



Main Questions

- Should we improve upon our ACL results ?
- Can we ?



ACL Clinical Results

- The rupture rate in a high-risk population 18 to 28%

Kamath GV et al. Am J Sports Med 2014;

Morgan MD et al. Am J Sports Med 2016; Webster KE et al. Am J Sports Med 2016

- Reoperations rate from 18.9% to 26,7% (2-6 years FU)

Kartus et al. KSSTA 1999; Heittrich CM et al. Am J Sport Med 2013

- Return to the pre injury level from 50 to 65%

Brophy RH et al (MOON) group. Am J Sports Med 2012; McCullough KA et al. Am J Sports Med. 2012

Clinical Results

- 92 ACL + ALL reconstructions
- Mean FU : 32 months
- 1% graft rupture / 6% contralateral
- No specific complications



*Outcome of a combined ACL and Anterolateral Ligament reconstruction technique
with a minimum 2-year follow-up .*

Sonnery-Cottet et al. Am J Sports Med. 2015

Prospective Comparative Study

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 Thauvat,[†] MD
Investigation performed at the Centre Orthopédique Santy, Lyon, France

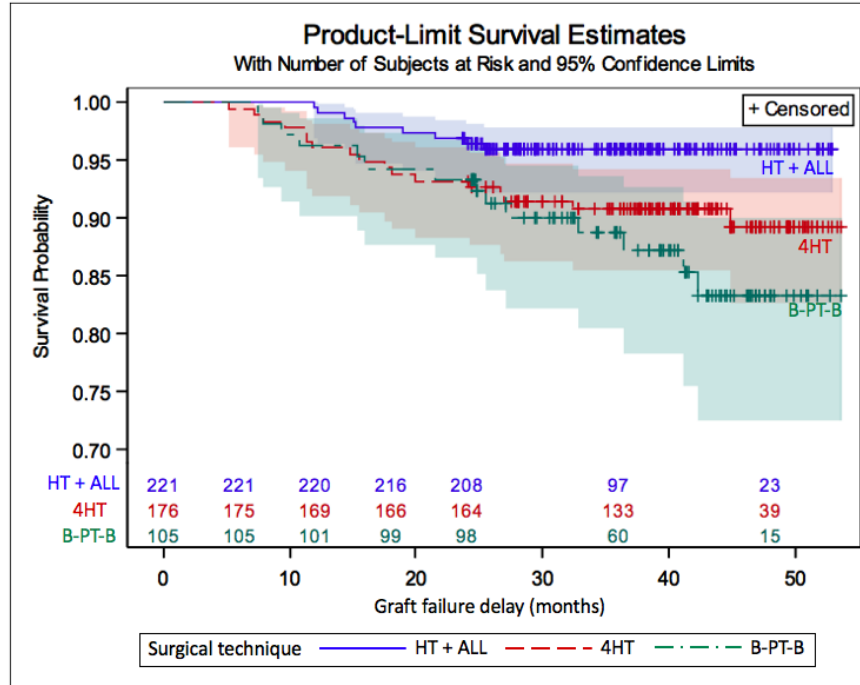
Prospective Comparative Study

- From 2012 to 2014, 1346 consecutive ACL R
- **502 Patients**
- **16-30 years old, Sport pivoting**
- **3 different Grafts: BPTB, 4HG, HG+ALL**
- Mean FU : 38,4 months (24 - 54)
- Graft rupture Rate : 8% / 11% Contralateral

*ALL Reconstruction is Associated with Significantly Reduced ACL Graft Rupture Rates
at a Minimum Follow Up of 2 Years* Sonnery-Cottet et al. Am J Sport Med 2017

Prospective Comparative Study

Graft Survival probability



HT+ALL

4 HT

BPTB

Graft failure with HT+ALL:
2.5 x less than BTB
3.1 x less than 4HT

Lower ACL graft failure with EAT

Adding a tenodesis
to an ACL reconstruction
significantly decreased
the force in the ACL graft
by an average of **43%**



The effect of an iliotibial tenodesis on intraarticular graft forces and knee joint motion.

Engebretsen L et al. Am J Sport Med 1990

ACL+LEAP: Comparative clinical studies

- **Lower Graft failure rate** vs Isolated ACL
 - In Pro athlete population
 - In Elite French Ski team population
 - In population >30 years
 - In pediatric population
 - In cases of ACL Revision



Sonnery-Cottet et al. *AJSM* 2021

Helito et al. *AJSM* 2021

Pioger et al. *AJSM* 2022

Ariel de Lima et al. *KSRR* 2021

Saithna et al. *J Knee surg* 2021

Helito et al. *Arthroscopy* 2019

Ripoll et al. *AJSM* 2023

Foissey et al. *ASMR* 2022

ACL+ALL: Comparative clinical studies

- Combined ACL + ALL vs isolated ACL

- Lower Graft rupture rate (17.4% vs 3.5%)
- Lower Overall reoperation rate (32.6 vs 15.3%)
- Lower Graft failure in patients with ligamentous hyperlaxity
- **Continous graft** (ACL + ALL) = no difference in graft failure rate compared to detached gracilis for ALL
- **ALL does not delay functional recovery** vs isolated ACL



Hopper G et al. *AJSM* 2022

Guy et al. *AJSM* 2022

Pettinari et al. *AJSM* 2024 *In Press*

Monaco et al. *AJSM* 2022

Carrozzo et al. *J.Ped.ortho* 2023
Systematic Revue

Saithna et al. *Arthroscopy* 2022
Systematic Revue

Coquard et al. *ASMR* 2022

Prospective Randomized Study

Objective: The best ACLR technique for High Risk Population » Gold Standard » BPTB vs Combined HG + ALL

Dec 2016 - 593 patients – 18-35 y -Pivoting Sports

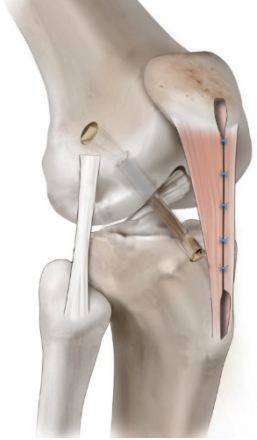


BTPB



HT + ALL

Prospective Randomized Study : Preliminary Results



- 224 patients at 12 months FU
- Graft failure: BTB: 5.4% vs HT-ALL 0.9% (ns)
- Less Complications rate ($p=0.0082$) in ALL Group
- Better Clinical Outcomes in ALL Group (IKDC, Lysholm, RTS test)

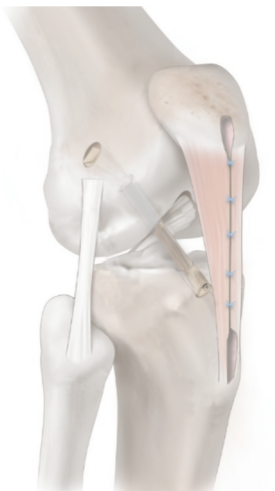
Prospective Randomized Study with mini 5 years FU

NCT03740022

592 Patients with a mean 61 months FU

BPTB

N=273



HT+ALL

N=281

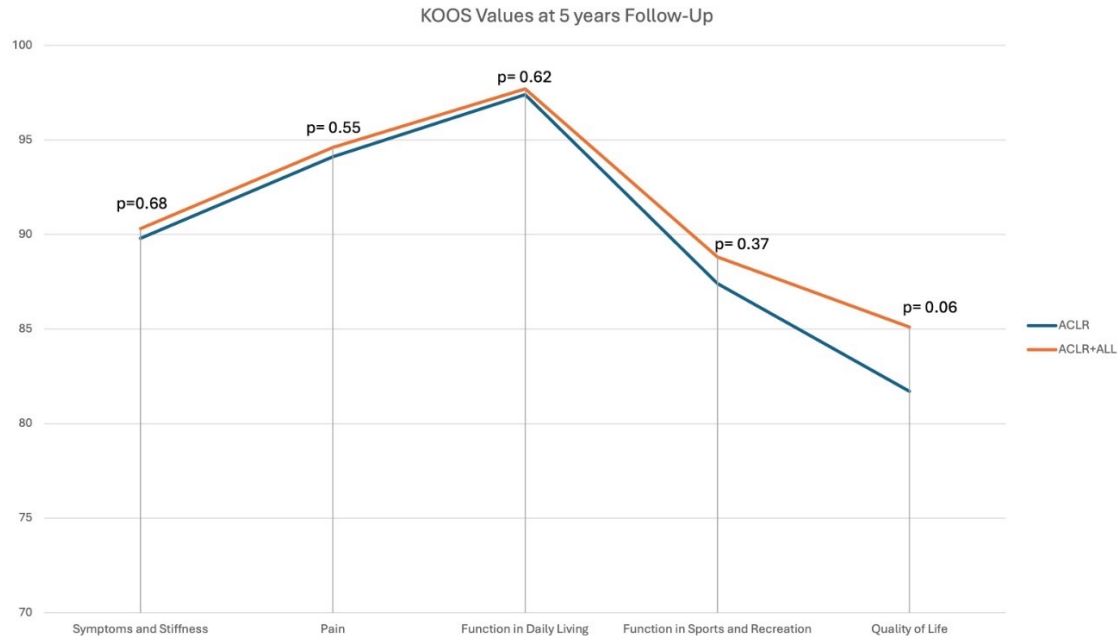


Prospective Randomized Study

NCT03740022

No Difference :

- KOOS
- IKDC
- Lysholm
- Tegner

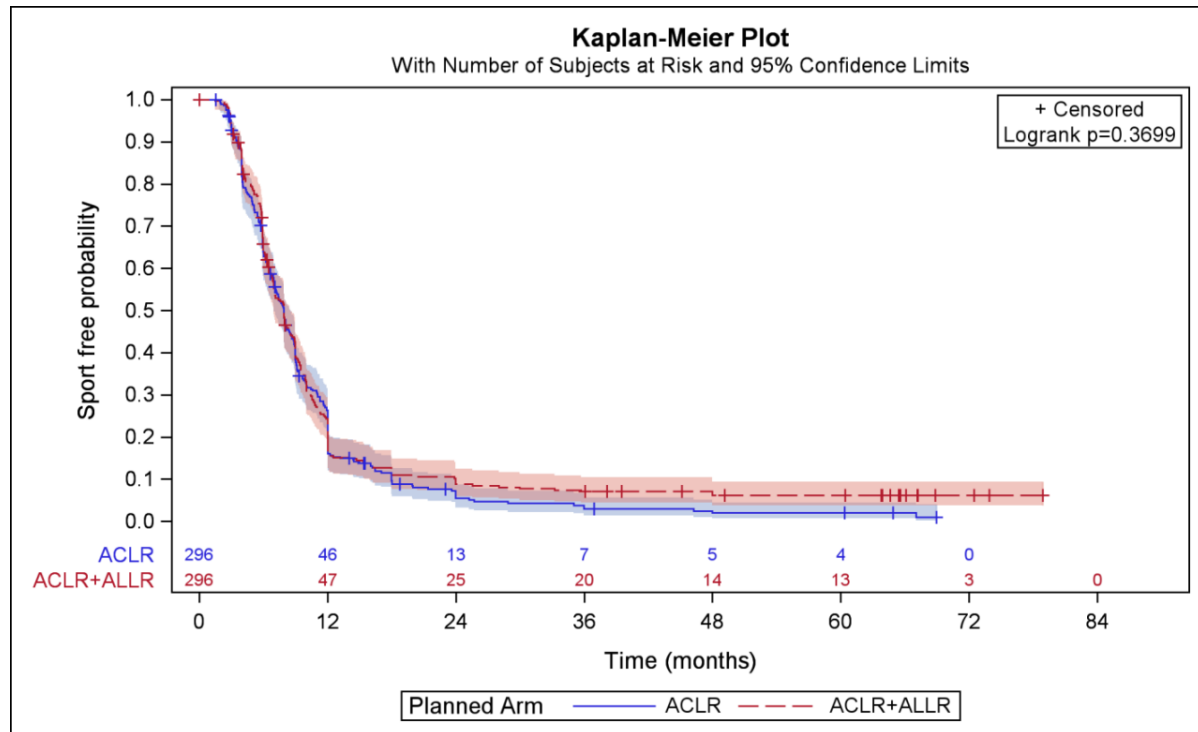


Prospective Randomized Study

NCT03740022

No Difference

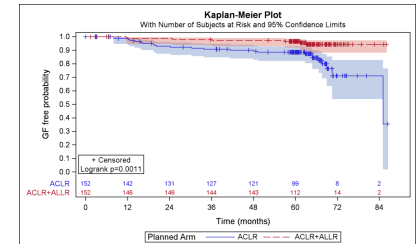
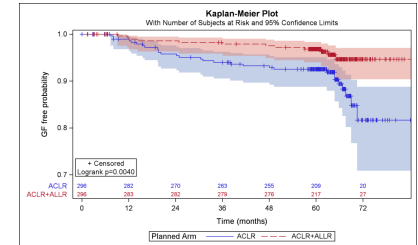
- Laxity
- RTS



Prospective Randomized Study

NCT03740022

Graft Rupture	BPTB	HT + ALL	P Value
Overall Population	11.2%	4.2%	0.0025
< 25 years old	17.9%	4.8%	0.0004

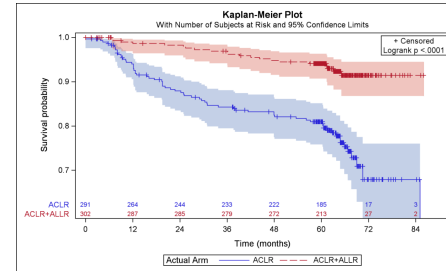


→ OR = **2.83** if BPTB
→ OR = **3.53** if < 25 yo

Prospective Randomized Study

NCT03740022

Reoperations	BPTB	HT + ALL	P Value
Overall Population	24.8%	7.3%	<0.0001
Meniscectomy	5.9%	2.1%	0.01897
Cyclops	8.9%	1%	<0.0001



→ OR = 4.2 if BPTB
→ OR = 1.87 if < 25 yo

**PRIMARY ACL
REVISION ACL**

LEAP in 2024



Combining an Anterolateral Complex Procedure With Anterior Cruciate Ligament Reconstruction Reduces the Graft Reinjury Rate and Improves Clinical Outcomes


A Systematic Review and Meta-analysis of Randomized Controlled Trials

Francesco Bosco,^{*†} MD , Fortunato Giustra,^{*†‡} MD , Virginia Marcello Capella,^{*} MD, Veronica Sciannameo,[§] PhD, Lawrence Alessandro Massè,^{*} MD, PhD, and Robert F. LaPrade,^{*} MD, PhD
Investigation performed at University of Turin, CTO, Turin, Italy

A Lateral Extra-articular Procedure Reduces the Failure Rate of Revision Anterior Cruciate Ligament Reconstruction Surgery Without Increasing Complications

CME

A Systematic Review and Meta-analysis

Alberto Grassi,^{*} MD, PhD, Rodrigo A. Olivieri Huerta,[†] MD, Gian Andrea Lucidi,^{*‡} MD, Piero Agostinone,^{*} MD, Giacomo Dal Fabbro,^{*} MD, Anna Pagano,^{*} MD, Thomas Tischer,^{§||} MD, Prof., , and Stefano Zaffagnini,^{*} MD, Prof.
Investigation performed at IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy

Conclusion: ALL or LET = No superiority of one over the other
Both associated with **Reduced graft failure rates**

Conclusions

- **Studies evaluating LEAP's** demonstrate
lower graft rupture rate

Higher survival rate of Medial Meniscus Repair
- Modified Lemaire and ALL R **provide Good Clinical**
- **LEAP** must be considered even for **Primary ACLR**

Thank you

