Universitat Autònoma de Barcelona

ACL-R WITH RISKY AND DIFFICULT ONSET ELDERLY PATIENTS (> 50 yo)

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ESSKA


disclosure

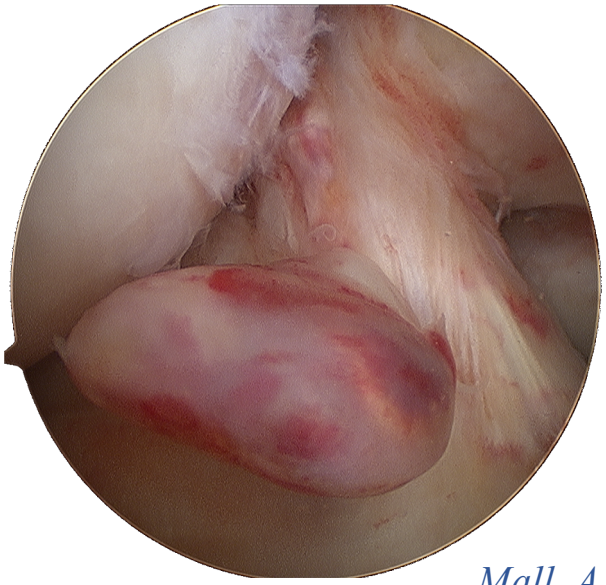

NOTHING TO DECLARE

IS IT AN ISSUE?

↑ POPULATION AGE

↑ «MIDDLE AGE» ACTIVITY

↑ **ACL INJURIES**



Mall, AJSM 2014
Iorio, Int Orth 2018
Fayard, Orthop Traumatol Surg Res. 2019
Swedish National Knee Registry 2020

IS IT AN ISSUE?

- From 2005 to 2020
- Age category ACL-R incidence

PRIMARY ACL-R is
INCREASING in > 40 yo

	> 40 years		Total	
Year	N	%	N	%
2020	584	16	3650	100
2019	737	18	4016	100
2018	613	16	3769	100
2017	663	17	3852	100
2016	599	17	3591	100
2015	556	16	3481	100
2014	526	15	3420	100
2013	478	14	3453	100
2012	419	12	3527	100
2011	421	13	3339	100
2010	421	13	3351	100
2009	390	13	3074	100
2008	369	12	2977	100
2007	317	12	2747	100
2006	276	11	2498	100
2005	229	12	1989	100
Total	7598	14	52734	100

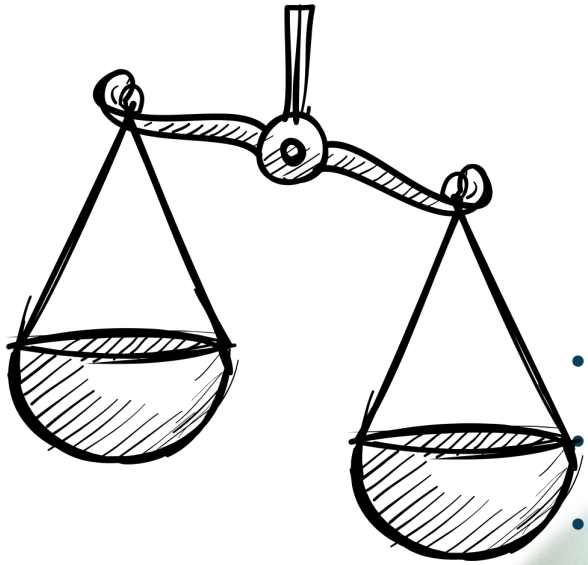
Swedish National Knee Ligament Registry 2020


SURGERY vs CONSERVATIVE

CONSERVATIVE TREATMENT

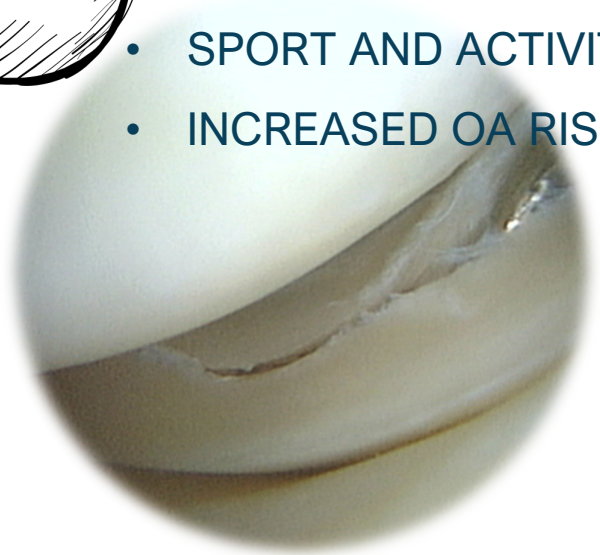
PRO's

- AVOIDS SURGICAL RISKS



CON's

- RESIDUAL LAXITY
- MENISCAL AND CARTILAGE INJURIES
- SPORT AND ACTIVITY REDUCTION
- INCREASED OA RISK



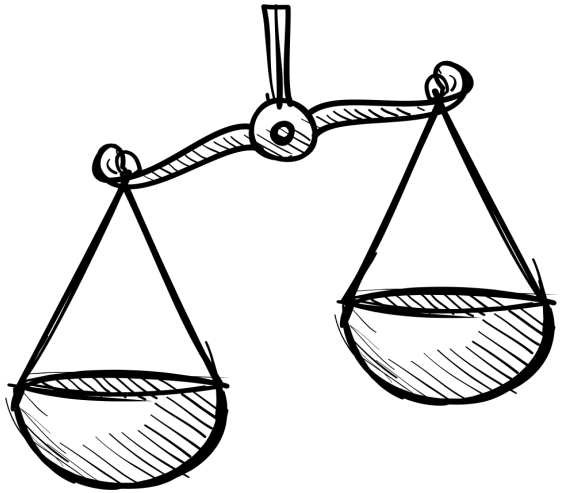
Frobell, N Engl J Med 2010

Aglietti, JBJS Am 2004
Kannus, JBJS Am 1987
Fitzgeral, KSSTA 2000
Strehl, J Trauma 2007

ACL RECONSTRUCTION

PRO's

- KNEE LAXITY IMPROVEMENT
- MENISCI & CARTILAGE PROTECTION



CON's

- RECOVERY TIME
- BONE QUALITY
- AUTOGRAFT QUALITY
- GRAFT INTEGRATION

Paschos, EFORT Open Rev 2016
Frobell, N Engl J Med 2010

Asano, Arthroscopy 2004
Ekdhal, KSSTA 2004

SATISFACTORY CLINICAL & FUNCTIONAL OUTCOMES

WHICH SOLUTION?

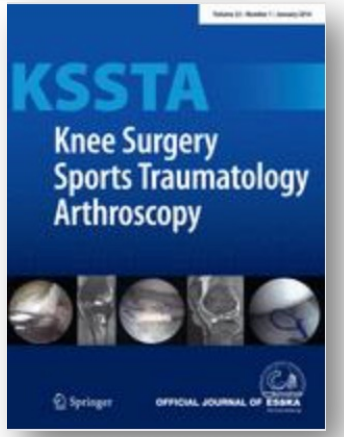
SURGICAL TREATMENT SEEMS BETTER

HOWEVER…

STILL OPEN QUESTIONS!

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

16 STUDIES, 470 ACL-R
mean age 53.6 years (50–75 years)
mean FU 50.4 months (2–240 months)

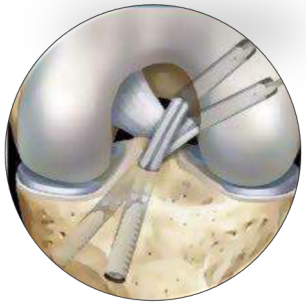


Costa, KSSTA 2019

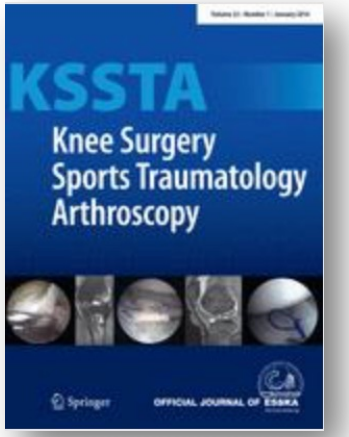
SURGICAL TECHNIQUE

- **ANATOMIC SINGLE BUNDLE** (14/16)

- ANATOMIC DOUBLE BUNDLE (2/16)

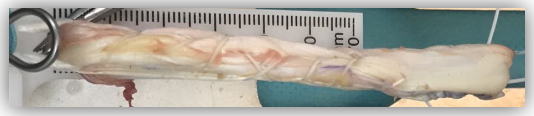


WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW



Costa, KSSTA 2019

GRAFT CHOICE



- **QUADRUPLED HT** 60.6% (261)

- BPTB 22% (95)

- ALLOGRAFT 17% (75)
  - PT 13% (65)
  - achilles (1)
  - tibialis post (1)
  - unspecified (8)

LOWER RISK OF EXTENSION LAG IN FUTURE TKA

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

GRAFT CHOICE

- QUADRUPLED HT 60.6% (261)
- BPTB 22% (95)
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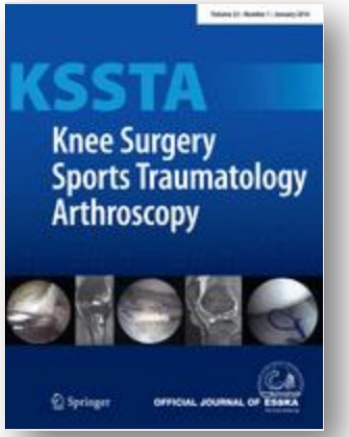


Costa, KSSTA 2019

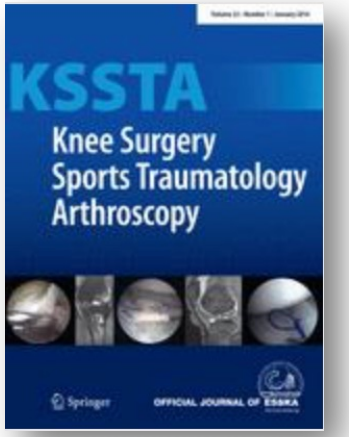
- NO MORBIDITY OF DONNOR SITE
- LESS POST-OP PAIN

VIABLE OPTION IN

LOWER DEMANDING POPULATION

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

FAILURE RATE



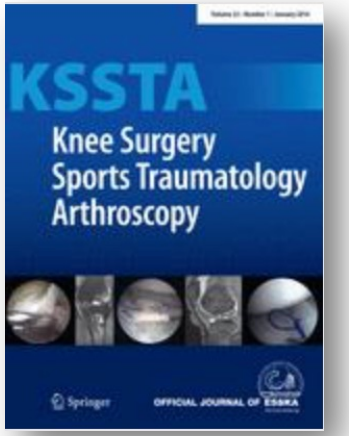
Costa, KSSTA 2019
Foster AJSM 2010

- HT vs BPTB → no differences
- ALLOGRAFT → slightly higher
- SIMILAR to YOUNGER Patients (0 - 14% vs 0 - 13%)

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

FUNCTIONAL OUTCOMES

- Lysholm, IKDC, Cincinnati➔ significant post-op IMPROVEMENT
- ↑ RTS rate and recreational activities (up to **86%**)
- ↓ RT **PRE**-INJURY level respect younger age if MENISCAL or CARTILAGE tears



Costa, KSSTA 2019
Osti, KSSTA 2011
Dahm, JBJS Br 2008

BUT…

LOWER EXPECTATIONS IN OLDER PATIENTS DRIVES TO

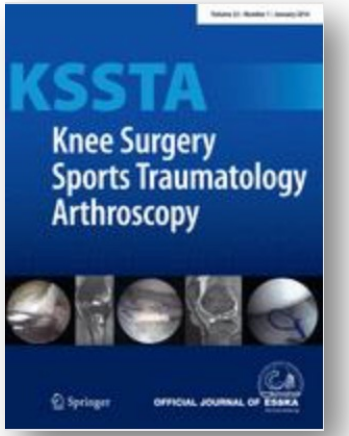
HIGHER SATISFACTION

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

OBJECTIVE OUTCOMES

- Positive LACHMAN in **9%**
- "GLIDE" OR "CLUNK" PIVOT SHIFT in **6%**
- KT-1000 STS DIFF <3mm (0.2 – 2.7 mm) in **20%**

CONSERVATIVE ACL INJURIES➔ KT-1000 STS DIFF **> 5mm**

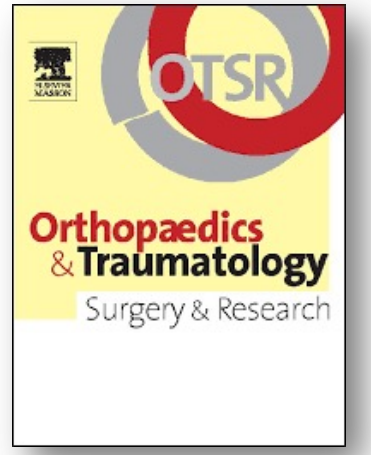


Costa, KSSTA 2019
Osti, KSSTA 2011
Cicotti, JBJS Am 1994

BETTER than **CONSERVATIVE**

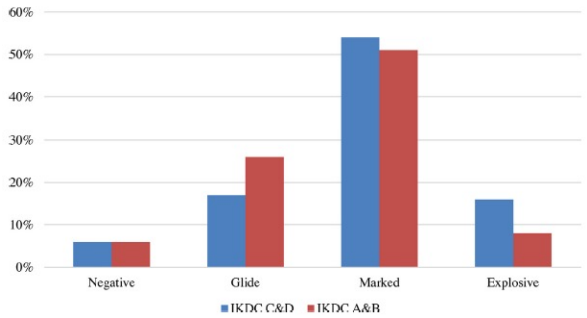
WHAT LITTERATURE SAYS? FRENCH EXPERIENCE

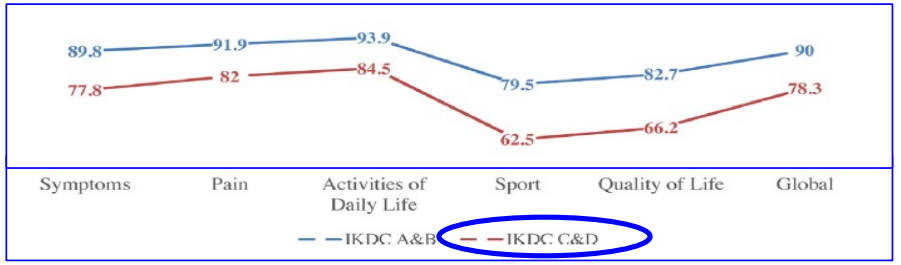
FACTORS AFFECTING OUTCOMES



Fayard, OTSR. 2019

- MULTICENTRIC STUDY, 398 pt, 42 MONTHS FU
- 68% HS / 32% BPTB
- POOR OUTCOMES (IKDC C/D) IN **23%**
  - PRE-OP EXPLOSIVE PIVOT-SHIFT
  - MEDIAL OA SIGNs & MENISCI INJURIES





WHAT LITTERATURE SAYS?

OA PROGRESSION RISK

- **OA prevalence** in 50 yo after ACL-R up to 5.3 y FU➔ **15%** (28/187 knees)

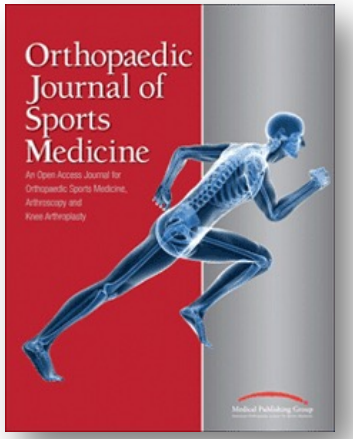
Costa, KSSTA 2019

- **OA prevalence** in 30 yo (23-45.2) after ACL-R up to 5 yrs FU➔ **11%** (4000pt)

Cinque, AJSM 2018

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

OA PROGRESSION RISK



Grassi, OJSM 2022

- HIGH RATE of OA Signs 20 y after ACL-R (**13%** severe OA)
- Risk Ratio of OA 2.8 (respect to contralateral un-injured knee)
- RISK FACTORS
  - Male
  - OLDER AGE at surgery
  - Delayed ACL R
  - MENISCAL & CARTILAGE lesion
  - Pivoting sports or strenuous activities

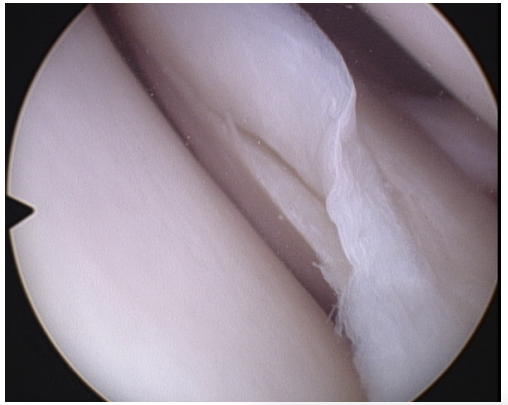
TABLE 5
Long-Term Risk-Factors for OA Development After Anterior Cruciate Ligament Reconstruction[a]

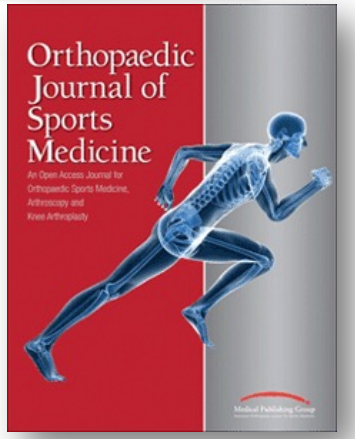
Factor	Measure
Age at surgery	
Per 1-y increase (from 23.2 ± 6.9 y)[b]	OA moderate/severe: OR = 1.06[28]
Per 1-y increase	NS[10]
Adolescents vs >18 y	NS[27]
Age OA (26.9 y) vs age non-OA (22.8 y)	OA presence: $P < .001$[23]
Age >30 y	OA presence: $P < .001$[10]

WHAT LITTERATURE SAYS? SYSTEMATIC REVIEW

OA PROGRESSION RISK

- Outcomes of ACL R ➔ FU minimum 20 y
- SIMILAR RATE of OA in operated & contralateral knee (28 vs 22%) in patients with intact menisci





Grassi, OJSM 2022

OA DEVELOPMENT due to PHYSIOLOGICAL AGING & SPORT PARTICIPATION

MY OPINION…

Do not leave an ACL injured knee in an active patient regardless the age

HIGH RISK OF MENISCAL & CARTILAGE LESIONS

6 months to 1 year Rehab / expectations

Does every ACL deficient knee over 50 needs regular ACL R ?

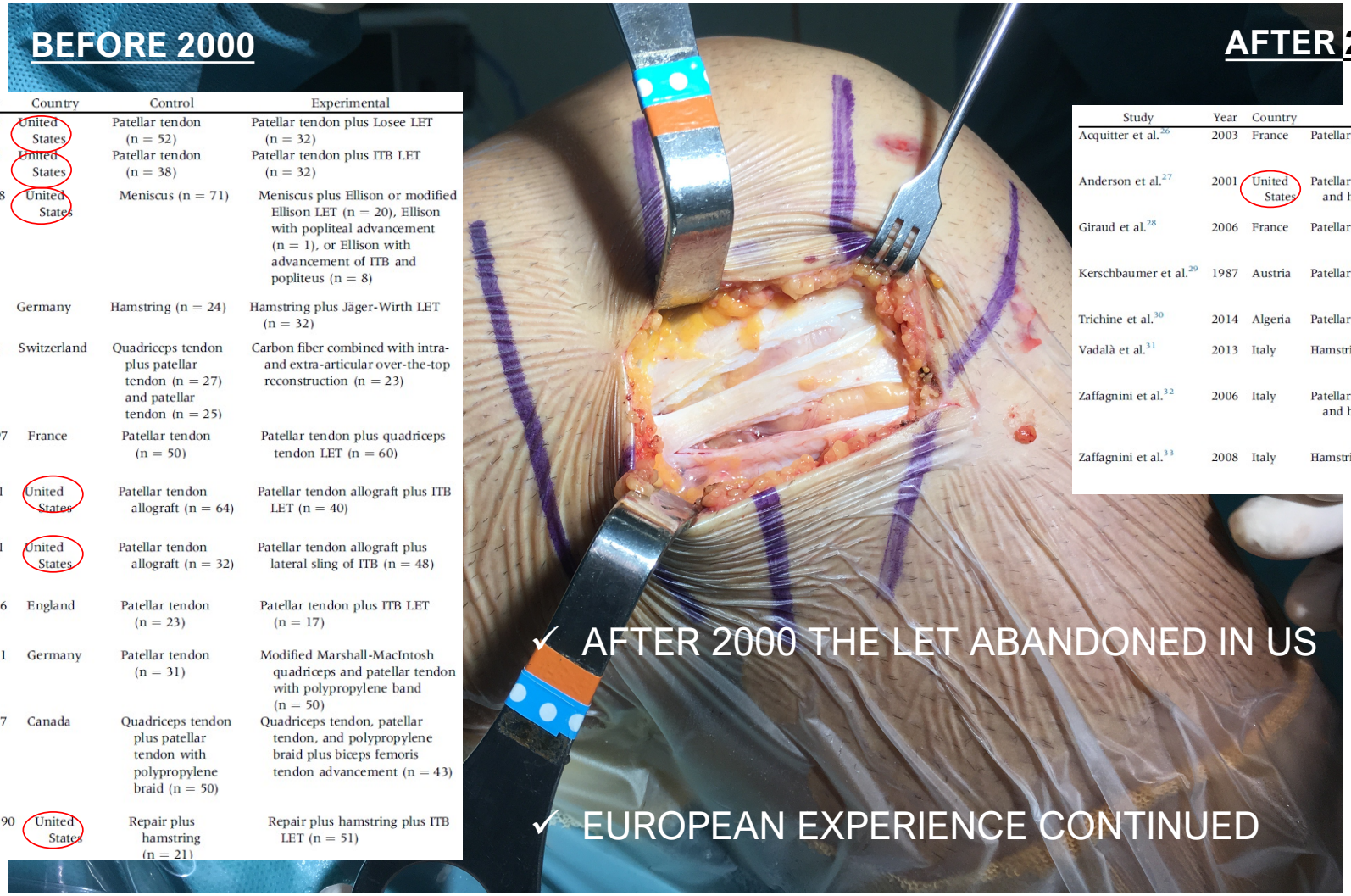
WHAT ABOUT LET ?

BEFORE 2000

Authors	Year	Country	Control	Experimental
Barber-Westin and Noyes[34]	1993	United States	Patellar tendon (n = 52)	Patellar tendon plus Losee LET (n = 32)
Barrett and Richardson[35]	1995	United States	Patellar tendon (n = 38)	Patellar tendon plus ITB LET (n = 32)
Ferkel et al.[37]	1988	United States	Meniscus (n = 71)	Meniscus plus Ellison or modified Ellison LET (n = 20), Ellison with popliteal advancement (n = 1), or Ellison with advancement of ITB and popliteus (n = 8)
Goertzen and Schulitz[38]	1993	Germany	Hamstring (n = 24)	Hamstring plus Jäger-Wirth LET (n = 32)
Hefti et al.[39]	1982	Switzerland	Quadriceps tendon plus patellar tendon (n = 27) and patellar tendon (n = 25)	Carbon fiber combined with intra- and extra-articular over-the-top reconstruction (n = 23)
Lerat et al.[43]	1997	France	Patellar tendon (n = 50)	Patellar tendon plus quadriceps tendon LET (n = 60)
Noyes and Barber[45]	1991	United States	Patellar tendon allograft (n = 64)	Patellar tendon allograft plus ITB LET (n = 40)
O'Brien et al.[46]	1991	United States	Patellar tendon allograft (n = 32)	Patellar tendon allograft plus lateral sling of ITB (n = 48)
Paterson and Trickey[47]	1986	England	Patellar tendon (n = 23)	Patellar tendon plus ITB LET (n = 17)
Riel et al.[48]	1991	Germany	Patellar tendon (n = 31)	Modified Marshall-MacIntosh quadriceps and patellar tendon with polypropylene band (n = 50)
Roth et al.[49]	1987	Canada	Quadriceps tendon plus patellar tendon with polypropylene braid (n = 50)	Quadriceps tendon, patellar tendon, and polypropylene braid plus biceps femoris tendon advancement (n = 43)
Sgaglione et al.[51]	1990	United States	Repair plus hamstring (n = 21)	Repair plus hamstring plus ITB LET (n = 51)

AFTER 2000

Study	Year	Country	Control	Experimental
Acquitter et al.[26]	2003	France	Patellar tendon (n = 50)	Patellar tendon plus quadriceps tendon LET (n = 50)
Anderson et al.[27]	2001	United States	Patellar tendon (n = 35) and hamstring (n = 33)	Hamstring plus Losee LET (n = 34)
Giraud et al.[28]	2006	France	Patellar tendon (n = 34)	Patellar tendon plus quadriceps tendon LET (n = 29)
Kerschbaumer et al.[29]	1987	Austria	Patellar tendon (n = 13)	Patellar tendon plus Ellison LET (n = 37)
Trichine et al.[30]	2014	Algeria	Patellar tendon (n = 60)	Patellar tendon plus ITB LET (n = 60)
Vadalà et al.[31]	2013	Italy	Hamstring (n = 32)	Hamstring plus Cocker-Arnold LET (n = 28)
Zaffagnini et al.[32]	2006	Italy	Patellar tendon (n = 25) and hamstring (n = 25)	Marcacci hamstring plus lateral sling (n = 25)
Zaffagnini et al.[33]	2008	Italy	Hamstring (n = 37)	Marcacci hamstring plus lateral sling (n = 35)



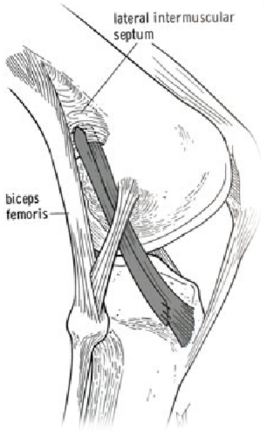
✓ AFTER 2000 THE LET ABANDONED IN US

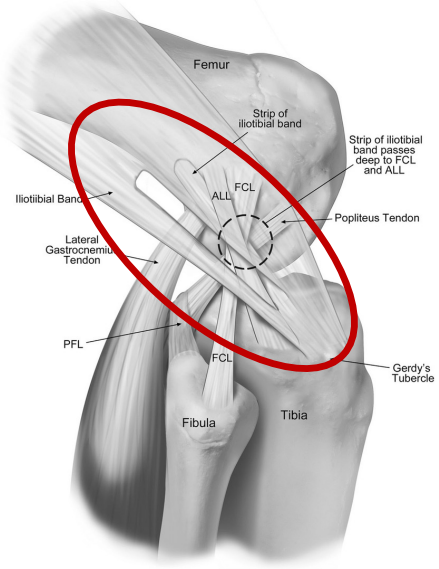
✓ EUROPEAN EXPERIENCE CONTINUED

ANCIENT VS MODERN LET

‘80-’90

- ✓ INVASIVE PROCEDURE
- ✓ Hard REHAB PROTOCOL
  - 3 MONTH CAST
  - NO WEIGHT-BEARING





GOOD OUTCOMES:

- PROMs
- Rotational control

- Persistent anterior laxity
- Early degenerative change in the lateral compartment

Vail AJSM 1992, Neyret Br J Sports Med 1994

In vivo kinematic and clinical analysis of isolated modified Lemaire anterolateral tenodesis in ACL deficient knee

Perelli S, Monllau JC et al. 2022 (*Submitted)*

PROSPECTIVE STUDY, 52 pts, >55yo
- 22 isolated LET / 30 first step of two-stage ACL Revision
- in vivo kinematic analysis of isolated LET to explore its ability to modify the stability of ACL deficient knees
- clinical outcomes

Patient Reported Outcomes Measures

CONCLUSION

@ two years follow-up LET improves ➔
- kinematics of the ACL deficient knee
- subjective stability & function
- clinical outcomes

MY OPINION !

IN ACTIVE SENIORS CONSIDER

LET ALONE

- NO BONE TUNNELS
- NO LIGAMENTIZATION TIME
- FASTER REHAB
- GOOD SUBJECTIVE AND LAXITY OUTCOMES

TAKE HOME MESSAGE

- INCREASING INCIDENCE OF > 50yo ACL TEAR AND RECONS
- SURGICAL TREATMENT PROVIDES BETTER OUTCOMES
- TRY TO SLOW DOWN OA NATURAL ONSET
- CONSIDER EXTRARTICULAR PROCEDURE ALONE

THANK YOU

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