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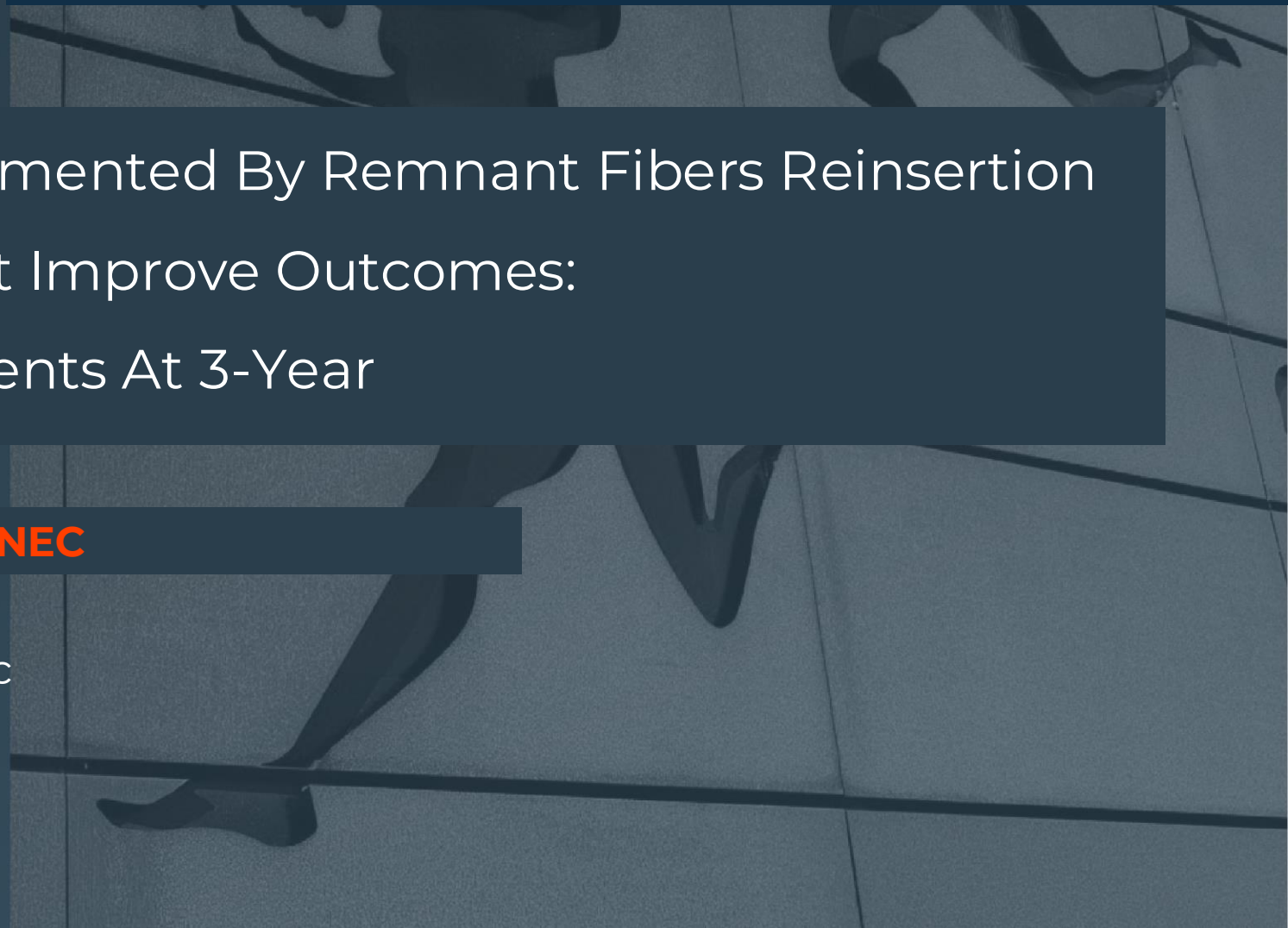

Does ACL Reconstruction Augmented By Remnant Fibers Reinsertion In Addition To Hamstring Graft Improve Outcomes: Results Of A Cohort Of 68 Patients At 3-Year

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MERISCIENCE

CONFLICTS OF INTEREST

N. Bouguennec is consultant for SBM, Stryker, FH and Arthrex (1)

(2)

(3)

INTRODUCTION

- One of the causes of failed ACL reconstructions : lack of integration (1)
- Increasing tendency to retain remnant (2)
- But many failures with repair techniques (3)
- New techniques required

  With hamstring augmentations ? (3)

› Knee Surg Relat Res. 2016 Dec 1;28(4):319-324. doi: 10.5792/ksrr.16.007.

Causes of Failure of Anterior Cruciate Ligament Reconstruction and Revision Surgical Strategies

Paolo Di Benedetto [1], Enrico Di Benedetto [1], Andrea Fiocchi [1], Alessandro Beltrame [1], Araldo Causero [1]

(1)

Histological features of the ACL remnant in partial tears

Bertrand Sonnery-Cottet [a], Céline Bazille [b], Christophe Hulet [b], Philippe Colombet [c], Thomas Cucurulo [d], Jean Claude Panisset [e], Jean François Potel [f], Elvire Servien [g], Christophe Trojani [h], Patrick Djian [i], Nicolas Graveleau [j], Nicolas Pujol [k,*], The French Arthroscopic Society

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(2)

› Arthroscopy. 2018 Apr;34(4):1085-1093. doi: 10.1016/j.arthro.2017.10.028. Epub 2018 Jan 17.

Clinical Outcomes of Arthroscopic Primary Repair of Proximal Anterior Cruciate Ligament Tears Are Maintained at Mid-term Follow-up

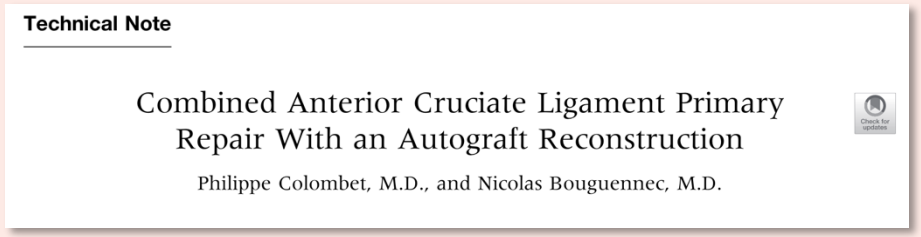
Gregory S DiFelice [1], Jelle P van der List [2]

(3)

TECHNIQUE

Our technique: Augmentation of the ACL at the hamstrings:

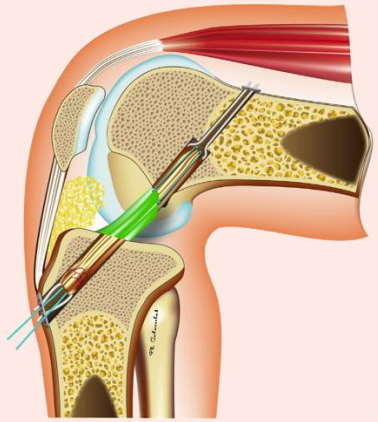
- Remnant preservation
- Reinsertion of the ACL on the femur
- By traction on the femoral endobutton

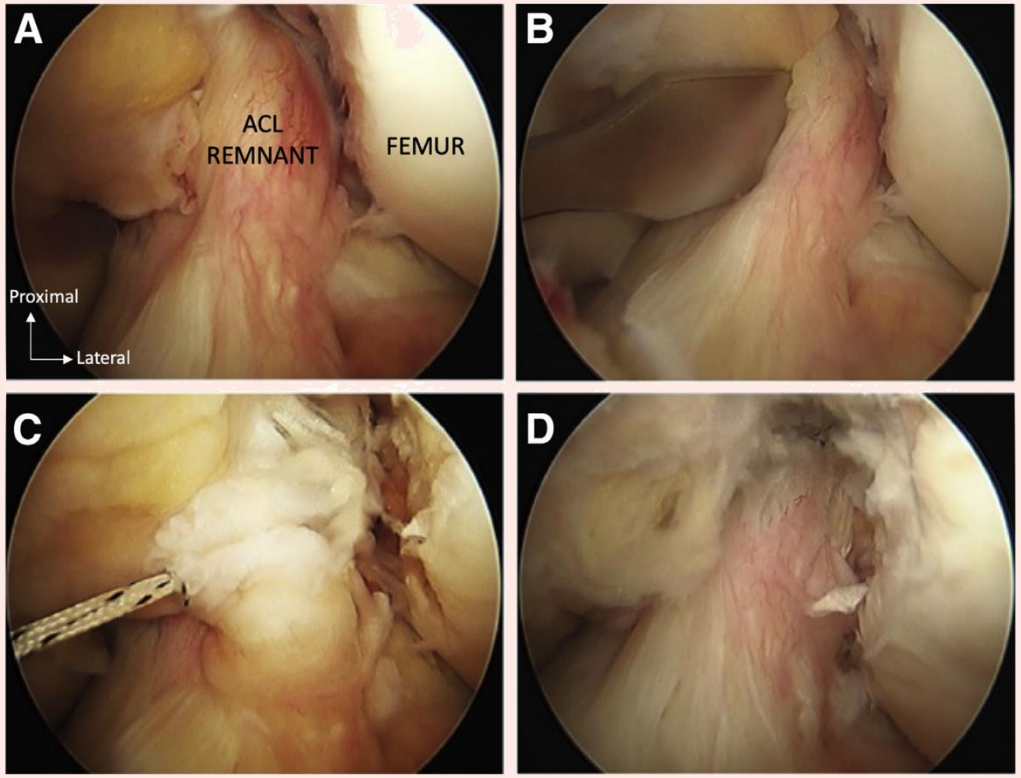

Technical Note

Combined Anterior Cruciate Ligament Primary Repair With an Autograft Reconstruction

Philippe Colombet, M.D., and Nicolas Bouguennec, M.D.

(4) Arthroscopy technique 2019





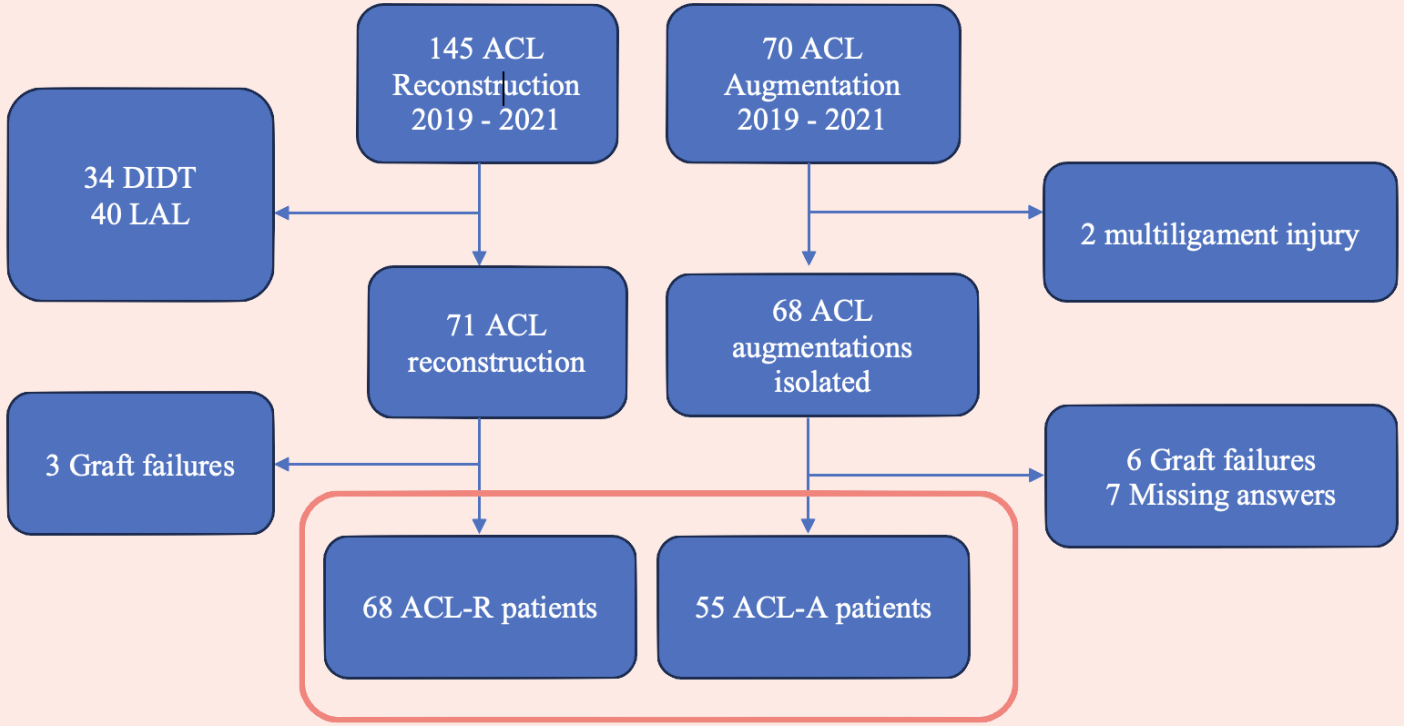
Comparison to a group of ACL reconstruction, with Semi-tendinosus graft (5)

METHOD

Groupe Augmentation of ACL (ACL-A)
- Patients who have undergone ACL augmentation - Between 2019 and 2021
- Exclusion: multi-ligament injury

Groupe Reconstruction of ACL (ACL-R)
- Patients who have undergone ACL reconstruction with DT4 - Between 2019 and 2021
- Exclusion: multi-ligament injury Antero-lateral reconstruction DIDT Graft

Comparative study, single-center, 2 operators



POPULATION

Population	ACL-A	ACL-R	p
Sex: M/F	23/45	39/32	0.1
Age	31.6 (14-68)	27.5 (12 – 59)	0.1
BMI	23.5 (16.3 – 31.6)	24.2 (18.3 – 38.3)	0.6
Tunnel width	8.6 (6 – 10.5)	8,8 (7.5 – 10.5)	0,1
Meniscal lesion	21	32	0, 6

→ 2 groups of population comparable

RESULTS

	ACL-A	ACL-R	p
Surgical revision All causes	10 (6.8%)	7 (9.9%)	0.9
Surgical revision for Graft failure	6 (8.8%)	3 (4.2%)	0.9
Surgery length (min)	43 (31 – 75)	34 (17 – 74)	< 0.05

Etiologies for 2nd Surgery :
ACL-A: 1 meniscus injury *3 arthrolysis* *6 graft failure*
ACL-R: 2 meniscus injuries *1 infection* *1 arthrolysis* *3 graft failures*

→ No benefit on failure rate

→ Longer tourniquet time

RESULTS

Functionnal results at 3 years postoperatively

Functionnal Results	ACL-A	ACL-R	p
ACL-RSI	66 (0 – 100)	71 (13 – 100)	0.5
IKDC	88 (42 – 100)	88 (59 – 100)	0.4
Tegner	6.327 (1 – 10)	6 (0 – 10)	0.5
SKV	82 (20 – 100)	89 (60 – 100)	0.2

→ No improvement in functional scores at 3 years postoperatively

DISCUSSION

GRAFT FAILURE RATE :

Robinson et al., ISAKOS 2023 [6] :	14% (ACL-A) vs 6% (ACL-R)
Wilson et al, Knee, 2020 [7] :	10.4% (ACL-A)
Our study :	9% (ACL-A) vs. 4% (ACL-R)

= GRAFT FAILURE rates close to the littérature

Functionnal results:

Score	ACL-RSI	IKDC	Tegner	SKV
Muller and al. AJSM 2022 (8)	75	85		
Gagliardi and al. AJSM 2019 (9)		91		
Ortmaier et al. (10) Sportverletz.-Sportschaden 2020			5	
Schneider et al. J Clinical med. 2020. (11)		87	6	
Heusdens et al. KSSTA 2020. (12)		85	6	
Vermeijden et al. Arthroscopy 2021. (13)		91	6	
Our study ACL-A groupe:	66	88	6	82

Subjective scores similar to the litterature

DISCUSSION

No reduction in re-rupture rate…

Improved integration?

- But difficulties linked to analysis methods
- SNQ validity?

→ Interest of an MRI study?

Sonnery-Cottet, Knee 2014

CONCLUSION

- ACL augmentation :
  No improvement in functional results compared to standard reconstruction
- No reduction in revision rates
- Despite a more technically demanding procedure

References

1 - Causes of Failure of Anterior Cruciate Ligament Reconstruction and Revision Surgical Strategies, Benedetto, KSSTA, 2016

2 - Histological features of the ACL remnant in partial tears, Sonnery Cottet, The Knee, 2014

3 - Clinical Outcomes of Arthroscopic Primary Repair of Proximal Anterior Cruciate Ligament Tears Are Maintained at Mid-term Follow-up, Di Felice, Arthroscopy, 2018

4 - Combined Anterior Cruciate Ligament Primary Repair With an Autograft Reconstruction, Colombet and al. Arthroscopy Technique 2020

5 - An Anterior Cruciate Ligament Reconstruction Technique With 4-Strand Semitendinosus Grafts, Using Outside-In Tibial Tunnel Drilling and Suspensory Fixation Devices, Colombet and al. Arthroscopy Technique 2015

6 - Primary anterior cruciate ligament repair: Current concepts, Robinson JR and al. Journal of ISAKOS, 2023

7 - Anterior cruciate ligament repair with internal brace augmentation: A systematic review, Wilson, The Knee, 2022

8 - Favorable Patient-Reported, Clinical, and Functional Outcomes 2 Years After ACL Repair and InternalBrace Augmentation Compared With ACL Reconstruction and Healthy Controls, Muller and al. AJSM, 2023

9 – ACL Repair With Suture Ligament Augmentation Is Associated With a High Failure Rate Among Adolescent Patients, Gagliardi and al. AJSM 2019

10 – Return to sports after anterior cruciate ligament injury: a matched-pair analysis of repair with internal brace and reconstruction using hamstring or quadriceps tendons. Ortmaier and al., Sportverletz Sportschaden, 2021

11 – Good to excellent functional short-term outcome and low revision rates following primary anterior cruciate ligament repair using suture augmentation, Schneider and al. , J Clin Med. 2020

12 - Suture tape augmentation ACL repair, stable knee, and favorable PROMs, but a AJSM Vol. 51, No. 12, 2023 Favorable Outcomes After ACL Repair and Ligament Augmentation , Heusdens and al. KSSTA 2021

13 - Patients forget about their operated knee more following arthroscopic primary repair of the anterior cruciate ligament than following reconstruction. Vermeijden and al. Arthroscopy. 2020