

Higher Revision Rate Among Low-Volume Practices Compared to High-Volume Practices Following Allograft Anterior Cruciate Ligament Reconstruction

Sahil Dadoo, BS, Ian D. Engler, MD, Janina Kaarre, MD, MSc, Audrey Y. Chang, BS, Michael F. Shannon, BS, Laura E. Keeling, MD, Volker Musahl, MD

Disclosures

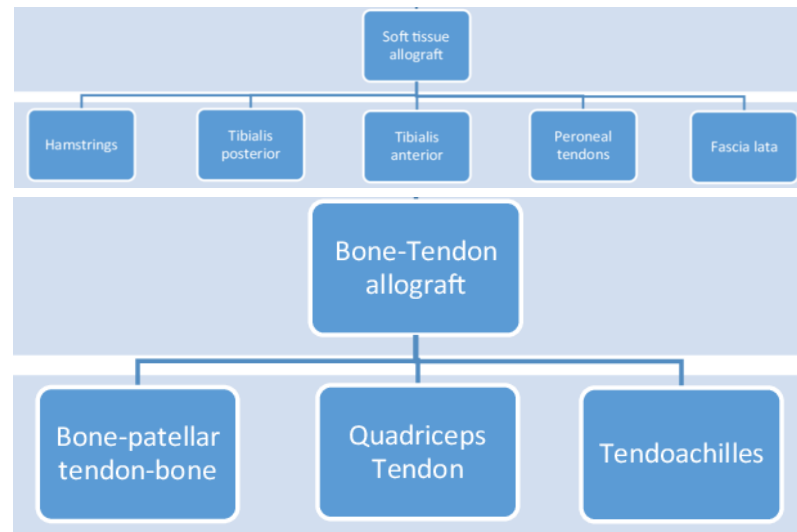
Volker Musahl, MD:

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Introduction

- Increasing evidence indicates **low practice ACL-R volume** as a risk factor for ACL-R failure and subsequent knee surgery¹
- May be due to **increased allograft use** during primary ACL-R among low-volume practices²

1. Schairer, OJSM 2017
2. Inacio, AJSM 2012



Hulet, KSSTA 2019

Purpose/Hypothesis

Purpose:

- To determine if ACL-R practice volume affects revision rate following primary allograft ACL-R
- To determine if ACL-R practice volume impacts allograft choice

Hypothesis:

- Low ACL-R practice volume would result in higher revision rate
- ACL-R practice volume would not affect graft choice

Methods

- All patients aged 14 years or older who underwent primary allograft ACL-R between 2015-2019 with minimum two-year follow-up at a large integrated healthcare system were analyzed from a registry
- Patient characteristics, operative details, allograft type, and revision ACL-R rates were retrospectively collected
- High-volume practice = 35+ ACL-R/year
- **Primary outcome = revision rate**
- **Secondary outcome = allograft choice**

Results

- 457 allograft ACL-R cases
 - 228 at high-volume practice
 - 229 at low-volume practice
- Mean age: 38.8 years
- Low-volume practices used significantly more bone-patellar tendon-bone allograft (BTB)

Table 1. Demographic characteristics and revision rate based on allograft type.

Variable	Allograft Type				p
	Achilles (n=84)	BTB (n=81)	SemiT (n=44)	Tibialis (n=248)	
Age (years), mean (SD)	40.4 (12.2)	41.6 (11.2)	39.2 (13.9)	37.3 (12.2)	0.02
Male (%)	54	61	50	50	0.34
BMI, mean (SD)	30.5 (7.7)	29.7 (5.9)	29.8 (5.0)	29.7 (6.2)	0.76
Graft Used by High-Volume Practice (%)	52	30	68	53	<0.001
Revision (%)	5	10	9	8	0.71

BTB = bone-patellar tendon-bone

SemiT = semitendinosus

*Post-hoc: BTB vs Achilles (0.01), BTB vs semiT (<0.001), BTB vs tibialis (0.001)

Results

- Allograft used in **significantly younger population** among low-volume practices
- **Revision rate significantly higher** in low-volume practice cohort (10% vs 5%; $p = 0.04$)
- More BTB and less semitendinosus allograft use among low-volume practices

Table 2. Demographic characteristics and revision rate based on practice volume.

Variable	Practice Volume		
	Low-Volume (n=229)	High-Volume (n=228)	p
Age (years), mean (SD)	37.6 (13.1)	40.0 (11.3)	0.03
Male (%)	54	51	0.48
BMI, mean (SD)	30.3 (6.5)	29.4 (6.2)	0.11
Allograft* (%)			<0.001
Achilles	17	18	
BTB	26	11	
SemiT	6	13	
Tibialis	51	58	
Revision (%)	10	5	0.04

BTB = bone-patellar tendon-bone

SemiT = semitendinosus

*Post-hoc: BTB (<0.001), semiT (0.01)

Conclusion

- **Higher revision rate following primary allograft ACL-R among low-volume versus high-volume practices**
- Allograft ACL-R is a viable option with low failure rates if strict indications are being observed
- Based on our results, allograft use should be reserved for patients of **older age and lower demand**

References

1. Schairer WW, Marx RG, Dempsey B, Ge Y, Lyman S. The Relation Between Volume of ACL Reconstruction and Future Knee Surgery. *Orthopaedic Journal of Sports Medicine*. 2017;5(7_suppl6):2325967117S00298. doi:10.1177/2325967117s00298
2. Inacio MC, Paxton EW, Maletis GB, et al. Patient and surgeon characteristics associated with primary anterior cruciate ligament reconstruction graft selection. *Am J Sports Med*. Feb 2012;40(2):339-45. doi:10.1177/0363546511424130
3. Hulet, C., Sonnery-Cottet, B., Stevenson, C. *et al*. The use of allograft tendons in primary ACL reconstruction. *Knee Surg Sports Traumatol Arthrosc* **27**, 1754–1770 (2019). <https://doi.org/10.1007/s00167-019-05440-3>

Thank you!

