

# Comparison of Clinical Outcomes between a Bone-patellar Tendon-bone and Quadriceps Tendon-bone Autografts in Anatomic Rectangular Tunnel Anterior Cruciate Ligament Reconstruction

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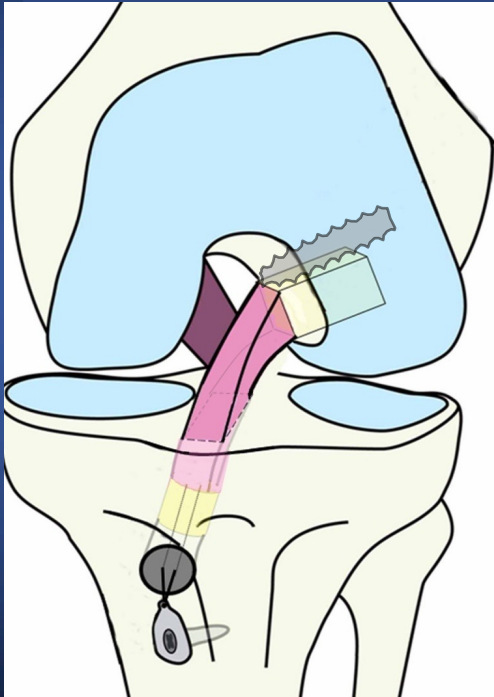
## COI Disclosure

Presenter's names:

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There are no COI with regard to this presentation.

# Anatomic Rectangular Tunnel Anterior Cruciate Ligament Reconstruction (ART-ACLR)



- Mimic the normal ACL fiber arrangement <sup>1)</sup>
- Resembled the normal knee biomechanics than “Round tunnel” (Cadaver study) <sup>2)</sup>
- Excellent subjective and objective outcomes w/ **bone patellar tendon bone (BTB) graft** <sup>3)</sup>

No clinical studies on ART-ACLR  
w/ **quadriceps tendon bone (QTB) graft**

# Hypothesis & Aim

## Hypothesis

QTB has thicker and higher tensile strength than BTB. <sup>4),5)</sup>

⇒ QTB would reduce the rate of re-injury and anterior knee pain.

## Aim

To compare minimum 1-year clinical outcomes after ART-ACLR with an autograft between QTB and BTB.

# Patients

April 2018 - March 2021

96 QTB vs 95 BTB



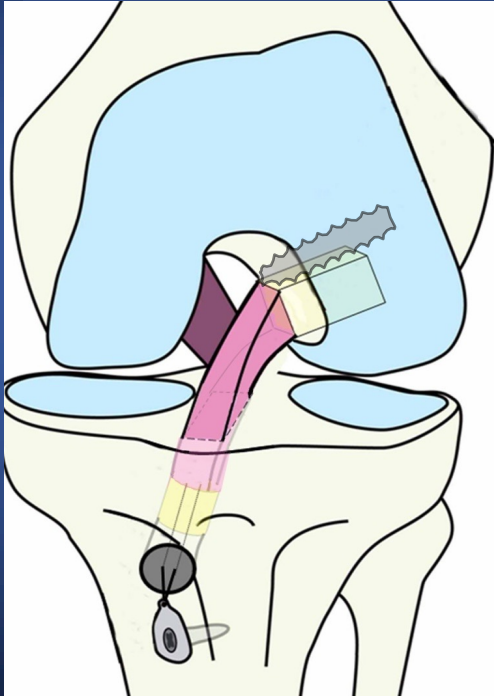
Minimum  
1-year FU

49 QTB vs 52 BTB

	QTB (N=49)	BTB (N=52)	P value	
<b>Characteristics</b>	Age	24.8 ± 11.6	29.4 ± 13.6	0.08*
	M/F	17 / 32	20 / 32	0.69**
	Height (cm)	164.0 ± 7.9	164.9 ± 7.2	0.67*
	Weight (kg)	62.7 ± 11.4	60.9 ± 10.2	0.52*
<b>Additional Surgeries</b>	Meniscal Repair	20 (40.8 %)	13 (25.0 %)	0.09**
	Meniscectomy	6 (12.2 %)	5 (9.6 %)	0.67**
	Cartilage Drilling	2 (4.1 %)	0 (0 %)	0.14**

\*Wilcoxon rank sum test, \*\*Pearson's chi-square test

# Surgical Procedures



- ART-ACLR <sup>1)</sup>
- Graft: QTB or BTB
- Femoral fixation: interference screw
- Tibial fixation: double spike plate (DSP)
- Initial graft tension: 10 N w/ tensioning boots

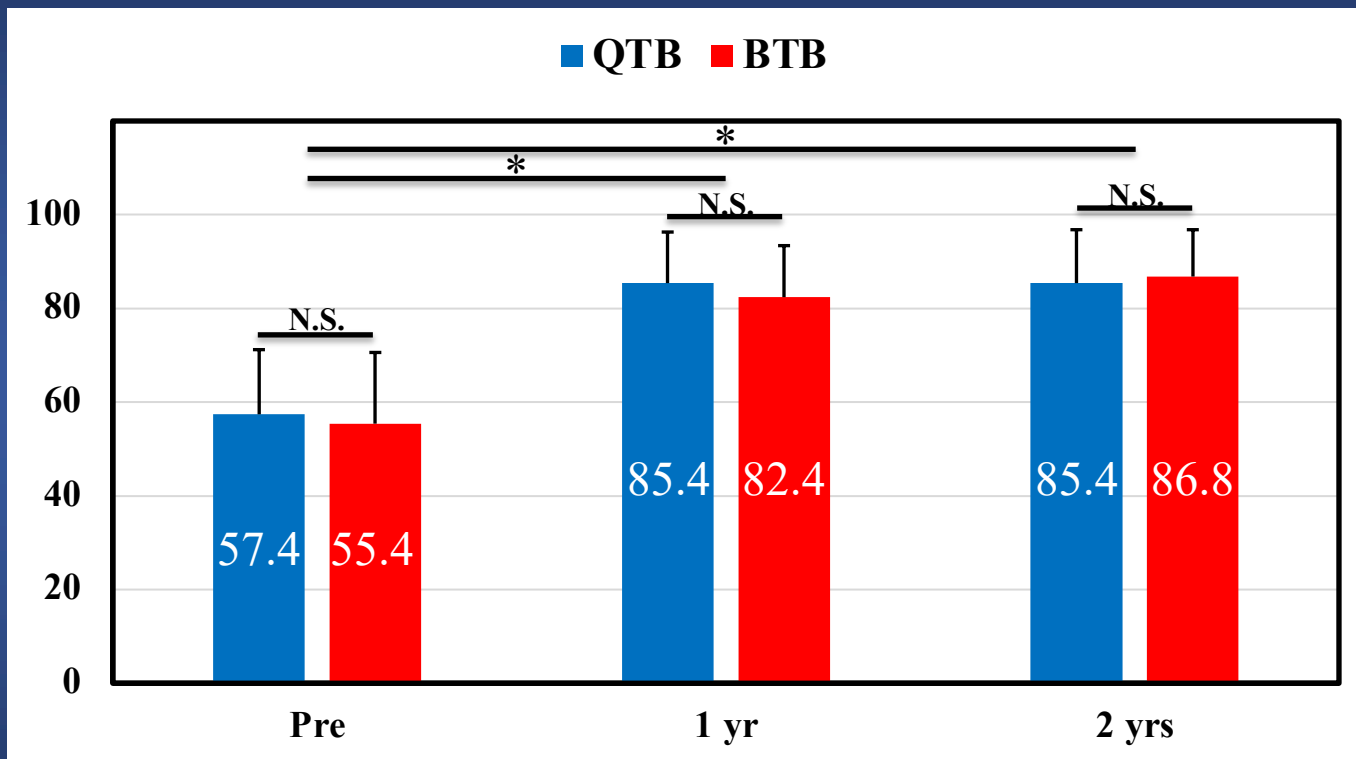
## Postop Rehab

- Knee brace -2w
- 1w- ROM exercise
- 1-2w Partial weight bearing
- 2-3w Full weight bearing
- 3mo- Jogging
- 8mo- Return to Sports

# Outcome Assessments

- Patient-reported outcome measures (PROMs)
  - IKDC
- Side-to-side differences (SSD) in KT-1000
- Re-injury
  - ipsilateral & contralateral knees
- Anterior knee pain (AKP)

## IKDC



\*  $p < 0.05$  (Kruskal-Wallis test)



# Clinical outcomes

		QTB (N=49)	BTB (N=52)	P value
<b>SSD in KT-1000</b>		0.37 ± 1.36 mm	0.36 ± 0.99 mm	0.88*
<b>Re-injury</b>	Ipsilateral	6.1 % (3 case)	9.6 % (5 case)	0.52**
	Contralateral	2.0 % (1 cases)	1.9 % (1 cases)	0.97**
<b>AKP</b>		4.1 % (2 cases)	23.1 % (12 cases)	0.006**

\*Wilcoxon rank sum test, \*\*Pearson's chi-square test

# QTB vs BTB

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	Previous studies <sup>6),7)</sup>	This study
<b>Clinical outcomes</b>	No differences	No differences
<b>Stability</b>	89% vs 68% (SSD 0-3mm)	0.37 mm vs 0.36 mm (SSD in KT-1000)
<b>Failure rates</b>	5.5% vs 6.7%	6.1% vs 9.6%
<b>AKP</b>	4.6% vs 26.7%	4.1% vs 23.1%

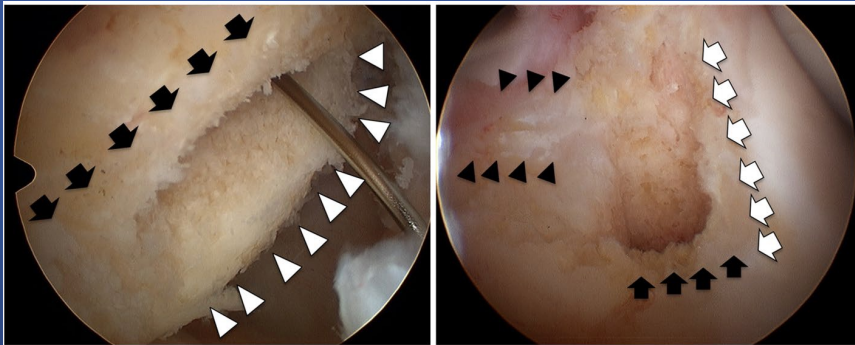
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Comparable outcomes to previous studies.

# ART-ACLR

## ART-ACLR w/ BTB

- Excellent subjective and objective outcomes in more than 95% of patients.<sup>3)</sup>



Better clinical outcomes expected after ART-ACLR w/ QTB by reduction in postoperative complications.

# Conclusions

- There were no significant differences in patient-reported outcomes, knee stability and re-injury between QTB and BTB autografts after ART-ACLR.
- QTB autografts were associated with reduced anterior knee pain compared to BTB autografts.

# References

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- 6) DeAngelis JP, et al. Clin Sports Med 2007 ;26(4):587-96.
- 7) Geib TM, et al. Arthroscopy 2009 ;25(12):1408-14.