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Utilizing a Minimally Invasive Superficial Band of the Quadriceps Tendon as a Tendon Graft for Anterior Cruciate Ligament Reconstruction: A Cadaveric Study

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Faculty Disclosure Information

- Nothing to disclosure

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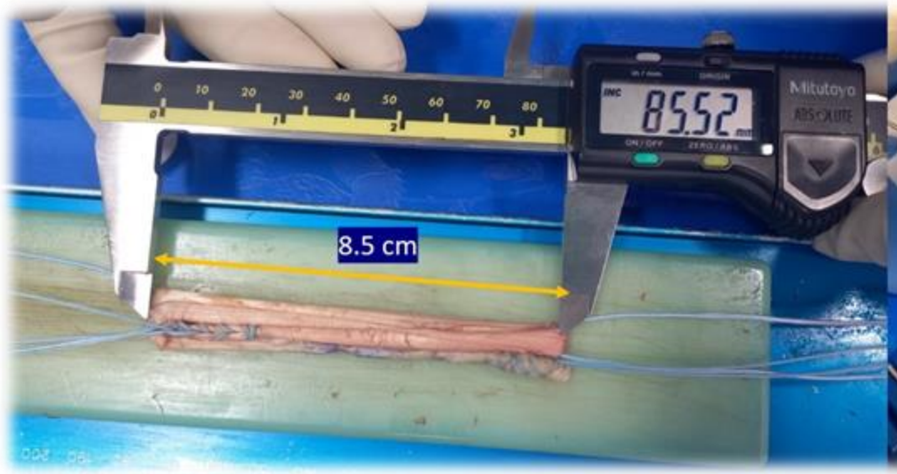
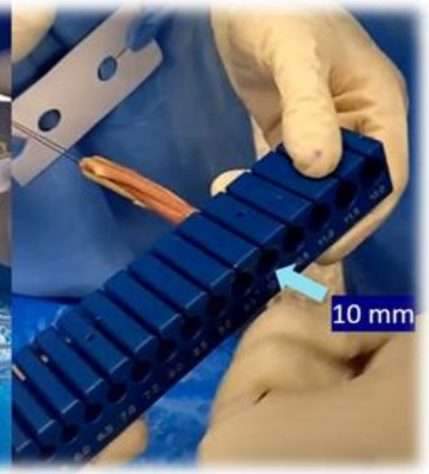
Introduction

- ACL injuries require reconstruction using grafts.
- Traditional graft options include BPTB, HT, and QT.
- QT graft is strong but traditional harvesting methods cause donor site morbidity.
- This study explores a minimally invasive technique for QT harvesting, using only superficial band.

Hypothesis

- A three-stranded QT graft harvested using a minimally invasive technique and the superficial band of the quadriceps tendon has an adequate diameter of over 8 mm and a length of over 6 cm.
- = suitable for anterior ligament reconstruction





Methods

Study design

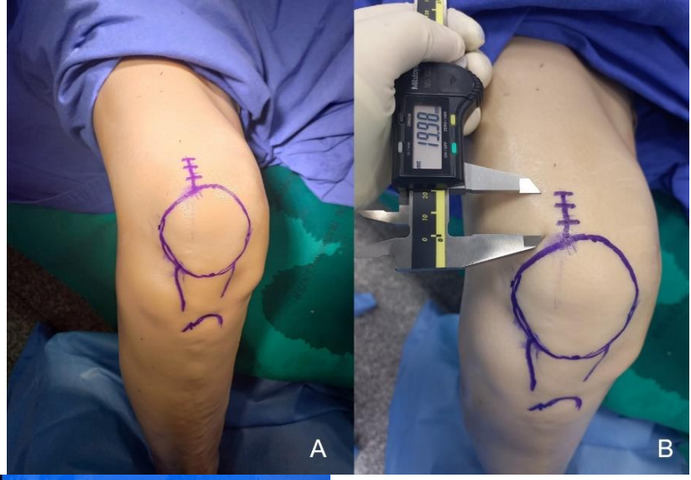
- Cadaveric study
- Special preserved Thiel's cadavers' lower extremities

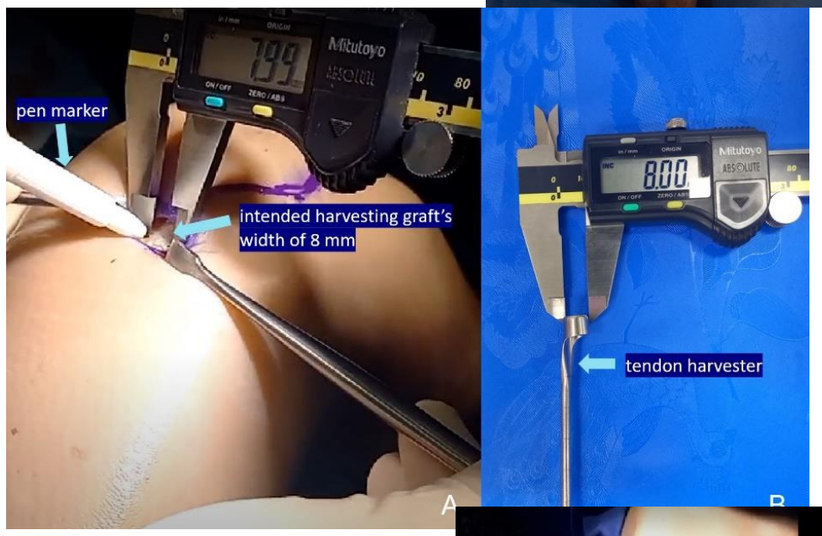
Inclusion criteria

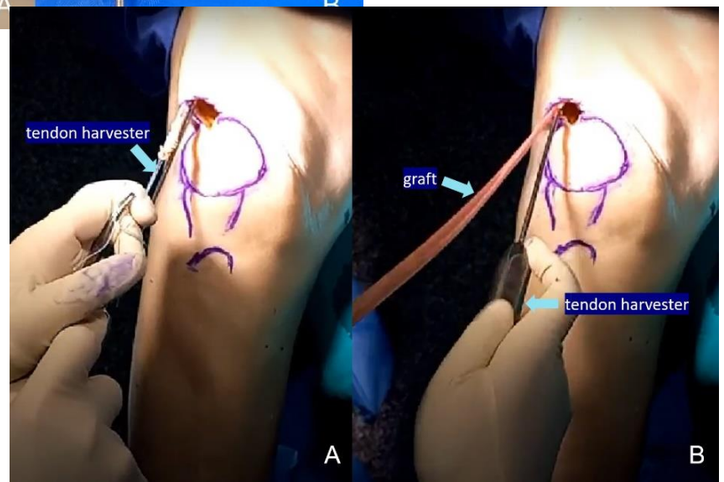
Cadavers aged over 18 years without prior lower extremity surgery or trauma.

Procedure

- 2-cm vertical skin incision is made over the superior pole of the lateral 1/3 patella
- Separating the superficial layer of quadriceps tendon
- Graft Harvesting utilized conventional tendon stripper







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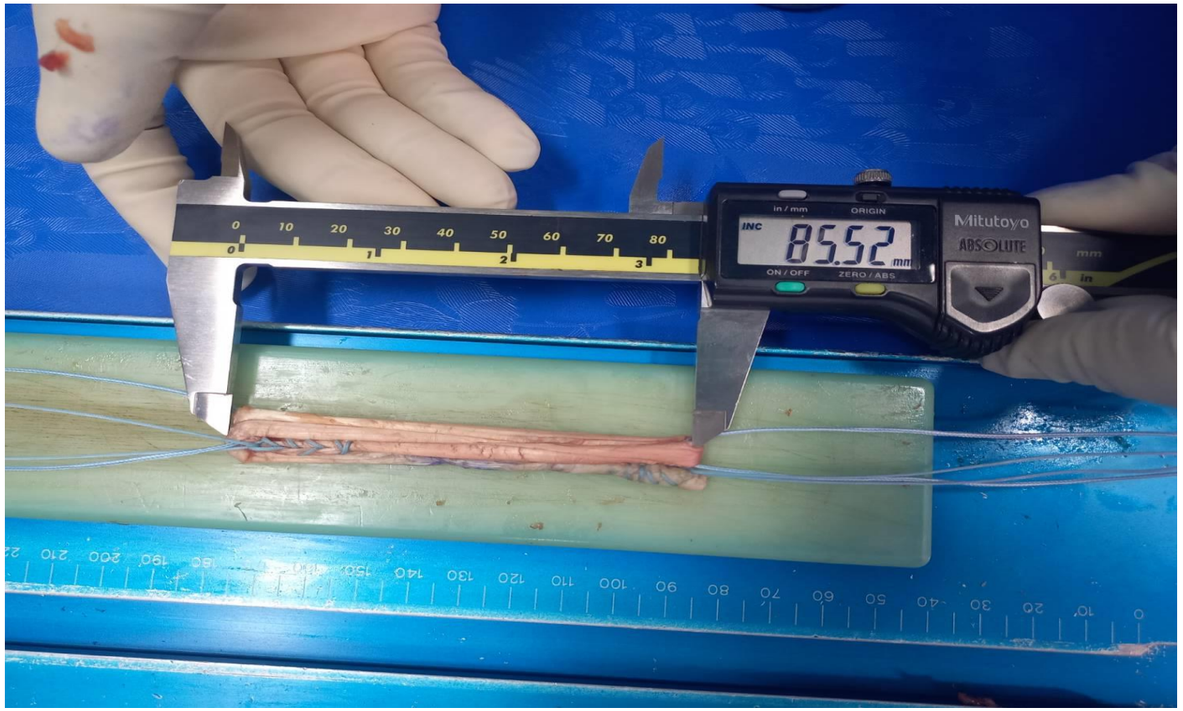
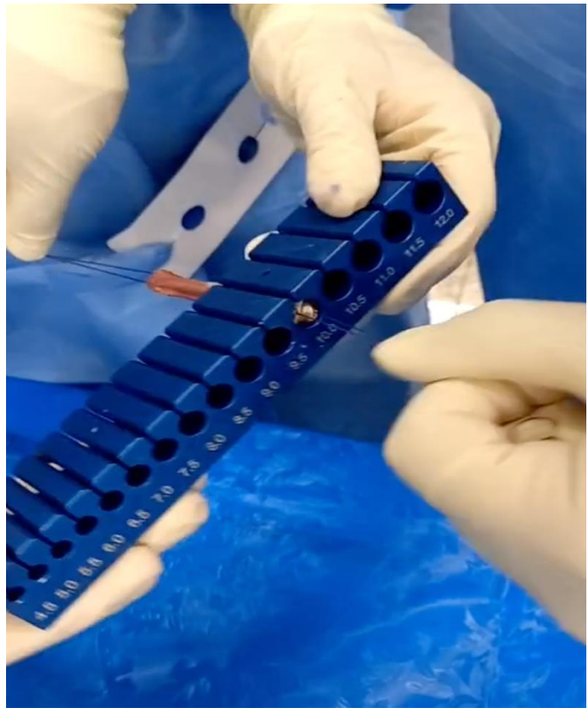
Measurements

Mid Diameter:
Vernier Caliper



Total and folded graft length:
Vernier Caliper



Peripheral End:
Graft Sizer

Results

- Demographic data

Age (y, mean±SD)	64.7±9.9
Sex	
- Male (n, %)	4, 50%
- Female (n, %)	4, 50%
Height (cm, mean±SD)	159.2±7.9

Results

- Measurement

Length (mm, mean +- SD)	288.9±10.3
Mid-diameter (mm, mean +- SD)	9.6±0.6
End diameter (mm, mean +- SD)	***8.5±0.3***
Folded length (mm, mean +- SD)	***93.0±4.6***

Discussion

- Minimally invasive QT harvesting is feasible for ACL reconstruction.
- Provides grafts with sufficient length and diameter.

Advantage

- Reduced donor site morbidity.
- No specialized equipment needed
- Preserves patellar and hamstring tendons.
- Offers flexibility in fixation techniques. (Suspensatory fixation requiring loops)

Limitation

- Conducted on cadaveric specimens, potentially not replicating living tissue conditions.
- Small sample size of 16 limits power and generalizability.
- Mean age of 64.7 years may not represent broader ACL reconstruction population.
- Single institution study may not apply to other settings with different techniques and care.

Conclusion

- Minimally invasive QT harvesting is a promising technique for ACL reconstruction.
- Provides adequate graft dimensions and reduces donor site complications.
- Further biomechanics & clinical studies are needed to confirm these findings.

Acknowledgment

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