Ligamentum Teres Reconstruction with Tibialis Anterior Allograft: Case Series with 2-Year Follow Up.

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Disclosures

I (and/or my co-authors) have something to disclose.

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Introduction

- Multiple studies have shown that ligamentum teres (LT) lesions may be associated with poorer patient-reported outcomes (PROs), distinct patterns of intraarticular damage, and an increased likelihood of conversion to arthroplasty within 2 years.

- In patients undergoing hip arthroscopy, multiple studies have reported high prevalence rates of concomitant LT pathology.

Purpose and Hypothesis

- The literature on outcomes of LT reconstruction is limited. Most studies report favorable outcomes, with contradictory findings of reoperation rates.
- This study aims to evaluate the outcomes of LT reconstruction with tibialis anterior allograft treatment for LT tears, with a minimum 2-year follow-up.
- Hypothesis: Favorable outcomes with high satisfaction and low revision rates at 2 years after LT reconstruction

Methods

- Looking at patients from a single surgery center between December 2014 and July 2021
- Included patients had completed preoperative and minimum of 2-year postoperative questionnaires for the following PROs: mHHS, NAHS, HOS-SSS, iHOT-12, VAS pain, or had a documented endpoint surgery
- Looking at patient demographics, radiographic findings, intraoperative findings, procedures, patient reported outcomes (PROs), secondary surgeries, and complications
- A sub-analysis was also performed comparing outcomes between a comparable group of patients with grade III LT Percentile Domb classifications who underwent hip arthroscopy with LT debridement as treatment.

Pearls and Pitfalls

Table 1: Pearls and Pitfalls of LT Reconstruction

Indications	Pearls	Pitfalls
Careful patient selection, in the setting of primary and revision hip arthroscopy. Consider in patients with symptoms of instability, high Beighton's score, borderline dysplasia, positive O'Donnell test. MRI suggestive of LT tear, with further intraoperative confirmation.	**Utilize Dual C-Arms:** This will save time and increase surgical efficiency. Tunnel Drilling under fluoroscopy. **Button Insertion:** For better stability, hold the button with a grasper at the opening of the acetabular drill hole and insert it with a switching stick. Release traction before fixing the button.	**Length Mismatch:** Be cautious of length mismatch between the femoral tunnel and graft. **Over-tightening:** Avoid over-tightening the graft by fully releasing traction on the leg before femoral fixation. **Intra-abdominal Extravasation:** Be aware of the risk of intra-abdominal extravasation following acetabular drilling.

Results

- 22 patients (19 females (86.4%)) were included in the study
- Average age was 36.4 ± 13.1 years, and the average BMI was 25.5 ±4.9 kg/m^2
- 14 (63.6%) patients had the LT reconstruction during a revision hip arthroscopy surgery
- Favorable PRO outcomes

Table 2: Minimum 2-Year Patient Reported Outcomes

Measurement	Preoperative	Δ	Postoperative	P value
mHHS	50.7 ± 17.6	28.6 ± 16.6	79.3 ± 20.6	**<0.001**
NAHS	52.4 ± 19.6	25.8 ± 17.1	78.3 ± 22.3	**<0.001**
HOS-SSS	22.4 ± 19.7	38.9 ± 27.6	61.3 ± 31.3	**<0.001**
VAS Pain Scale	6.4 ± 2.4	-3.5 ± 3.0	2.8 ± 2.5	**<0.001**
iHOT12	30.3 ± 23.4	38.7 ± 26.2	69.0 ± 26.7	**<0.001**
Patient Satisfaction	-	-	7.6 ± 2.6	-

Results Continued

- There was a 95.5% arthroplasty-free survival rate, with only one patient, who had an Acetabular Outerbridge of II on diagnostic arthroscopy, converting to THA at 71.45 months postoperatively.
- High rates of meeting clinically relevant thresholds

Table 3: Number of Patients Meeting MCID Thresholds for Minimum 2-year Patient-Reported Outcomes.

mHHS	17 (85.0%)
NAHS	16 (80.0%)
HOS-SSS	17 (85.0%)
VAS Pain SCALE	15 (75.0%)
iHOT12	16 (80.0%)

Secondary Analysis Results

- 22 patients with grade III LT Percentile Domb classifications who underwent hip arthroscopy with LT debridement as treatment were successfully matched to our LT reconstruction study group of 22 patients.

- Both groups demonstrated comparable preoperative and postoperative PRO scores across all PROs ($p>0.05$), as well as significant improvement from the preoperative to 2-year timepoint for mHHS, NAHS, iHOT12, and VAS Pain ($p<0.05$).
  - The control group did not show significant improvement for HOS-SSS ($p = 0.20$) while the LT reconstruction group did demonstrate significant improvement ($p<0.01$).

Secondary Analysis Results Continued

Table 4: Minimal Clinical Important Difference (MCID)

	LT Reconstruction	Control Group	P Value
mHHS	76.2%	73.7%	>0.99
NAHS	76.2%	60.0%	0.33
HOS-SSS	78.9%	46.7%	0.08
iHOT-12	81.3%	75.0%	>0.99

MCID was calculated independently using a distribution-based method for both groups. Values are presented as % meeting MCID. MCID, minimal clinically important difference.

Table 5: Secondary Surgeries and Complications

	LT Reconstruction	Control Group	P Value
Second Arthroscopy*	1 (4.5%)	3 (13.6%)	0.61
Time to Second Arthroscopy (mo.)†	10.58	49.31 ± 19.85	
Conversion to arthroplasty*	1 (4.5%)	4 (18.2%)	0.34
Time to arthroplasty (mo.) †	71.45	19.83 ± 12.02	

*The values are given as the number of hips, with the percentage in parentheses.

†The values are given as the mean and the standard deviation.

Conclusion

- Arthroscopic LT reconstruction with a tibialis anterior allograft, concomitant with labral repairs and osteoplasties for FAI, have shown favorable outcomes, high patient satisfaction rates, and a high percentage of patients reaching clinically important thresholds, with a low rate of complications and THA conversion at a minimum 2-year follow-up.

References

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