#75. Repair of Horizontal Cleavage Meniscus Tears. Results from a Prospective Multi-Center STITCH Trial

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Disclosure Information (All Authors)

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Horizontal Cleavage Tears (HCTs)

- HCTs represent approximately 25% of all tear types\(^1\)\(^{-11}\)
- 36% of tears in patients ≥40 years old are HCTs\(^3\)

Historic Treatments Poor

- Historically treated conservatively or via partial resection
  - Superior or inferior leaflet resection
- Partial resection increases contact pressures by 75% \(^1\)
- Repair returns contact pressures to near-normal levels \(^1\)

HCT Repairs Are Possible

- Meta-analysis in 2014\(^1\)
  - 9 studies with HCTs
  - 98 HCT repairs pooled
  - 78% combined success rate

- Higher success rates upon second-look and MRI follow up\(^2,3\) in recent studies

- Multiple techniques have been used

STITCH Study Design

- Prospective, non-randomized, single-arm, open-label clinical study conducted at 8 US centers
  - Andrews Institute for Orthopaedics & Sports Medicine (Gulf Breeze, FL)
  - CORE Orthopaedic Medical Center (Encinitas, CA)
  - Long Beach Memorial Hospital (Long Beach, CA)
  - Mayo Clinic (Rochester, MN)
  - OrthoIndy (Greenwood, IN)
  - Ohio State University (Columbus, OH)
  - University of Virginia (Charlottesville, VA)
  - Valley Health (Winchester, VA)
Objective

- To evaluate HCT repair using circumferential sutures placed with a self-retrieving all-inside suture repair device (NOVOSTITCH™ PRO; Smith + Nephew), with or without adjunct all-suture techniques

Endpoints

- Meniscus healing by second-look at 6 months
- Freedom from reoperation of the index meniscus repair site at 2 years
- Improvements in knee pain and function as measured by International Knee Documentation Committee (IKDC) score; the Knee injury and Osteoarthritis Outcome Score (KOOS) subscales of Activities of Daily Living (ADL), Pain, Quality of Life (QOL), Sport, and Symptom; Lysholm score; and Tegner score
Inclusion Criteria
- Ages 18-60 at screening
- HCT in the symptomatic compartment, as confirmed by MRI

Exclusion Criteria
- Grade ≥3 osteoarthritis
- BMI ≥35 kg/m²
- Prior meniscal repair or meniscectomy of study meniscus
- Malalignment of study knee >5°
- Tobacco abuse
All MRIs were evaluated for pure horizontal or oblique orientation tears.
Patient Demographics

- 30 patients were enrolled
  - 4 disqualified: 3 for fixator usage and 1 for tobacco use
  - 66.7% male
    - Average age of 38.2±11.1 years
- 63.3% medial tears
- 46.7% extended into Zone 1, 43.3% into Zone 2, and 10% into Zone 3
- Average tear length of 17.7±5.9 mm
- Average of 4.9±2.7 stitches placed
In-Office Endoscopy Results

- 15.4% (4/26) required reoperation at 2 years
- 100% (10/10) complete healing at 6 months*

*Complete healing defined as: no visible defect on in-office needle endoscopy
Pre-Op and One-Year Post-Op MRI
Patient-Reported Outcomes (PROs)

- Statistically significant improvements in all PROs measured (P<0.001)
- Significant improvements maintained or improved further at 1 and 2 years
Limitations

- Single-arm study
- Sample size
  - 19 patients with PROs follow up at 2 year
  - 10 patients in-office endoscopy follow up
- Insufficiently powered to identify relevant correlations between outcomes and demographics
Conclusion

- 100% healing upon second-look arthroscopy at 6 months
- Reoperation rate at 2 years (15.4%) is comparable to the success rate of more commonly repaired patterns, and lower than what has been reported for HCT repair\(^1\)
- Significant improvement across all PROs at 2 years
  - KOOS, IKDC, Lysholm, and Tegner
- These results show that repair of HCTs, even in an older age group with tears extending into the avascular zone, yield acceptable midterm clinical healing rates and low reoperation/failure rates