Repair of Radial Meniscus Tears with a New All-Inside Suture vs. Inside-out

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Disclosures

• None

Intro

• Radial meniscus tears can be a challenging clinical scenario
• 10-23% incidence of radial tear pattern in adults
• 10% incidence in children and adolescents
Neglect and partial meniscectomy have been shown to have negative biomechanical and clinical results. Recent studies have shown repair to have improved results over partial meniscectomy for radial tears.

The purpose of the study was to compare the strength, stiffness, and gap formation of repaired radial meniscus tears treated with a new all-inside technique vs traditional inside-out vs all-inside. The hypothesis was that the new all-inside technique would be superior to the other tested techniques.

Porcine menisci used
Medial and lateral menisci used
3 types of repair, 10 (5m, 5l) of each
  – Inside-out, meniscal scorpion with 2-0 fiberwire, meniscal cinch
A full thickness tear was made in the mid body of the meniscus. Two horizontal mattress sutures were used for repair in each type. The sutures were placed 5mm from the tear on either side at the 1/3 and 2/3 points. 6 half hitches were used for knot security.

Once prepared, the menisci were tested on an Instron. Both cyclic loading and load to failure were performed. Values measured:
- Displacement after cyclic and load to failure
- Max load
- Load at 3mm displacement
- Stiffness
Methods

• Displacement after cyclic
  – Scorpion significantly lower than cinch (p<0.001)
  – Inside-out significantly lower than cinch (p=0.007)
  – No statistical difference in scorpion vs inside out
**Results**

- Max load
  - Inside out significantly higher than cinch (p<0.001)
  - Scorpion significantly higher than cinch (p=0.037)
  - Inside out significantly higher than scorpion (p=0.045)

- Stiffness
  - Scorpion trending towards significantly higher than cinch (p=0.08)
  - Inside out significantly higher than cinch (p=0.044)
  - No significant difference between scorpion and inside out

- No significant difference between any groups for displacement after load to failure and load at 3mm displacement
Other studies

- There are no current studies in the literature testing the meniscal scorpion for repair of radial meniscus tears
- There are recent studies which utilize a similar device, the Novostitch

Future

- Testing of the technique on an intact knee would be beneficial
- Incorporating different suture patterns
- Knots on undersurface of meniscus?
Conclusion

• Repair of radial meniscus tears using the meniscal scorpion appears to be a viable method and may be superior to fixation with the cinch

References


Thank you
References