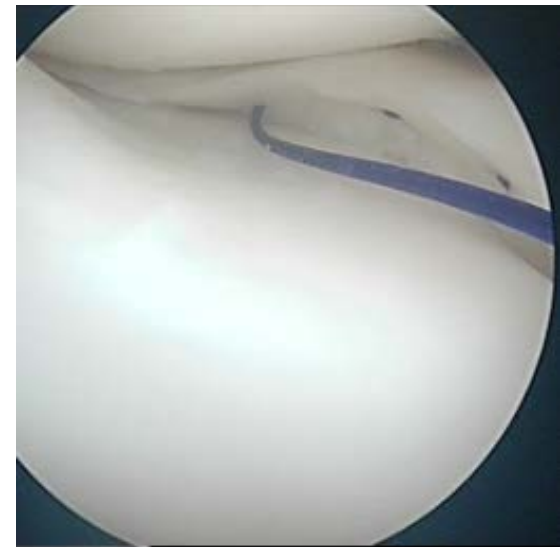


# **Out-In Submeniscal Horizontal Suture Repair: A Simple And Efficient Method**

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- I have no financial conflicts to disclose

# Background (1)

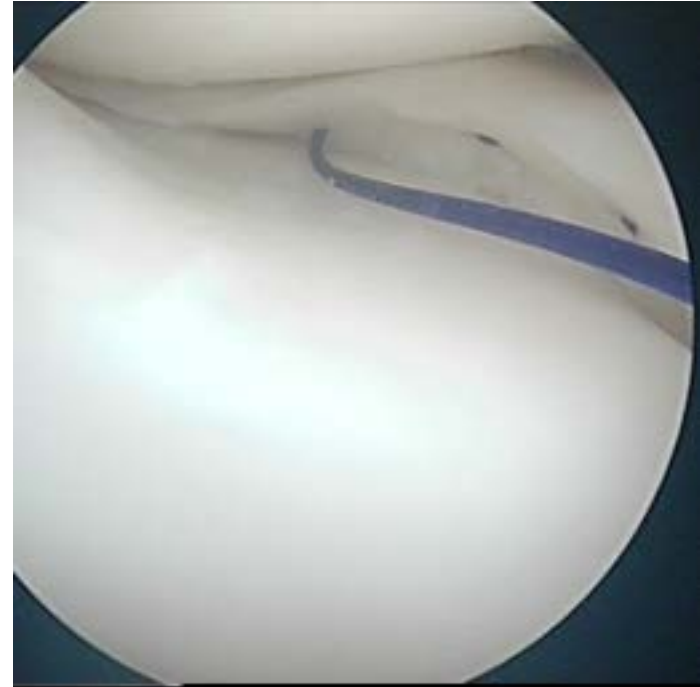
- Parts of the implants and suture materials that surmount the surface of the meniscus can wear down the cartilage in the contact zones and cause chronic synovitis.
- The rationale for using submeniscal sutures is to prevent the potential hazard of chondral abrasion.

# Background (2)

- A technical problem during meniscal repair is placing the sutures in the far posterior region of the meniscus.
- Submeniscal horizontal suture is an acceptable technique to overcome this problem and reach this part of the menisci without any additional incision.

# Purpose of study

- The goal of this prospective study was to evaluate the mid-term results of arthroscopic meniscal repair using submeniscally placed out-in horizontal PDS sutures.



# Method

- Between Jan 2009 and Feb 2012
- 103 consecutive patients
- Mean age 27.2 y (range 16-45)
- With longitudinal tear in red-red and red-white zone with acceptable tissue quality
- Surgical technique: submeniscal horizontal out-in repair
- Concurrent ACL reconstruction was performed in 78 patients

## Evaluation:

- Tegner and Lysholm knee scores
- Barrett's criteria (absence of joint-line tenderness, locking, swelling, and a negative McMurray test)

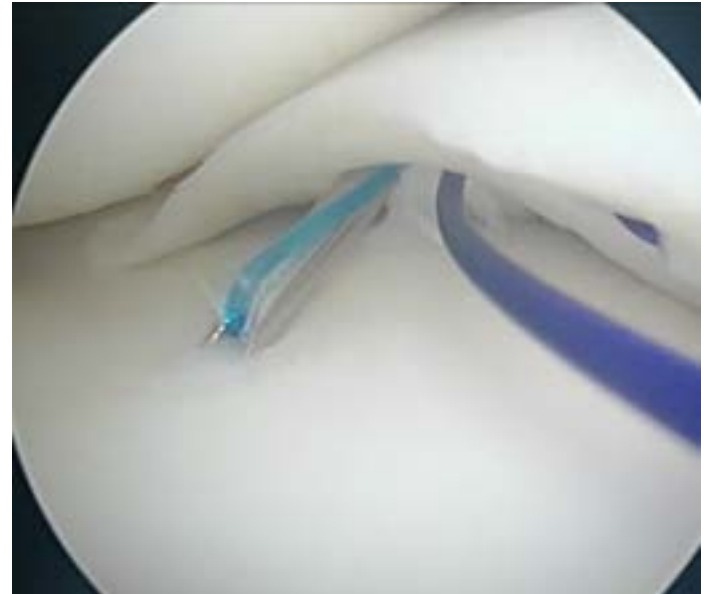
# Technique (1)

- After locating the best entry point and making a small skin incision, a cannula threaded with a free-end No. 1 polydioxanone suture is passed through the capsule and across the tear and comes out from the undersurface of meniscus.



# Technique (2)

- Anterior to the entry point, a second cannula threaded with a Nylon 2/0 suture loop is passed through the same incision and again comes out through the inferior surface of the meniscus





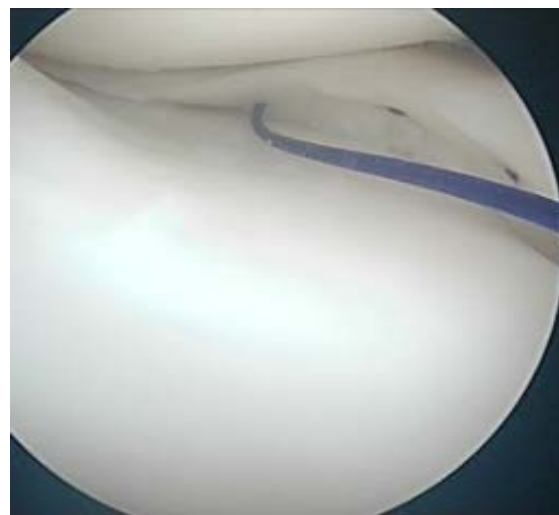
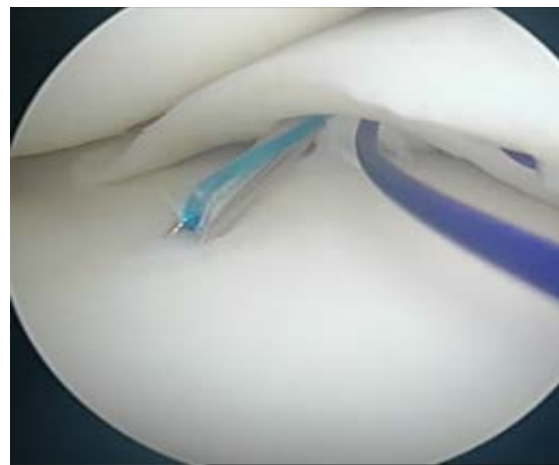
# Technique (3)

- Outside the knee joint, the free PDS suture is passed through the suture loop. Pulling on the suture loop from its entry point draws the free suture back into joint and out of the skin.
- The two free ends of the PDS suture are tied with five to six simple knots.



# Technique (4)

- According to the tear size, two to six sutures are placed along the joint line in the same way.
- Postoperatively, a hinged knee brace was used for 6 weeks.



# Results

- Average follow-up: 19 months (range, 14 to 40 months)
- Time interval from injury: 2-390 days (median, 96 days)
- Barrett's criteria, Success: 86.5% Failure: 13.5%
- Lysholm score: 39.6 preop to 84.5 postop
- Tegner activity score: average of 3.4 (range, 2-6) preop to 5.9 (range, 5-8) postop

# Conclusion

- Our results showed that acceptable midterm results can be expected from submeniscal horizontal out-in repair technique.
- This technique is cheap, safe and has the advantage of avoiding chondral abrasion caused by solid implants and suture materials placed over the meniscus.

# References

- 1. Barrett GR. Clinical results of meniscus repair in patients 40 years and older. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 1998;14(8):824-9.
- 2. Barber FA, Herbert MA, Richards DP. Load to failure testing of new meniscal repair devices. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2004;20(1):45-50.
- 3. Dervin GF, Downing KJ, Keene GC, McBride DG. Failure strengths of suture versus biodegradable arrow for meniscal repair: an in vitro study. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 1997;13(3):296-300.
- 4. Rankin CC, Lintner DM, Noble PC, Paravic V, Greer E. A biomechanical analysis of meniscal repair techniques. *The American journal of sports medicine*. 2002;30(4):492-7.
- 5. Rimmer MG, Nawana NS, Keene GC, Pearcy MJ. Failure strengths of different meniscal suturing techniques. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 1995;11(2):146-50.
- 6. Stärke C, Kopf S, Petersen W, Becker R. Meniscal repair. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2009;25(9):1033-44.
- 7. Seil R, Rupp S, Dienst M, Mueller B, Bonkhoff H, Kohn DM. Chondral lesions after arthroscopic meniscus repair using meniscus arrows. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2000;16(7):1-4.