

Giving the Meniscus Another Chance: Repairing Degenerative Tears in Middle-Aged Patients

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INTRODUCTION: Degenerative complex meniscal tears (DCTs) are common in adults over 40 and are typically managed with meniscectomy when conservative treatment fails, despite the risk of rapid joint degeneration. As interest in meniscal preservation grows, repair of DCTs remains technically demanding due to the challenging anatomical reduction and limited healing potential. This study evaluates the clinical outcomes of arthroscopic all-inside repair using a suture hook and an injectable autologous blood clot–collagen mixture in middle-aged patients.

METHODS: In this retrospective cohort study, 56 patients (aged 40–67) underwent arthroscopic all-inside meniscus repair with biologic augmentation between April 2020 and June 2023. After excluding 5 patients lost to follow-up and 2 who declined postoperative MRI, 49 patients were analyzed with a minimum 2-year follow-up. This study protocol was approved by institutional review board. Clinical outcomes were evaluated using the IKDC subjective and Lysholm scores. MRI at 12 months postoperatively assessed healing, with grades 0–2 indicating healing and grade 3 indicating incomplete healing. Clinical failure was defined as 1) need for repeat meniscectomy, 2) conversion to knee arthroplasty, or 3) recurrence of preoperative symptoms. Complications and reoperation rates were recorded.

RESULTS: Of 49 patients, 31 were female and 18 were male; 39 had medial and 10 had lateral meniscus tears. Concomitant procedures included HTO (n=6), ACL revision (n=2), microfracture (n=3), and stem cell-based cartilage regeneration (n=4). IKDC and Lysholm scores improved significantly from 59.3 ± 11.7 to 86.8 ± 13.3 , and from 62.1 ± 10.4 to 90.2 ± 14.2 , respectively ($P < 0.001$). At 1-year MRI, 10.2% showed grade 0 signal, 36.7% grade 1, 28.6% grade 2, and 24.5% grade 3. Only one patient (2.04%) experienced clinical failure. No complications related to the repair were observed.

DISCUSSION: All-inside arthroscopic repair using a suture hook and injectable blood clot–collagen mixture appears to be a safe and effective treatment option for meniscus DCTs in patients over 40. However, further studies are warranted to elucidate the biomechanical integrity and chondroprotective role of successfully healed meniscal tissue.

SIGNIFICANCE/CLINICAL RELEVANCE: This suggests the potential to preserve meniscal volume and maintain its function, thereby delaying the progression to osteoarthritis

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IMAGES AND TABLES

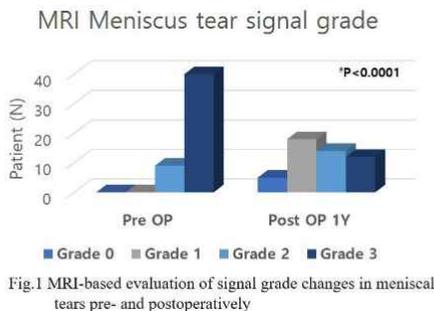
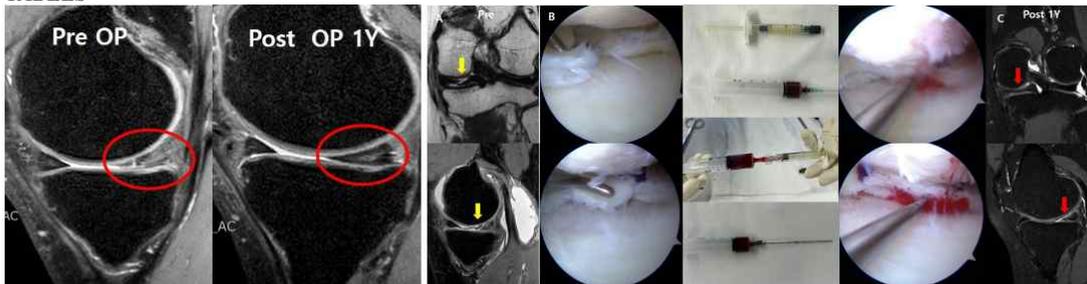


Fig.2 Case 1: A 56-year-old female presented with posteromedial joint line pain for over 9 months. Arthroscopic evaluation revealed a radial-horizonal complex tear of the medial meniscus. The tear was repaired using a suture hook and four stitches with PDS-0, along with the application of a blood-collagen mixture. On 1-year follow-up MRI, the medial meniscus showed near-complete healing.

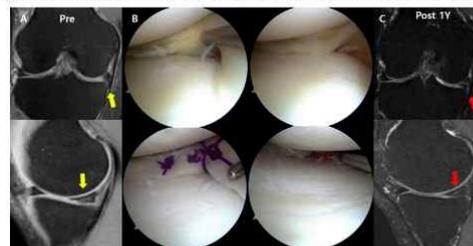


Fig.3 Case 2: A 43-year-old male presented with medial joint line pain for over 11 months. Arthroscopic evaluation revealed a horizontal flip complex tear of the medial meniscus impinging on the medial tibial spine. The tear was resected and repaired using a suture hook and five stitches with PDS-0, along with the application of a blood-collagen mixture. On 1 year follow-up MRI, the medial meniscus demonstrated a well-maintained shape and a decreased signal intensity, corresponding to grade 1.