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Medial Meniscus Root Repair: Are We Healing and How Can We Tell?

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Summary:
The purpose of this study was to evaluate the biologic healing of meniscus root tears through high resolution MRI and correlate this appearance to clinical outcome.

Abstract:
INTRODUCTION
Meniscus root tears are associated with loss of hoop stress, increased peak pressure, and reduction in contact area of the affected compartment of the knee. Reversal of this outcome is predicated on the successful restoration of the meniscus through biologic healing to the tibial attachment. The purpose of this investigation was to evaluate the biologic healing of meniscus root tears through high resolution MRI and correlate this appearance to clinical outcome.

METHODS
Nine patients were identified as having undergone a medial meniscus root repair using an identical pull-out surgical technique by a single surgeon. Outcomes were determined using Lysholm and WOMAC scores and quality of meniscus healing was assessed using a 3 Tesla MRI. MRI studies were reviewed by two fellowship trained musculoskeletal radiologists according to pre-defined criteria.

RESULTS
There were 4 females and 5 males in the study group. The average follow-up time was 30 months (range 21-41). MRI demonstrated a new tear medial to the prior repair in 4/9 patients. 4 patients demonstrated recurrence of tear or lack of biologic healing of the root attachment. In patients with recurrent tears of the root, meniscal extrusion averaged 1.5mm. In patients with evidence of healing, extrusion averaged 1.0mm. The average WOMAC and Lysholm scores were 11.2 and 81.6 respectively. There was no correlation between healing and clinical outcome scores in this series.

CONCLUSION
4 of 9 patients demonstrated recurrent tearing of the meniscus root. There was an increase in peripheral meniscus tears away from the repair in 4/9 patients, indicating excessive stress induced by the repair. Successful repair and healing was associated with decreased meniscus extrusion; however, this did not correlate with functional outcome scores, indicating that biologic healing is not a pre-requisite for good clinical outcome. A similar finding has been shown in studies evaluating rotator cuff repair.