

Small Medial Meniscocapsular Separations: A Potential Cause of Chronic Medial-Side Knee Pain

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Purpose: To describe clinical characteristics, surgical findings, and functional outcome after arthroscopic repair of a unique type of meniscocapsular separation. **Methods:** We retrospectively reviewed office charts, magnetic resonance imaging (MRI) scans, operative reports, and arthroscopic images of 6 patients who underwent surgery between January 2007 and May 2009, in whom a medial meniscocapsular separation measuring less than 5 mm in length was identified and treated. Inclusion criteria were medial-side knee pain unresponsive to nonoperative management, negative MRI findings, and an isolated meniscocapsular separation injury detected on arthroscopy and repaired with 1 stitch. Patients were contacted and completed questionnaires that included subjective International Knee Documentation Committee, Tegner, and Marx scores. **Results:** Of the 6 patients, 5 were female patients aged 14 to 18 years who were involved in sports. All patients recalled an acute twisting knee injury. Symptoms were related mainly to sports and were absent or very minimal during activities of daily living. On physical examination, the medial joint line was tender in all patients, whereas medial-side knee discomfort while squatting (i.e., baseball catcher's position) and McMurray tests were positive only in some. The negative MRI scans used a 3-T magnet in 5 cases and a 1.5-T magnet in 1 case. The duration of symptoms from injury to surgery was between 6 months and 9 years in 5 cases. On arthroscopy, all patients had a medial meniscocapsular separation measuring less than 5 mm in length that was identified when the tip of the arthroscopic probe was inserted into the lesion. This was repaired with a single all-inside stitch. The mean latest follow-up was 31 months (range, 15 to 38 months). The mean subjective International Knee Documentation Committee score was 87 at latest follow-up. Tegner and Marx scores showed that after surgery, 5 patients regained their preinjury level of activity. **Conclusions:** Meniscocapsular separation can involve a segment of less than 5 mm in length, be occult on MRI, be challenging to visualize on arthroscopy, and lead to chronic medial-side knee pain. Critical evaluation with a history, physical examination, and careful arthroscopic inspection of the medial meniscus can lead to appropriate treatment with a good to excellent outcome after repair. **Level of Evidence:** Level IV, therapeutic case series.

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Meniscocapsular separation is an uncommon injury.¹ It is typically accompanied by ligament tears (anterior cruciate ligament [ACL], posterior cruciate ligament, medial collateral ligament).¹⁻⁴ The injured area usually involves over 1 cm of disrupted meniscocapsular tissue, requiring several sutures for repair.^{2,4}

In this study we describe a series of patients who presented with longstanding medial-side knee pain that followed low-energy knee trauma and did not respond to nonoperative management. Magnetic resonance imaging (MRI) scans, which used a 3-T magnet in 5 cases and a 1.5-T magnet in 1 case, a sagittal and coronal slice width of 3.5 mm, and no intersection

gap, were negative in all cases. During arthroscopy, there was a detachment of less than 5 mm in length (measured with the right angle tip of the arthroscopic probe used as a scale) at the capsular attachment of the medial meniscus posterior horn or posterior horn–body junction area. The injury was identified by inserting the tip of the arthroscopic probe into the lesion showing meniscal instability. Contrary to previously described meniscocapsular separations, no other significant intra-articular abnormalities or ligament disruptions accompanied the injury. The purpose of this study is to describe clinical characteristics and surgical findings of this pathology, as well as to report functional outcome after arthroscopic repair. We hypothesized that a good to excellent outcome is achieved after repair of this type of meniscocapsular separation.

METHODS

This study includes 6 consecutive patients who underwent surgery by the senior author (R.G.M.) at a single institution between January 2007 and May 2009. Office charts, MRI scans, operative reports, and arthroscopic images were reviewed. Inclusion criteria were medial-side knee pain unresponsive to nonoperative management (i.e., activity modification and physical therapy), physical examination findings indicating tenderness on palpation of the medial joint line, negative MRI findings, and an isolated meniscocapsular separation injury detected on arthroscopy and repaired with only 1 stitch. In 5 patients the magnetic resonance (MR) magnet was 3 T and in 1 case it was

1.5 T. Sequences included fast spin-echo sagittal, axial, and coronal images, as well as inversion recovery sagittal sequence images, performed with and without fat suppression. Sagittal as well as coronal slice width was 3.5 mm with no intersection gap between slices. The repair technique included debridement of the meniscocapsular damaged tissue with a 4.5 mm full-radius shaver, followed by a single all-inside No. 2-0 nonabsorbable suture in a horizontal-oblique configuration. The intercondylar notch, just anterior to the ACL, was then debrided with the shaver, causing some bleeding to potentially promote healing of the repair. The postoperative protocol included 3 weeks of non-weight bearing and knee motion in a brace limited to 0° to 90° until 6 weeks. After 3 weeks, full weight bearing was allowed. After 6 weeks, full motion was allowed, except squatting. Running was allowed at 4 months and squatting with unrestricted activities at 6 months. Patients were contacted and completed functional questionnaires that included subjective International Knee Documentation Committee score, Tegner activity level score, and Marx activity level score. Descriptive statistics included individual as well as mean values for the functional scores. The study was approved by our institutional review board, and all participants signed informed consent forms.

RESULTS

Table 1 presents patient demographics, injury characteristics, and surgical findings. Of the 6 patients, 5 were female aged 14 to 18 years who were involved in

TABLE 1. Patient Demographics, Injury Characteristics, and Surgical Findings

Case No.	Age (yr)	Sex	Injury Mechanism	Symptom-Related Activity	MRI Magnet and Interpretation	Symptoms Duration From Injury to Surgery	Area of Medial Meniscocapsular Separation and Procedure
1	17	F	Twisting and pivoting during soccer	Twisting and pivoting during soccer	3 T, normal findings	3 mo	Posterior horn–body junction, 1 all-inside stitch
2	14	F	Twisting and pivoting during soccer	Running	3 T, normal findings	2 yr	Posterior horn, 1 all-inside stitch
3	17	F	Twisting and pivoting during lacrosse	Long walks, running, twisting, pivoting	1.5 T, mild knee effusion, patellar tendinosis	1 yr	Posterior horn–body junction, 1 all-inside stitch
4	15	F	Jump landing during gymnastics	Jumping	3 T, normal findings	3 yr	Posterior horn, 1 all-inside stitch
5	18	F	Twisting during figure skating	Long walks, stairs, twisting	3 T, normal findings	6 mo	Posterior horn, 1 all-inside stitch
6	48	M	Jump landing	Long walks, jogging, running	3 T, mild knee effusion, otherwise normal findings	9 yr	Posterior horn–body junction, 1 all-inside stitch

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