



ELBOW

Prominent synovial plicae in radiocapitellar joints as a potential cause of lateral elbow pain: clinico-radiologic correlation



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Background: Thickened synovial plicae in the radiocapitellar joint have been reported as a cause of lateral elbow pain. However, few reports regarding diagnosis based on detailed physical examination and magnetic resonance imaging (MRI) findings are available. The aims of this study were to characterize the clinical manifestations of this syndrome and to investigate the clinical outcomes of arthroscopic surgery.

Methods: We analyzed 20 patients who received a diagnosis of plica syndrome and underwent arthroscopic débridement between 2006 and 2011. The diagnosis was based on physical examination and MRI findings. Elbow symptoms were assessed using a visual analog scale for pain; the Mayo Elbow Performance Index; and the Disabilities of the Arm, Shoulder and Hand score at a minimum of 2 years after surgery. The thickness of plicae on MRI was compared with the normal data in the literature.

Results: Plicae were located on the anterior side in 1 patient, on the posterior side in 15, and on both sides in 4. Radiocapitellar joint tenderness and pain with terminal extension were observed in 65% of patients. MRI showed enlarged plicae consistent with intraoperative findings. The mean plica thickness on MRI was 3.7 ± 1.0 mm, which was significantly thicker than the normal value. The mean lengths (mediolateral length, 9.4 ± 1.6 mm; anteroposterior length, 8.2 ± 1.7 mm) were also greater than the normal values. The visual analog scale score for pain decreased from 6.3 to 1.0 after surgery. The Mayo Elbow Performance Index and Disabilities of the Arm, Shoulder and Hand scores improved from 66 to 89 and from 26 to 14, respectively.

The local Institutional Review Board approved this retrospective case series (Samsung Medical Center Institutional Review Board File No. 2015-12-124).

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Conclusions: Specific findings of the physical examination and MRI provide clues for the diagnosis of plica syndrome. Painful symptoms were successfully relieved after arthroscopic débridement.

Level of evidence: Level IV; Case Series Design; Diagnostic Study

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Keywords: Plica; elbow; arthroscopy; synovial fold; lateral epicondylitis; MRI

Lateral epicondylitis is the most common cause of lateral elbow pain. However, we occasionally encounter patients with symptoms or physical signs incompatible with either lateral epicondylitis or other common pathologies. Recently, the presence of pathologic radiocapitellar synovial plica has emerged as a potential source of lateral elbow pain.^{1,2,5} A synovial plica, or fold, is a prominent synovial membrane that is a remnant of the normal embryonic development of the synovial membrane.^{7,14} Normally, existing plicae have no known function and do not cause any symptoms.¹¹ However, occasionally, thickened plicae may irritate the radiocapitellar joint during joint motion, especially when they become hypertrophied following trauma or repetitive activities. Symptomatic synovial plicae are infrequently encountered as a cause of lateral elbow pain, and they have been variously termed “plica syndrome,” “synovial fringes,” or “meniscus-like structures.”^{1,2,5,6,8,9,12,13,15,19} This lesion is easily misdiagnosed as either a loose body in the joint or lateral epicondylitis owing to the similar pain location.

There is no consensus regarding the diagnosis and treatment of this rare syndrome, and the clinical results after surgery remain a subject of controversy. As current knowledge of the physical signs and magnetic resonance imaging (MRI) findings of pathologic plicae is largely limited, we investigated cases of pure radiocapitellar plica syndrome as a means to elucidate this pathologic entity. The aims of this study were (1) to characterize the clinical properties for diagnostic clues, (2) to analyze the MRI findings, and (3) to evaluate the clinical outcomes after arthroscopic débridement. The findings presented may facilitate the diagnosis of plica syndrome in patients with lateral elbow pain.

Materials and methods

Clinical demographic characteristics

We undertook a review of cases of synovial plica that were treated surgically at 2 tertiary referral hospitals between March 2006 and February 2011. The inclusion criteria were (1) age of 18 years or older and (2) arthroscopic examination and excision of synovial plica. We identified a total of 29 patients in the database. The exclusion criteria were as follows: (1) lateral epicondylitis, intra-articular loose body, osteochondral lesion, or posterolateral instability in the same elbow; (2) surgical history in the same elbow; and (3) notable osteoarthritic or post-traumatic radiographic changes. After exclusion, 24 patients were eligible for review. Four patients were lost to postoperative follow-up in less than 2 years. Finally, a total of 20 patients (83% follow-up rate) were analyzed.

Strict diagnostic criteria for synovial plica were used to identify a homogeneous group of patients with pure radiocapitellar plica syndrome. Patients typically complained of lateral elbow pain, possibly accompanied by a popping or snapping sensation during elbow movement. Owing to the similar pain location, we carefully differentiated synovial plica from lateral epicondylitis. Typical physical signs associated with lateral epicondylitis were (1) tenderness on deep palpation at the lateral epicondyle over the extensor origin area and (2) pain associated with the lateral epicondyle during resisted dorsiflexion of the wrist with the elbow in full extension. Positive results on these 2 provocative tests indicated a diagnosis of lateral epicondylitis, which excluded patients from the study.

Preoperative demographic data, physical examination results, and intraoperative findings were gathered from electronic medical records to analyze retrospectively. The items examined for the physical signs were tenderness on the soft spot associated with the posterior radiocapitellar joint, any extension deficit of the elbow, pain on the posterolateral side during terminal extension of the elbow joint, and flexion-pronation. The flexion-pronation test was conducted by reproducing snapping with passive flexion of the pronated elbow.²

In all subjects, conservative treatment including activity modification, physical therapy, and medication including nonsteroidal anti-inflammatory drugs was attempted for at least 3 months. A corticosteroid injection into the area of discomfort, that is, the maximal tender point, was administered in 7 patients (35%). If conservative measures failed despite appropriate patient compliance, arthroscopic assessment and treatment were considered.

Patients were asked to report visual analog scale (VAS) scores for pain based on the most severe pain during work or activities of daily living throughout the previous week. Postoperative clinical outcomes were collected at the final follow-up by an independent fellowship-trained orthopedic surgeon. Clinical evaluation included repeated physical examination as well as calculation of the Mayo Elbow Performance Index (MEPI) and Disabilities of the Arm, Shoulder and Hand scores. Overall satisfaction after surgery was defined based on a 5-point Likert-type scale as completely dissatisfied, mostly dissatisfied, neutral, mostly satisfied, or completely satisfied.

The mean follow-up duration was 2.9 years (range, 2.0-6.2 years). There were 11 male and 9 female patients with a mean age of 42 years (range, 18-63 years). The dominant arm was involved in 13 patients (65%). The average time interval between the onset of symptoms and arthroscopic surgery was 15.7 months (range, 4-60 months). Of the patients, 5 (25%) were able to recall the traumatic event associated with the elbow. No patient was involved in a workers' compensation case. Plica syndrome was preoperatively diagnosed or suspected in 18 patients, whereas the diagnosis was confirmed intraoperatively in 2.

Analysis of radiologic data

A simple radiograph was used to exclude osteoarthritic changes involving the joint, loose body, deformity, or previous fracture.

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