ULTRA SONO GRAPHY

Ultrasonographic diagnosis of snapping annular ligament in the elbow

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CASE REPORT

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Elbow snapping by annular ligament is rare and may be difficult to diagnose, when this condition is not familiar. We report a case of elbow snapping by annular ligament diagnosed by ultrasonography, which was confirmed by arthroscopic observation. The ultrasonographic findings were thickening of the annular ligament and snapping in and out of the radiocapitellar joint during elbow flexion and extension on dynamic ultrasonography.

Keywords: Elbow joint; Ligaments; Ultrasonography

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Introduction

Elbow snapping is known to be caused by various conditions, including intra-articular loose bodies, instability, synovial plicae [1], ulnar nerve subluxation, aberrant tendon of triceps brachii [2], annular ligament [3–5], and meniscus-like tissue [6]. Elbow snapping by annular ligament causes lateral sided elbow snapping and pain, which can be misdiagnosed as lateral epicondylitis, because many clinicians are not familiar with this pathologic condition.

In the most of the literatures describing elbow snapping by annular ligament, the diagnosis was made by arthroscopy. The first radiologic diagnosis of elbow snapping by annular ligament was made by magnetic resonance imaging (MRI), which was reported by Huang et al. [5]. Here, we report a case of elbow snapping by annular ligament, diagnosed by dynamic ultrasonography.

Case Report

A 20-year-old man visited our hospital with palpable snapping at his right elbow joint anterolateral side. He exercised intensively 2 months ago. He is currently serving in the military. Musculoskeletal ultrasonography was performed with the 17-MHz linear array transducer of an iU 22 scanner (Philips Healthcare, Bothell, WA, USA). The ultrasonography at the anterolateral elbow showed proximal border of thickened annular ligament interposed between radial head and capitellum in extended elbow. And the annular ligament slipped out of the radiocapitellar joint, relocated in front of the radial head during elbow flexion (Fig. 1, Video clip 1).

The patient underwent arthroscopic exploration to excise the excessive soft tissue causing the snapping. Arthroscopy revealed hypertrophied leading edge of annular ligament, which is proximally migrated between radial head and capitellum in elbow extension (Fig. 2A) and repositioned anterior to radial head in elbow flexion (Fig. 2B). No more snapping was observed after arthroscopic

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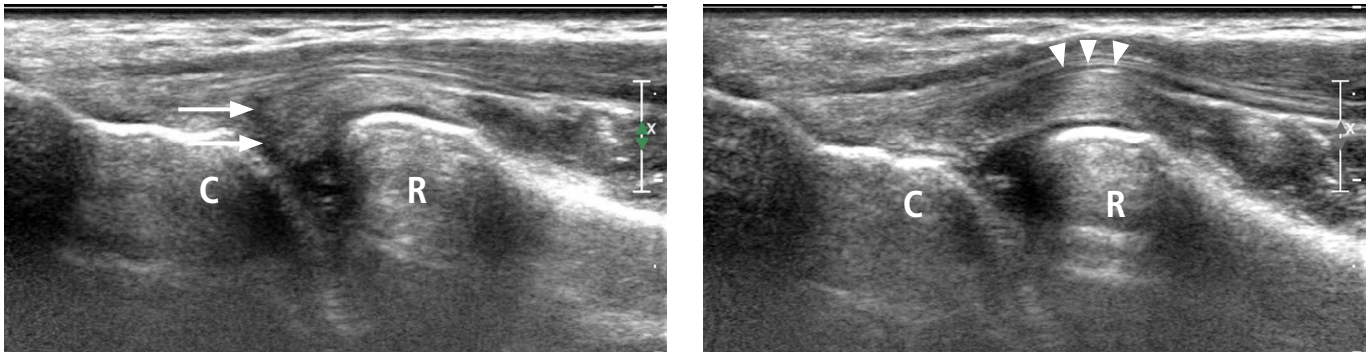
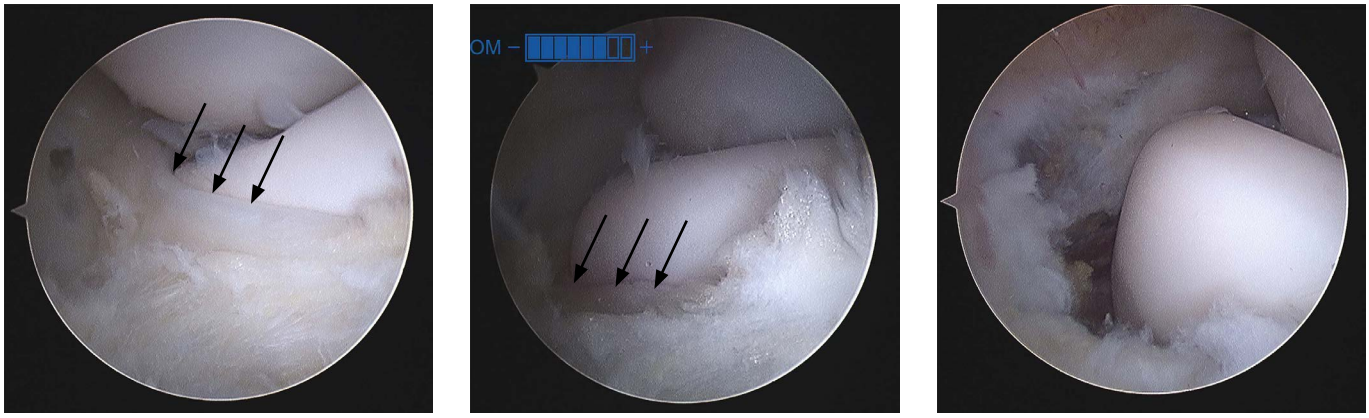


A B

Fig. 1. Ultrasonograms of a 20-year-old man with snapping elbow.
A. On the longitudinal scan of anterolateral elbow, the proximal edge of thickened annular ligament (arrows) is slipped into the radiocapitellar joint in extended elbow. Note the distal portion of the ligament is still attached at radial neck. B. During elbow flexion, the thickened annular ligament (arrowheads) relocates in front of the radial head. C, capitellum; R, radial head.



A B C

Fig. 2. Arthroscopic images of snapping annular ligament in the radiocapitellar joint.
A. Thickened annular ligament (arrows) partially covering radial head articulating surface is visible from a proximal anteromedial portal in extended elbow. B. During elbow flexion, the proximal edge of thickened annular ligament (arrows) is repositioned out of the radiocapitellar joint, visualizing the smooth margin of radial head articulating surface. C. Resection of the proximal edge of thickened annular ligament revealed no more slipping into radiocapitellar joint in elbow extension.

debridement of hypertrophied proximal edge of annular ligament.

Discussion

In 1963, Wightman [3] reported a case in which a torn annular ligament displaced in the radiohumeral joint caused a noticeable click in the lateral elbow. The author explained that tightened anterior capsule pulled the annular ligament proximally, which caused the torn proximal band of the annular ligament slip over the radial head in elbow extension showing bucket-handle appearance.

The other reports [4,5] described degenerated annular ligaments as the cause of snapping elbow. Aoki et al. [4] reported two cases of snapping annular ligaments of the elbow in the throwing arms radial head. of young brothers. Pathology of removed tissue was ligament with degenerated fibrocartilage. In 2005, Huang et al. [5] reported a case of snapping annular ligament, diagnosed by MRI. T2-weighted MRI examination showed a meniscus-like annular ligament interposed between radial head and capitellum in the periphery of anterolateral aspect of radiocapitellar joint. Histology of removed tissue was ligament with focal myxoid change. The authors of two reports commonly described the degeneration of ligament as a result of inflammation and fibrosis of chronic torn or loose annular ligament with repetitive mechanical stress.

In our case, dynamic ultrasonography showed only thickening of annular ligament without visible separation of proximal edge. The result of arthroscopy was consistent with the ultrasonographic

finding. The patient's history of intensive exercise and occupation may have role in the degeneration of annular ligament.

In summary, we report a case of snapping annular ligament, which can be properly diagnosed by dynamic ultrasonography, which has its own strength in high resolution and feasibility of dynamic evaluation.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Supplementary Material

Video clip 1. Dynamic ultrasonography of a 20-year-old man with snapping elbow. On the longitudinal scan of anterolateral elbow, the thickened annular ligament is visible in front of the radial head in flexed elbow. During elbow extension, the proximal edge of thickened annular ligament slips into the radiocapitellar joint and relocates at its original position by elbow flexion. Anatomic details were marked at Fig. 1 (http://dx.doi.org/10.14366/usg.14032.v001).

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