

Subsequent bone scan showing increased uptake in the scapular body, consistent with the stress fracture.

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## Extension restriction of the elbow caused by a synovial fold—a report on 2 athletes

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### Case 1

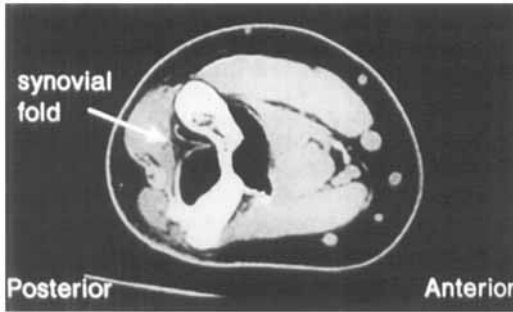
A male judo expert aged 17 years was referred because of a progressive extension restriction with pain (flexion +135°, extension -50°) of the right elbow for a few months. The patient reported no previous trauma and conventional radiographs were normal. CT arthrography showed a thick synovial fold originating from the wall of the posterolateral capsule to the olecranon fossa. Intraarticular injection of lidocaine resulted in normal motion and complete pain relief for 2 hours. Under general anesthesia, motion of the elbow was normal. The olecranon fossa was exposed through a posterior approach. The synovial fold was 1 × 2 × 3 cm and impinged between the olecranon and its fossa on extension. The fold was excised and histologic examination showed chronic hypertrophic fibrous synovitis. 1 month after surgery, the patient had

normal elbow motion without pain and had returned to his usual activities.

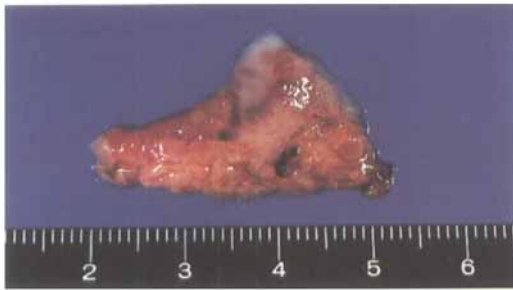
### Case 2

A male gymnast 15 years of age was examined in our clinic because of mild snapping and pain on extension of his left elbow for 10 months, without previous trauma. The snapping occurred with full extension and resulted in an inability to perform handstands. There was no swelling or warmth. The elbow snapped on full extension with pain. The snapping phenomenon was clearly palpable at the humero-ulnar joint. Conventional radiographs and arthrography were normal. Under general anesthesia, the snapping phenomenon persisted. A posterior ulnar arthrotomy revealed a synovial fold surrounding the olecranon. The fold impinged between the olecranon and its fossa in exten-

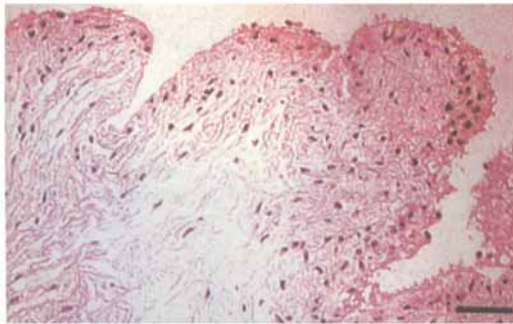
## Case 1.



CT arthrography of the elbow. A large synovial fold was found in the olecranon fossa.



Macroscopic view of the removed synovial fold.



Microscopic view of the removed synovial fold. The fold showed hypertrophic fibrous synovitis in both cases. Bar 100  $\mu$ m.

sion from  $0^\circ$  to  $-10^\circ$ . The snapping disappeared after excision of the synovial fold. Histologic examination showed chronic hypertrophic fibrous synovitis. One month after the operation, the patient returned to his gymnastics and his elbow no longer snapped.

## Discussion

Extension restriction caused by impingement of a synovial fold in the olecranon fossa has been de-

scribed once in the English literature (Commandre et al. 1988) and twice in the Japanese (Horiuchi et al. 1986). Histopathologic examination showed chronic hypertrophic fibrous synovitis. 11 cases of a similar pathogenetic condition have been reported in Japanese (Kanamori et al. 1991), in which a meniscoid formed a synovial fold, impinging on the humeroradial joint. Injury of the annular ligament surrounding the radial head (Wightman 1963, Kurihara et al. 1988) and dislocation of the medial head of the triceps (Rolfesen 1970, Dreyfuss and Kessler 1978, Reis 1980, Hayashi et al. 1984) have been reported to cause a snapping elbow. Flick (1904) described a permanent synovial fold that was present on the dorsal face of the articular capsule between the humerus and the radius. Satoh et al. (1992) performed autopsies on 78 elbows and found a synovial fold in all cases, with a large variety of sizes, the synovial fold of the olecranon fossa impinged in the dorsal humero-ulnar joint in 3 patients. This pathomechanism in our cases may be chronic inflammatory synovitis, caused by overloading of a congenitally large synovial fold.

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