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Case Report

Synovial Cyst of the Little Finger Originating From a Degenerative Wrist Joint



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A 67-year-old woman had a painless tumor in the pulp of her left little finger, which was diagnosed as a synovial cyst. She underwent 2 surgeries to remove the cyst; however, she had a third recurrence. Magnetic resonance imaging revealed that the cyst originated from the flexor tenosynovitis associated with degenerative arthritis of the distal radioulnar joint and pisotriquetral joint. We performed flexor tenosynovectomy and a salvage procedure for the degenerative wrist joint with a Sauve-Kapandji procedure for distal radioulnar joint osteoarthritis and pisiformectomy for pisotriquetral joint arthritis. One year after surgery, the synovial cyst had not recurred, and the functional outcomes of the wrist joint were good. Flexor tenosynovectomy and concurrent joint salvage procedure may be good treatment choices for synovial cysts originating from the flexor tenosynovitis associated with a degenerative wrist joint.

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Synovial cysts of the finger are common tumors in the hand, and resection is a treatment option if nonsurgical treatment is ineffective. After surgical resection, however, recurrence is a potential clinical problem. Synovial cysts in the pulp of the little finger could originate from cystic lesions around the wrist joint. Wainwright and Burge¹ reported 3 patients with synovial cysts of the little finger originating from the wrist joint. The patients were diagnosed using wrist arthrography, but surgical treatment was not performed. Here, we report a recurrent synovial cyst of the little finger originating from a degenerative wrist joint treated with tenosynovectomy of the flexor tendon and a salvage procedure for the degenerative distal radioulnar joint (DRUJ) and pisotriquetral joint.

Case Report

A 67-year-old woman had a painless tumor in the pulp of her left little finger. She worked as a farmer and was unable to wear a glove on her left hand because of the enlargement of the little finger

(Fig. 1). She underwent 2 aspiration procedures to remove the jelly-like fluid in the cyst, but the cyst immediately recurred after each procedure. Plain radiographs showed no calcification in the cyst and minimal degenerative arthritis of the distal interphalangeal (DIP) joints. Magnetic resonance imaging revealed a low-intensity lesion on T1-weighted images and a high-intensity lesion on T2-weighted images. She opted for surgical excision of the cyst, and a volar cystectomy was performed. Pathological findings were consistent with a synovial cyst.

Three months after the resection, a small cyst appeared on the dorsum of the DIP joint. One year after the resection, the cyst in the pulp of the left little finger had not recurred, but the patient needed treatment for a mucous cyst with skin thinning dorsally. This lesion was excised, and the skin defect on the dorsum of the DIP joint was covered with a rotational flap. One year after the resection of the mucous cyst, the dorsal DIP cyst had not recurred, but the patient needed treatment for a newly formed dorsal proximal interphalangeal joint cyst (Fig. 2).

Before the third resection of this persistent synovial cyst, we investigated the wrist joint. Swelling and tenderness were detected over the DRUJ. Degenerative arthritis of the DRUJ and arthritis of the trapeziometacarpal joint were evident on plain radiographs (Fig. 3). Computed tomography showed degenerative arthritis of the DRUJ, pisotriquetral joint, and thumb carpometacarpal joint (Fig. 4). Magnetic resonance imaging showed low- and high-intensity signals around the flexor tendons on T1- and T2-

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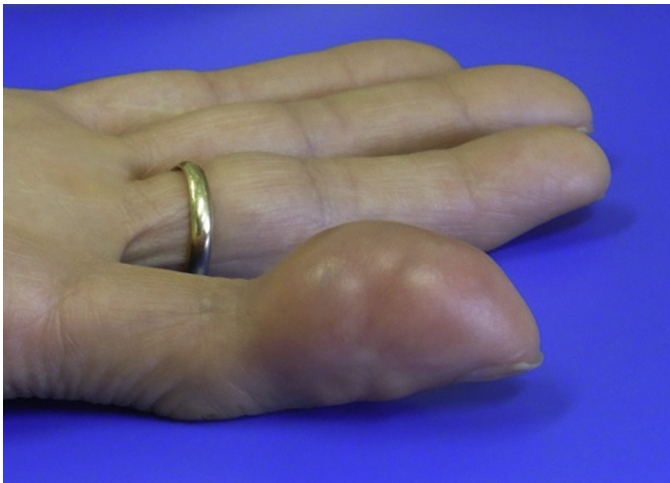


Figure 1. Synovial cyst at the first visit.



Figure 2. Synovial cyst at the second recurrence.

weighted images, respectively, suggesting flexor tenosynovitis in the carpal tunnel. Next to the flexor tenosynovitis, a high-intensity lesion was detected in the pisotriquetral joint on T2-weighted images (Fig. 5). The flexor tenosynovitis in the carpal tunnel extended toward the little finger and thumb (Fig. 6). Laboratory data showed no evidence of rheumatoid arthritis.

We concluded that the recurrent synovial cyst of the little finger originated from the flexor tenosynovitis around the wrist, which could occur secondary to degenerative arthritis of the DRUJ and pisotriquetral joint. After discussing treatment options with the patient, we decided to perform flexor tenosynovectomy and a salvage procedure for the degenerative wrist joint.

Surgery was performed under general anesthesia. Through a dorsal approach, the DRUJ was fused with a 4.0-mm cannulated cancellous screw (Meira) and a headless compression screw (Acutwist, Acumed) using the Sauve-Kapandji procedure.² Through the palmar approach, the carpal tunnel and ulnar canal were released, and flexor tenosynovitis was detected. The tenosynovium contained serous contents, and a thorough tenosynovectomy was performed. Then, the pisotriquetral joint was inspected, and no small hole in the joint capsule was detected. The pisotriquetral joint arthritis could have been caused by recurrent flexor tenosynovitis, and we performed pisiformectomy.³ Lastly, we resected the dorsal proximal interphalangeal synovial cyst.

One year after the last surgery, no recurrent synovial cyst was detected. Plain radiographs showed a well-fused DRUJ, and magnetic resonance imaging showed no tenosynovitis in the carpal



Figure 3. Plain radiograph showing the degenerative DRUJ.

tunnel or little finger. Tenosynovitis around the flexor pollicis longus had also disappeared. The patient had no pain around the wrist joint, and the wrist range of motion was 80° extension, 47° flexion, 78° forearm pronation, and 90° supination. Grip strength of the left hand was 18 kg (25 kg on the contralateral side). The Disabilities of the Arm, Shoulder, and Hand score was 2.5.

Discussion

Wainwright and Burge¹ reported 3 patients with synovial cyst of the little finger originating from the wrist joint. One patient had a painless cystic swelling in the pulp of the right little finger, and the swelling extended over the middle phalanx and dorsal DIP joint. The patient had previously undergone carpal tunnel release and dorsal DIP cystectomy. Radiographs showed mild osteoarthritis of the DIP joint of the little finger and advanced degenerative arthritis of the wrist and trapeziometacarpal joint. The second patient had cystic swelling in the pulp of the little finger with no significant osteoarthritis of the radiocarpal joint and DRUJ. The third patient had swelling of the pulp of the left little finger and degenerative

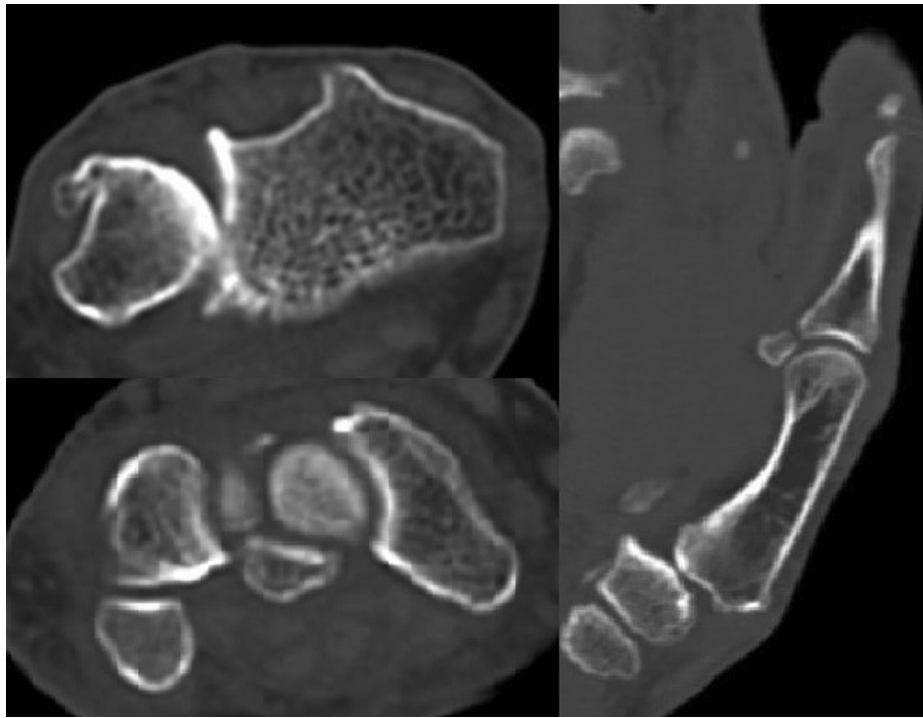


Figure 4. Computed tomography scan showing the degenerative pisotriquetral joint.

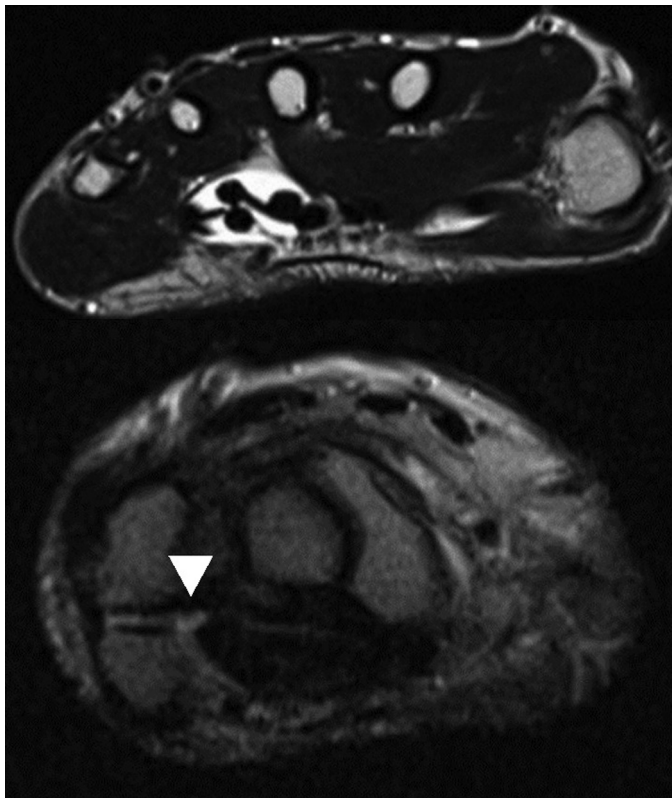


Figure 5. Axial T2-weighted image showing a high-intensity lesion (arrowhead) in the flexor tenosynovium which was connected to the degenerative pisotriquetral joint.

arthritis of the radiocarpal joint and DRUJ. These 3 patients were diagnosed using wrist arthrography, but surgical treatment was not

performed. The report suggested that degenerative arthritis around the wrist could cause synovial cyst of the little finger via the flexor tenosynovium.

Bouilleau et al⁴ reported a case of an 88-year-old woman with a painless mass in the pulp of the little finger. Radiocarpal arthritis was observed on radiographs, and fluid collection surrounding the flexor tendon of the little finger was noted on magnetic resonance imaging. The mass was surgically removed, and the cystic lesion in the synovium of the flexor digitorum tendon sheath was also removed. No bony procedure was performed for the degenerative wrist joint, and the results of surgical resection of the cystic mass in the pulp were not described in detail.

Meek and Heras-Palou⁵ reported a case of a 62-year-old woman with a nontender cyst in the pulp of the little finger. The patient had no significant osteoarthritis of the radiocarpal joint, and arthrography with dorsal radiocarpal injection clearly demonstrated that the cyst contents originated from the wrist. Through a volar-ulnar wrist approach, synovial fluid was drained, and the capsular perforation of the volar aspect of the DRUJ was found and repaired. The synovial cyst had not recurred at 1 year after surgery. The report by Meek and Heras-Palou⁵ suggested that the DRUJ could cause flexor tenosynovitis, resulting in a ganglion cyst in the pulp of the little finger. Their patient had no significant osteoarthritis of the radiocarpal joint, and simple capsular repair yielded a satisfactory outcome. These previous reports did not clarify the ideal treatment for synovial cyst in the pulp of the finger originating from a degenerative wrist joint.^{1,4,5}

The synovial cyst of our patient originated from the flexor tenosynovitis adjacent to the degenerative DRUJ and pisotriquetral joint. We performed flexor tenosynovectomy and a joint salvage procedure involving a Sauve-Kapandji procedure for DRUJ osteoarthritis and pisiformectomy for pisotriquetral joint arthritis. One year after surgery, the persistent synovial cyst had disappeared, and wrist function and patient satisfaction were good.

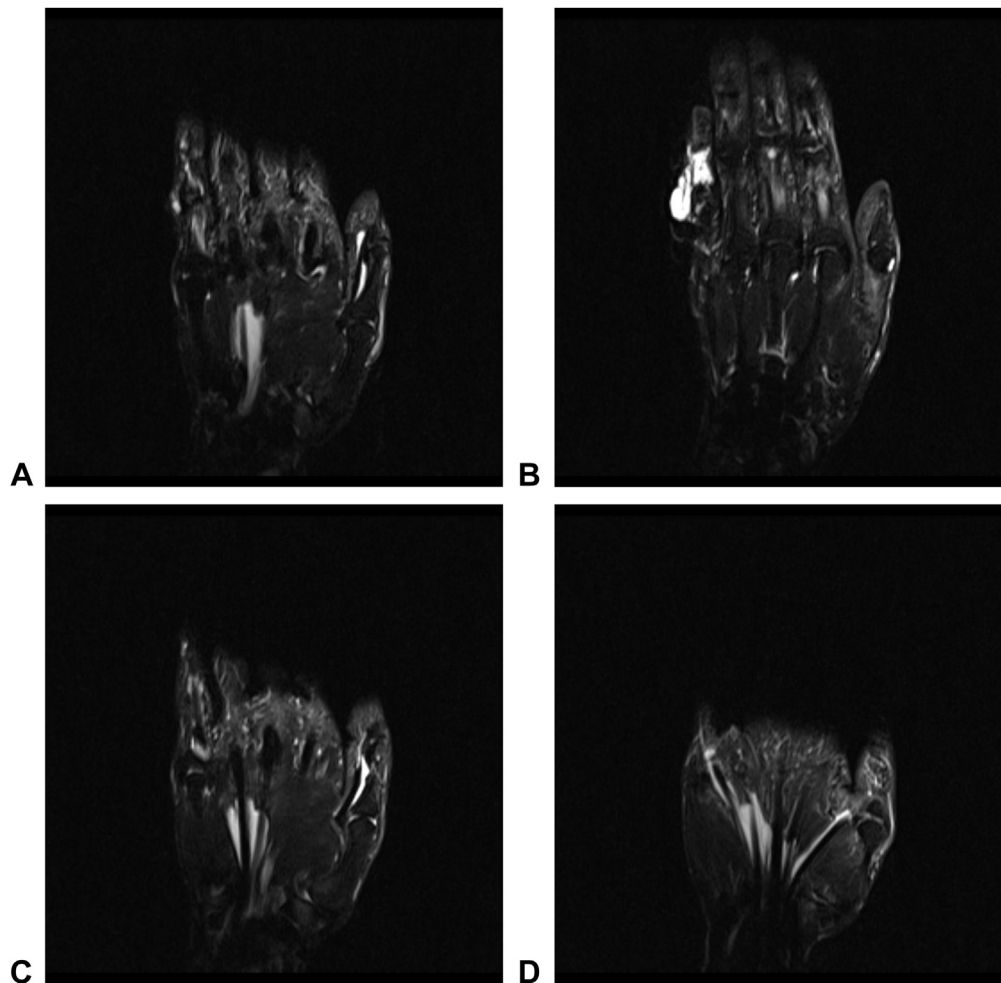


Figure 6. Coronal T2-weighted image showing **A** a high-intensity lesion in the carpal tunnel connected to **B** synovial cyst through **C, D** the flexor tenosynovium of the little finger.

To our knowledge, this is the first report of treatment including a joint salvage procedure for synovial cyst of the little finger originating from a degenerative wrist joint. We should keep in mind that synovial cyst in the pulp of the little finger may originate from a distant origin, such as a degenerative radiocarpal joint or DRUJ. Flexor tenosynovectomy and concurrent joint salvage procedure such as the Sauve-Kapandji procedure and pisiformectomy may be good treatment choices for synovial cyst originating from the flexor tenosynovitis associated with a degenerative wrist joint.

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