Metacarpophalangeal Joint Locking in 3 Family Members With Brachymesophalangy: Case Report

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We report painful locking of the metacarpophalangeal joint in a man, his mother, and his sister, all of whom have brachymesophalangy. Surgical excision of loose osteocartilaginous fragments relieved their symptoms. The fragments appeared to be unfused ossicles of the metacarpal head, unique to patients with brachymesophalangy. *(J Hand Surg Am. 2014;39(6):1094–1097.*

Key words Brachydactyly, brachymesophalangy, locking, metacarpophalangeal.

Locking of the metacarpophalangeal (MCP) joint in association with brachydactyly is infrequently reported.[1–3] In 2 reports, the authors believed that the locking was related to a loose metacarpal head fragment secondary to osteochondritis dissecans.[1,2] In the third report, however, the authors believed that the loose metacarpal head fragments were akin to epiphyseal separations in childhood.[3] We describe locking of the MCP joint in association with brachymesophalangy in a mother and her 2 children.

CASE REPORT

A 25-year-old man of normal stature and facial appearance came to the office complaining of pain and loss of motion of his middle finger after a fall a few days earlier (Fig. 1). Prior to the fall, he did not have symptoms in this joint. He held the finger in approximately 40° of flexion, and there was minimal swelling and no deformity. Tenderness was present dorsally and volarly over the MCP joint, and he had active and passive motion of the joint from 40° to 80°. The interphalangeal joints and the other digits were nontender and had full motion.

Radiographs showed a loose ossicle interposed in the joint space, likely preventing full extension. There were similar ossicles in the asymptomatic index and ring finger MCP joints. The metacarpal heads of the index, middle, and ring fingers had abnormal bicondylar shapes. There was also hypoplasia of the ulnar styloid and short middle phalanges, particularly of the index and small fingers, consistent with brachydactyly type A4.[4,5]

The patient's asymptomatic hand had a radiographic appearance similar to that of his symptomatic hand with ossicles present in the index and middle finger MCP joints (Fig. 2). X-rays of his sister's hand were almost identical to the patient's. X-rays of his mother's hand showed the same features with the addition of short metacarpals, particularly of the little finger, and short distal phalanges, particularly of the middle and ring fingers. X-rays of the mother's hand also showed what appeared to be arthritis of the index and middle MCP joints, with flattening of the metacarpal heads and narrowed joint spaces.

Immediately before surgery and prior to making an incision, the examination under anesthesia revealed full passive motion of the MCP joint without any locking. When the MCP joint was exposed, no loose body was identified dorsally as had been noted on the lateral radiograph. The metacarpal head had an unusual and irregular shape, although the cartilage surface appeared intact with minimal chondromalacia (Fig. 3).

On further evaluation, the dorsal aspect of the metacarpal head was loose and, when probed, could

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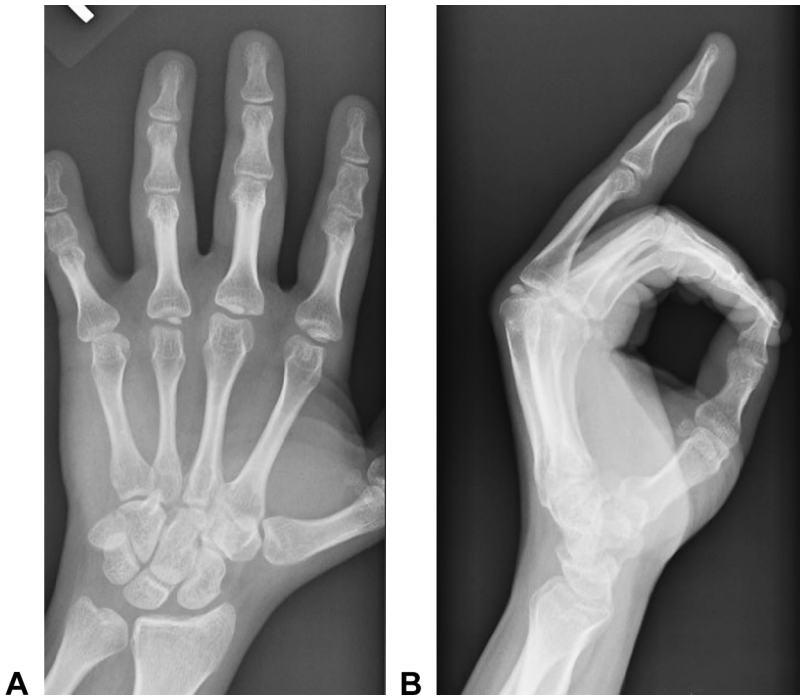

FIGURE 1: **A** Anteroposterior and **B** lateral radiographs of the patient's affected hand. The middle finger had a 40° flexion contracture.

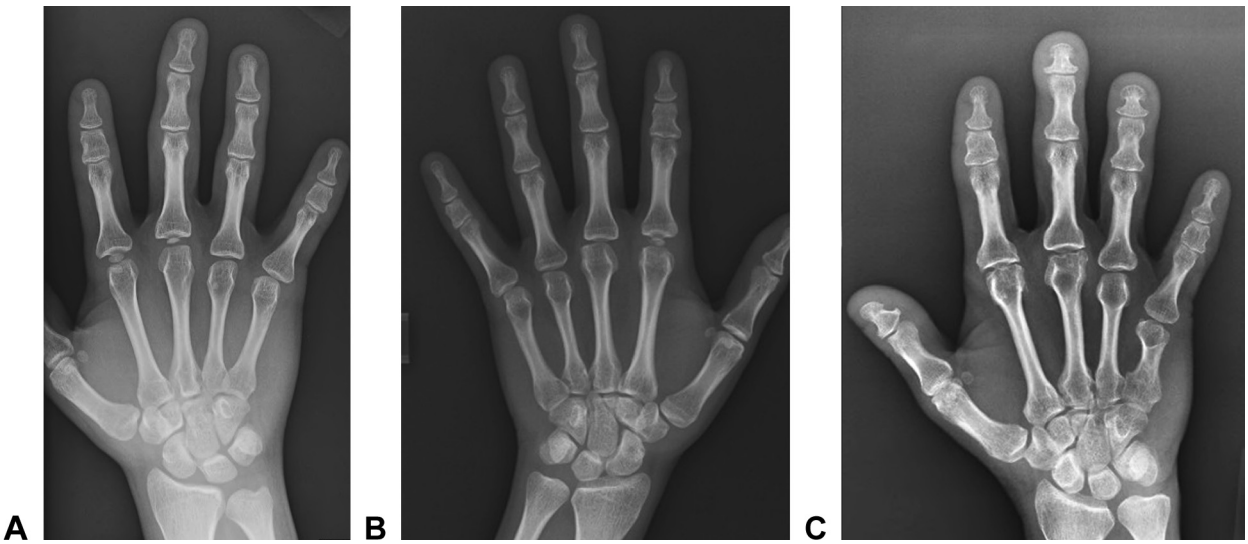

FIGURE 2: Representative x-rays of the asymptomatic hands of the involved family members. The patient's **A**, the sister's **B**, and the mother's **C**.

be moved approximately 2 mm relative to the rest of the metacarpal head and the shaft. We felt that this fragment was the cause of the patient's symptoms. After considering stabilizing the fragment, we sharply excised it. We noted that the excised fragment was completely covered by cartilage. Its location on the metacarpal head was also covered with cartilage (Fig. 4). Fluoroscopic images indicated that the previously noted ossicle was no longer present. The remaining metacarpal head, both visually and fluoroscopically, had a bicondylar appearance.

The joint had full range of motion, although the articulation was not congruent. The arthrotomy and extensor hood were closed, and the MCP joints were splinted in approximately 50°. Microscopic analysis of the specimen identified bone completely surrounded by cartilage.

The splint was discontinued at 2 weeks, and the patient began active range of motion and progressive increase in activities. He returned to work at a retail store in 2 weeks and had minimal pain and full range of motion 1 month after surgery.