Chondroma within the Flexor Tendon Sheath of the Index Finger: Case Report

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Summary

Chondroma of soft tissue is rare. We report a patient in whom a chondroma occurred within the flexor tendon sheath of the index finger. Magnetic resonance imaging showed the extent of the tumor, which wrapped around flexor tendons within the sheath, but did not invade either tendons or sheath. Total excision was done with preservation of the flexors and flexor tendon sheath. After the operation, the index finger had a full range of motion, and movement was painless.

Chondroma within the flexor tendon sheath is rare. Our patient completely recovered normal function postoperatively without loss of tendons or the tendon sheath. The surgical treatment of the case is summarized here, together with a review of the literature.

Case Report

A 56-year-old woman presented with a mass on the volar aspect of the proximal phalanx of the right index finger (Fig. 1-A). The family and personal history was unremarkable. The patient had noticed the mass about a year earlier. Its gradual growth had started to prevent full flexion of the finger, which had

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recently become painful. The mass was hard and measured about 1.5 by 2 cm. The margin was not clear by touch, and the phalanx was neither red nor swollen. Tenderness was absent, and the mass had not adhered to the skin, nor did it move when the finger moved.

A radiograph showed a mass with calcification in the soft tissue on the volar side of the right index finger (Fig. 1-B). The margin was clear and the tumor was not connected with the proximal phalanx. Magnetic resonance imaging showed an area of abnormal intensity around the flexor tendons at the level of the proximal phalanx (Fig. 2). Sagittal T₁ images showed an area of low intensity or isointensity that seemed to have expanded toward the volar side of the tendons. Invasion of the tendons and phalanx was not seen. T₂ images showed the lesion as an area of low to high intensity. Axial views showed the mass wrapped around the tendons.

These findings suggested that the mass was a benign tumor in the soft tissue, and we decided to undertake simple total excision of the tumor. We started with
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Figure 2. Magnetic resonance images of the lesion. A, sagittal T1; B, sagittal T2; C, axial T1; D, axial T2. The lesion was seen as an area of low intensity or isointensity in the T1 images, and an area of low to high intensity in the T2 images. Axial views showed the mass to be wrapped around the tendons.

an oblique incision on the volar aspect of the proximal phalanx. Neurovascular bundles were protected. The mass was found within the flexor tendon sheath at pulleys A1 to A2. When a Z-shaped incision was used to open the sheath, a tube-shaped whitish mass wrapped around the flexor tendons was seen (Fig. 3). The tumor had arisen from within the flexor tendon sheath, in parts encircling the flexor tendons but not invading the tendons themselves. The mass was easily excised. The entire lesion was extraperiosteal. The flexor tendon sheath was repaired and the wound was closed. Macroscopically, the tumor was solid, whitish, and semitranslucent. It measured 1 by 1.5 by 2 cm. Microscopically, the lesion was a mass of cartilage with occasional dense calcifications (Fig. 4). Cellular atypia was not great. The pathological diagnosis was chondroma with calcification. The index finger had a full range without pain postoperatively. There has been no recurrence either locally or as a distant metastasis one year postoperatively.
Figure 3. Intraoperative findings. A: Whitish mass is seen within the flexor tendon sheath (*). B: Flexor tendons and flexor tendon sheath preserved when the lesion is excised.

Figure 4. Macroscopic and microscopic findings of the tumor. A: Sagittal section. B: Pathological diagnosis is a chondroma (H-E ×200).
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Discussion

Benign cartilaginous tumors of the soft parts are uncommon. There are two comprehensive reports of this disease entity. Dahlin and Salvador published a review of 70 cases, and the review by Chung and Enzinger lists 104 cases. The usual location is an upper extremity, especially the fingers. The tumors have been suggested to be chondrosarcomas but the lesions are, in fact, benign, and do not metastasize. However, Dahlin and Salvador reported recurrence in 8 of 59 cases referred to the Mayo Clinic, as did Chung and Enzinger in 10 of 56 patients with at least one-year of follow-up. Most patients with chondroma of the soft parts are between 30 and 60 years of age. The age of the patients at the time of the first operation was 10 to 84 years, with peak incidence during the fourth and sixth decades, in the report of Dahlin and Salvador, and 9 to 78 years, with a median of 34.5 years, in the report of Chung and Enzinger, who found peak incidence to be in the second to fifth decades of life. There is no significant difference in the sex distribution. There are few symptoms: usually, a slowly progressive swelling is noted. Occasionally, the mass interferes with the function of the part involved and causes pain, as in the case we report. Soft-tissue chondroma is often associated with a tendon, tendon sheath, or joint capsule. In nearly every case, the lesions are of synovial origin. Almost all of the tumors are solitary, but multiple lesions have been found. In general, however, multiple tumors are likely to be synovial chondromatosis. Differential diagnosis usually is not difficult in cartilaginous tumors of the soft tissues of the hands and feet. The most important distinction is between chondroma and chondrosarcoma in hand, which usually begins within bone. Only one of 30 chondrosarcomas reported by Dahlin and Salvador seemed to be periosteal in origin. Many radiographs of chondromas show calcification of variable density in what seems to be a soft-tissue mass. In a few cases, slight erosion or deformation of the underlying bone by the soft-tissue mass is seen in radiographs, but the bone is not involved. Osteochondroma, periosteal chondroma, enchondroma, and synovial chondromatosis should be clearly distinguished. Most chondromas can be seen by eye to be well demarcated or circumscribed. They may be attached to tendons or a tendon sheath as in our case. The tumors generally are small, 3 cm or less; the largest that has been reported was 9 cm in its greatest dimension. Most tumors are seen under a microscope to be well circumscribed and lobulated, and to consist of mature hyaline cartilage, some of it undergoing fibrosis or ossification. Myxoid change, sometimes pronounced and accompanied by hemorrhage, is common. Many tumors are partly or completely calcified. Detailed surgical techniques to excise a lesion within the flexor tendon sheath have not been published, but we recommend local complete
excision of the tumor with preservation of flexor tendons and the flexor tendon sheath.

Benign chondroma should always be considered during differential diagnosis of a soft-tissue tumor of the hand. Local excision with preservation of surrounding tissues (tendons or the tendon sheath) is the treatment most to be recommended, although recurrences have been reported1-4.

References