

Lipoma of the Tendon Sheath in the Fourth Extensor Compartment of the Hand

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Abstract

Lipoma of an extensor tendon compartment is an exceedingly rare tumor of the hand. Although benign, it can often cause localized pain and finger stiffness, necessitating surgical excision. We report a case of a lipoma of the tendon sheath in the fourth dorsal compartment of the hand that was successfully treated with surgical excision.

Lipomas are relatively common benign tumors composed primarily of adipose tissue. They can occur anywhere on the body and are seen often in the hands and forearm. Typically localized to the subcutaneous fat layer, a lipoma is rarely associated with a tendon sheath or tendon compartment.^{1,2} When this uncommon event occurs, the lipoma is appropriately labeled *lipoma of the tendon sheath*.

While there are numerous case reports of lipomas of the tendon sheath occurring in association with tendons in the lower extremity, there are no reports, to our knowledge, of their occurrence in the extensor compartments of the hand.¹ We report a rare case of lipoma of the tendon sheath localized to the fourth

dorsal compartment of the hand, which was successfully treated with surgical excision. The patient provided written informed consent for print and electronic publication of this case report.

Case Report

A 33-year-old right hand–dominant waitress presented with a chief complaint of a painful, slowly enlarging right dorsal hand mass of 5 years' duration. The mass was particularly bothersome with activities involving grip and finger extension. Physical examination revealed a mobile, rubbery mass on the dorsum of the hand that moved slightly with fist formation. There were no signs of neurovascular compromise. She had normal hand and wrist range of motion.

Plain radiographs were unremarkable (Figures 1A, 1B). Magnetic resonance imaging (MRI) with and without contrast revealed a 4×2-cm mass consistent with a diagnosis of lipoma. However, it was unique in that it appeared to extend from the long- and ring-finger extensor tendon sheaths in the fourth dorsal compartment of the hand (Figures 2A, 2B) and was deemed a lipoma of the tendon sheath. Representative MRI also showed the lipoma to be present within the fourth extensor compartment of the hand (Figure 2B). Because of the mass's increasing size and interference with hand function, the patient elected to have the mass excised.

Figure 1. (A) Anteroposterior and (B) lateral radiographs of the patient's right hand upon initial presentation.

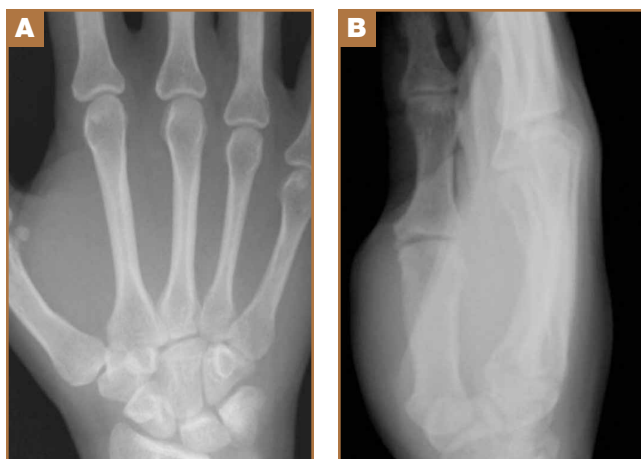


Figure 2. (A) Axial cut of T2-weighted magnetic resonance imaging (echo time, 102.2 ms; repetition time, 2700 ms) showing the lipoma of the tendon sheath and its relation to the extensor tendons of the long and ring fingers and to the extensor compartment. Lipoma is indicated by the arrow. (B) Sagittal cut of T1-weighted magnetic resonance imaging (echo time, 12.29 ms; repetition time, 600 ms) showing the lipoma within the fourth extensor compartment of the hand.



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Surgical Technique

A 3-cm longitudinal incision was made over the dorsum of the hand centered directly over the mass. Dissection was carried through the subcutaneous tissue to the distal margin of the extensor retinaculum. The fourth dorsal compartment was entered and the tendons of the fourth extensor compartment were identified. Immediately beneath the extensor tendons to the long and ring fingers was a yellow, rubbery mass consistent with lipoma (Figure 3). This mass was strongly adherent to the underlying tendons and had to be dissected carefully with tenotomy scissors. Fortunately, the mass could be excised as a

There are 2 types of tendon sheath lipomas: discrete solid masses of adipose tissue (which we encountered) and adipose tissue coupled with hypertrophic synovial villi (or, lipoma arborescens).^{4,5} Of note, the latter is significantly more common than the former, which makes our case even more uncommon. Although both types of lipoma of the tendon sheath are benign, they can cause symptoms such as pain, finger stiffness, and nerve compression.⁶ Thus, they frequently merit surgical removal, as in our case.

The appropriate workup for lipoma of the tendon sheath generally includes thorough history, physical examination, and advanced imaging, such as MRI. MRI is usually diagnostic of such a lesion and can aid in surgical planning.¹ Regarding their overall prognosis, all lipomas (even large ones) are benign by definition but can transform into liposarcomas in rare cases.⁴ Lipomas are typically treated surgically by simple excision, and lipoma of the tendon sheath is no different. As long as complete excision of a tendon sheath lipoma is performed, recurrence rates are less than 5%.^{2,3}

Surgeons should also be aware that, with long-standing lipomas of the tendon sheath, weakening of a tendon secondary to irritation from the mass is a possibility, especially in the lower extremities. All tendons should be inspected carefully at the time of surgery to ensure that other procedures, such as tendon grafting or side-to-side tenodesis, are not required. Although lipomas of the tendon sheath and extensor compartments are quite rare, all surgeons evaluating masses for possible surgical excision should be aware of their existence and know how to manage them appropriately.

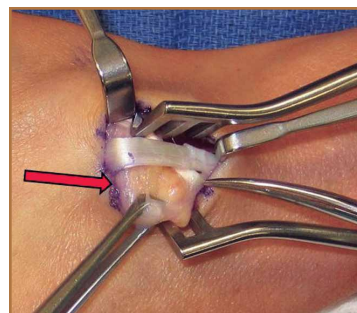


Figure 3. Intraoperative image showing adherence of the lipoma to the long-finger extensor tendon sheath. Lipoma is indicated by the arrow.



Figure 4. Gross pathologic specimen after excision. The mass measured approximately 4x2 cm.

single unit (Figure 4). It was sent to the pathology department for histologic examination, which revealed mature adipose tissue and confirmed the diagnosis of lipoma. The wound was closed with absorbable suture, and a soft, sterile dressing was applied.

Postoperative Care

The patient was seen in follow-up 2 weeks later for routine evaluation. She had an intact wound with minimal hand pain, and full wrist and hand range of motion. She returned to work as a waitress approximately 3 weeks after surgery without difficulty. At her 6-week postoperative mark, she had a pain-free wrist with a well-healed incision and no signs of recurrence.

Discussion

Tendon sheath lipomas, whether in the upper or lower extremities, are exceedingly rare entities. Further, lipomas of an individual extensor compartment of the hand (as in our case) have yet to be described, in contrast to lipomas of flexor tendon sheaths.³ There are only a handful of case reports in the literature of lipomas of the tendon sheath, and none to our knowledge of their existence in the extensor compartments of the hand. Nevertheless, it is important for the treating surgeon to be aware of their existence and know some basics about them and their treatment.

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This paper will be judged for the Resident Writer's Award.