

CASE REPORT

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Intratendinous ganglion of the hand: two case reports occurring in the extensor digitorum communis and the flexor digitorum superficialis tendon

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ABSTRACT

An intratendinous ganglion of the hand is a rare entity, and only one case report of flexor tendon has been published in the English literature. We herein report two cases of an intratendinous ganglion occurring in the extensor digitorum communis and flexor digitorum superficialis tendon, respectively.

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Flexor digitorum superficialis; extensor digitorum communis; intratendinous ganglion

Introduction

Ganglions mostly arise from the scapholunate ligament on the dorsal side of the wrist [1], and intratendinous occurrence is quite rare; moreover, only one previous case report has described its occurrence in the flexor tendon of the hand [2]. We herein report two cases of an intratendinous ganglion occurring in the extensor digitorum communis (EDC) and flexor digitorum superficialis (FDS) tendon, respectively.



Case 1

A 58-year-old person was referred to us with the complaint of a right wrist dorsal mass which persisted more than 30 years. The mass moved in accordance to the movement of the middle finger, and the patient felt pain in wrist extension. A radiograph showed no abnormality including arthrotic change of the carpometacarpal joint. A multiloculated lesion measuring approximately 10 × 20 × 30 mm was observed in the fourth extensor compartment on MRI. At operation, the EDC II, III and IV tendons were found to clump together with proliferative synovial tissue just distal to the extensor retinaculum. The synovial tissue was peeled off carefully and each tendon was separated,

then the intratendinous ganglion was identified within the tendon substance of the EDC III and a part of the ganglion was herniated from the slit of the tendon substance (Figure 1).

The ganglion was obstructed at the distal edge of the extensor retinaculum with extension of the wrist and middle finger. The synovium, ganglion and tendon substance adhered firmly and were hard to separate from one another. Hence, to remove the ganglion completely, the ganglion was excised with a small portion of the tendon substance attached (Figure 2). As a result, two-thirds of the EDC III tendon was resected together with the ganglion so that it was sutured to the EDC IV tendon by a side-to-side procedure for reinforcement. The pathological finding was an intratendinous ganglion that contained a myxoid area enclosed by fibrous tissue.

Eight days after the operation, the patient could not extend the ring finger, as well as the middle finger. Subcutaneous rupture was suspected and confirmed in operation, and both the EDC III and IV tendons were reconstructed with a bridge graft using the palmaris longus tendon. Six months after the operation, the patient regained full range of finger motion, and the grip strength was 38 kg for the right hand and 41 kg for the left, unaffected hand.

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Figure 1. The synovial tissue was peeled off carefully and each tendon was separated. The intratendinous ganglion was herniated from the slit of the tendon substance of the EDC III. The extensor retinaculum had been partially cut and separated.



Figure 2. The ganglion was excised with a small portion of the tendon substance attached.

Case 2

A 56-year-old person noticed pain and a subcutaneous mass in the right palm at the metacarpophalangeal joint of the ring finger. There was no limitation of motion; however, some pain was noted in simultaneous extension of the ring finger and the wrist joint. MRI evaluations showed a cystic lesion measuring approximately $7 \times 7 \times 20$ mm in the flexor tendon sheath of the ring finger. Surgical exploration revealed an intratendinous ganglion of the FDS tendon just proximal to the A1 pulley (Figure 3). The distended tendon was obstructed by the A1 pulley when passively extending the ring finger. Although no adherence to the FDP tendon was observed, moderate tenosynovitis around the FDS tendon existed. Fearing

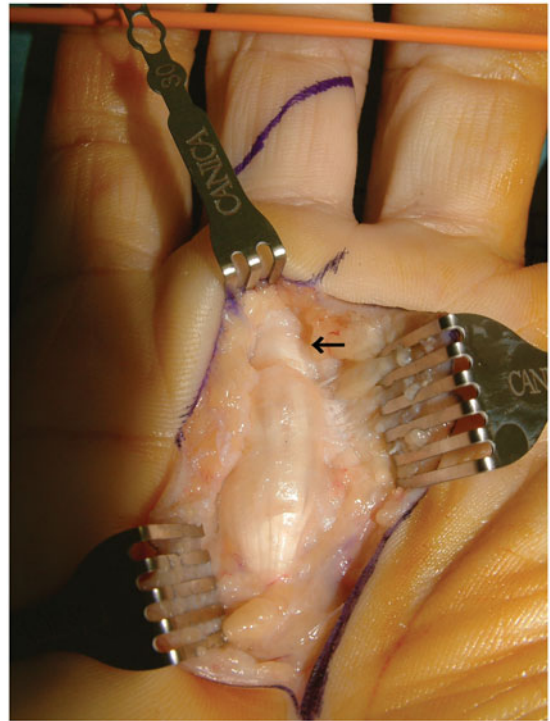


Figure 3. Intraoperative findings. The FDS tendon of the ring finger was swollen in a fusiform-shape just proximal to the A1 pulley (arrow) and moderate tenosynovitis around the FDS tendon existed.



Figure 4. Gross specimen of the resected FDS tendon including the ganglion. The expanded tendon with ganglion was covered with proliferative synovial tissue and the content was observed between the cleft of the tendon substance.

recurrence of the ganglion resulting from incomplete resection or postoperative subcutaneous rupture of the tendon, on account of structural weakness resulting from excessive resection, en bloc excision of the FDS tendon including the ganglion was performed (Figure 4). The pathological finding showed that the cyst had no lining endothelium, and the diagnosis was a ganglion. Six months after the operation, the patient had a normal range of motion and the grip strength

recovered to 42.5 kg, with 43 kg for the unaffected hand.

Discussion

An intratendinous ganglion of the hand is a rare entity and only one case report of flexor tendon has been published in the English literature [2]. In contrast with the extensor tendon, which exists just beneath the skin, the flexor tendon is located in the deep layer of the hand, and it is hard to recognize the lesion until it becomes large enough. Therefore, latent asymptomatic flexor ganglions probably occur more frequently than reported.

Chronic mechanical stimulations to the tendon, such as friction to the retinaculum, and irritation by metacarpal bosses, may be the cause of intratendinous ganglion. Nearly all of the previous cases were reported to occur around the extensor retinaculum. In the present cases, obstruction at the extensor retinaculum for Case 1 and the A1 pulley for Case 2 may have been the cause of the ganglion. Ganglion is well recognized to occur in the tendon sheath, and the previous instances were mostly located at the level of the A1 and A2 pulleys, which are a common site for stenosing tenosynovitis and a structure for preventing bowstring of the flexor tendon, respectively [3]. A common pathogenesis with flexor tendon sheath ganglion may be the cause of intratendinous ganglion.

Treatment of intratendinous ganglion of the hand remains controversial. Among 20 tendons previously reported in 18 cases, excluding the case of Lucas [4] which occurred in the extensor digitorum brevis manus tendon (which is an anomalous muscle), 16 were treated with excision of the ganglion [2,5–12], and 2 were treated with en bloc excision of the affected tendon due to structural weakness as a result of resection [10,11].

Undoubtedly excision of the ganglion and preservation of the tendon is ideal for treatment. However, some situations carry a risk of postoperative spontaneous rupture. In the majority of the previously reported cases, tenosynovitis was observed and in the cases associated with a certain degree of synovitis, degeneration of the affected tendon was greater than suspected. In the present case 1, not only the EDC III tendon which contained the ganglion, but also the EDC IV tendon suffered subcutaneous rupture after ganglion excision. Satonaka et al. [10] revealed histopathological findings that the tendon substance adjacent to the lesion showed degenerative change and an accumulation of hyperplastic synovial cells was observed.

Complications associated with recurrence also need to be considered. Concerning the intratendinous ganglion, Seidman and Margles [11] reported one recurrence out of eight cases after excision.

Decisions must be made whether to preserve the tendon at the risk of potential recurrence and postoperative rupture or to excise the tendon for permanent cure with the permission of sacrifice. Many factors are involved, including the size and location of the ganglion, severity of tendon degeneration according to associated synovitis, seriousness of the impairment of sacrifice if taken with the tendon and the personality and conditions of the patient. Above all, the patient's consent under adequate information is essential.

Conclusions

An intratendinous ganglion of the hand is a rare entity. Excision of the ganglion and preservation of the tendon is ideal for treatment; however, thoroughly understanding the characteristic of the ganglion is necessary, as intratendinous ganglion is a mobile tumour, unlike other ganglions. This means that the affected tendon frequently suffers structural weakness due to the associated synovitis and ganglion contained in the tendon.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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