

야구 선수의 수지에서 심수지굴곡전 파열을 동반한 건내 섬유종: 증례 보고

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Intratendinous Fibroma with a Flexor Profundus Tendon Tear in the Finger of an Adolescent Baseball Player: A Case Report

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Flexor digitorum profundus (FDP) tears in adolescents appear as avulsion tears in the FDP tendon, whereas longitudinal tears are very rare. Moreover, there has been only one reported case of intratendinous fibroma occurring in the flexor tendon of a finger. A longitudinal tear of the flexor profundus tendon associated with an intratendinous fibroma has not been previously reported. We report one case of a longitudinal partial tear accompanied by an intratendinous fibroma at the FDP tendon of the left middle finger after a hyperextension injury caused by the impact of a baseball. Given the rarity of longitudinal flexor tendon tears in adolescents, in such cases, the possibility of an underlying pathology should be considered.

Key Words: Finger, Flexor digitorum profundus, Intratendinous fibroma

Fibroma of the tendon sheath is a rare benign soft tissue tumor that typically occurs in the upper extremities, especially the fingers. The most common symptom is a slow-growing mass with no pain or swelling. When it occurs in a finger, finger movement may be limited due to interference with tendon excursion through the flexor pulley system. Moreover, depending on where the tumor occurs, fibroma may also cause localized symptoms such as carpal tunnel syndrome¹ or trigger-finger². Fibroma of

the tendon sheath is almost always found adhering to the tendon sheath or tendon³, whereas it is extremely rare to find this tumor within the tendon. Grenga⁴ reported a case of intratendinous fibroma in a 10-year-old boy presenting with a slow-growing, non-tender mass in the palmar aspect of a finger, which limited finger movement. The mass was 1.5 cm in size and was located within the flexor digitorum profundus (FDP) tendon, interfering with the excursion of this tendon. Closed tears of the FDP tendon

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in pediatric patients are very rare, whereas cases involving avulsion tear of the FDP tendon are more common⁵. However, reports of a closed longitudinal tear of the FDP tendon have not been found in the English literature to date. We report the case of a 12-year-old baseball player with a longitudinal partial tear at the FDP finally diagnosed as an intratendinous fibroma.

CASE REPORT

A 12-year-old male baseball player complained of pain in the proximal interphalangeal joint (PIPJ) of the middle finger after a hyperextension injury caused by a baseball impact six weeks previously, which was managed with conservative treatment. Physical examination revealed

tenderness and swelling at the palmar side of the PIPJ of the left middle finger. Although passive range of motion showed no limitation, active range of motion was limited (range, 0-70 degrees). There was no triggering.

Preoperative radiography revealed no abnormalities, whereas magnetic resonance imaging (MRI) revealed a longitudinal partial tear at the FDP tendon of the left middle finger (Fig. 1). Surgical treatment was planned to allow the patient to return to his sports activity. After making a zigzag skin incision on the palmar side of the middle PIPJ under general anesthesia, the cruciate pulley and parts of the A2 pulley were incised. A longitudinal tear was found in the FDP tendon. Further splitting of the tear revealed a $0.8 \times 0.5 \times 0.5$ cm mass (Fig. 2). The mass was well demarcated and was excised easily, followed by tenorrhaphy with continuous suture. Histopathological examination confirmed the mass to be a fibroma (Fig. 3). In the one-month postoperative follow-up, there was no pain in the PIPJ of the middle finger, and the range



Fig. 1. Magnetic resonance image showing a longitudinal partial tear of the middle flexor digitorum profundus tendon and an intratendinous tumor (arrow).

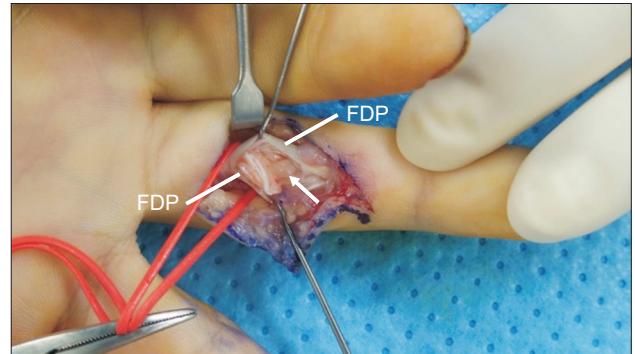


Fig. 2. Intraoperative photograph showing a longitudinal split of the flexor digitorum profundus (FDP) tendon and the intratendinous tumor (arrow).

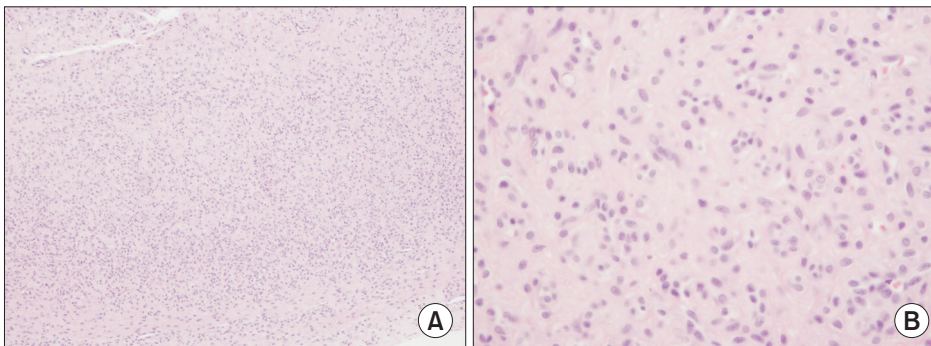


Fig. 3. Histopathologic finding of intratendinous fibroma. (A) Low-power view (H&E stain, $\times 100$) showing numerous hyalinized fibrous tissues. (B) High-power view (H&E stain, $\times 400$) showing scattered fibroblasts with large irregular nuclei.

of motion in the joint returned to normal. In the one-year postoperative follow-up, the patient was able to play baseball without pain. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

DISCUSSION

The most common form of benign soft tissue tumor in the hand is ganglion, followed by giant cell tumor. Fibroma is a very rare form of benign soft tissue tumor. It occurs mostly in patients aged 20-49 years, and its prevalence is twice as high among male than female patients. The diagnosis of fibroma is based on the medical history of the patient and clinical tests; however, radiological examinations such as MRI or ultrasonography may be useful. Plain radiography typically shows negative results; however, positive results may be found when a large mass is compressing the surrounding muscles or fat or when bony erosion is present. Differential diagnoses include epidermal cyst, neurofibroma, nodular fasciitis, leiomyoma, and giant cell tumor. In particular, the clinical features of giant cell tumor and fibroma are very similar to each other. Both types of tumor commonly occur in the fingers, attached to the tendon sheath, and they show similar MRI signal intensity and form a grayish-white multiseptated mass that is hard and well encapsulated. However, a fibroma can be differentiated from a giant cell tumor on the basis of histopathological findings. Fibrotic changes in the matrix of a fibroma are more severe than in a giant cell tumor. Moreover, in fibroma, spindle cells are more abundant, the frequency of giant cells is low, and foam cells and siderophages are rare. Satti⁶ described fibroma in the tendon sheath as an end or hardening stage of a giant cell tumor that may have been the result of progressive vascular damage. Fibroma may occur anywhere on the limbs; however, it is especially common in the finger, hand, and wrist areas. Millon et al.⁷ reported that, of 208 hand tumor excision cases in soft tissue over a 15-year period, fibromas of the tendon sheath of the finger flexor tendon accounted for 1%. The relapse rate after tumor excision was $\geq 24\%$ ⁸. Fibroma that occurs in

a finger may interfere with tendon excursion, causing limited movement and triggering⁹. There has been only one previously reported case of fibroma found within a tendon⁴; it is typically found as an indolent mass adhering directly to the tendon sheath or the tendon itself^{3,7}. In our case, a fibroma with a size of 0.8×0.5×0.5 cm, which was too small to be detected by visual inspection alone, was found, and it remained asymptomatic until several finger injuries occurred. It is believed that the finger injury led to the underlying intratendinous fibroma, causing a longitudinal tear of the FDP tendon, which in turn caused limited movement and pain in the finger.

Most cases of closed flexor tendon injury following finger injury in children involve avulsion rupture of the FDP tendon¹⁰, which is rare⁵. Mid-substance rupture of the flexor tendon in adults often occurs when an underlying pathologic condition is present, but it rarely occurs without any underlying pathology⁵. Traumatic closed mid-substance flexor tendon rupture in children is extremely rare, although Badur et al.⁵ reported a case of mid-substance flexor tendon rupture that occurred in a 12-year-old child with no underlying pathology. In our case, the underlying pathology of the child was intratendinous fibroma, and this was the first case in which mid-substance longitudinal partial tear was caused by this tumor.

We report one case of a longitudinal partial tear accompanied by an intratendinous fibroma at the FDP tendon of the left middle finger after a hyperextension injury caused by the impact of a baseball. Longitudinal flexor tendon tear in adolescents is extremely rare; when it occurs, the possibility of an underlying pathology should be considered.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

REFERENCES

1. Garrido A, Lam WL, Stanley PR. Fibroma of a tendon sheath at the wrist: a rare cause of compression of the

- median nerve. *Scand J Plast Reconstr Surg Hand Surg.* 2004;38:314-16.
2. Oni OO. A tendon sheath tumour presenting as trigger finger. *J Hand Surg Br.* 1984;9:340.
3. Cooper PH. Fibroma of tendon sheath. *J Am Acad Dermatol.* 1984;11:625-8.
4. Grenga TE. Intratendinous fibroma of flexor tendon. *J Hand Surg Am.* 1990;15:92-3.
5. Badur N, Gutierrez Monclus R, Ferreres I Claramunt A, Leclère FM. Spontaneous rupture of a flexor digitorum profundus tendon at two levels in zones II and III in a child. *Hand (NY).* 2013;8:97-101.
6. Satti MB. Tendon sheath tumours: a pathological study of the relationship between giant cell tumour and fibroma of tendon sheath. *Histopathology.* 1992;20:213-20.
7. Millon SJ, Bush DC, Garbes AD. Fibroma of tendon sheath in the hand. *J Hand Surg Am.* 1994;19:788-93.
8. Chung EB, Enzinger FM. Fibroma of tendon sheath. *Cancer.* 1979;44:1945-54.
9. Feinberg MS. Fibroma of a tendon causing limited finger motion: a case report. *J Hand Surg Am.* 1979;4:386.
10. Lourie GM, Hamby Z, Raasch WG, Chandler JB, Porter JL. Annular flexor pulley injuries in professional baseball pitchers: a case series. *Am J Sports Med.* 2011;39:421-4.

야구 선수의 수지에서 심수지굴곡건 파열을 동반한 건내 섬유종: 증례 보고

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청소년에서 심수지굴곡건 파열은 주로 견열 파열로 나타나며 종적 파열은 매우 드물다. 수지의 굴곡건에 발생하는 건내 섬유종의 보고는 지금까지 1예가 있었지만, 건내 섬유종과 관련된 심수지굴곡건의 종파열은 아직까지 보고된 바 없었다. 저자들은 야구 중 충격에 의한 과신전 손상을 받은 이후 좌측 3수지의 건내 섬유종과 동반된 심수지굴곡건의 종 파열을 보고한다. 청소년에서 굴곡건의 종 파열은 드물지만 발생한 경우 병적 질환에 의한 파열일 수 있음을 고려하여야 하겠다.

색인단어: 수지, 심수지굴건, 건내 섬유종

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