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Cases of Snapping Finger Originating in Tendovaginitis of Extensor Digiti Quinti Proprius Tendon*)

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ABSTRACT

Snapping finger is frequently encountered in orthopeidic diagnosis and treatment, and frequently experienced as cases of minor surgical operation of the hand. Cases of snapping finger generally are broadly classified into infantile cases and adult cases by their operative findings. The former is caused by formation of tumor by the flexor pollicis longus tendon itself at the entrance of the tendon sheath at the MP joint and the latter is caused when tendovaginitis of flexor tendon developing in the thumb, middle finger or ring finger disturbs the gliding at the tendon sheath entrance. These are very regular conditions, and it would be no exaggeration to say it is not the custom to look for another cause when snapping of finger is observed clinically. However, very rare as it is, it is a fact also that snapping fingers exist which are not attributable to the above-described general causes. Their cause can be attributed to the structure of the PIP joint or to the extensor tendon and not to the flexor tendon.

The authors recently experienced three cases of snapping of the little finger originating in tendovaginitis of the extensor digiti quinti proprius tendon, which they will report.

CASES

<Case 1>

The case is a 37-year-old female, a cash register operater, who visited this hospital because pain of the ulnar aspect of right hand and extension disturbance of little finger gradually progressed.

Findings at initial examination: Active movement of the MP joint of the right little finger was restricted to −20° on extension and 90° on flexion. When flexion was forced passively, the patient complained of marked pain in the region of the 5th metacarpal bone proximal to the finger and a mass approximately 7 mm in diameter was palpated at this site.

Because the mass was consistent with the extensor digiti quinti proprius tendon and tendovaginitis of that site was suspected from the clinical symptoms, the course was followed up conservatively with local injection of steroid and fixation of the little finger in extended position with a splint, but no relief being seen, operation was performed. (Fig. 1)

Operation findings: Observation of the right extensor digiti quinti proprius tendon upon making a dorsal longitudinal skin incision along the tendon revealed total absence of gliding of the tendon by passive extension of the little finger and the tendon to be loose and serpentine. Tracing the tendon proximally, a tendon sheath-like structure was present at a positon 1/3 proximal on the 5th metacarpal bone and marked thickening was presented at the site

*) 山口利仁，渡　捷一，津下健哉：小指個有伸筋腱の腱鞘炎に起因した弾発指の症例

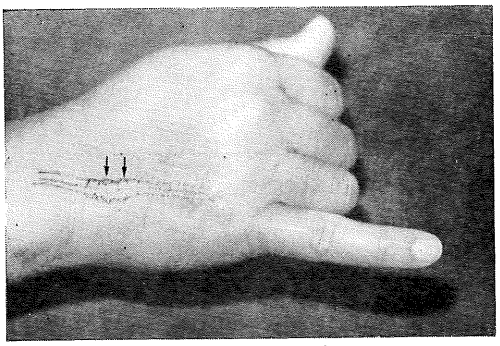

Fig. 1. Preoperative findings of case 1
As indicated with arrows, a mass was palpated along the extensor proprius tendon of the right little finger, ant the little finger presented the snapping phenomenon.

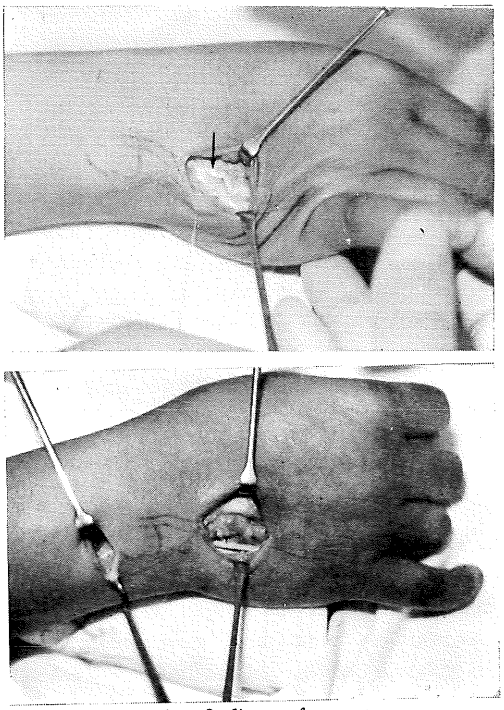

Fig. 2. Operative findings of sese 1
A : Examination of the extensor digiti quinti tendon revealed that there was no gliding movement of the tendon with passive extension, and that it was serpentine. A tendon sheath-like structure is observed at the proximal site shown with the arrow.
B : Gliding of the extensor digiti proprius tendon was completely restored with removal of the tendon sheath-like structure and the extensor retinaculum.

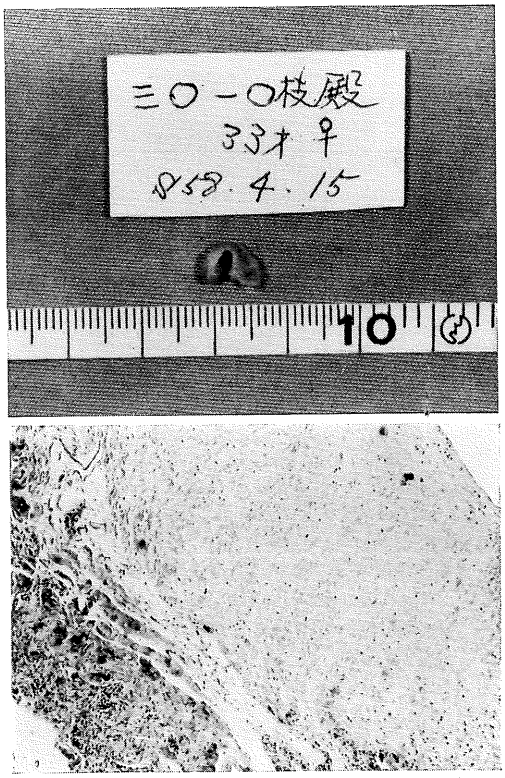

Fig. 3. Resected tendon sheath and pathologic findings
A : Macrosopic finding:
Thickening to 2~3 times normal.
B : Histopathologic findings:
The synovium is thickened and fibrin is seen on the surface. Infiltration of chronic inflammatory cells is also seen.

where a mass was palpated preoperatively. As the tendon sheath-like structure was resected gradually beginning distally and proceeding proximally while examining the gliding of the extensor digiti quinti proprius tendon, gliding of the tendon was rectored to normal at a point where approximately 1 cm of the extensor retinaculum remained. (Fig. 2-A, B)

Fig. 3-A shows the resected thickened part of the tendon sheath and B is a histopathological view. Histologically, the tendon sheath shows marked thickening of the synovium, with fibrin on the surface, and mild infiltrtaion of inflammatory cells is seen. (Fig. 3-A, B)

At present seven months after the operation, mobility of the right little finger has been completely restored, and pain and snapping phenomenon have disappeared.

<Case 2>

The case is a 19-year-old female who has been playing the piano for the past 12 years. From about a year previously, with no conceivable cause, she had pain when she flexed her right little finger, which gradually aggravated. Lately, a mass became palpable in the dorso-ulnar aspect of the right wrist joint and she visited this department for examination.

Findings at initial examination: Active movement of the right little finger was 5° extension and 10° flexion, and marked flexion restriction was presented. Pain was marked on forced passive flexion, and a definite snapping phenomenon was presented.

Findings at operation: As in case 1, a swelling of the extensor proprius tendon was found consistent with the site where a mass was plapated, and the distal tendon sheath had developed relative stenosis. The tendon sheath was removed and the synovium of the extensor proprius tendon was resected, and this caused the symptom to disappear.

At present two years after the operation, the case is totally asymptomatic and has no trou ble playing the piano.

<Case 3>

This case is a 43-year-old female, a typist, for who no conceivable cause in particular began to sense of late an abnormal sound in the ulnar aspect of the right wrist joint and gradually saw appearance of extension disturbance of the little finger in addition to pain, for which she visited this hospital.

Findings at initial examination: The dorso-ulnar aspect of the right hand was mildly swollen and tender, and restriction of active movement of MP joint of the little finger to −30° on extension and 90° on flexion was seen. Further, a small mass was palpated in the distal part of the extensor retinaculum of the right extensor digiti quinti proprius.

Operation findings: As in the foregoing case, the extensor digiti quinti proprius tendon was exposed and the distal 3/4 of the 5th compartment of the extensor retinaculum was removed, and this resulted in complete disappearance of the mobility restriction of the little finger.

At present two years after the operation, there has been no recurrence of pain and snapping phenomenon.

DISCUSSION

What is generally given as the cause of snapping finger is disturbance of the gliding of the tendon as a result of thickening of the tendon sheath caused to develop by mechanical stimulation of the tendon sheath on the basis of some kind of constitutional predisposition. As a general concept, the place where these disturbances occur is preponderantly the flexion aspect, namely, in the flexor tendon, and development in the extension aspect is not known except the stenosing tendovaginitis of de Quervain. However, tendovaginitis in the extension aspect is not so rare so far as reports go. Burman (1952)[1], studying each of the dorsal compartments, has reported that tendovaginitis is found whichever compartment it may be. As regards the extensor digiti quinti proprius tendon, Drury (1960)[2] has investigated fracture and trouma of the wrist joint in adults and reported that almost 5% of such cases developed tendovaginitis of the 5th compartment. However, tendovaginitis of the extensor tendon presenting the snapping phenomenon is rarely experienced in every day medical examination and treatment, and opportunities to encounter such cases as are reported here are believed to be infrequent.

The cases experienced by the authors generally have pathological conditions in common. All were engaged in an ccupation in which the fingers and wrist joints were abused and moreover the abnormality had occurred in the extensor digiti quinti proprius tendon of the more skillful hand whose friquency of use is high. A similar case has been reported by Hopper and McMaster (1979)[3], who maintain that the pathologic condition very closely resembles that of de Quervain's disease and compression by the dorsal branch of ulnar nerve and dorsal venous network can be a cause. However, by the authors' operation experience the cause was definitely tendovaginitis. It being, moreover, a tendovaginitis presenting the snapping phenomenon, it was thought the disturbance perhaps might be characteristic of the extensor digiti quinti proprius tendon. As reason, it was assumed that for tendovaginitis to present the snapping phenomenon a special anatomical characteristic is necessary as basis, and among extensor tendons the extensor digiti quinti pro-

pries tendon could be considered to have a rather special tendon sheath structure. That is, it can be considered a cause that the ligament of this tendon in the wrist joint extends far more distally than the ligaments of other extensor tendons. Incidentally, a study of 60 hands of cadovers showed that the distal end of the extensor retinaculum is spread at an angle of 30°～40° to the horizontal axis of the wrist so that it is usually present up to proximal 1/4 part of the 5th metacarpal bone. In addition, there is on the dorsal aspect of the base of the 5th metacarpal bone a gliding groove for the extensor digiti quinti proprius tendon which is formed by the protuberance of osseous tissues of soft tissues, and the extensor retinaculum covers this up to the distal end, forming a roof over a tunnel. This structure, the purpose of which presumably is to prevent ulnar dislocation of the tendon by abduction of the little finger, is definitely of disadvantage where development of tendovaginitis is concerned. Further, the little finger, with the thumb, has large flexion and extension movements which more over are repeated frequently, and it is a characteristic of extensor tendons to change their course while running. These also can be considered to be disadvantages where development of tendovaginitis is concerned. And, according to the type of occupation, tendovaginites, once it occurs, can be considered to progress without curing, to finally develop stenosis of tendon sheath, disturbance of gliding mobility, and snapping phenomenon. Further, it was assumed that extension disturbance of the little finger had readily developed, because the extensor digiti quinti proprius tendon assumes charge of the main portion of the little finger's extension ability[4].

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