BILATERAL SNAPPING THUMBS

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Chronic traumatic and inflammatory lesions of the tendons and tendon sheaths of the hand are not uncommon and are often quite disabling, yet there are few reports of these cases and the American literature is surprisingly silent upon the subject. Snapping index or "trigger fingers" are occasionally seen in any large clinic, while the stenosing tendovaginitis at the radial styloid process which was first reported by de Quervain, in 1895, and recently reviewed with an excellent résumé of the cases in the literature by Finkelstein, is still more common. De Quervain declared that the condition occurred only in the tendon sheath of the abductor longus and extensor brevis pollicis tendon. A similar lesion which involved the tendon or tendon sheath of the flexor pollicis longus muscle was described by Paulson, Nussbaum, Troell, and Finkelstein (Case X), while Hauck, in 1923, and Kroh, in 1925, described the only cases of bilateral tendovaginitis of the m. flexor pollicis longus with snapping thumbs that I have been able to find in the literature. These authors have also noted similar lesions of other tendons of the hand.

Because there is so little general knowledge of this subject the condition has been erroneously diagnosed as rheumatism, neuritis, periostitis, tenosynovitis, tuberculous osteitis, or, as in the case reported here, chronic recurring dislocation at the distal interphalangeal joint.

Report of Case.—A woman, aged twenty years, came to the University of Chicago clinics on April 15, 1930, because of "locking" of the distal phalanx of both thumbs. The patient stated that since the age of three or four years she had had difficulty in flexing the distal phalanx of both thumbs, and, when flexed, she was often unable to extend this phalanx without assistance from the opposite hand. Upon either flexion or extension there was always a visible jerk and a snap or click was often noted. The patient was a skilled pianist and not only was the disability a handicap to her but after an hour or more at the piano the thumb became quite painful and the difficulty in either flexion or extension became much more marked. Numerous medical consultations had failed to explain or relieve the condition. As a result of the disability she had been compelled to give up her position as a teacher of the piano. With the exception of the disability described, the past history was not relevant.

An examination of the hands revealed an entirely normal appearance, but flexion of the distal phalanx of either thumb was possible only with considerable effort and was accompanied by a snap or click. The initial impression was that this was a case of recurrent dislocation which accompanied each *flexion* of the phalanx. However, when the tendon of the flexor pollicis longus muscle was palpated, a firm nodule was detected near the base of the thumb which moved with the tendon and seemed to snap abruptly back and forth in the sheath with a palpable click upon flexion or extension of the distal phalanx. It seemed probable that this was a condition analogous to the more common one of snapping index finger, or "trigger finger." Since there is a transverse band

across the tendon sheath just at the level of the tendon nodule, it was thought probable that the phenomenon was due to the difficulty in passage of the nodule through the narrow portion of the tendon sheath. The nodules proved to be radiolucent. Other laboratory tests were normal. A diagnosis of tendonitis stenosans of the flexor pollicis longus tendons, bilateral, was made.

Operation was performed on both hands May 27, 1930. The approach was through an incision on the outer side of the thumb, extending from the distal interphalangeal joint proximally to the base of the first metacarpal bone. By reflecting the medial flap the sheath of the flexor pollicis longus tendon was exposed. The sheath was opened longitudinally to the transverse volar ligament which was incorporated in the tendon sheath as a dense transverse band of fibrous tissue which constricted the sheath and tendon. When traction was applied to the tendon distal to the constriction band, there was a definite resistance and then with an audible click a nodular, fusiform

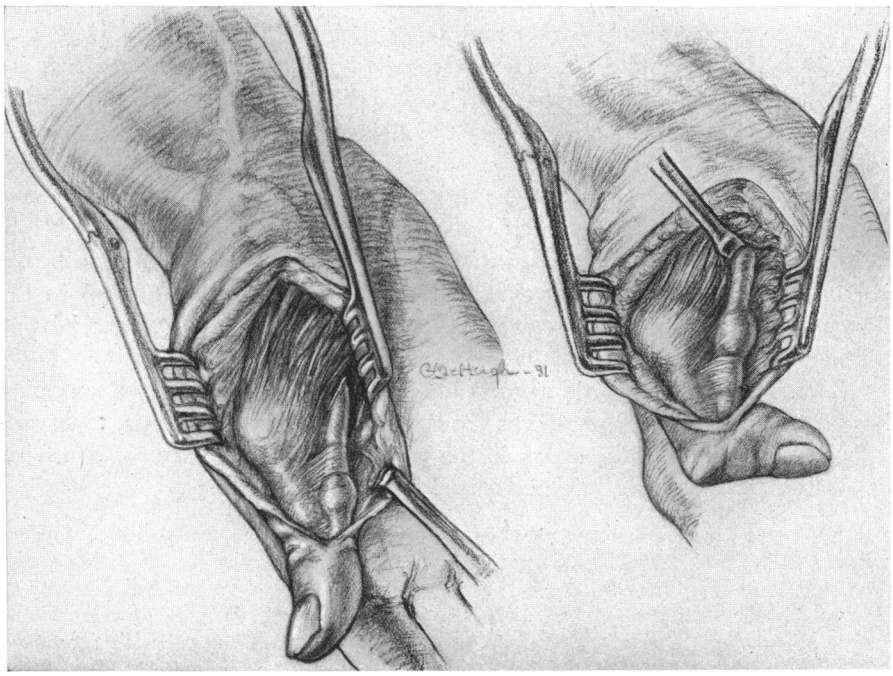

FIG. 1.—Diagram illustrating the nodule in the tendon of the flexor pollicis longus muscle. When the distal phalanx of the thumb was extended the nodule was distal to the transverse fibrous band. When the thumb was flexed at the distal interphalangeal joint the nodule was drawn through the constricted portion of the sheath to the proximal side of the fibrous band.

swelling in the tendon snapped into view. This nodule was one centimetre in length and more than twice as thick as the diameter of the tendon itself. The tendon fibres were rough and frayed from the constant friction of forcing this nodule through the narrow portion of the tendon sheath. When the thumb was now forcibly extended the nodule was pulled up out of sight and again the snap or click was both heard and palpated. (Fig. 1.)

The tight transverse band was divided and part of the sheath was cut away as far as the point at which the tendon disappeared beneath the short muscles of the thumb. (Fig. 2.) The tendon was then split open through the fusiform swelling and about half of the nodular portion of the tendon was excised and the slit in the tendon was closed. It was then possible to extend and flex the thumb without any difficulty and both the jerk and the click had disappeared.

A similar procedure was carried out on the right hand and an identical condition was found, although the nodule in the tendon was larger than that on the left side.

The patient made an uneventful recovery and she was discharged from the hospital six days after the operation.

Physiotherapy was continued for two weeks and when she returned to the clinic on June 25, 1930, one month after operation, the range of motion was normal and there was no "click." Two months after operation, July 25, 1930 (Fig. 3), there was no pain, stiffness, or tenderness in either thumb and she reported that she played the piano with greater freedom than she had ever been capable of before the operation. In December, 1930, seven months after operation, the patient reported that she was again teaching piano and that there had not been the slightest return of the disability. At the time of the last visit, September 28, 1931, the range of motion and function of the thumbs was entirely normal.

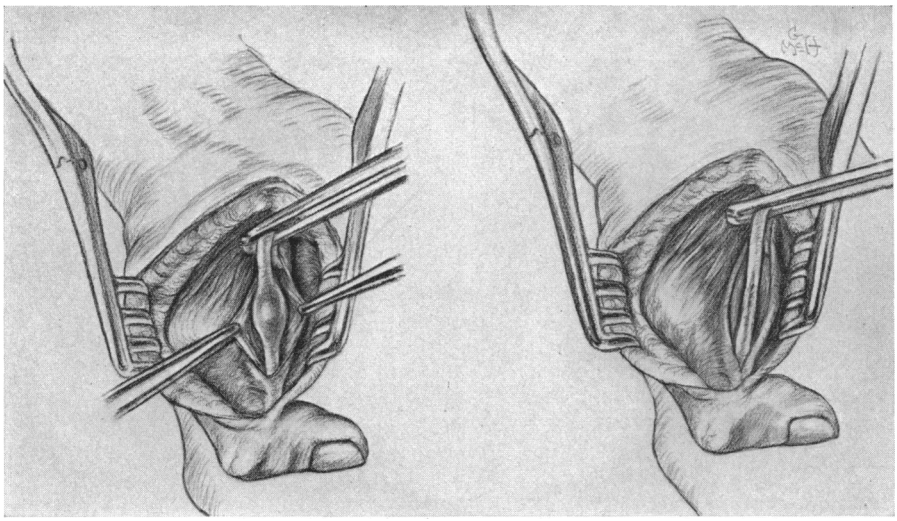

FIG. 2.—The sheath has been opened and part of the constricting band has been cut away. The second illustration shows the appearance of the tendon following excision of the central portion of the "tumor."

A microscopical study of some of the tissue removed from the fusiform nodules revealed numerous cartilage-like cells among the dense fibrous tissue of the tendon.

Comment.—The etiology of tendonitis stenosans has been attributed to chronic trauma and in cases previously reported the onset of the symptoms has usually been in older patients. Finkelstein's case was fifty years of age and the disability had been noted only sixteen months. At operation a fusiform swelling one centimetre long was found in the m. flexor pollicis longus tendon at the metacarpo-phalangeal joint of the right thumb. Troell studied the case of a piano teacher, sixty-four years of age, who had, in addition to tendovaginitis at the radial styloid process, a "doigt á ressort" or snapping finger on the middle finger of the opposite hand. A second case, also a woman, aged fifty-six years, had for four years had a snapping of the flexor pollicis longus tendon as well as a tendovaginitis stenosans at the radial styloid process. Troell also felt that chronic trauma was the most obvious etiological factor.

Poulsen reported fifteen similar cases, and in five of these a small tendon tumor was found in the long flexor tendon of the thumb. Nussbaum reported stenosis of the sheath of the flexor longus pollicis tendon without a tendon tumor.

Kroh described seven cases with involvement of the long flexor of the thumb with difficulty in flexion or extension of the distal phalanx and definite "snapping"

upon such motion. Of seven additional cases involving the flexor tendons of the fingers, the audible snapping was noted in four while in three there was only difficulty in flexion and extension associated with pain upon motion without the snapping. Kroh's cases included a male child aged two and one-half years with involvement of the left thumb and a female aged three and one-half. The duration of symptoms in each case was two to three weeks and in each instance a nodule was found in the flexor pollicis longus tendon. In a third case, aged forty-eight years, the disability was bilateral and had been present for six weeks on the left hand and two years on the right. Hauck also found this condition in two young children, both females, aged two and three and one-half years, respectively. In a total of four cases the disability was due to a nodule in the flexor pollicis longus tendon and was associated with definite snapping. In eight additional cases there was snapping and difficulty upon flexion and extension of the distal phalanx of the thumb, but the pathology present at operation consisted of thickening or contracture of the sheath of the m. flexor pollicis longus tendon without a nodule or tumor of the tendon itself.

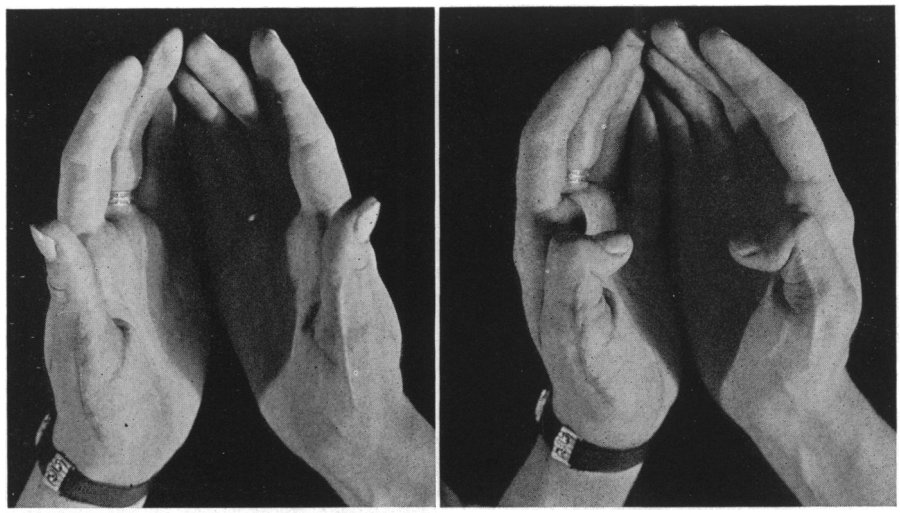

FIG. 3.—Normal voluntary flexion and extension of the thumb, July 25, 1931, two months after operation.

In a review of the literature forty cases were studied. In each of these cases the disability consisted of difficulty in flexion and extension of distal phalanx, associated with pain and "snapping" upon motion. In seventeen of the forty cases nodules were found in the flexor pollicis longus tendons, and, in two of these, one reported by Kroh, aged forty-eight years, and a second by Hauck, aged three years, the condition was bilateral.

The ages varied from two years to seventy-one years. There were eight patients six years or younger, but only two of the other patients were less than forty years of age.

The disability is far more common in the female, since there were only four males in the series, thirty-three females and three cases in which the sex was not clearly stated.

Most of the patients were treated by operation in which part of the sheath was cut away, permitting free motion of the enlarged portion of the tendon.

In every instance complete relief from symptoms was reported, while attempts to treat the condition conservatively before advising operation had been uniformly unsuccessful.

The etiology of the condition is doubtful. The occurrence in very young children would indicate a congenital basis but most of the patients were more than forty years of age and the duration of the symptoms in these patients was from four weeks to two years. In some of the cases, as in our own, the slight enlargement of the tendon may have dated from intra-uterine life, while the constant use of the thumb not only may have contributed to irritation, thickening and narrowing of the tendon sheath, but caused further enlargement of the tendon nodules themselves.

SUMMARY

(1) The literature describing cases of snapping thumbs due to involvement of the flexor pollicis longus tendons has been reviewed.

(2) A case of bilateral snapping thumbs has been reported.

(3) These cases do not respond to conservative treatment and should be treated surgically.

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