The Flexor Digitorum Superficialis as a Cause of Bilateral Carpal-Tunnel Syndrome and Trigger Wrist

A Case Report

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Carpal-tunnel syndrome is a common entity, increasingly recognized as being caused by any lesion that reduces the capacity of the carpal tunnel[9,11]. Some anomalies of muscle can result in the syndrome[1,3,4,6,11,13,15], with a malformation of the flexor digitorum superficialis constituting one of the more common causes of the disorder[5,7-10,12-14]. However, only one case of carpal-tunnel syndrome associated with triggering of the wrist caused by malformation of the belly of the flexor digitorum superficialis muscle has been reported[8]. We are presenting the case of a patient who had this rare association of conditions bilaterally.

Case Report

A twenty-two-year-old woman was referred to our out-patient clinic because of pain and paresthesias of the fingers of both hands. She also had triggering related to flexion of the fingers and wrists.

The symptoms started simultaneously in both hands several years before the patient was first seen by us. Examination revealed marked wasting of the thenar muscles and weakness of grip bilaterally. Flexion of the wrists and digits with the exception of the thumbs was accompanied by clicking and triggering. In both wrists a soft, non-tender, oval mass four by two centimeters in diameter was palpable in the transverse carpal ligament. The mass moved longitudinally with flexion and extension of the fingers and it did not harden with contraction of the flexor muscles in the fingers. The sensibility of the fingers was intact. Tinel's sign was present and Phalen's test was positive. The preoperative conduction latency of the median nerve showed a delay in velocity of 5.2 milliseconds in the right wrist and 7.5 milliseconds in the left. The conduction time of the ulnar nerve was normal bilaterally.

Surgical exploration of the carpal tunnel was first performed in the left wrist under general anesthesia and tourniquet control. The transverse carpal ligament was divided, and the muscle belly of the flexor digitorum superficialis of the long and ring fingers was found to extend across the wrist joint into the palm as far as the distal palmar crease (Fig. 1). The median nerve was constricted (Fig. 2) and marked hypertrophy of the synovial sheaths of all the flexor tendons was noted.

The anomalous muscle bellies of the long and ring fingers and the hypertrophied synovial sheaths were excised, and the median nerve was lysed. The postoperative period was uneventful. The triggering disappeared, as did the paresthesias in the fingers.

The identical operation was performed one month later on the right wrist, similar findings were noted, and a similar resolution of symptoms followed.

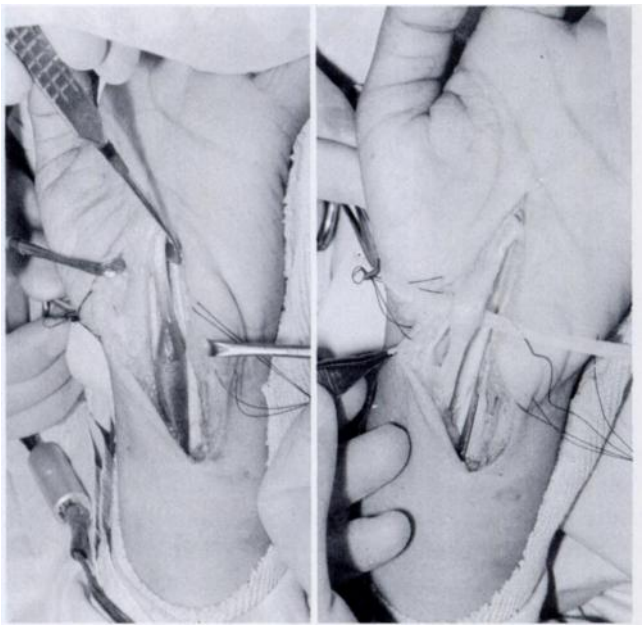

FIG. 1 FIG. 2

Fig. 1: The muscle belly of the flexor digitorum superficialis extends across the wrist joint into the palm and causes carpal-tunnel syndrome and triggering of the wrist.

Fig. 2: Extreme constriction of the median nerve at the carpal tunnel.

Comment

Abnormal findings on palpation in wrists that are affected by carpal-tunnel syndrome, especially if it is bilateral, should alert the examiner to the possibility of a muscle anomaly if there are no other obvious reasons for the syndrome.

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References

1. ASHBY, B. S.: Hypertrophy of the Palmaris Longus Muscle. Report of a Case. J. Bone and Joint Surg., **46-B:** 230-232, May 1964.
2. BACKHOUSE, K. M., and CHURCHILL-DAVIDSON, D.: Anomalous Palmaris Longus Muscle Producing Carpal Tunnel-Like Compression. Hand, **7:** 22-24, 1975.
3. BUTLER, BRUCE, JR., and BIGLEY, E. C., JR.: Aberrant Index (First) Lumbrical Tendinous Origin Associated with Carpal-Tunnel Syndrome. J. Bone and Joint Surg., **53-A:** 160-162, Jan. 1971.

4. ERIKSEN, JØRGEN: A Case of Carpal Tunnel Syndrome on the Basis of an Abnormally Long Lumbrical Muscle. Acta Orthop. Scandinavica, **44:** 275-277, 1973.
5. HAYES, C. W., JR.: Anomalous *Flexor Sublimis* Muscle with Incipient Carpal Tunnel Syndrome. Case Report. Plast. and Reconstr. Surg., **53:** 479-483, 1974.
6. JACKSON, D. W., and HARKINS, P. D.: An Aberrant Muscle Belly of the Abductor Digiti Quinti Associated with Median Nerve Paresthesias. Bull. Hosp. Joint Dis., **33:** 111-115, 1972.
7. MAINLAND, D.: An Uncommon Abnormality of the Flexor Digitorum Sublimis Muscle. J. Anat., **62:** 86-89, 1927.
8. NEVIASER, R. J.: Flexor Digitorum Superficialis Indicis and Carpal Tunnel Syndrome. Hand, **6:** 155-156, 1974.
9. PHALEN, G. S.: The Carpal-Tunnel Syndrome. Seventeen Years' Experience in Diagnosis and Treatment of Six Hundred Fifty-four Hands. J. Bone and Joint Surg., **48-A:** 211-228, March 1966.
10. RASMUSSEN, J., and STOUGÅRD, J.: Karpaltunnelsyndrom. En Efterundersøgelse af 91 Opererede Tilfaelde. Nordisk Med., **81:** 366, 1969.
11. ROBBINS, HERMAN: Anatomical Study of the Median Nerve in the Carpal Tunnel and Etiologies of the Carpal-Tunnel Syndrome. J. Bone and Joint Surg., **45-A:** 953-966, July 1963.
12. SCHULTZ, R. J.; ENDLER, P. M.; and HUDDLESTON, H. D.: Anomalous Median Nerve and an Anomalous Muscle Belly of the First Lumbrical Associated with Carpal-Tunnel Syndrome. Case Report. J. Bone and Joint Surg., **55-A:** 1744-1746, Dec. 1973.
13. SMITH, R. J.: Anomalous Muscle Belly of the Flexor Digitorum Superficialis Causing Carpal-Tunnel Syndrome. Report of a Case. J. Bone and Joint Surg., **53-A:** 1215-1216, Sept. 1971.
14. STILL, J. M., JR., and KLEINERT, H. E.: Anomalous Muscle and Nerve Entrapment in the Wrist and Hand. Plast. and Reconstr. Surg., **52:** 394-400, 1973.
15. TANZER, R. C.: The Carpal-Tunnel Syndrome. A Clinical and Anatomical Study. J. Bone and Joint Surg., **41-A:** 626-634, June 1959.
16. TOUBORG-JENSEN, A.: Carpal-Tunnel Syndrome Caused by an Abnormal Distribution of the Lumbrical Muscles. Case Report. Scandinavian J. Plast. and Reconstr. Surg., **4:** 72-74, 1970.