

Trigger Wrist

Il-Jung Park, MD, Yoon-Min Lee, MD*, Seung-Koo Rhee, MD*,
Seok-Whan Song, MD*, Hyung-min Kim, MD, Ki-Bum Choi, MD*

Department of Orthopedic Surgery, Bucheon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Bucheon,

*Department of Orthopedic Surgery, Yeouido St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

Trigger wrist is a relatively rare disease compared to trigger finger, which is the most common disorder found in hands. Patients with trigger wrist usually complain about the following symptoms: snapping and clicking or triggering around carpal tunnel with or without mild to moderate median neuropathy. There are a total of five cases of trigger wrist: three cases of anomalous muscle belly of flexor digitorum superficialis and two cases of fibroma around flexor tendon sheath within carpal tunnel. This study reports on two of those cases: one with anomalous muscle and the other with fibroma of flexor tendon sheath. Accurate examination and proper diagnosis are mandatory to obviate improper and time-wasting treatment for patients with trigger wrist.

Keywords: Wrist, Triggering, Tenosynovitis, Mass

Trigger wrist is a relatively rare disease compared to trigger finger, which is the most common disorder found in hand. The term “trigger wrist” is defined as: the painful click or catching sensation around the wrist joint during finger or wrist motion. In the existing medical literature, the symptoms associated with wrist trigger are caused by pathology under or around transverse carpal ligament and extensor retinaculum: possible etiologies of the condition include tumor or a rheumatoid nodule in the flexor tendons inside the carpal tunnel, an anomalous muscle belly in the carpal tunnel, or a combination of both.

There are a total of five cases with trigger wrist: three cases of anomalous muscle belly of flexor digitorum superficialis (FDS) and two cases of fibroma around flexor tendon sheath within carpal tunnel. This study reports on two cases: one with anomalous muscle and the other with fibroma of flexor tendon sheath. A review of the medical literature on these conditions is also performed.

CASE REPORTS

Case 1

A 31-year-old woman visited our outpatient clinic with a small palpable mass on the palmar side of her wrist; the mass moved concurrently up and down during wrist motion for roughly three years. The movements of mass in the carpal tunnel created momentary pain and snapping during usage of the finger. She complained of numbness on the thumb, index, and middle fingers worsened by usual activities of the hand and wrist, suggesting carpal tunnel syndrome.

Upon physical examination, the mass was palpated just proximal to the transverse carpal ligament. The direct carpal compression test and Phalen test were both positive. A snapping sound and pain around carpal tunnel was detected during flexion and extension of the index finger with moving mass. There was no tenderness on the A1 pulley area of index finger. In nerve conduction studies, median neuropathy at the wrist level was confirmed. There were no abnormal findings on plain X-rays (Fig. 1A). Computed tomography scanning with gadolinium enhancement showed 11 mm × 8 mm × 12 mm sized, oval and well demarcated soft tissue mass at wrist level extended into the carpal tunnel (Fig. 1B).

According to these findings, we suspected either a nodule or ganglion as a space occupying lesion which led to carpal tunnel syndrome. We performed surgical ex-

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Correspondence to: Yoon-Min Lee, MD

Department of Orthopedic Surgery, Yeouido St. Mary's Hospital, College of Medicine, The Catholic University of Korea, 10 63-ro, Yeongdeungpo-gu, Seoul 07345, Korea

Tel: +82-2-3779-1192, Fax: +82-2-783-0252

E-mail: simba0415@catholic.ac.kr

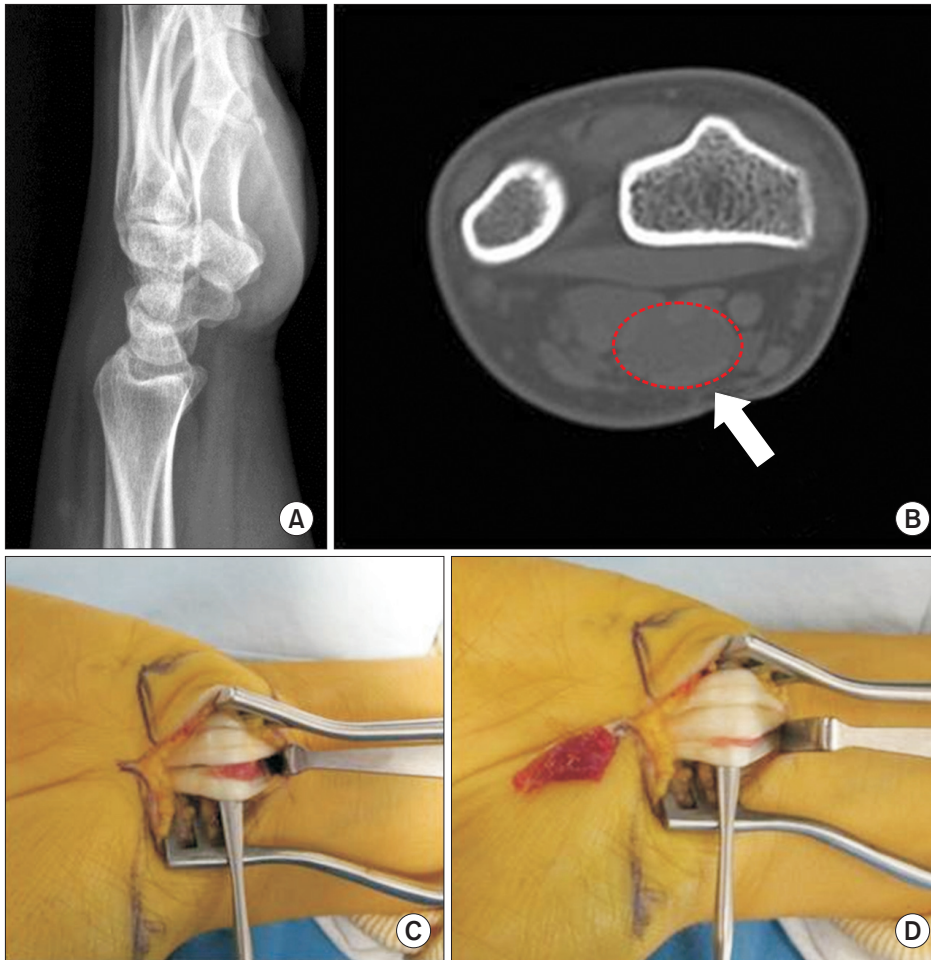


Fig. 1. Trigger wrist by abnormal flexor digitorum superficialis (FDS) muscle. (A) Plain lateral radiography shows no abnormal soft tissue shadow. (B) Computed tomography shows soft tissue mass shadow between FDS at the wrist level. Abnormal FDS muscle (arrow). (C) Intraoperative photograph showing an anomalous FDS muscle belly of index finger within the carpal tunnel. (D) Surgical excision of the anomalous FDS muscle belly, allowing its tendon to move freely within the carpal tunnel and operative specimen measuring 1.5 cm × 1 cm, showing normal striated muscle.

ploration to excise the palpable mass. Mild hypertrophic transverse carpal ligament and degeneration of median nerve were identified. The transverse carpal ligament was divided; however, there was no mass lesion within carpal tunnel. By exploration of flexor tendons in carpal tunnel and proximal wrist level, we found hypertrophied and anomalous muscle belly of FDS of index finger, more distally extended muscle belly than a normal condition (Fig. 1C). Anomalous muscle belly made compression of median nerve and snapping around carpal tunnel during finger motion. After resection of abnormal muscle belly from FDS tendon (Fig. 1D), snapping during finger motion was disappeared. Three months after the operation, patient was free from symptoms.

Case 2

A thirty-nine year old man complained of a catching sensation during wrist motion and a progressive tingling sensation of palmar aspect of right hand for roughly three months. Previously, he was treated conservatively in several private clinics for trigger finger or carpal tunnel syn-

drome; however, there were no results of the treatment.

During physical examination, triggering of the index to little finger was felt during passive motion. Carpal tunnel syndrome was suspicious because he had paresthesia on median nerve dermatome and positive Phalen test, and it was confirmed by nerve conduction studies.

Plain radiographs were normal, and magnetic resonance imaging (MRI) showed well defined soft tissue mass attached around flexor tendon sheath from carpal tunnel to mid carpal level (Fig. 2A).

After release of transverse carpal ligament and exploration of flexor tendons, pale brown colored oval mass was founded between flexor digitorum profundus tendons and moderate synovial hypertrophy of tendon sheath (Fig. 2B). Histology revealed fibroma of the tendon sheath (Fig. 2C).

DISCUSSION

Trigger finger is one of the most common causes of hand with a painful click during finger motion.¹⁾ Trigger wrist,

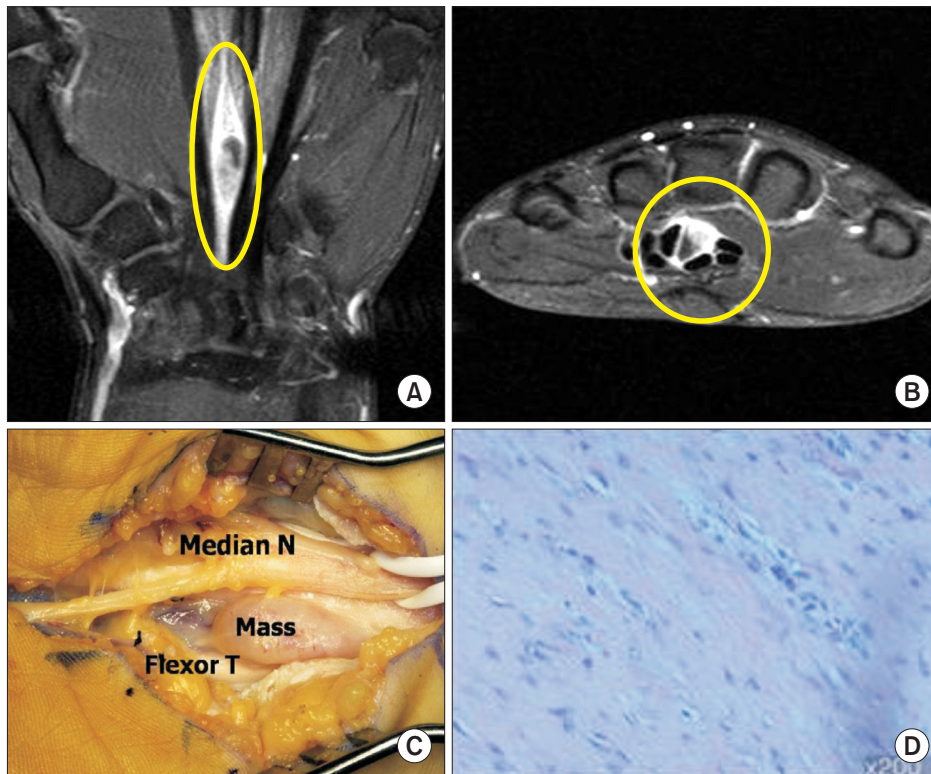


Fig. 2. Trigger wrist by fibroma of flexor tendon sheath. (A) Coronal T2-weighted image of wrist magnetic resonance imaging showing soft tissue mass wrapping around flexor tendons from carpal tunnel to mid palmar area. (B) Soft tissue mass inside the carpal tunnel in axial image. (C) Intraoperatively, pale brown colored oval mass was identified between flexor digitorum profundus tendons and moderate synovial hypertrophy of tendon sheath. (D) Hypertrophy of fibrotic tissue was confirmed by pathology (H&E, x200 high power field).

however, has a low incidence rate in the general population; therefore, many hand surgeons do not have direct experience dealing with the condition.

Symptoms such as snapping, catching or triggering at the wrist should be clinically differentiated from trigger finger; however, it is quite difficult to differentiate because patients often complain of vague pain or discomfort not in the wrist but fingers.^{2,3)} For this reason, trigger wrist might be misdiagnosed as trigger finger; this can lead to unnecessary surgery and other medical procedures such as A1 pulley release or steroid injection. Nodule or mass of flexor tenosynovitis, or benign tumors inside carpal tunnel, often cause median neuropathy. If a patient has long standing (chronic) carpal tunnel syndrome without obvious triggering, surgeons probably will perform an early release of carpal tunnel. Although the triggering may be solved *via* this procedure,⁴⁾ the main problem still remains.

In order to make a more precise diagnosis, a careful physical examination and review of atypical and uncertain symptoms and signs for trigger fingers are necessary. For example, vague pain on palm, absence of point tenderness on A1 pulley area or difficulties in full flexion of fingers might be clues suggesting a diagnosis of trigger wrist.²⁾ If carpal tunnel syndrome is accompanied with trigger finger, triggering should be checked at wrist level.⁵⁾

Because patients with trigger wrist also often have

carpal tunnel syndrome, if a patient presents with median neuropathy as a main complaint, checking crepitus of intracarpal tunnel might be helpful to find intracarpal mass. If crepitus were felt by light compression over the transverse carpal ligament by examiner's thumb during finger motion, further evaluation such as MRI or ultrasonography is needed to distinguish space occupying lesion of carpal tunnel which can lead to trigger wrist.

Suematsu et al.⁶⁾ classifies the cause of trigger wrist into three categories. Class A trigger wrist is due to a tumor or nodule occurring on the flexor tendon sheath which enters and exits from the carpal tunnel. Class B trigger wrist is due to anomalous muscle belly (including an abnormal lumbrical muscle or abnormal muscle belly of the FDS). Class C trigger wrist is a combination of class A and B. Of the three classes, class A is most prevalent. Applying this classificatory system for the cases presented in this paper: case 1 is class B and case 2 is class A. Median neuropathy caused by space occupying lesion in carpal tunnel may be candidates of trigger wrist if disease have progressed regardless of treatment.⁷⁾ Thus, an accurate diagnosis and carpal tunnel release with excision of triggering mass are necessary to treat trigger wrist.^{8,9)}

The clinical differentiation of trigger wrist from trigger finger or carpal tunnel syndrome is difficult when characteristic snapping or triggering around wrist is ab-

sent. Partly due to this reason, trigger finger is often misdiagnosed; in addition, trigger wrist is a rare disease with low population prevalence. The diagnosis becomes clearer when the clinical presentation is related to catching, snapping, and locking on wrist level with or without mild to moderate carpal tunnel syndrome rather than triggering of a finger with tenderness over A1 pulley area. Ineffective conservative treatments or inappropriate surgical procedures may lead to more advanced disease conditions such as severe tenosynovitis or adhesion of flexor tendons or carpal tunnel syndrome with atrophy of thenar muscles,²⁾

which need more extensive explorations or reconstructive surgeries (i.e., tendon reconstruction or opponensplasty). The accurate examination and proper diagnosis are mandatory to avoid improper and time-wasting treatment for patients with trigger wrist.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Ryzewicz M, Wolf JM. Trigger digits: principles, management, and complications. *J Hand Surg Am.* 2006;31(1):135-46.
2. Ogino T, Kato H, Ohshio I. Trigger wrist induced by finger movement: pathogenesis and differential diagnosis. *Handchir Mikrochir Plast Chir.* 1994;26(1):3-6.
3. Lemon RA, Engber WD. Trigger wrist: a case report. *J Hand Surg Am.* 1985;10(1):61-3.
4. Smith RD, O'Leary ST, McCullough CJ. Trigger wrist and flexor tenosynovitis. *J Hand Surg Br.* 1998;23(6):813-4.
5. Aghasi MK, Rzetelny V, Axer A. The flexor digitorum superficialis as a cause of bilateral carpal-tunnel syndrome and trigger wrist: a case report. *J Bone Joint Surg Am.* 1980;62(1):134-5.
6. Suematsu N, Hirayama T, Takemitsu Y. Trigger wrist caused by a giant cell tumour of tendon sheath. *J Hand Surg Br.* 1985;10(1):121-3.
7. Davalbhakta VV, Bailey BN. Trigger wrist: report of two cases. *Br J Plast Surg.* 1972;25(4):376-9.
8. Desai SS, Pearlman HS, Patel MR. Clicking at the wrist due to fibroma in an anomalous lumbrical muscle: a case report and review of literature. *J Hand Surg Am.* 1986;11(4):512-4.
9. Kernohan JG, Benjamin A, Simpson D. Trigger wrist due to anomalous flexor digitorum profundus muscle in association with fibroma of tendon sheath. *Hand.* 1982;14(1):59-60.