A Case of Trigger Finger Caused by A Bony Prominence of The Second Metacarpal Head

Morimitsu Takai, MD1*, Denju Osada, MD2, Masahiro Kameda, MD1, Michiy0 Tomaru, MD1, Kazuya Tamai, MD1, Hiroshi Taneichi, MD1

1Department of Orthopaedic Surgery, Dokkyo Medical University School of Medicine
2Department of Orthopaedic Surgery, Dokkyo Medical University Nikko Medical Center

*Corresponding author: Dr. Morimitsu Takai, 880 Kitakobayashi, Mibu, Tochigi, 321-0293 Japan, Tel: +81-282-87-2161; Email: morimi21975@yahoo.co.jp

Received: 12-26-2015
Accepted: 07-20-2016
Published: 08-10-2016

Abstract

Locking of the metacarpophalangeal (MP) joint due to the presence of a spur or bony prominence of the metacarpal head has been frequently reported. We herein report a rare case of trigger finger caused by a bony prominence of the second metacarpal head. A 15-year-old female had been aware of triggering of the right index finger at the time of extension for approximately three years. On an examination, triggering with crepitation was detected around the MP joint when the patient extended the index finger from the flexed position, and complete extension was enabled after triggering. A bony prominence was observed on the radial-volar side of the second metacarpal head on oblique X-ray and CT scans. Intraoperatively, a thickened radial accessory collateral ligament was noted. After the ligament was split transversely, the triggering disappeared. Postoperatively, the patient achieved complete range of motion without any triggering, pain or instability of the MP joint. Awareness of this condition is important for preventing unnecessary exploration of the proximal pulley and tendon sheath.

Keywords: Trigger Finger; Metacarpal Head; Locking Finger

Introduction

A trigger finger is one of the most common upper extremity problems seen by the orthopaedic surgeon. A trigger finger is almost always caused by a stenosing tenosynovitis, but it could rarely occur due to another problems, and releasing the A1 pulley is a common surgical procedure [1]. On the other hand, the presence of a spur or bony prominence of the metacarpal head may cause locking of the metacarpophalangeal (MP) joint, for which separation of the accessory collateral ligament and excision of the spur and/or bony prominence is required [2]. We herein report a rare case of trigger finger caused by a bony prominence of the second metacarpal head.

Case report

A 15-year-old female spontaneously developed triggering of the right index finger in extension approximately three years prior to admission. She was referred to our department due to sharp pain of the index finger lasting for five months. She was in good health with no history of joint disease or previous history of symptoms related to her hands. She had begun to play Kyudo (Japanese archery) one year previously, in which she used her right hand to pull the bow.

On a physical examination, triggering with crepitation was detected in the right index finger around the MP joint at time of extension from flexion; complete extension was possible after triggering. The location of triggering was not confirmed on palpation. There were no obvious abnormalities on anteroposterior or lateral radiographs. A diagnosis of stenosing tenosynovitis was excluded based on the absence of tenderness in the region of the flexor tendon. The presence of extensor tendon dislocation or subluxation at the MP joint was also excluded based on inspection, palpation and ultrasonography. Furthermore, no abnormal masses were detected in the flexor tendon.

at the wrist joint on MRI performed to rule out the presence of a trigger wrist. Given these findings, we additionally obtained oblique X-rays of the second MP joint, in which a bony prominence with a smooth margin was noted at the radial-volar side of the second metacarpal head (Figures 1-A). The presence of the bony prominence was confirmed on CT images (Figures 1-B,C). Under a diagnosis of trigger finger caused by the bony prominence, surgery was performed.

**Figure 1.** Preoperative images  arrow: the bony prominence

A) : Oblique radiograph

(B) : 3-D CT

C) : CT axial plane

When the radial collateral ligament was exposed through a lateral incision, the accessory collateral ligament was found to be abnormally thick (Figures 2-A). After the ligament was split transversely, the triggering disappeared. The presence of a bony prominence under the ligament was confirmed [Figures. 2-B]. After excising the bony prominence (Figures 2-C, Figure 3), the ligament was reattached to its original position. External splinting was not performed after surgery. Six months postoperatively, the patient achieved complete range of motion without any triggering, pain or instability of the MP joint.

**Figure 2.** Intraoperative findings

(A) : The radial accessory collateral ligament was thickened.

(B) : A bony prominence was observed on the radial-volar side of second metacarpal head.

(C) : The bony prominence was excised

**Figure 3.** Oblique radiograph obtained after surgery

**Figure 4.** Photograph showing contact between the string and the radial side of the MP joint of the index finger when drawing a bow.

**Discussion**

A trigger finger is caused by stenosing tenosynovitis in most instances; however, the condition can occur rarely due to anatomical variation of the lumbrical muscle [3], partial laceration of the flexor tendon, viral infection, and so on. Conducting a careful medical examination is necessary in order to identifying the cause of a trigger finger. Poirier [4] reported, based on the results of an experimental study, that the trigger phenomenon may occur when the collateral ligament of the MP joint passes over a prominence of the metacarpal capitulum. To our knowledge, no previous reports have described a case of a trigger finger associated with a bony prominence of the metacarpal head.

It is known that the boney prominences of the metacarpal head are largest on the radial-volar side of the second metacarpal head, where triggering developed in the present case. The presence of a boney prominence of the metacarpal head in also known to cause MP joint locking [2]. Harvey [5] classified MP
joint locking as degenerative, spontaneous or miscellaneous depending on the factors of onset. Among these groups, the spontaneous type is common in young people, and is associated with anatomical variations of the bone and cartilage. It can be safely said that the current case involved a subtype of the spontaneous group.

In the present case, the side edges of the bony prominence were smooth and the radial accessory collateral ligament was thickened. When the patient drew a bow, the string obviously hits the radial side of the MP joint of the index finger (Figures 4). Most likely, thickening of the radial accessory collateral ligament occurred due to repeated irritations when drawing the bow. We speculate that the thickened radial accessory collateral ligament did not override the bony prominence with a smooth margin in finger flexion, such that the patient developed triggering, but not locking.

References


