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Simultaneous Rupture of the Ulnar Collateral Ligament of the Interphalangeal and Metacarpophalangeal Joints of the Thumb

Chul Hyun Cho, M.D.

Department of Orthopaedic Surgery, Dongsan Medical Center,
Keimyung University School of Medicine, Daegu, Korea

Abstract

Simultaneous rupture of ulnar collateral ligament of the interphalangeal and metacarpophalangeal joints of the thumb without dislocation has not been reported in the English literature, to our knowledge. We report a case of a 46-year-old man with simultaneous rupture of the ulnar collateral ligament of the interphalangeal and metacarpophalangeal joints of one thumb. This was treated successfully by primary repair of the interphalangeal joint and by thumb spica cast for the metacarpophalangeal joint. Although multiple ligament injuries of the finger are rare, thorough examination of the adjacent structures or joints is essential not to miss the combined injuries.

Key Words : Interphalangeal joint, Metacarpophalangeal joint, Rupture of ulnar collateral ligament, Thumb

Introduction

Acute disruption of the ulnar collateral ligament (UCL) of the metacarpophalangeal (MCP) joint of the thumb is a relatively common soft tissue injuries in hand [1,2]. However, simultaneous rupture of the ulnar collateral ligament of the interphalangeal (IP) and MCP joints of the thumb without dislocation have not been reported yet in the English-language literature, to our knowledge. Here, we report the case of a 46-year-old man with simultaneous rupture of the UCL of the MCP and the IP joints of the thumb. This was treated successfully by primary repair of the IP joint and by thumb

Corresponding Author: Chul Hyun Cho, M.D., Department of Orthopaedic Surgery, Keimyung University School of Medicine, 56 Dalseong-ro, Jung-gu, Daegu 700-712, Korea
Tel: +82-53-250-7729 E-mail: oscho5362@dsmc.or.kr

Fig. 1. A stress radiograph shows valgus instability (26 degrees of valgus) of interphalangeal joint of the thumb.

Fig. 2. A stress radiograph shows no definite valgus instability of the metacarpophalangeal joint of the thumb.

spica cast for the MCP joint.

Case Report

A 46-year-old right-handed man was referred to our hospital with a history of painful swelling in his dominant thumb after trauma. He had fallen down stairs 6 days earlier but could not remember the details of the injury because he was inebriated when he fell. There was no history of previous trauma to his right thumb.

The patient had severe tenderness with focal swelling of the IP joint and moderate tenderness of the MCP joint. Valgus stress testing of the IP joint revealed gross valgus instability with no firm endpoint. Examination of the MCP joint revealed no gross valgus instability. The radial collateral ligament of the both joints was competent in varus stress testing.

Plain radiographs revealed normal bony structures. Under local anesthesia, valgus stress radiographs of the IP joint demonstrated valgus instability of approximately 26 degrees (Fig. 1). Radiographs of the MCP joint demonstrated no difference of laxity compared with the uninjuried side (Fig. 2). Ultrasound showed a complete midsubstance

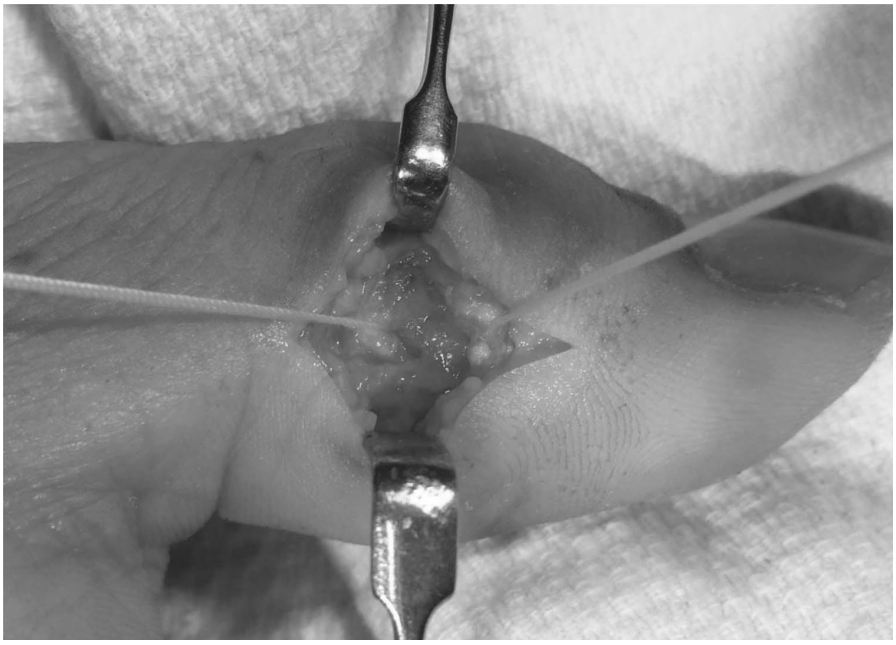

Fig. 3. An intraoperative photograph shows complete tear of the ulnar collateral ligament at the midsubstance portion in the interphalangeal joint.

tear of the UCL of the IP joint and a nearly complete tear at its insertion with the base of the proximal phalanx without displacement or Stener lesion of the UCL at the MCP joint.

Under general anesthesia and pneumatic tourniquet control, we made a midlateral incision on the IP joint and explored the joint. The midsubstance portion of the UCL was torn completely, and the articular capsule was also torn (Fig. 3). The torn ligament and capsule were repaired using 2-0 nonabsorbable suture. One 1.0-mm Kirschner wire was inserted into the IP joint and then a thumb spica cast was put in place.

At 4 weeks after surgery, we removed the Kirschner wire and cast, afterward the patient started range-of-motion exercises and physio therapy. He was able to return to work at 4 months after surgery. At his 30-month follow-up examination, he had no symptoms and no joint instability.

Discussion

As recreational participation in sports (ski, tennis, soccer, etc.) has become more popular, the potential for soft-tissue injuries of the hand has increased. Injury of the UCL of the thumb MCP joint, called skier's thumb or gamekeeper thumb, and collateral ligament injury of the proximal interphalangeal (PIP) joint of other fingers are common [2], but ligament injury of the IP joint of the thumb, which is similar to the distal interphalangeal (DIP) joint of the fingers, is extremely rare for two reasons: First, the IP joint of the thumb is stabilized by the adherent skin, the flexor pollicis longus tendon, the extensor pollicis longus tendon, the volar plate, and the

collateral ligaments. Second, the relatively short lever arm of the distal phalanx makes the IP joint less susceptible to injury [3-4]. Though there are a few cases report of simultaneous dislocation of the MCP & IP joints of thumb or simultaneous rupture of UCL of thumb MCP joint with adjacent soft tissue injuries (extensor pollicis longus or brevis rupture, dislocation, dorsal capsular tear, radial collateral ligament injury), there is no reports on simultaneous rupture of UCL of MCP & IP joint of the thumb in English-language literature to our knowledge.

The mechanism of UCL injury is most often abduction force applied when the thumb is extended [7-9]. Although the exact mechanism of injury in our case was uncertain, we think that instantaneous strong abduction force might have had more of an effect on the IP joint than on the MCP joint at the extended position of the thumb, as indicated by the degree of instability.

Treatment of the UCL injury of the thumb MCP joint is controversial because it depends on the severity of the injury and on the patient's activity level. If the chosen treatment fails, the patient may have pain, a weak pinch grip, and arthritis because of residual instability. Joint laxity of more than 15 degrees' difference from that of the uninjuried thumb and a soft endpoint are better indicators of complete ligament disruption than the absolute value of the joint angle when the joint is stressed [10]. Absolute surgical indications are complete tear with Stener lesion, displaced avulsion fragment, or volar dislocation [1,10]. We chose conservative treatment for our patient's UCL injury of the thumb MCP joint because stress radiographs demonstrated no difference in laxity compared with the uninjuried thumb, despite ultrasound evidence of nearly complete rupture.

As far as we know, there are few reports and no clear consensus on the treatment of ligament injuries of the thumb IP or DIP joint of the other fingers [4]. However, we believe that in our case there was sufficient indication for surgery on the IP joint because of its valgus instability (26 degrees), along with UCL rupture of the MCP joint, and because surgical treatment prevents complications such as pain and residual instability.

Although multiple ligament injuries of the finger are rare, if ligament injury of finger is present, thorough examination of the adjacent structures or joints is essential so that associated injuries are not missed.

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