

Bilateral simultaneous bony skier's thumb. A case report.

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ABSTRACT

Injuries of the thumb during winter sport activities usually occur amongst skiers, followed by snowboarders. Rupture of the ulnar collateral ligament (UCL) is most common injury, as a result of fall or an entrapment of the hand in a ski pole. We present a simultaneous bilateral bony rupture of the thumb UCL in a female recreational snowboarder, sustained after a simple fall during a snow ride. Surgical intervention with open reduction and stabilization with 1 mm Kirschner wires was performed at one time on both hands by the same orthopedic surgeon. A thumb plaster cast was applied for protection on either thumb. K-wires and the thumb cast were retained for a period of 4 weeks. The patient regained full function of her thumbs at 6 months postoperatively.

Keywords: Hand trauma, ulnar collateral ligament, skier's thumb, metacarpophalangeal joint

Introduction:

Stability of the metacarpophalangeal (MCP) joint of the thumb is maintained by a complex ligamentous mechanism. The ulnar collateral ligament (UCL) of the thumb is a primary static stabilizer of the MCP joint and its untreated injury can lead to chronic laxity. Winter sports and especially skiing have an incidence up to 40% of all injuries,^[1] a condition which led to naming the acute type of this injury with the general term "skier's thumb". We present the first ever reported case of a simultaneous bilateral bony avulsion of the UCL in a 27 years old female snowboarder.

Case report:

A 27 year old female was evaluated at the emer-

gency department after sustained a fall during snowboarding two days before administration. The patient suffered from pain at the ulnar side of both thumbs and inability to perform a strong fist. Clinical evaluation revealed pain at the ulnar side of metacarpophalangeal (MCP) joint on both thumbs with simultaneous laxity on valgus stress test under local anesthesia with lidocaine (Oberst anesthesia). Macroscopically edema and mild hematoma on the thenar was documented bilaterally. The flexion and extension mechanisms were intact, while no neurovascular deficit was detected. Radiographic imaging (figure 1) revealed avulsed fracture of the UCL at the base of the proximal phalanx of the thumb, bilaterally.

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Figure 1. Posteroanterior radiography of the hands revealing bilateral bony avulsion of the thumb UCL.



Figure 3. A. Thumbs were stable under valgus stress at 6 months postoperatively. Scar wound was cosmetically acceptable by the patient. B. Range of motion was complete and painless on both hands.

Under brachial block anesthesia, open reduction using a longitudinal incision and stabilization with 1 mm Kirschner wires was performed (figure 2). During surgical exposure the bone fragments were found displaced and rotated a condition which favored our decision on surgical management of the lesions. The small bony fragment of the left UCL led to the use of only one k-wire, an intervention



Figure 2. Postoperative Posteroanterior radiography of the hands. Two 1mm K-wires were used for stabilization of the right fragment, while only one 1mm K-wire was considered adequate for the left fragment. A thumb spica was applied postoperatively for protection and rest.



Figure 4. Posteroanterior radiography at 6 months postoperatively. Porosity of both fragments was complete. Under valgus stress the MCP joint was stable bilaterally.

which provided enough stability to the reattached structure, as it was tested intraoperatively. A dorsal thumb plaster cast for rest and protection was applied, as well as an arm sling on every extremity. K-wires were removed four weeks postoperatively and progressive kinesiotherapy was consulted.

At 6 months follow up the patient restored full thumb mobility (figure 3), MCP joints were stable

on valgus stress test and porosity of the fractures was sufficient on plain radiographs (figure 4). Grip strength was almost equal between the two hands, as well as the lateral pinch grip strength. The young snowboarder returned to her previous activities, being completely functional.

Discussion:


Thumb's UCL is a complex structure consisting of two main parts, the proper and the accessory collateral ligament, acting as restrainers of the MCP in flexion and extension respectively. Watson-Jones^[2] in 1943 was the first who pointed that deficiency of the ulnar ligament at the base of the thumb leads to widening of the MCP joint under pressure. It was until 1981 when Gerber^[3] used the term "skier's thumb" in order to describe the acute rupture of the UCL of the thumb, due to the high prevalence of this injury in winter sports athletes, mostly skiers^[4].

Rupture of the ligament is a result of extended valgus stress in an abducted MCP joint. In winter sports a fall, as in our case, or an inadvertent stress force^[4] applied by a ski pole leads to skier's thumb. Edema and pain at the ulnar side of the thumb's base, hematoma at the thenar area are commonly detected during clinical evaluation. The clinician should test the stability of the MCP. Under local anesthesia with lidocaine (Oberst anesthesia) and placing valgus stress in 30° of flexion and 0° of extension to the thumb, with the metacarpal head stable, a rupture of the proper or accessory collateral ligament can be identified respectively.^[5] A possible ligamentous laxity should be differentiated to a rupture by examination of the contralateral thumb, something which in our case was impossible due to the simultaneous and similar type of injury of both thumbs.

Following clinical examination, posteroanterior (PA) and lateral radiographies of the thumb are the next step in evaluation. PA images show a radial deviation of the thumb, while the lateral x-ray provides information about the volar subluxation of the proximal phalanx. When an ulnar bone frag-

ment of the UCL at the base of proximal phalanx is not present, imaging studies should be concentrated on stress radiographies, usually under local anesthesia. PA views of bilateral thumbs under valgus stress can reveal a possible rupture and distinguish between ligamentous laxity and a true injury of the collateral ligament, as well the stability of the MCP joint postoperatively. In cases where doubt for the diagnosis still exist Magnetic Resonance Imaging (MRI) is the study of choice.^[6]

Anatomical reduction and stabilization of the UCL is mandatory for restoring kinematics of the MCP joint. Best results are obtained when treating acute bony injuries, rather than lesions being diagnosed 3 weeks after the actual accident. Palmer and Lewis^[7] set a classification of skier's thumb and its treatment options, which was later modified by Hinterman.^[8] Based on their classification system, our case is considered a type II injury. Regarding avulsion fractures and the high incidence of non union as the result of conservative treatment, which in some series rises up to 60%,^[9] a displacement of more than 2mm, joint incongruence and rotation of the fragment are the main indications for surgical treatment.^[10] Open reduction and stabilization can be performed either with 1mm K-wires or small diameter screws, when considering bigger fragments. Some authors suggest that small fragments should be excised, followed by anatomical reattachment of the ligament with anchors. The use of a thumb spica postoperatively is used for protection for a period of 4 to 6 weeks.

Intense graduate kinesiotherapy must follow after cast removal. Patients usually regain full mobility of the thumb 3 to 4 months postoperatively. Radial sensory nerve neurapraxia is common, but it subsides automatically. Joint stiffness of the MCP and interphalangeal joint of the thumb, complex regional pain syndrome and secondary osteoarthritis are also reported. Chronic valgus instability is a result of a failure of the conservative or surgical treatment. Poor outcomes are expected when dealing with complex injuries or late diagnosis. 

REFERENCES

1. Mahajan M, Rhemrev SJ. Rupture of the ulnar collateral ligament of the thumb: a review. *Int J Emerg Med.* 2013;6:31.
2. Watson-Jones H. *Fractures and Joint Injuries.* 3th ed. Edinburgh: F. & S. Livingstone; 1943:587.
3. Gerber C, Senn E, Matter P. Skier's thumb. Surgical treatment of recent injuries to the ulnar collateral ligament of the thumb's metacarpophalangeal joint. *Am J Sport Med.* 1981;9(3):171-177.
4. Baskies MA, Lee SK. Evaluation and treatment of the ulnar collateral ligament of the thumb metacarpophalangeal joint. *Bull NYU Hosp Jt Dis.* 2009;67:68-74.
5. Heyman P, Gelberman RH, Duncan K, et al. Injuries of the ulnar collateral ligament of the thumb metacarpophalangeal joint: biomechanical and prospective clinical studies on the usefulness of valgus stress testing. *Clin Orthop Rel Res.* 1993;(292):165-171.
6. Plancher KD, Ho CP, Cofield SS, Viola R, Hawkins RJ. Role of MR imaging in the management of "skier's thumb" injuries. *Magn Reson Imaging Clin N Am.* 1999; 7(1):73-84.
7. Palmer A, Lewis D. Gamekeeper's thumb. When is surgery necessary? *Orthop Trans.* 1977;1:14-15
8. Hintermann B, Holzach PJ, Schütz M, Matter P. Skier's thumb: the significance of bony injuries. *Am J Sports Med.* 1993 Nov-Dec;21(6):800-804.
9. Sorene ED, Goodwin DR . Non-operative treatment of displaced avulsion fractures of the ulnar base of the proximal phalanx of the thumb. *Scand J Plast Reconstr Surg Hand Surg.* 2003;37:225-227
10. Husband JB, McPherson SA. Bony skier's thumb injuries. *Clin Orthop.* 1996;327:79-84

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