The Stener Like Lesion of the radial collateral ligament of the thumb

Bernuth S., Jakubietz M.G., Gilbert F., Meffert R.H., Jakubietz R.G.
Department of Trauma, Hand, Plastic and Reconstructive Surgery, University of Wuerzburg, Germany

Although the injury of the radial collateral ligament accounts for only a low percentage of the ligamentous injuries of the thumb metacarpophalangeal joint, lack of treatment may result in chronic instability, pain and degenerative arthritis. Primary repair is rarely done, more often patients present with a chronic instability. A radial equivalent to the Stener lesion might be the reason that conservative treatment is unsuccessful. The radial Stener like lesion has been described in very few cases. We report on an acute case of radial ligament rupture and a cadaver study to delineate specific anatomic findings.

Anatomy
Like ulnar, the stability of the radial metacarpophalangeal joint is provided by a proper collateral and an accessory collateral ligament. Both arise from the tubercle of the radial metacarpal condyle und insert into the volar base of the proximal phalanx and the volar plate. They are overlaid by the aponeurosis of the abductor and the flexor pollicis brevis that insert at a dorsoproximal site of the proximal phalanx. These muscles run along the metacarpophalangeal bone and function as a protecting shield and an additional stabilizer against adduction forces contrary to the abductor aponeurosis that runs to the ulnar side in an almost rectangular way.

Clinic
A 26 year old man presented after luxation of the metacarpophalangeal joint of the thumb, which was reduced. An instability of the radial collateral ligament (D) and palmar subluxation (E) on plain radiographs was present. In surgery the distally avulsed end of the radial collateral ligament was proximally retracted lying superficial to the aponeurosis. The distal end was reattached to the radial metacarpal condyle with a FiberWire suture anchor (F, G). After reconstruction the patient was splinted for 6 weeks. No instability developed after 6 months.

Results
To investigate the anatomic conditions and required forces that lead to a Stener lesion of the radial collateral ligament, we used a cadaveric thumb model (H). Plain adduction force to the carpometacarpal joint didn’t expose the ruptured radial collateral ligament superficial to the abductor aponeurosis (I). But the combination of abduction, flexion and ulnar torque injures the weak connecting tissue between the aponeurosis and the metacarpal condyle. During this complex movement the aponeurosis slips to the volar side and exposes the proximal end of the rupture radial collateral ligament (K).

In contrast, the ruptured end of the ulnar collateral ligament exposes superficially to the adductor aponeurosis while plain abduction of the metacarpophalangeal joint (L). It requires a strong force but no additional alteration of the movement direction.

Conclusion
Acute ruptures of the RCL of the thumb rarely receive operative treatment in comparison to the UCL rupture. However chronic instabilities often present a surgical challenge. One of the reasons might be that these injuries are overlooked. In the current case an operative exploration revealed a Stener like lesion. If treated conservatively, this will lead to a chronic instability and subsequent osteoarthritis. We believe that in cases of acute rupture of the RCL physicians need to have a high index of suspicion and apply the same diagnostic tools to rule out a Stener type lesion.