Surgical treatment of chronic perilunate dislocation for prevention of attritional flexor tendon rupture

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A 25-year-old man presented with a chronic perilunate dislocation. While awaiting surgery, he developed flexor tendon rupture. The authors present an indication to proceed to emergently prioritize surgical treatment of even chronic perilunate dislocation. A delay in treatment may lead to attritional flexor tendon rupture.

Key Words: Attritional; Chronic; Flexor tendon; Perilunate dislocation; Rupture

Perilunate dislocations and fracture-dislocations comprise a spectrum of ligamentous or bony disruption that result from high-energy trauma to the wrist (1-4). Diagnosis requires thorough upper-extremity examination, high clinical suspicion, and radiographic examination of the wrist in neutral or radial deviation (2). When diagnosed acutely, urgent surgical management is currently the standard of care to achieve and maintain anatomical reduction (2), and minimize the risk of recognized complications including post-traumatic arthritis, median nerve dysfunction and/or carpal instability (1-4). Unfortunately, it is frequently misdiagnosed in an acute setting and the treatment of chronic perilunate dislocations is less clear. We discuss a case of attritional rupture of flexor tendons occurring chronically as a rare complication of perilunate dislocations, with only few cases previously reported in literature (5-9) and discuss the implications of surgical timing.

CASE PRESENTATION

A 25-year-old left-hand dominant man who worked in marketing presented to the clinic with left wrist pain. He sustained this injury while wrestling with his friends 2.5 months earlier. He did not initially seek medical attention but persistent pain led to a visit with his family doctor. An x-ray revealed a volar lunate dislocation (Figure 1). He was referred for surgical opinion and triaged to be seen urgently.

His medical history was unremarkable. He was a nonsmoker, non-diabetic with no medication allergies and no history of injury to his left wrist.

He complained of pain and loss of wrist motion, as well as intermittent tingling in the hand along the median nerve distribution. His wrist examination revealed volar tenderness, but no obvious erythema or significant swelling, active wrist motion was only 30% of normal in all planes. There was no finger flexion weakness, or loss of motion. Tinel’s sign was positive over the carpal tunnel.

X-rays confirmed a volar lunate dislocation without any bony fracture. An urgent magnetic resonance imaging (MRI) scan confirmed the volar lunate dislocation and also revealed flattening and increased synovitis around the lunate and the long finger flexors.

Operative intervention was successful at reducing the lunate and decompressing the carpal tunnel from a volar approach. Significant synovitis was noted around the lunate and the long finger flexors. Lower-grade attritional damage was noted in the flexor pollicis longus. High-grade attritional damage was noted in the flexor digitorum superficialis (FDS) of the middle finger, flexor digitorum profundus (FDP) was intact. Complete attritional rupture was noted of the FDS and FDP to the index finger around the zone of the lunate dislocation. Primary repair was not possible and the tendon ends were tagged for staged reconstructions. A dorsal approach was necessary to restore normal alignment, pin the reduction and perform a lunotriquetral ligament repair (Figure 3). The scapholunate was deficient and repair was performed.
His postoperative course was unremarkable. His neurological symptoms resolved. The pins were removed at six weeks and he began a gentle mobilization program. By three months postoperatively, he experienced minimal wrist pain and had reasonable wrist function. He continued to be bothered by his loss of active index finger flexion and was referred for consideration of tendon reconstruction.

DISCUSSION
Perilunate dislocations in the acute setting are managed with reduction of the lunate with possible decompression of the median nerve. In the chronic setting, however, the urgency to proceed to surgery is not as well established. We presented an indication to proceed to surgery on an emergent basis. As occurred in our case, we believe that delay could lead to clinically occult attritional flexor tendon rupture.

In chronic cases of perilunate dislocations, several review articles have suggested that the major concerns were related to nerve damage and arthrosis. If these injury complications are already present at presentation, surgical management may lead to less than optimal results (1-4). Importantly, none of these review articles mention flexor tendon attritional rupture as a possible complication or concern. One particular review discussed closed flexor tendon rupture in the context of carpal bone pathology (5-6). Specifically, Stern et al (7) described radial sided flexor tendon rupture decades after a volar lunate dislocation, but was not instructive because attrition would be expected over that long duration. Their management included excision without repair of the lunate. Primary tendon transfers were performed. Johnston et al (8) presented immediate physical findings of ulnar sided tendon rupture. They described the dislocation as “ancient”. Troper et al (9) presented a case with a similar time frame to our case; four months postinjury. Their management included excision and primary tendon transfer. The main distinction between these cases and the one presented herein is that flexor tendon ruptures had already occurred at the time of initial presentation. Consequently, it is difficult to establish whether the tendon rupture was part of the original coincidental injury or as a consequence of the chronic volar lunate dislocation.

CONCLUSION
The educational value of the present case report is that attritional tendon rupture is a real concern with any volar lunate dislocation and can occur with minimal or no clinical symptoms or imaging findings.

This has been reported rarely and only twice in the English literature (7,8). We propose that clinicians should treat chronic volar lunate dislocation emergently, not simply urgently, to minimize the underreported risk of clinically occult attritional flexor tendon damage and/or rupture.

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REFERENCES