



Letter to the editor

Response to the Letter by Feipeng Gong, Zhiqiang Fan, Xiaozheng Tang, Baofu Yu


We appreciate Feipeng Gong and colleagues for their interest in our article entitled “Mini hook plate fixation for thumb ulnar collateral ligament avulsion fracture: A technical report”. In response to their requests, here we compare hook plate fixation and suture anchor fixation, describe the indications and advantages of our method, and identify the appropriate number of screws.

1. What are the advantages of hook plate fixation when compared to suture anchor fixation?

Suture anchor fixation is useful for the repair of both ligamentous rupture and avulsion fracture of the ulnar collateral ligament (UCL) and provides sufficient stability to start early mobilization. However, a recent biomechanical cadaver study that compared hook plate and suture anchor fixation for UCL avulsion fractures demonstrated that mean load to failure of hook plate (1.5 mm titanium plate with single screw) and suture anchor (2.4 mm × 8.5 mm anchor with 2-0 FiberWire) was 58 N ± 20 N and 27 N ± 19 N, respectively [1]. These results suggest that our 1.5 mm two-hole hook plate fixation method could provide more stability than suture anchor fixation.

Next, suture anchor fixation requires the creation of bone tunnels for passing sutures through small bony fragments in order to tie them to the fragments. On the other hand, in the hook plate method, the fragment is held with a hook, thereby resulting in no damage to the bony fragment. A previous study reported that the average size of UCL avulsion fragments was 3.2 mm × 1.4 mm [2] and that there might be risk of unexpected fragmentation of UCL avulsion fragments even in suture anchor fixation.

Taken together, we consider hook plate fixation to be a more reliable and safer method for UCL avulsion fractures than suture anchor fixation.

2. Is an additional locking screw necessary for these two cases, or what are the indications for using an additional locking screw?

Shin's cadaver study using a single-hole hook plate for UCL avulsion fractures demonstrated that single-screw fixation had a risk of implant failure, with the failure mechanism being screw backout and screw bending [1]. Actually, the thumb receives larger load than other fingers during daily life and activities. Although several clinical studies have advocated that single-hole hook plate fixation was sufficient for finger avulsion fractures, we think that thumb

fractures require more rigid fixation than other fingers, and separate fixation strategies should be considered for fractures of the thumb and other fingers.

In addition, in cases of avulsion fracture of tendon insertion (e.g. Mallet fractures) and volar plate, finger motion (flexion and extension) provides linear displacement force for the fragments. On the other hand, in cases of avulsion fracture of collateral ligaments, finger motion can provide multidirectional force for the fragments. Thus, thumb UCL avulsion fractures need more rigid fixation than other avulsion fractures, and usage of an additional locking screw is preferable for these injuries.

3. When the fractures are free, is the hook plate fixation still useful, or should it be combined with UCL repair?

Hook plate fixation is also available for periarticular rim fractures without ligamentous connection. However, fixation of such free fragments is generally less important than fixation of avulsion fractures with ligamentous connection in terms of restoration of joint stability. Moreover, free fragments can occur as small osteochondral fractures; therefore, K-wire fixation is often used. Generally, hook plate fixation may be more useful for avulsion fractures with ligamentous connection.

4. Is a second procedure needed to remove the plate and screws?

We do not think that hardware removal is necessary with this method. Indeed, the thumb is positioned on palmar abduction with pronation when holding objects. This movement avoids impingement between plate and grasping objects. Our 2 patients did not complain of hardware prominence and impingement with objects. We recommend hardware removal only in cases of intra-articular placement of the hook that disturbs joint motion and bone resorption under the hook due to excessive compression.

We sincerely hope that our method will help surgeons who treat UCL avulsion fractures.

Disclosure of interest

The authors declare that they have no competing interest.

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