The role of intact vincula tendinum in the results after delay flexor tendon repair in zone II

Claudia Lamas-Gómez, Laura Velasco-González, Marta Almenara-Fernández, Ariadna Da Ponte-Prieto, MC Pulido-García, Aranzazu González-Osuna
Hand Unit and Upper Extremity. Department of Orthopaedic Surgery. Hospital de la Santa Creu i Sant Pau. Universitat Autònoma de Barcelona

Objectives
Isolated laceration of the flexor digitorum profundus (FDP) tendon appears habitually when the section is in zone I and sometimes in zone II. In some cases, due to a delayed diagnosis or to a fail of the primary suture, the repairation is performed some weeks after the injury. In most of these cases, the intact vincular system prevents the retraction of the FDP tendon and this can be repaired as would be done in a primary repair. Finger in which the vincular system was not disrupted had greater final total active motion than had those without intact vincula.

The objective of the study was to explain our experience and outcomes in the delayed treatment of the lacerations of the FDP tendon without tendon retraction due to the presence of the intact vincular system.

Methods
Between 2005 and 2016, eight patients were operated with delay reparation of the FDP tendon without retraction of the same in zone II. The injury was diagnosed clinically and with MRI. The injury was localized in the proximal interphalangeal (PIP) joint in 5 cases (Figure 1) and in middle phalanx in the other 3 (Figure 2). Surgery treatment and outcomes were analysed. Visual analog scale (VAS) scale, range of motion and Disabilities of the Arm, Shoulder and Hand (QuickDASH) score were evaluated at the final of the follow-up.

Results
There were 8 patients with FDP tendon lacerations. There were 5 men and 3 women with a mean age of 27 years old (29-54). Reparation was performed after 3.3 weeks (3-5). The initial injury was located in zone I in 3 cases and in zone II in 5 cases. The lacerations were in the index finger in 3 cases, long finger in 2, and little finger in 3. Minimum follow-up was 12 months (Figures 3 and 4).

Ochiai et al. classified three types of distribution of VLS (vinculum longum superficialis) and five types of distribution of VLP (vinculum longum profundus). The five types of distribution of VLP were determined to be the distal, middle, mixed, proximal, and absent. The intraoperative findings found the intact VLP in all cases that avoided the proximal retraction of the FDP. The middle type of VLP bridge between the profundus tendon and vinculum breve superficialis through the decussation of the superficialis tendon. Its blood supply came from the proximal transverse digital artery. This type is the most common type in our cases. A modified Kessler suture was performed in all cases. All patients had good functionality measured with the DASH score at the final of the follow-up.

Conclusions
The integrity of the VLP could be one reason of the lack of retraction that occurs sometimes in FDP tendon injuries. When it occurs and the diagnosis is delayed, tendon suture can be performed like an acute primary repair. In cases of intact VLP, the vincular blood supply in combination with the synovial fluid nutrition maintain tendon viability and permits tendon healing after tendon repair.

References