Avulsion injury of the Flexor Digitorum Profundus of the left ring finger

Mennen U, MBChB, FRCS (Glasg), FRCS (Edin),
FCS (SA) Orth., MMed (Orth), MD (Ort) Pret
Emeritus Professor: Department of Hand and Microsurgery
Medical University of Southern Africa, RSA

(SA Fam Pract 2004;46(9): 46)

Dear Colleague,

Re: Your patient with a painful swollen and red left ring finger
Thank you for your referral of Mr. F de B a 22 year old right hand dominant medical student who presents with a painful swollen red and non functioning left ring finger after a game of rugby five days previously. Mr. de B noticed that his left ring finger became very suddenly painful and started swelling soon after tackling an opponent. Detailed questioning revealed that he grab his opponent by the collar with his left hand when he suddenly felt the sharp pain in his finger and up his arm. He continued playing but after the game the finger presented with a red bluish discoloration, swollen, throbbing and very difficult to move. He ignored it for a few days but the condition did not improved. It was even suggested that he might have an infection in the finger.

On **examination** it was clear that the left ring finger was severely injured. The finger was swollen, red, tender and in slight flexion. The swelling was even noticeable in the palm. Mr. de B could flex his MP joint as well as the PIP joint but not the DIP joint. Palpation of the flexor muscles was tender in the arm. The neurovascular examination of the hand was otherwise normal.

The only **special investigations** were a plain x-ray view of both hands which did not reveal any abnormalities.

The **diagnosis** is an avulsion of the flexor digitorum profundus of the left ring finger. The patient is suffering from heamo-teno-synovitis and the swelling in the palm is caused by the bundling of the flexor digitorum profundus (FDP tendon).

The **treatment** is surgical. Since this diagnosis can be confused with an infective teno-synovitis it is important to establish the diagnosis by clinical examination and history. Since this injury occurred within a week one should attempt to re-insert the FDP onto the distal phalanx. This is done by an incision on the volar aspect of the ring finger distally as well as in the palm. A small naso-gastric tube is inserted from distally to proximally through the flexor tendon sheath. The tip of the FDP is attached to the naso-gastric tube and is slowly pulled through the sheath until it imerges distally. Distally one has a number of options in fixing the tendon to the bone. I prefer to elevate an osteo-periosteal flap which is sutured over the tendon. The finger is kept in flexion with a dorsal splint for five weeks after which careful hand therapy should be instituted. This should include dynamic flexion and extension splinting until full function is regained.

Discussion

Avulsion injuries of the FDP of the ring finger can easily be confused with an infective teno-synovitis. All the signs of an infection are mimicked by the heamo-teno-synovitis namely swelling, tenderness, pain and slightly flexed position.

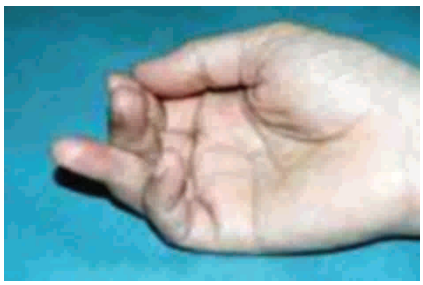
It is important that the tendon be sutured back within a few days. After a week the curled-up tendon in the palm looses all its blood supply because of kinking of the blood vessels in the tendon. This will obviously lead to necrosis of the tendon. If this dead tendon is resutured, adhesions or rupture of the tendon is very likely.

The reason for the avulsion of the FDP of the ring finger is that this tendon is the most vulnerable when the fingers are flexed. The ring finger becomes the "longest" finger and therefore takes the most force when an object is garbed by a clenched hand.

Should the injury be older than one week the flexor tendon sheath tends to shrink making it practically very difficult for the avulsed tendon to be passed through the sheath. This leaves us with only two options i.e. a free tendon graft such as palmaris longus which has a smaller diameter or an arthrodesis of the distal inter-phalangeal joint in fifteen degrees of flexion. The patient has to decide between these two options taking the disadvantages and advantages into account. A free tendon graft needs a prolong period of immobilization and intensive rehabilitation for an extend period. Added to this about twenty to thirty percent of cases re-rupture during the rehabilitation phase. The advantage is that one regains mobility of the DIP joint. Fusion of the DIP joint in slight flexion does not cause much disability. The procedure is much smaller and the patient can start using his finger immediately for light activities until total union has occurred within three to four months. Of course the disadvantage is lack of active flexion and extension of the DIP joint. As a prospective medical doctor it may be a difficult choice. He may opt for a free tendon graft and should this fail one could always revert to an arthrodesis. However the total time and effort of surgery and rehabilitation should be taken into account.

With sincere regards,
Ulrich Mennen

Figure 1: Avulsion of the ring finger FDP



Since the ring finger is the longest finger in the clenched fist, it becomes most vulnerable. When an object is grabbed, the FDP to the ring finger takes most strain and may rupture avulse. The finger presents with a typical extended DIP joint, unable to flex. Not the slight swelling in the palm which is the retracted FDP tendon. This could easily be palpated.

See CPD Questionnaire p.47