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Original article

Support for partial lesions of the flexor tendons of the fingers: A retrospective study of 36 cases

Traitement des lésions partielles des tendons fléchisseurs des doigts. Étude rétrospective de 36 cas

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Abstract

The treatment of traumatic partial injuries of the flexor tendons of the fingers is seldom published. The only published clinical series states that the therapeutic approach depends on the existence or absence of a preoperative trigger. We hypothesized that the therapeutic attitude mainly depends on the percentage of the injured cross-section. Our retrospective series included 36 partial lesions of 31 fingers in 29 patients. The average age was 42 years, there were 19 men. We noted 8 lesions in zones I, 21 in zone II and 2 in zone III. The average percentage of the injured cross-section was 35% and ranged from 10% to 90%. If the lesion was less than 50% (29 tendons), a tangential resection was performed. If the lesion exceeded 50% (seven tendons), a direct suture was performed, supplemented by a running suture. At a follow-up of 34 months, the average pain on a visual analogue scale was 0.7. The average percentage of strength compared to the contralateral side was 93%. The Quick DASH score was 6.2. The range of motion averaged 214° with extremes ranging from 90° to 260°. We observed no cases of hypertrophic callus, neither through the MRI nor through the ultrasonography. Complications such as trigger finger, pseudoblocage or rupture were not observed. Based on our results, in case of partial injury of a flexor tendon, we propose to perform a tangential resection in cross-section lesions up to 50%, and a suture for those which exceeded 50%.

Keywords: Flexor tendon; Partial injury; Trimming; Trigger finger; Tendon rupture

Résumé

Le traitement des sections traumatiques partielles des tendons fléchisseurs des doigts est rarement évoqué dans la littérature. La seule série clinique publiée considère que l'attitude thérapeutique dépend de l'existence ou non d'un ressaut peropératoire. Nous avons posé l'hypothèse qu'elle doit plutôt dépendre du pourcentage de lésion de la tranche de section. Notre série rétrospective comprenait 36 lésions partielles de 31 doigts chez 29 patients. L'âge moyen était de 42 ans, il y avait 19 hommes. Les lésions siégeaient 8 fois en zone I, 21 fois en zone II et 2 fois en zone III. Le pourcentage moyen de lésion était de 35 % avec des extrêmes allant de 10 % à 90 %. Si la lésion était inférieure à 50 % (29 tendons), une résection tangentielle était réalisée. Si la lésion était supérieure à 50 % (sept tendons), une suture directe était réalisée, complétée par un surjet. Au recul moyen de 34 mois, la douleur était en moyenne de 0,7 sur une échelle visuelle analogique. Le pourcentage de force par rapport au côté opposé était en moyenne de 93 %. Le score quick DASH était de 6,2. L'arc moyen de mobilité était de 214° avec des extrêmes de 90° à 260°. Aucun cas de cal hypertrophique n'a été trouvé, ni à l'IRM, ni à l'échographie. Aucune complication à type de doigt à ressaut, pseudoblocage ou de rupture n'a été retrouvée. Nos résultats suggèrent qu'en présence d'une section partielle d'un tendon fléchisseur, il est logique de proposer une résection tangentielle jusqu'à 50 % de lésion de la tranche de section, et une suture au-delà.

Mots clés : Tendon fléchisseur ; Lésion partielle ; Ressaut ; Résection tangentielle ; Rupture tendon

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1. Introduction

The surgical treatment of traumatic sections of the flexor tendons of the fingers has been subject to numerous publications. So far there are no less than 3048 publications referenced in PubMed when combining the keywords ''flexor tendon injury''.

However, there are only 31 relevant publications when combining the keywords ''partial flexor tendon injury''. Most of these publications relate to biomechanical studies on animal models and human corpses, or relate to isolated clinical cases of partial injuries of flexor tendons.

The only clinical series published in literature reports 17 cases out of 15 patients with partial injuries exceeding more than 50% of the cross-section [1]. According to these authors, the therapeutic attitude was dictated not by the percentage of cross-section lesion, but by the presence or absence of a preoperative trigger. In case of trigger, a partial resection of the tendon was performed more or less associated with an opening of one or more pulley(s).

Based on a clinical series of 36 traumatic partial sections of the flexor tendons of the fingers, we hypothesized that the therapeutic attitude (tangential resection or suture) should primarily be dictated by the percentage of the cross-section lesion.

2. Materials and methods

Between January 2005 and January 2013, all patients treated in our department for partial injuries of the flexor tendons of the hand in zones I, II and III were included. We obtained a favorable agreement of the Ethics Committee of our University for this retrospective study.

All patients underwent surgery under locoregional anesthesia, on the day of the accident or on the following day. The surgical technique depended and was based on the percentage of the injured cross-section estimated by the surgeon. If the lesion was less than or equal to 50% (29 tendons), a tangential resection was performed with a surgical blade No. 11 (Fig. 1). The shape of the tangential resection was adapted such that the cross-section disappeared. If the lesion exceeded 50% (7 tendons), a Kessler-suture was performed using a nylon 3/4 and 0/0 according to the Tsuge or Kessler method, supplemented by an anterior running suture using a nylon 5/0 or 6/0. The tendon sheath was not closed. The lack of trigger was verified.

Postoperative immobilization depended on the existence of neurovascular lesions. In the absence of associated lesions, the mobilization was immediate. In the presence of associated lesions, mobilization was delayed for 10 days to safely enable the healing of the neurovascular pedicle. Postoperative rehabilitation depended on the percentage of the injured cross-section. If the lesion was less than 50%, active rehabilitation was performed. If the lesion was greater than 50%, passive rehabilitation was performed, aided by the Duran protocol [2].

At the last follow-up, evaluation consisted in measuring six clinical and imaging variables. Pain was assessed using a visual analogue scale (VAS) ranging from 0 (no pain) to 10 (worst pain imaginable). The strength of grip was measured by a Jamar® dynamometer placed in position 2 (Sammsons Preston Ryolan™, Bolingbrook, IL, USA). The results were expressed as a percentage of the contralateral side. The overall hand function was assessed by the Functional Assessment score of the upper limb ''quick DASH'' going from zero (normal use of the upper limb) to 100 (upper limb unusable). The mobility of finger was measured by the range of motion in degrees.

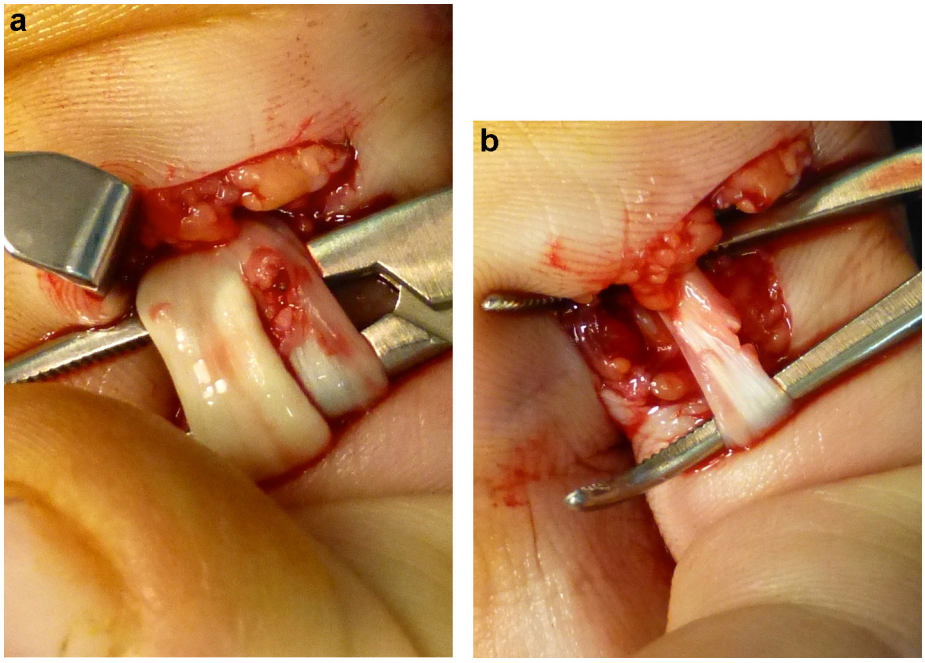

Fig. 1. a, b. Case No. 28. Peroperative aspect of a 20% partial section of a *flexor digitorum profundus* tendon of the fifth finger.