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Compression of the palmar cutaneous branch of the median nerve secondary to previous rupture of the palmaris longus tendon: Case report

Yanlin Wan, Wenxue Jiang, Bingqi Wang, Yufu Sun*

Department of Orthopedics, Tianjin First Center Hospital, 24 Fukang Rd., Nankai District, Tianjin 300192, China

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ABSTRACT

INTRODUCTION: We report an unusual case compression of the palmar cutaneous branch of the median nerve (PCBMN).

PRESENTATION OF CASE: A 52-year-old woman presenting with previous rupture of the palmaris longus tendon. During surgery, we found that the end of the tendon had formed nodules. After removing the nodules, the PCBMN was released, and half a year later, the abnormal feelings had disappeared.

DISCUSSION: We aim to remind surgeons of this type of compression and to highlight the importance of maintaining vigilance in order to avoid nerve injury.

CONCLUSION: PCBMN needs to be paid more attention and damaged tendons should be repaired.

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1. Introduction

We report a case of compression of the PCBMN secondary to previous rupture of the palmaris longus tendon. The spontaneous formation of nodules after rupture of the palmaris tendon is rarely reported, and the nodules has no effect on the main trunk of the median nerve, but it has oppressed the PCBMN, resulting in neurological symptoms. We aim to remind surgeons of the potential rupture of the palmaris longus tendon and to highlight the importance of the PCBMN in order to avoid nerve injury.

2. Presentation of case

A 52-year-old woman reported that she had been cut with glass at the wrist 2 months ago, she pay no attention about the wound, and the wound healing itself. Upon admission, she reported about 5 days after injury she felt hypesthesia, paresthesia, and pain in the palm of the left hand. About 1 month later she noticed that she had a nodule on her left wrist, accompanied by numbness and discomfort in the palm of the left hand and radiating pain symptoms in the middle finger. The patient is in good health, no history of food or drug allergies, no history of genetic disease, and good mental health. Admission examination: a 1.0-cm long scar could be seen proximal, by approximately 6.0 cm, to the distal wrist flexor crease; near the scar, we could see a nodule that was oval in shape and hard (Fig. 1). The skin of the palm of the left hand was dry.

Tenderness was accompanied by radiating pain in the thenar eminence and middle finger, and the local Tinel's sign was positive. The left thumb-small finger superficial sense was normal, the muscle of the thenar eminence were weak, and the left thumb demonstrated good function. Wrist MR was performed preoperation, we found the nodule was a continuation of the palmar tendon, and is closely related to the median nerve, and the local nerve is deformed by compression. MRI showed that the local signal of the palmar longus tendon at the distal end of the left radius is uneven, and the continuity is not good. T1 and other T2 signal shadows such as nodules can be seen locally. The size is about 8.2 cm × 5.7 cm × 1.3 cm. The distal radius of the long palmar tendon ruptures and local nodular fibrous scar formation (Fig. 6 the white arrow show PCBMN the gray arrow show the nodular of palmaris longus tendon). Pre- and post-operation the patient actively cooperated with the examination and treatment. The patient requested further surgical exploration

Surgery performed by Dr Sun. During the operation, the palmaris longus tendon was observed to be broken, and the tendon was expanded at the end (Fig. 2). Exploration revealed that the main trunk of the median nerve was normal, PCBMN has been took off from the trunk of the median nerve, located on the radial side of the trunk, about 3 cm proximal to the wrist joint the PCBMN was compressed by the nodules formed by the rupture of the palmaris longus tendon (Fig. 3). About 1 cm of the PCBMN became thinner for the pressure. With excision of the hyperplastic tissue of the tendon (Fig. 4), we found that compression of the palmar cutaneous branch was released. The postoperative pathological results demonstrated: dense connective tissue, and collagen fibrosis with hyaline degeneration. After a-year of follow-up, the patient's left hand returned to normal, there were no motor function abnormal-

* Corresponding author.

E-mail address: jiamu010@163.com (Y. Sun).



Fig. 1. Admission examination. Near the scar, showing a nodule that was oval in shape and hard.



Fig. 4. Hyperplastic tissue of the tendon.



Fig. 2. Palmaris longus tendon was observed to be broken, and the tendon was expanded at the end.

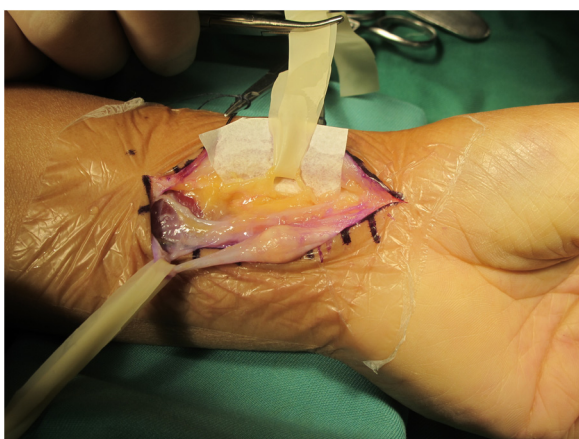


Fig. 3. Exploration of main trunk of the median nerve.

ities, and there was no obvious muscle atrophy. All the procedures have been reported in line with the SCARE 2018 criteria [1]. Post-intervention we inform patients to use neurotrophic drugs to observe the improvement of symptoms in the wrist and fingers, and further examinations are needed if necessary (Figs. 5 and 6).

3. Discussion

The palmaris longus tendon originates from the general starting point of the flexor muscle, and its position is superficial. The tendon



Fig. 5. Post operative assessment.

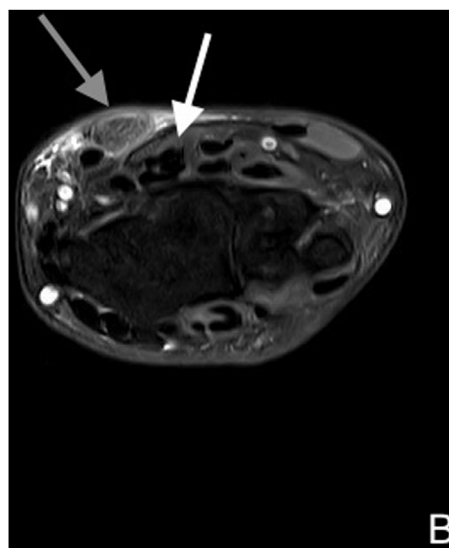


Fig. 6. Post operative assessment.

passes over the superficial surface of the transverse ligament of the wrist and migrates to the palmar aponeurosis. The main function of the tendon is to assist other carpal flexor muscles and to help flex the palmar aponeurosis. It is common for the palmaris longus to be broken when observed in the clinic due to various types of trauma. Because the defect of the palmaris longus tendon rarely causes the subjective dyskinesia, after the rupture of the tendon, the lack of anastomotic repair has no significant effect on the function of the affected limb, but if the broken tendon is not repaired, the ends are retracted due to muscle tension and elasticity. In addition due to the presence of fibroblasts, the collagen-like tissue at the end of the tendon proliferates to form induration, compressing the surrounding tissue. The typical course of the PCBMN is a radial branch arising 5 cm proximal to the distal wrist flexor crease and traveling on the ulnar aspect of the flexor carpi radialis (FCR) tendon before crossing the flexor retinaculum [2]. The tendon runs on the ulnar side of the FCR before crossing the flexor retinaculum. It divides into two branches, medial and lateral while crossing the flexor retinaculum. In our case the PCBMN took off from the trunk of the median nerve about 5 cm distal to the wrist and go along with the truck separated about 2 cm proximal to the wrist joint, No obvious anatomical variation.

Several variations of the PCBMN have also been reported. The PCBMN has been described to cross ventral to the FCR and to run on the radial side of the FCR [3] communicating with the superficial branch of the radial nerve [4]; approximately 11.7% of cases branch from the ulnar aspect of the median nerve [5]. In addition, Hobbs reported that a PCBMN arose from the median nerve at different levels. Roche reported a case of an absent PCBMN [6].

Kamath [7] summarized the causes of PCBMN injury, which, in addition to traumatic factors, included ganglion compression, and flexor tendon compression of the fascia, lead to PCBMN injury. Damage to the PCBMN can result in undesirable consequences. Injury can lead to decreased sensation in the thenar region of the palm and painful neuromas and it may even contribute to complex regional pain syndrome [8]. Therefore we explored the PCBMN from the proximal branching point of the median nerve to its distal arborization at the level of the distal palmar crease. We also searched for the PCBMN if we did not find it during the initial exposure. In our case, although it is not the trauma that directly caused the PCBMN injury, but the secondary injury to the nerve, patients with neurological symptoms after local wrist injury need to find out whether PCBMN is OK.

4. Conclusion

This report adds an additional cause of compression of the PCBMN and emphasizes the need to repair the tendon to avoid scar nodule formation

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

Declaration of Competing Interest

None of the conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding were existed in the passage.

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Wan is in the writing of the manuscript.

Wang and Jiang are analysis and interpretation of data.

Sun is in the decision to submit the manuscript for publication.

Ethical approval

Not the first-in-man surgery, we just show a clinic finding, there is no other study in the patient.

Our research has been approved by the Medical Ethics Committee of Tianjin First Central Hospital China (Review number 2016N076KY).

Consent

We got the contents, and the statement has written at the end of the passage.

Author contribution

Wan: data analysis, writing the paper.

Wang: data collection.

Jiang: data or interpretation.

Sun: study concept and design, who also do the surgery.

Registration of research studies

- 1 Name of the registry:
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The passage is just a case, there is no study or experiment on the patient, and there is no other conclusions to get.

Guarantor

Yufu Sun is responsible for the page.

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