Case report

Dupuytren's contracture limited to the distal interphalangeal joint: A case report

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ABSTRACT

Dupuytren contracture is not a rare disorder. However, the contracture limited to the DIP joint is rare conditions. In this study, we describe a case of Dupuytren contracture limited to the DIP joint occurred in the ring finger.

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1. Introduction

Dupuytren’s contracture occurs as a result of the formation of the diseased cords [1]. Usually, the cords progressively shorten, leading to joint and soft tissue contracture [2]. The cords involve the palmar, palmodigital, and digital regions. The pretendinous cord develops from the pretendinous band. This cord is responsible for flexion deformity of the metacarpophalangeal (MP) joint and often extends distally to continue with digital cords. The most frequently digital cords are the central, spiral, and lateral cord. The central cord is an extension of the pretendinous cord in the palm and attaches into the flexion sheath near the PIP joint or the middle phalanx. The spinal cord has four origins; the pretendinous band, the spiral band, the lateral digital sheet, and the Grayson ligament [3]. The lateral cords originate from the lateral digital sheet and attaches to the skin or the floor tendon sheath near the Grayson ligament. They are responsible for flexion deformity of the PIP joint. In the other words, Dupuytren’s contracture does not usually affect the DIP joint. To our knowledge, there have been only five cases that Dupuytren’s contracture limited to the DIP joint. However, the localization was on the radial side of the little finger in all cases. We report a patient with Dupuytren’s contracture limited to the DIP joint of the right ring finger.

2. Case report

A 28-year-old male right-handed office worker recognized a soft tumor mass on the radial side of the DIP joint of the right ring finger since 2002. On that September, the tumor mass was excised at our department. After this operation, he had no pain and restric-

Fig. 1. The present clinical findings: a: a strong cord (black arrow) was present on the radial side of the DIP joint in the ring finger; b: on the ulnar side (white arrow), no cord was present and the creases in this region had disappeared. The limitation of the movement was noted only in the DIP joint.
range of motion in active motion was $-50^\circ$ to $70^\circ$ in the DIP joint. No vascular or neurological damage was observed. Based on the above findings, we diagnosed Dupuytren’s contracture limited to the DIP joint of the right ring finger. The clinical finding was evaluated as Grade 1 of Dupuytren’s contracture based on Meyerding’s classification. Surgical procedure was performed on August 2007. A zigzag skin incision was made on the palmar side of the ring finger and extended towards the PIP joint (Fig. S1; see the supplementary material associated with this article online). The strong cord assumed to be arising from the lateral digital sheet was localized on the radial side, and involved a digital nerve. Also, the hypertrophic change of the cord was more marked on the side of the distal phalanx attachment than the proximal side. This cord was observed crossing the DIP joint, and extended proximally into the middle part of the middle phalanx bone. Excision of this cord resulted in complete correction of the deformity avoiding damages of that nerve.

Histological findings: under the light microscopic examination, the dense fibrous connective tissues were proliferated, and there were many fibroblasts in this region (Fig S2a; see the supplementary material associated with this article online). On examination under a transmission electron microscope for the mass, we noticed fibroblasts with rich collagen fiber in circumference. These cells showed the cytoplasm containing a fairly extensive rough endoplasmic reticulum, a moderate number of mitochondria, and a well-developed Golgi’s apparatus, indicating high cellular activity (Fig S2b).

At 1 year after surgery, the grip strength was 40.3 kg (non-affected side: 40.7 kg) and the range of motion of the ring finger in active motion was 0–80$^\circ$ in the DIP joint. There was no disability in activities of daily living or symptoms of nerve disturbance. No recurrence or advancement to other regions has occurred.

3. Discussion

Dupuytren’s contracture occurs as a result of the formation of the diseased cords. As the risk factors, there are diabetes mellitus, treatment with barbiturics for epilepsy, smoking and traumatic injury. On traumatic injury, Skoog [4] reported that the excessive formation of fibroblast resulted from the repeated minute trauma and external stress during healing process of trauma, and the hyperplasia and contracture of aponeurosis lead to the flexion contracture.

White [5] suggested that the frequency of Dupuytren contrac- ture in the little finger is higher on the ulnar side of the finger than the radial side of that. In 1985, MacFarlane [6] reported that the lateral cord is likely to cause the PIP joint contracture and the DIP joint contracture occurs as the results from advancement of the PIP joint impairment. In the meantime, the retrovascular cord is less likely to cause the PIP joint contracture, but is possible to cause the DIP joint contracture. MacFarlane and McGrouther [7,8] reported that the DIP joint contracture can occur as a result of lateral or retrovascular cord formation.

Generally, there are few cases that Dupuytren contracture causes the contracture of the DIP joint. In 1967, Millesi [9] reported that the DIP joint contracture showed a tendency to occur in the little finger in many cases. However, in his report, there was only one case in which the DIP joint alone was affected. To our knowledge, only five cases of Dupuytren contracture limited to the DIP joint have been reported [9–12]. All cases were male aged 45 years or older, and had a past medical history of trauma. Also, the localization of the cord was formed on the radial side of the little finger in all cases. In the case reported by Zyluk, the cord was limited to the DIP joint, but the PIP joint contracture accompanied.

In our case report, the DIP joint contracture occurred in the ring finger and the age was less than 40 years old, unlike the above five cases. However, the localization of the cord was formed on the radial side of the finger, same as the above five cases. On 2002, the excision of a soft tumor mass was performed at the radial side of the DIP joint of the right ring finger. The pathological diagnosis was a varix with thrombosis. After this operation, the range of motion in the DIP joint gradually became impaired and a strong cord appeared under the past skin incision. On consideration of these facts, it is possible that Dupuytren’s contracture limited to the DIP joint resulted from the surgical stress or the hypovascularity due to that tumor. From the operative findings on 2007, this case may have been Dupuytren’s contracture developing in the lateral digital sheet. The hypertrophic changes of this retrovascular cord were marked on the distal side and advanced from the distal region to the proximal region. These findings were different from the general pattern of advancement of Dupuytren’s contracture (from proximal to distal region).

Needle fasciectomy has recently been a focus of heated debate for the treatment of Dupuytren’s contracture. One should always work from the most proximal to the most distal part of the palm and root of the first phalanx; the second phalanx is rarely and the third almost never treated. Lermusiaux et al. [13] suggested that the needle fasciectomy is most effective in patients with early disease. Then, we have considered that surgical fasciectomy should be performed for the patients involving DIP joint contracture.

Conflicts of interest

None of the authors has any conflicts of interest to declare.

Appendix A. Supplementary data

Supplementary material (Fig. S2) associated with this article can be found, in the online version, at http://www.sciencedirect.com, at doi:10.1016/j.jbspin.2010.02.036.

References