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Multiple Finger Extensor Tendon Dislocations in Systemic Lupus Erythematosus with Unique Trigger Phenomena

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Abstract

Dislocation of extensor tendons is the most frequently seen complaint for suffers of rheumatoid arthritis. Here, we present a rare clinical case of multiple finger extensor tendon dislocations in systemic lupus erythematosus (SLE). Upon physical examination, active extension of middle, ring and little fingers were impossible at the MP joint. A trigger phenomenon was generated when these extensors were reduced in passive extension. The procedure was performed under local anesthesia. A satisfactory clinical outcome was achieved with sagittal band reconstruction and reinforcement for the site using juncturae tendinum. Surgical intervention under the local anesthesia allowed for extensive gathering of information about repair site strength and dynamic stability.

Keywords: Extensor dislocation; Systemic lupus erythematosus; Trigger phenomena

Introduction

Dislocations of extensor tendon have four major etiologies [1-4]; degenerative, traumatic, idiopathic and congenital. Except for trauma, the most common etiology is degenerative caused by rheumatoid arthritis (RA) [5]. Although SLE is categorized in the degenerative group, extensor tendon injury (including dislocation, rupture and other) is uncommon. To our knowledge, 2 published reports exist of SLE-associated extensor tendon dislocation associated with degenerative changes [6].

One report includes three cases, and the other only one case. As for extensor tendon rupture, nine cases were previously published in the literature. Here, we report a case of multiple finger extensor tendon dislocations caused by systemic lupus erythematosus (SLE).

Current practice offers many reconstruction procedures for extensor tendon dislocation, but multiple dislocations make it difficult to select the appropriate procedure. In our case, a satisfactory long term result was obtained from careful observation around the tendon then doing the surgical repair under local anesthesia to test flexion and extension by the conscious patient.

Case Presentation

The patient is a 54-year-old female with a longstanding treatment history of SLE who suffers from difficulty in extending middle, ring and little fingers of the right hand actively at the MP joint.

Figure 1: Physical examination showing extensor tendon dislocation of middle, ring and little fingers. Block to extension and passively achieving full extension with trigger phenomenon.

She noticed the swelling and tenderness on the dorsal aspect of the middle finger at the MP joint 10 months prior to presentation. Similar symptoms gradually progressed to ring and little fingers. She denied a history of trauma on the MP joint. The patient is on long-term Prednisolone therapy (more than 20 years) and was prescribed 15 mg per day on first visit to our hospital.

Upon physical examination, those extensor digitorum communis (EDC) tendons demonstrated the ulnar deviation in flexion and reduction by passive extension with snapping (trigger phenomenon) (Figure 1).

Radiography revealed no abnormalities including joint collapse or dislocation.

Surgical technique

We operated under local anesthesia to evaluate active extension and flexion.

A dorsal longitudinal incision was made along the MP joint of middle and ring fingers.

On the middle finger, the expansion hood was attenuated and its proximal portion found partially defective. The sagittal band of both sides was defective and the extensor tendon at that region was also degenerated (Figure 2). To reconstruct the sagittal band, the remaining radial expansion hood was incised and plicated to realign the extensor tendon (central relocation technique).

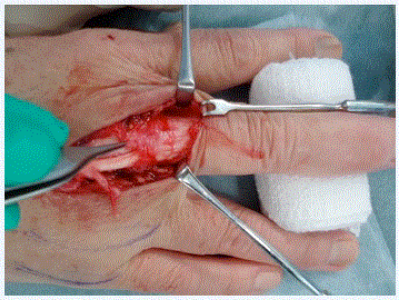

Figure 2: Intraoperative findings showing attenuated expansion hood, defects in both sides of the sagittal band and the proximal portion of expansion hood. The forceps grasp the degenerated sagittal band.

In addition, the juncturae tendinum of the ulnar side of the middle finger was used to reinforce the plicated site (Wheeldon's technique) (Figure 3). The ring finger was centralized with radial plication in a similar fashion. Reduction of the little finger occurred spontaneously with achievement of correct balance between middle and ring fingers.

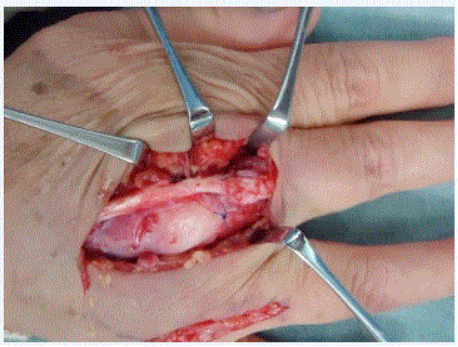

Figure 3: Repair of expansion hood and sagittal band using central relocation and Wheeldon's technique.

The aligned extensor tendons were stable at the MP joint and showed neither ulnar deviation nor snapping with active ROM. Correct positioning of extensor tendons was confirmed by testing the patient's grip under local anesthesia (Figure 4).

Figure 4: Rebalancing among the extensor tendons under local anesthesia.

Rehabilitation protocol

Active finger motion at PIP and DIP joint was encouraged during the immediate postoperative period. The MP joint was splinted in extension postoperatively. Mobilization applied with dynamic splinting was started with restriction up to 45° flexion during daytime after the 1st- postoperative week. Static splinting was employed at night. Splinting was removed and active, assisted ROM exercise started in the 4th- postoperative week. Strong gripping was permitted at 3 months postoperatively.

2 years after the operation, she could extend all fingers with no symptoms including snapping or pain.

Discussion

The etiologies of extensor tendon dislocation in SLE vary from those in RA. The marked attenuation of structural support around extensor tendons due to steroids is thought to be the cause of extensor tendon dislocation in SLE while structural destruction with proliferation of synovitis is thought to be the case in RA. This difference between the two diseases may be the reason for unique trigger phenomena and multiple extensor tendon dislocations. Previous reports described characteristics of structural changes in SLE as follows [6,7] : (1) snapping during passive extension, (2) lower frequency of synovial proliferation; (3) attenuation and degeneration of tendon, ligaments and other overlying tissue; (4) rarity of joint destruction and malalignment.

In cases where surrounding structural support is severely attenuated, sagittal band repair alone is inadequate to maintain reduction at the correct position. Various additional techniques to reinforce a sagittal band repair have been reported and provide good clinical results [1,8-11]. The techniques include the use of a half slip of the extensor tendon, juncturae tendinum and tenodesis. Ishizuki recommended to add reinforcement for cases of non-traumatic extensor tendon dislocation to minimize the reoccurrence rate [12]. In our case, preservation of extensor tendons was the most important clinical goal followed by restoration of full motion. An optimal surgical strategy was discussed carefully. Since extensor tendons were partially degenerated, we preferred a technique which avoided undesired iatrogenic tendon rupture. Therefore, the use of a half slip of tendon was contraindicated. Although tenodesis could provide rigid fixation while decreasing recurrence of dislocation, second-line option was

selected in consideration of patient ADL and age. As a consequence, we selected juncturae tendinum with sagittal band reconstruction reinforcement technique. Wheeldon et al. separated the juncturae tendinum from its attachment to the ring finger extensor tendon, reversed it, and sutured it down to the sagittal band repair site of the middle finger [1]. We achieved a satisfactory clinical outcome with full range of motion and no recurrence of extensor tendons dislocation. In treatment for extensor dislocation in SLE patients, a policy of careful observation followed by choosing the best procedure from a suite of suitable options is recommended.

Cases of multiple finger involvement were reported previously. Fujii treated cases of the idiopathic extensor dislocation of middle, ring and little fingers using a central relocation method for radial aponeurosis of middle finger combined with sagittal band reconstruction. They achieved a good functional outcome and no further surgical intervention for ring and little fingers. They concluded that restoration via balance adjustment in cases of dislocation could provide stable reduction to the remaining dislocated extensor tendon. As this case was similar to the Fujii case, little finger reconstruction was also judged as unnecessary. The guiding principles in this case was to adjust the extensor from the radial to the ulnar side. It is the ultimate principles to adjust extensor from radial to ulnar side and then continuously evaluate appropriate balance among the injured fingers by active flexing and extending under local anesthesia.

As a rehabilitation program dynamic splinting was employed permitting up to 45° flexion with a constant force applied to the joints and muscles. Static splinting is thought of as a first-line postoperative device for extensor dislocation in previous reports because of the difficulty in estimating the strength around the repair site [3,13]. Immobilization would be continued until the soft tissue in the area is considered mature enough to bear the stress of mobilization. However active ROM during the operation under local anesthesia provides us with the benefit of a visual estimate of proper range of motion [14]. Matsuki used dynamic splinting for idiopathic extensor dislocation in a similar fashion and achieved a good clinical result [15]. Additionally, this prevents fingers from deviating to the ulnar side by constant radiodorsal traction force.

Conclusion

We treated an SLE patient suffering from multiple extensor tendon dislocations at the MP joint with unique trigger phenomena. The marked attenuation of structural support around the extensor tendons is associated with a unique trigger phenomenon and multiple finger involvement. Careful surgical observation and information collection under local anesthesia provided crucial clues about repair site strength and dynamic stability. This method, in combination with dynamic splinting for rehabilitation is expected to lead to a good postoperative clinical result.

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