Delayed repair of disconnected thenar branch with transligamentous variation after carpal tunnel release: A case report.

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Introduction

Carpal tunnel syndrome is a group of symptoms caused by the compression of the median nerve at the wrist, and is the most common nerve compression disorder in upper extremities. Several variations of the thenar branch have been reported. Therefore, careful attention should be paid to the damage of the thenar branch when performing carpal tunnel release. There are few reports about iatrogenic thenar branch injury.

We report a patient suffering from thenar branch injury after carpal tunnel release. The patient underwent delayed thenar branch repair at 138 days after carpal tunnel release, and the nerve function was restored.

Patient Presentation and Result

A 49-year-old female patient with tingling of both hand in January 2016 underwent an electromyography with a positive Tinel and Phalen sign on physical examination. Electromyography showed bilateral carpal tunnel syndrome. Bilateral carpal tunnel release was performed with longitudinal incision. Postoperative follow-up showed improvement of symptoms and no specific complications. The patient complained of discomfort in the left thumb at the 12 week follow-up visit. At the 16 week follow-up, the left thenar compartment showed weakness, and atrophy was observed. In electromyography, abductor pollicis brevis innervated by thenar branch of median nerves showed no motor conduction. On the 138th day after carpal tunnel release, median nerve exploration was performed. Adhesion of surgical site was not severe, and release was sufficient. The proximal part of the disconnected thenar branch was attached to the released transverse carpal ligament. When the thenar branch was carefully detached from the transverse carpal ligament and the cross-section was observed with microscope, the fibrous tissue was observed. The distal end was cut at 1 mm intervals, and the cut surface was observed with microscope. Three fascicles were observed when cut at 3 mm. The distal part of the disconnected thenar branch was searched in the thenar compartment and the adipose tissue between the muscle was observed and the adipose tissue was carefully removed to find the nerve tissue that entered the thenar compartment. Like the disconnected proximal end, three fascicles were observed on the microscope at the disconnected distal thenar branch. Both sides of the disconnected thenar branch had a contracture, and the proximal part was cut about 3 mm, so that direct repair was performed with tension slightly (Figure 1, 2). At 6 months post-operative follow-up, the patient said that the power of the thumb was better and the electromyography showed motor conduction. At 1 year after follow up, the patient had no atrophy and the electromyography was restored similar to that before carpal tunnel release (Table). At 2 years after follow up, the patient had no atrophy and the electromyography showed bilateral carpal tunnel syndrome. The patient had no atrophy and the electromyography was restored similar to that before carpal tunnel release (Table). At 2 years after follow up, the patient had no atrophy and the electromyography was restored similar to that before carpal tunnel release (Table).

Table

<table>
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<th>Motor nerve(APB) conduction change on electromyography</th>
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<th>20160530</th>
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<tbody>
<tr>
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<td>NR</td>
<td>Direct</td>
<td>NR</td>
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<td>5.6ms</td>
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<tr>
<td>Amplitude</td>
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<td>NR</td>
<td>Direct</td>
<td>NR</td>
<td>6.6mV</td>
<td>NR</td>
<td>5.51mV</td>
</tr>
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</table>

APB: Abductor pollicis brevis, CTR: Carpal tunnel release, NR: No record

Discussion

Lanz reported that the incidence of the extraligamentous, subligamentous, and transligamentous course of the thenar branch. Korhberg et al. reported a bifid median nerve variation of the transligamentous type. Palmer and Toivonen compared the complications of endoscopic carpal tunnel release and open carpal tunnel release. To the patients that injured thenar branch, they performed direct repair or nerve graft. In this case, delayed repair was performed at 4 months after nerve injury, but motor function was restored.

There was concern about slight tension on the repaired thenar branch, which might adversely affect the recovery, but the patient recovered normal function. If direct repair is not possible or if tension is predicted to be too strong during direct repair due to contracture, nerve graft may be considered. After nerve repair, the patient showed improvement after 6 months. Lilly and Magnelli reported that the patients with thenar branch injury after carpal tunnel release had improved after months on the two cases performing delayed repair. In this case, it is good to observe the recovery of nerve function through electromyography every 3 months after surgery.

References