The treatment of focal dystonia of index finger of the hand with tendon transfer

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ABSTRACT

Dystonia is a disorder of motion; accompanied by unintentional muscle spasms leading to repetitive movements and/or aberrant posture that appears during a specific activity. Examples of focal task-specific dystonia (TSD) are “writer’s cramp” and “musician’s dystonia”, and it specifically involves the hand. A 54-year-old male presented with a complaint that the index finger of his right hand moved repetitively that scratched the wrist and palm when he shook hands. He could not find a solution to his problem through non-surgical treatment options. Based on the fact that the problem was limited to the index finger, non-progressive (stable) and refractory to non-surgical treatment, it was attempted to treat the patient with a tendon transfer as a last option. A case of focal TSD of the right index finger treated with tenotomy and tendon transfer is presented here.

Key words: Dystonia, focal dystonia, task specific dystonia, treatment, tendon transfer

Introduction

Dystonia is a movement disorder featuring involuntary muscle spasms leading to repetitive movements and/or abnormal postures. Task-specific dystonia (TSD) only appears during specific activities. It is assumed that TSD onsets after a period of repetitive movements requiring fine-motor skills in people having a genetic predisposition [1]. Although the exact pathophysiology remains unclear, much evidence implies decreased inhibition at different levels of the sensorimotor system [2]. Focal TSD specifically involves the hand, as in “writer’s cramp” and “musician’s dystonia”. Focal TSD of the hand has also been reported in golfers, hairdressers and telegraphers [2]. Here, a case of focal TSD in the right index finger treated with a tendon transfer is presented.

Case Report

A 54-year-old right-handed male was examined for hyperkinetic movement disorders, complaining about a repetitive spasm of the index finger in his right hand only while he was shaking hands in 2002. He was scratching the wrist and palm of the hand of a person he was shaking hands with, especially when getting nervous or excited (Figure 1). This behavior made the patient feel like he was giving some sort of hidden message. His symptoms had begun 3 years ago and signifi-
significantly affected his social life and so he had to stop handshaking. His hand examination was normal and there was no lumbrical issue or deformity during evaluation. The patient’s psychiatric and neurological examination was normal, as well. Cranial CT and EMG studies of the upper extremity were normal. To determine with EMG which muscle had task-specific dystonia, EMG should be repeated frequently to coincide at the same time as the task-specific repetitive spasm of the index finger. He had been using various medications provided by neurologists and psychiatrists. He had also been enrolled into a number of physiotherapy sessions. He did not claim to have an occupation with any kind of repetitive movements, like writing, making music or sports. There were not any clinical signs or diagnosed disease suggesting a secondary etiology. Family history was negative. Genetic testing was not performed.

The patient was offered a nonsurgical treatment. After one year, he declared that he had used various nonsurgical treatment methods, however, all had failed. Thus, he asked for a surgical solution.

It was not possible to find any specific orthopedic surgical treatment method for the condition in the literature. Transfer of the FDS tendon of the fourth finger to the thumb or the index finger had been widely used for substitution in neurological or traumatic conditions. The patient was informed that tendon transfer may not work for his specific condition. In addition, he was also told that the condition may spread to the other fingers over time.

Under general anesthesia, FDP and FDS tenotomy of the index and FDS tenotomy of the fourth finger in the palm was performed. The lumbrical muscle originating from the FDP of the index finger was released and the FDS tendon of the fourth finger was transferred to the FDP tendon of the index finger. After one month of cast splinting and then one month of physiotherapy, there was no more task specific repetitive muscle spasms while hand shaking (Figure 2). The patient’s physical examination showed minimal muscle strength loss and he continued his social life trouble free, pleased to have gotten rid of the problem. He was followed for ten years.

**Discussion**

Here, tendon transfer as a last option for the treatment of focal task-specific dystonia of the right index finger was described. Nonsurgical treatment options include pharmacological alternatives, rest (immobilization), sensorimotor retraining (adaptive strategies), other rehabilitation therapies and botulinum toxin injections. Oral medications have proven beneficial in selected patients with dose-limiting side effects [3].

Botulinum toxin injections are the most regularly employed and probably most effective treatment of focal TSD of the hand [1]. It was reported that of 84 musicians with focal TSD treated with EMG-guided botulinum injections, 69 experienced improvement and 36% reported long-term benefits in their performance ability [3]. There are few reports of stereotactic surgery (thalamotomy, pallidotomy and deep-brain stimulation) for disabling TSDs [4]. Slight improvement has been documented after tenotomy for the treatment of focal TSD [1].
Patients with focal TSD must be offered nonsurgical treatment. Tenotomy and/or tendon transfer may be the last option after all other nonsurgical treatments.

Task-specific spasms were eliminated by performing tenotomy, and active motion was provided with tendon transfer. The lumbrical muscle originating from the FDP of the index finger was released in order to remove any possible cause of dystonia. If there was a task-specific overactive lumbrical muscle that could give rise to a lumbrical plus phenomenon only during hand shaking, stronger flexion of the MCP joint and the incapability of the DIP joint to flex fully as the patient attempted to grip the other hand, the patient may try to overcome this by force flexing the index DIP joint, possibly leading to scratching the wrist and palm of the person whom they are greeting with a hand shake.

This report highlights to consider tendon transfer option as a last option for the patient with focal TSD of the hand which is non-progressive (stable) and refractory to non-surgical treatment.

Conflict of interest statement
The authors have no conflicts of interest to declare.

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