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Assessment of T-shape double fascia graft for lower lip deformity from facial paralysis: A questionnaire survey☆

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Summary *Introduction:* There are two main methods to treat lower-lip deformity (LLD) in facial paralysis. The first method is surgical intervention on the side of the paralysis, and the second involves denervating the depressor muscles on the healthy side. It is sometimes difficult for patients to ethically accept the denervating healthy tissue; therefore, we performed the T-shape double fascia graft (TSDFG), which reportedly restores symmetry.

In this study, we report our experience with TSDFG and evaluation of the outcomes including the patient questionnaires.

Methods: Two fascia strips from the thigh, 7 × 70 mm in size, were used; one was grafted horizontally at the lower lip to correct the static position, and the other was grafted obliquely at the lateral side by folding and crossing the horizontal fascia.

A total of nine patients were treated by this procedure; three procedures were performed individually and six were performed in combination with another static or reanimation procedure. A questionnaire containing a five-point scoring system for facial appearance in multiple situations and other problems was sent to each patient at least 6 months after the surgery.

Result: From the physicians' point of view, all patients achieved an improvement in symmetry of the lower lip, particularly when opening of the mouth; however, assessments from the patients demonstrated much less satisfaction. The main reason for the dissatisfaction was the slight bulkiness of the red lip. There was one comment that noted that with more treatment, the expectations were higher, and, as a result, the patient could not admit satisfaction at the end.

Discussion: TSDFG is a simple and effective procedure for LLD; however, slight modifications may be required. In addition, there were some gaps in the perception of the results between

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the physicians and patients, and we need to consider these when planning to treat LLD.

Introduction

Lower-lip deformity (LLD) has been attributed to various causes, such as congenital hypoplasia of the depressor anguli oris muscle including first arch syndrome or hemifacial microsomia, facial paralysis, trauma, or iatrogenic causes following surgery for tumor resection or neck dissection.[1] The marginal mandibular branch of the facial nerve is delicate and easy to be paralyzed, because the rate of the peripheral nerve anastomosis to other branches is low, and spontaneous recovery tends to be difficult.[2] The loss of innervation to the depressors of the lower lip produces asymmetry of the lower lip when opening the mouth, smiling, and crying,[3] and the resultant deformity is an elevation of the affected lower lip with an apparent drooping of the healthy side.

This deformity sometimes becomes more apparent and must be corrected after successful treatment for facial reanimation with muscle graft or transfer.[4]

Despite remarkable advances in facial reanimation for upper-lip elevation, LLD has received relatively little attention as an option for its restoration, although it is also an important factor to create a natural smile.

For the treatment of LLD in facial paralysis, there has been no standard method of treatment, and the strategy for treating LLD varies.[1,3,5–7] There have been two main methods for the improvement of symmetry. The first method is surgical intervention on the side of the paralysis,[5,6] and the second involves intervention on the functional healthy side.[1]

Each method has its pros and cons; as chemodenervation using botulinum toxin has been commonly used in several fields, intervention to the functional side have become more common.[8] However, patients always want treatment for the paralyzed side,[4] and it is sometimes difficult for the patient to accept any interventions on the functional healthy side.

In this study, we perform the T-shape double fascia graft (TSDFG), which was reported by Udagawa and Yamamoto et al. in 2007 and 2008, respectively,[9,10] for the treatment of LLD. It consists of horizontal and vertical fascia strip grafts harvested from the tensor fasciae latae; the horizontal fascia strip restores the central position of the lower lip, whereas the vertical fascia strip restores the lower-lip symmetry when opening the mouth by crossing and pulling down the horizontal fascia obliquely[9,10] (Figure 1a). TSDFG is a simple and less invasive surgical procedure compared with previous methods. We believe that it would be ethically better if we could treat LLD without sacrificing the functional muscles on the healthy side and obtain good results with treatment only on the paralyzed side.

In this study, we report our experience with TSDFG and the evaluation of the actual effects and problems associated with this procedure through patient questionnaires.

Patients and method

We performed TSDFG on two congenital and seven established patients with LLD due to salivary gland carcinoma or acoustic neuroma. Patients were aged 9—66 years, with a mean age of 47.6 years, and the duration of the facial paralysis was 1—64 years (Table 1).

Operative procedure

First, we marked the center of the lower lip and created a 1-cm incision at five different points: three of them at the intraoral lower lip and angle, one at the cheek mucosa, and one at the submandibular edge (Figure 1b). We then created two subcutaneous tunnels: a horizontal tunnel under the vermilion border and an oblique tunnel at the position of the depressor labii inferioris (DLI). After harvesting two fascia strips from the thigh, each 7 × 70 mm in size, we placed one of them into the horizontal subcutaneous tunnel (Figure 1c). We corrected the static position of the lower lip, which was deviated to the healthy side, by fixing the horizontal fascia on the orbicularis oris muscle at the locations where the incisions were created. Next, another strip was passed through the oblique tunnel by crossing and folding the horizontal one (Figure 1c). This fascia was fixed to the edge of mandibular periosteum through the submandibular incision, and we adjusted this position to restore the proper shape of the lower lip during mouth opening (Figure 1d).

When performing this method with lengthening temporalis myoplasty, the edge of the horizontal fascia is connected to the advanced temporal tendon through the nasolabial fold incision (Figure 2a). If this method is performed with static reconstruction to the cheek, the long fascia from the lower lip is grafted to the upper cheek, and the position of the lower lip is adjusted along with the cheek (Figure 2b).

Questionnaire

We mailed a questionnaire to all patients to evaluate the results from the subjective point of view of the patients.

The questionnaire contained inquiries regarding lower-lip appearance (LLA) in various situations such as when opening or closing of the mouth and smiling as well as inconveniences such as stiffness or incongruity. The patients answered those questions using a five-point score system