Blepharoptosis Following Surgery for Facial Paralysis

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ABSTRACT

Although various well-known forms of blepharoptosis have been reported, there is no report arguing blepharoptosis following the surgery for facial paralysis.

A 40-year-old woman with unilateral facial paralysis secondary to mastoidectomy 20 years ago was admitted with her left upper eyelid ptosis. It was found that a free muscle grafting with tendon had been done to treat the complication. A Z-plasty was done to elongate the short tendon by 7 mm under general anesthesia. For reconstructing the mouth corner, a superiorly based sternocleidomastoid muscle flap was transferred after 3 months of the Z-plasty on tendon.

The ptosis disappeared soon after Z-plasty surgery on the tendon. The patient learned how to use the newly transferred muscle for the mouth corner movements in 3 months.

The problem associated with the presented case is rare, which included facial paralysis followed by blepharoptosis. This is a paradoxical situation. In other words, first, there is a possiblity of having blepharoptosis in a patient with facial paralysis that is already operated on. Second, it might be an intricate problem and I would like to discuss it. Last but not least, it is an example of paradox existing in medicine.

Key words: Facial paralysis, blepharoptosis, tendon transfer, Z-plasty, sternocleiodomastoid muscle flap.

INTRODUCTION

The two conditions called facial paralysis and blepharoptosis exist in medical literature due to two different neurumuscular pathologies. The first system includes facial nerve and related mimicking muscles. The second system includes oculomotor nerve and is related to only one muscle. There are 18 paired muscles of the face, including the orbicularis oris, which can be considered as a paired muscle, too. A detailed discussion of each of these muscles is available elsewhere. Since the eyelids are located close to the mimicking muscles of the face, there is a tendency among medical students and physicians to surmise that the eyelid opening is also under the effects of facial nerve as the other facial mimicking muscles. Contrary to this, the eyelids' opening activity is mediated by another cranial nerve, and it is the third cranial nerve—, the oculomotory nerve. The intentional opening of the upper eyelid is under the effects of the levator palpebra superior muscle, and it is innervated by the oculomotory nerve. The unintentional eyelid movement of blinking is mediated by superior tarsal muscle's action, and this muscle is innervated by the autonomous nerve system (1). Eyelids not able to close or open are nerve-related problems pertaining to the eyelids. In very rare situations, the two problems may coexist, and this would require more than one neural pathology.

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FIGURE 1: Upper face is at rest preoperatively.

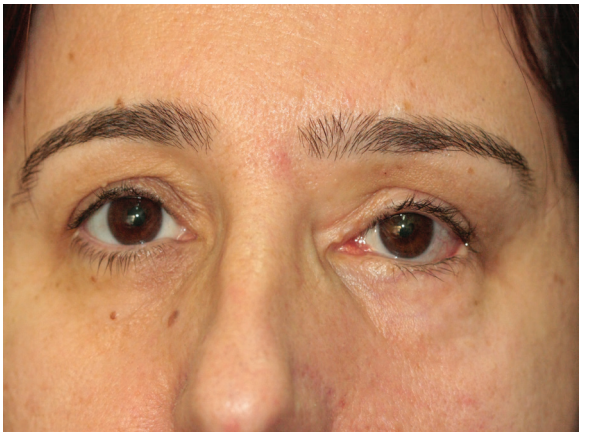

FIGURE 2: Postoperatively showing the patient's upper face is at rest.

CASE REPORT

A 40-year-old female patient admitted to the hospital with her left upper eyelid covering her eyeball like a curtain and preventing her seeing properly. From her history, it was understood that she had undergone an operation on the mastoid area 20 years ago, which complicated with left facial paralysis. Two years from the surgery on the mastoid area, she was further operated on for facial paralysis by tendon transplant surgery from her foot. The patient was inspected 18 years later from the second operation. When the height of the palpebral aperture on the paralyzed side was compared with that of the normal side, it was understood that the measurment of the aperture was narrower than the normal side paradoxically. The lower face was observed at rest and with animation. The asymmetry of the nose and mouth was visible. There was weakening of the nasolabial fold, deviation of the philtrum toward the normal side, commissure depression on the paralyzed side, and deviation of the entire oral sphincter toward the normal side mediated by the unopposed muscle action on the normal side. Furthermore, the left upper eyelid margin covered more than 2-mm pupillary region, and the so-called transferred tendon was palpable on the medial canthal region. At the same time, an ectropion in the patient's lower eyelid was present with its redish show in addition to the scleral show. A Z- plasty was performed to elongate the short tendon by 7 mm under general anesthesia. It was sutured with 5-0 absorbable materials. Then, to treat the lower eyelid laxity, a subciliary incision was done on the lateral part of the lower eyelid in the part in which the conjunctiva was much visible with its pinkish red colour. A full-thickness lower lid tissue 3 x 3 mm in size from the edge including the tarsal plate was removed. Then a superiorly based skin flap was elevated just lateral to the incision's end. The skin flap was transferred to the defect caused by subcilliary incision. The donor area of the flap was closed primarily. As the result obtained for the eyelid surgery was decent, the patient later visited us for the reconstruction of the mouth corner. For this, a superiorly based sternocleidomastoid muscle flap was transferred. The patient learned how to use the muscle in mouth corner movements in 3 months.

DISCUSSION

Facial paralysis loosens the facial mimicking, which is both an aesthetic and a functional issue. The mimicking is more prominent around the eyelides and the mouth corners. Therefore, unilateral facial paralysis results in marked asymmetry at these two regions when compared with the same opposite sites. This is prominent during the smile and closing of the eyelids; otherwise, it may not be so visible (2).

The ptosis is classified into congenital and acquired, based on the age of the onset of ptosis. When it presents after the age of 1 year, it is termed the acquired ptosis. It may also be classified by etiology as follows: aponeurotic, neurogenic, myopathic, neuromuscular, neurotoxic, mechanical, traumatic, and pseudoptosis. According to this approach, the blepharoptosis associated with our case can be seen among the mechanical ptosis. However, in a very detailed paper about this subject, there is no mention about the facial paralysis surgery (3).

It is the paralysis of the orbicularis oculi muscle that is innervated by facial nerve, causing inability to close the eye. The levator palpebra superior muscle is innervated by oculomotor nerve and works against the orbicularis oculi muscle. When the muscle that raises the eyelid cannot do it so effectively, then a blepharoptosis exists. Second, the muscle helping in involuntary opening of the upper eyelid is Müller's muscle that is innervated by otonom nerve system (3).

The upper eyelid's insufficient functions causes the inability to close the eye because the upper eyelid has most of the movement during the eyelid closure. In the contrary, the main function of the lower lid is to maintain the lid margins in contact with the globe. With paralysis, more of the globe is exposed at rest due to the unresisted action of the levator palpebrae and the effect of gravity on the lower lid as compared to the upper lid. In the present case, the globe exposure involving the upper eyelid was lesser even than normal, and the reason for this, in spite of facial paralysis, was the tendon transfer that forced the upper lid to close. However, the globe exposure involving the lower eyelid was prominent enough with the scleral show due to the normal loss of tone of the lower lid tissues with the passage of time and gravity leading to sagging of the lid. To solve this problem, a subciliary incision was done on the lateral part of the lower eyelid. A full-thickness lower lid tissue 3 x 3 mm^2 in size from the edge including the tarsal plate was removed. Then, a superiorly based small skin flap was elevated just lateral to the incision's end. The skin flap was transferred to the defect caused by subcilliary incision. The donor area of the flap was closed primarily.

One of the operations that is not popular recently is the transfer of extensor digitorum brevis muscle and tendon to the upper eyelid (4, 5). When the muscle is transferred, the tendon of the muscle is passed through a tunnel to the left upper eyelid where the musculus orbiculars oculi is located. In other words, the muscle belly is transferred onto the opposite lower and healthy muscle, and its tendon is transferred to the paralytic upper eyelid muscle to make its adaptation easier as it is transferred as a muscle graft. This type of operation can be considered among the dynamic operations done for facial paralysis. When a simple graft of relatively small muscle tissue is transferred, it is expected to be reinnervated with what is called neurotization. Then, it works simultaneously with the adjacent healthy muscle of the lower eyelid, and since the tendon of the transferred muscle is inserted to the opposite and paralytic upper eyelid's orbicularis oculi muscle, the new unit contracts and pulls the tendon to close the upper eyelid. However, the critical aspects of this procedure are setting the tension of the transfer and placing the transfer without deforming the upper lid. If it is too long, it will not pull enough the upper lid to close. If it is too short, it may result in a blepharoptosis. This type of operation is also not suitable for the patient with bilateral paralysis and is no more common in practice. When the patient was observed 18 years after the second operation. The left upper eyelid margin covered more than 2-mm pupillary region, and the so-called transferred tendon was palpable on the medial canthal region. At the same time, an ectropion in the patient's lower eyelid was present with its redish show in addition to the scleral show. An eyelid problem associated with facial palsy causes the inability to close it. In the presented case, there was a blepharoptosis together with facial palsy that was already operated on. This was somehow paradoxical. In other words, first, there is the possiblity of having a blepharoptosis in a patient with facial paralysis that is already operated on and I would like to share this observation. Second, it might be an intricate problem and I would like to discuss it. Last but not least, it is an example of paradox existing in medicine that may deserve to be shared.

However, the complaints related to the lower face may include the lack of oral continence, difficulties with speech, nasal airway difficulties, and problems with psychosocial functioning and social interactions. As a result of the paralysis of the orbicularis oris, the lower lip will frequently pout outward, making it difficult to control food and fluids. Labial speech sounds are impossible. All of these mentioned problems could be endured and tolerated by the patient but the only burden that she was not able to manage was to smile. To accomplish this, a sternocleidomastoid muscle flap was transferred to the mouth corner (6). The correction of the lower face and lips with such a dynamic procedure provided symmetry at rest (Figure 4). A slight overcorrection might be more acceptable than an undercorrection for smiling.

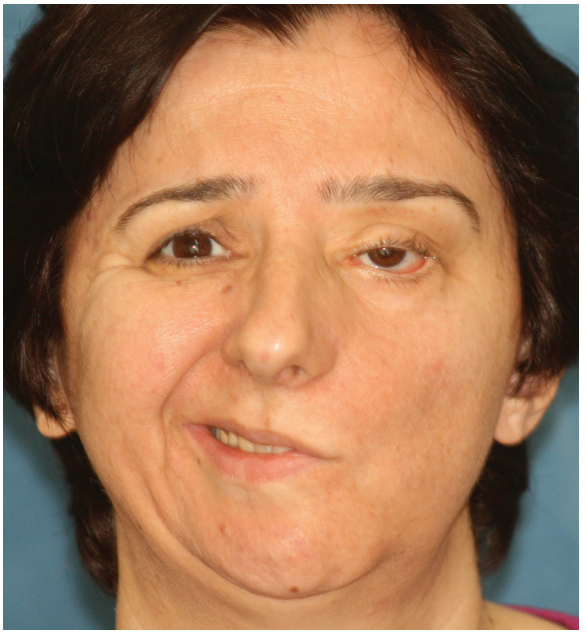

FIGURE 3: Preoperatively showing the patient's smile.

FIGURE 4: At rest after insertion of a segment of sternocleiodomastoid muscle into the left lower face with innervation by the original supplying together with corrections on the eyelids.

REFERENCES

1. Moore KL. Clinically Oriented Anatomy, Williams and Wilkins, Baltimore, 1985, pp 822-834.
2. Stark RB. Aesthetic surgery of the orbit, In: RB Stark (Ed), Plastic Surgery of the Head and Neck, New York, Churchill Livingstone, 1987, pp393-412.
3. Sudhakar P, Kosoko-Lasaki O, Palmer M. Upper Eyelid Ptosis Revisited, American Journal of Clinical Medicine, Summer 2009, 6(3): 5-14.
4. Sevin K, Can Z, Üstünsoy E, Yormuk E. Management of facial palsy using free muscle transplantation, J Ankara Med School, 13(4): 307-315, 1991.
5. Huang WQ, Fang BR, Fang XQ, Wang CJ. Extensor digitorum brevis and extensor hallusis brevis transplantation for treatment of long-standing facial paralysis. Chin J Traumatol. 2009 Feb;12(1):3-9.
6. Yang C, Cui L, Wang W, Liu Q. Transposition of pedicled sternocleidomastoid muscle for repair of facial paralysis in late stage. Zhongguo Xiu Fu Chong Jian Wai Ke Za Zhi (Chinese with English abstract). 2002 Jan;16(1):48-50.