

Neurovascular Muscle Transfer for Möbius Syndrome

Mikhail L. Novikov, MD

Abstract

Background: Möbius syndrome (MS) is a congenital anomaly that typically characterized bilateral facial and abducens nerve paralysis. They have difficulties to communicate both verbally and nonverbally (1,2). Lack of a smile brings these patients to the reconstructive surgeon. Today, free functional muscle transfer is used to create facial expression for Möbius patients (3-5).

Materials and methods: Since 2006 nineteen patients with MS were evaluated. From 2006 to 2011 ten of them underwent two-stage bilateral free gracilis muscle (FGM) transfer to the face. The age of the patients ranged from 7 to 29 years. Only one of them was male. Thorough clinical evaluation and electrophysiological studies were used in all cases before surgery. Eighteen partial FGM in nine patients were revascularized from facial artery and vein, in one patient - from superficial temporal vessels. All muscles were neurotized by motor branch to masseter. Postoperative assessment was carried out at least in 18 months after the second surgery.

Results: All muscles regained contractility in 2-3 months after surgery, which usually stopped growing in 9 months. By the end of 12th month all the patients were able to reproduce the smile without need to clutch their teeth. Adult patients and parents of the child reported improvement in self-esteem and social interaction.

Conclusion: Free microsurgical muscle transfer neurotized by masseteric motor branch is effective in treating patients with MS. Because of the CNS plasticity patients can simulate a smile without clenching the teeth. There is no problem with unwanted facial movements at the time of chewing.

References

1. Kahane J.C. Pathophysiologic effects of Moebius syndrome on speech and hearing. *Arch Otolaryngol* 1979; 105:29
2. Kumar D. Moebius syndrome. *J Med Genet* 1990; 27:122-126.
3. Goldberg C., DeLorie R., Zuker R.M., Manktelow R.T. The Effects of gracilis muscle transplantation on speech in children with Moebius syndrome. *J Craniofacial Surg* 2003; 14: 687 - 690
4. Terzis, J.K., Noah, E.M. Plast. Dynamic restoration in Möbius and Möbius-like patients. *Reconstr. Surg.* 2003; 111: 40 - 55
5. Manktelow R.T., Tomat L.R., Zuker R.M., Chang M. Smile reconstruction in adults with free muscle transfer innervated by the masseter motor nerve: effectiveness and cerebral adaptation. *Plast Reconstr Surg.* 2006; 118: 885 - 899

Disclosure/Financial Support

The author doesn't have a financial interest in any of the products, devices, or drugs mentioned in this manuscript.