

Facial reanimation

Federico Biglioli*, Fabiana Allevi**

*MD, Full Professor and Head of the Specialization School for Maxillofacial Surgery - Milan University - Head of Maxillofacial Surgical Unit - San Paolo Hospital, Milan (Italy)

**MD, Assistant Professor, Maxillofacial Surgical Unit - San Paolo Hospital, Milan (Italy)



Figure 1. The face disfigured by facial paralysis.



Figure 2. Good symmetry of the face while smiling after facial reanimation.

Facial palsy is a common condition affecting one person every 55 people during lifetime. The etiology of facial paralysis may be infectious (Bell's palsy is the most frequent), iatrogenic (as a consequence of brain/cranial base surgery or parotid surgery), congenital, developmental, traumatic and others. Facial palsy is characterized by both morphological and functional deficits that severely affect patients' quality of life. Facial deformity is evident, due to soft tissues ptosis on the affected side of the face. That is associated with the lack of smiling and highly reduced eye lubrication, often leading to keratitis and corneal ulceration (Figure 1).

Facial palsy reanimation includes restoration of facial movements in order to fix facial deformity at rest and to get a pleasant symmetry during smiling and eyelid closure. The primary aims of the reconstructive surgeon are directed to the restoration of both voluntary and spontaneous smile and eyelid closure in order to get a better symmetry at rest and during smile and to restore or maintain the ocular health (Figure 2).

The surgical treatment of facial palsy depends on the timing of surgery related to the onset of paralysis. Facial paralysis can be subdivided into two groups: recent (less than 18-24 months from the onset of the paralysis) and chronic facial palsy (more than 18-24 months from the onset of the paralysis) (1, 2). In order to discriminate between recent and chronic facial palsy, each patient has to perform an electromyography of the mimetic muscles of the face. This test allows to assess if the mimetic muscles are still trophic (recent palsy) or are substituted by fatty-fibrous tissue (chronic facial palsy). Many static and dynamic techniques have been devised. The first ones are finalized to get a better symmetry of the face at rest, but they cannot restore facial movements. Dynamic techniques represent the gold standard in treating facial palsy patients, because they allow to restore facial movements, mainly smiling and eyelids closure. In case of recent facial palsy, the mimetic muscles can still be recruited through the use of a new motor nerve (masseteric nerve, hypoglossal nerve, deep temporal nerve, spinal nerve, etc.) that is anastomosed to the distal branches of the injured facial nerve to restore facial movements. The use of a new motor source allows to restore a powerful stimulus required to make the face move.

In case of chronic facial palsy, the atrophic mimetic muscles cannot be used and a musculature transplantation is recommended. The gold standard is nowadays represented by neurotized free flap (gracilis free flap with its obturator nerve or the latissimus dorsi free flap with the thoracodorsal nerve).

Both the use of a new motor source directly on the distal branches of the facial nerve and the use of a transplanted muscle allow to restore only the voluntary movements of the face. In order to restore also the spontaneous smile and blinking, two cross-face sural nerve grafts are mandatory: they connect two distal branches of the healthy contralateral facial nerve (one directed to the orbicularis oculi muscle and one directed to the great zygomatic muscle) to the injured facial nerve through two subcutaneous tunnels, adding a qualitative spontaneous stimulus to the facial reanimation. Beside facial reanimation techniques, ancillary surgical procedures such as middle third soft tissue suspension, lipofilling, lower eyelid suspension are often required to reach the high standards nowadays required by facial palsy surgery.

References

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2 Biglioli F. Facial reanimations: part 2 - Long-standing paralyse. *Br J Oral Maxillofac Surg* 2015 Dec;53(10):907-12.