OCULOPLASTIC SURGERY IN PATIENTS WITH PARALYTIC LAGOPHTHALMOS

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Abstract: The treatment for the complications of facial nerve palsy is complex and varies from one patient to another. Lagophthalmos secondary to facial palsy, defined as the inability of the eyelids to fully close, is a clinically condition that requires effective and early treatment in order to prevent the serious complications of prolonged corneal exposure. The therapeutic approach should be systematic, the ophthalmologist will try to establish the underlying cause of the facial palsy and will ensure that the patient's cornea is protected. The treatment is individualized for each patient and depends on the prognosis of functional recovery of facial nerve palsy. If lagophthalmos is discrete, the treatment is symptomatic, nonsurgical, in order to improve the quality of patient's life and it is limited on lubrication of the cornea. Surgical treatment is required in the patients with no perspective for functional recovery of facial nerve; the techniques are chosen to establish the palpebral function and ocular comfort. Surgical procedures include static and dynamic techniques. This review presents the most used static procedures for ocular surface coverage.

The main ophthalmic complication of facial nerve palsy is lagophthalmos. Patients with lagophthalmos are unable to close completely their eyelids so the corneal protection is compromised. The blink reflex and eyelid position are essential to maintain a healthy eye surface. Common morbidities include corneal exposure and kerathopathy which may lead to corneal ulceration and infectious keratitis.(1)

The therapeutic approach should be systematic, the ophthalmologist will try to establish the underlying cause of the facial palsy and will ensure that the patient's cornea is protected.

- Facial nerve palsy may result from different causes:(2)
- Trauma
- Cerebrovascular accidents
- Bell's palsy
- Tumours
- Infectious causes
- Möbius syndrome

It has been proved that traumatic and iatrogenic lesions have a bad perspective of functional recovery. In Bell's palsy, the most common cause of lagophthalmos, most patients show complete recovery without intervention in three- four months.(3)

Treatment considerations

The goal in the management of a patient with a facial palsy is prevention of exposure keratopathy. The treatment should be individualized based on the prognosis of the disease and other factors such as the patient's age, general health and socio-professional reintegration.

If lagophthalmos is discrete and functional recovery of facial nerve is anticipated, temporary and non-surgical measures are used to protect the ocular surface. They include the use of artificial tears and ointments, moisture chambers, taping the eye during the night, botulinum toxin injections in the upper eyelid or external eyelid weights application.(4)

Surgical treatment

When lagophthalmos is persistent and patients are in risk to develop corneal complications surgical treatment should

be considered. The most important risk factors are: absence of corneal sensation, an absent Bell's phenomenon, severe dry eye syndrome. Surgical procedures include dynamic and static techniques.(5) The most common used are static procedures which include tarsorrhaphy, lid loading, müllerectomy and levator aponeurosis recession. The main purpose of surgical treatment is to prevent exposure keratopathy, to correct ectropion and manage epiphora.

Tarsorraphy

It was introduced in 1953 by Mc Laughlin (6) and represents the surgical fusion of the upper and lower eyelid margins. It has very few contraindications and can be reversed.(7) This procedure can be performed at the bedside under local anesthesia under most circumstances.

Classification of tarsorraphies:(8)

- Permanent or temporary
- Total or partial
- Lateral, medial or central according to the position in the palpebral fissure

Permanent tarsorraphy: It is indicated in patients with chronic exposure keratopathy who have failed the conservative treatment or a lid loading performed procedure.

Temporary tarsorraphy: Can be applied for the patients who have an acute facial palsy, who are unsuitable for any other procedure to perform or who are unable to instil lubricants.

Lateral tarsorrhaphy: Is a simple, common used procedure of providing adequate corneal protection in the management of the patient with a facial palsy. It is easy and quick to perform and reversible.(9) The extension of tarsorraphy should be large enough in order to ensure an adequate corneal protection.

The main disadvantage of this method is the limitation of visual field and the poor cosmesis.(10)

Medial canthoplasty: In this procedure the inner aspect of the eyelids are fused together. This procedure is often used in addition to a lateral tarsorrhaphy to further improve corneal

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protection in a patient with a facial palsy. It also helps to prevent the development of a medial lower lid ectropion.

Lid Loading

A relatively simple method to cure lagophthalmos is lid loading by precious metal implantations.(11) This technique was first performed by Ambos in 1957 and a year later by Illig in 1958.(4)

Gold weight implantation has become the most commonly used technique for rehabilitation of the eye in patients with facial nerve palsy and it has been shown to effectively reduce lagophthalmos, protect the cornea and improve cosmetics, while having a low extrusion rate.(12) This procedure enhances eyelid closure in a gravity-dependent fashion. Gold is the preferred material due to its colour, specific gravity and tissue compatibility, but as an alternative platinum weights should be used in patients with suspected gold allergy.(13) The success of gold weight implantation depends on careful patient selection. It is not advisable to implant a gold weight into patients with very thin pale skin, with a very atrophic orbicularis muscle and an upper lid sulcus defect.

The appropriate weight it has to be chose preoperatively by taping weights of various sizes onto the external lid above the tarsus and observing the closing and opening of the lids.(14) There is used a weight greater with 0, 1 g than minimum weight which determine the maximum eye closure. Generally, a 1.0g or 1.2g weight is used. Properly chosen, the ideal weight will allow full closing and opening the lids, while avoiding ptosis in primary gaze. It is more difficult in the case of a patient with a lateral tarsorrhaphy that is to be opened at the time of placement of the weight. The weights are available commercially but it is preferable to have them shaped to the contour of the patient's individual tarsus (figure no. 1).

Figure no. 1. Patient LE., 47 years old-LE - corneal leukoma in the context of exposure kerathopathy, treated 7 years ago with an inefficient tarsorraphy (Acustic Neurinoma). LE: gold weight implant in the upper lid. Four months POSTOP., the patient has a normal lid occlusion



Gold weight in combination with canthoplasty is sometimes necessary to obtain a complete correction of lagophthalmos and ectropion with resolution of pre op symptoms. The technique is simply performed, safe, inexpensive and easily reproducible, achieving a significant reduction of lagophthalmos and optimal coverage of the ocular surface.(15) The only important disadvantage of this method is the fact that the correction mechanism is gravity, so that there are situations in which the eye does not close when the patient is lying on horizontal.(16) Another disadvantage is that when closing the eye is observed the gold plate contour and also the weight may migrate or extrude.

Müllerectomy and levator aponeurosis recession

A gentle recession of the upper eyelid retractors (the muscles which lift the eyelid) may be used for the patients with a chronic facial palsy, with upper eyelid retraction, who have lagophthalmos but a moderate Bell's phenomenon, normal corneal sensation and normal tear production.(17) The aesthetic results are good with respect to symmetry in primary position, but as the orbicularis function is not improved and no opposite force is presented to the levator muscle, the lagophthalmos is not fully improved.(1)

CONCLUSIONS

The treatment of paralytic lagophthalmos should be individualized for each patient. Many factors need to be considered such as the recovery expectation, the age, the degree of lagophthalmos and orbicular function, Bell's reflex.

A great variety of techniques can be used to ensure the palpebral function and ocular comfort.

Because of the important aesthetic changes and the psychological stress, cosmetic aspect should be included in the surgical concept.

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