

HZO Lagophthalmia Surgery: A New Autoskin Graft

Author Details: Duong Dieu

MD PhD, Faculty of Medicine-Nguyen Tat Thanh University,
300A Nguyen Tat Thanh street-Dist 4-HoChiMinh City, Vietnam-email: duongdieumd@gmail.com,
duongdieumd@ntt.edu.vn.

Abstract:

Lagophthalmia is the inability to close the eyelids completely due to malfunction of the facial nerve (VII cranial nerve) by herpes simplex virus or lesion of the first division of the fifth cranial nerve by zoster virus. Herpes Zoster Ophthalmicus (HZO) is caused by the varicella-zoster virus. HZO is an ocular disease which usually manifests as a unilateral painful skin rash in a dermatomal distribution of the trigeminal nerve shared by the eye and ocular adnexa. HZO occurs typically in older adults but can present at any age. It occurs after reactivation of latent varicella-zoster virus (VZV) present within the sensory spinal or cerebral ganglia. It may travel along neurons to the sensory axons of the skin to form vesicular lesions. The herpes simplex virus, which causes cold sores and genital herpes, is commonly found in people afflicted with Bell's palsy.

A simple surgical technique that can be performed at the second health care level under local anesthesia without the need for expensive technical equipment was introduced and described as details. This is an auto skin grafting-single staged procedure - on the course of hospital administration for upper lid reconstruction by a lower lid skin flap. Two cases of lagophthalmia with surgical upper reconstruction are reported. One is lagophthalmia post zona causing contracted scar upper lid with corneal ulcer; the other is lagophthalmia post Bell facial paralysis. All of these cases were failure of medical treatment. The results and some considerations on HZO lagophthalmia were discussed.

Key words: lagophthalmia, Bell's palsy, Herpes Zoster Ophthalmicus, surgical treatment, autoskin graft, graft one stage.

1. Introduction:

With 2018 ICD-10-CM Diagnosis Code H02.2 is used for Lagophthalmia.

Lagophthalmia is the inability to close the eyelids completely due to malfunction of the facial nerve (VII cranial nerve) by herpes simplex virus or lesion of the first division of the fifth cranial nerve by zoster virus. Herpes Zoster Ophthalmicus (HZO) is caused by the varicella-zoster virus. HZO is an ocular disease which usually manifests as a unilateral painful skin rash in a dermatomal distribution of the trigeminal nerve shared by the eye and ocular adnexa. HZO occurs typically in older adults but can present at any age. It occurs after reactivation of latent varicella-zoster virus (VZV) present within the sensory spinal or cerebral ganglia. It may travel along neurons to the sensory axons of the skin to form vesicular lesions. The herpes simplex virus, which causes cold sores and genital herpes, is commonly found in people afflicted with Bell's palsy [1, 2, 3]. This paper reported 2 cases of lagophthalmia: one is lagophthalmia post zona causing contracted scar upper lid, the other is lagophthalmia post Bell facial

paralysis. All of these cases were surgical treatment after medical treatment failure. We introduce the simple surgical techniques that can be performed at the second health care level under local anesthesia without the need for expensive technical equipment. For correction lagophthalmia, author's new procedure with auto-skin graft from lower lid to upper lid was described. This is an auto skin grafting-single staged procedure - on the course of hospital administration for correction of upper lid [3,4,5]. The results and some considerations on HZO lagophthalmia were discussed in this paper for General Practitioners and Eye Doctors.

2. Method of Surgery (figure attach)

A new surgical technique graft for correction lagophthalmia as follow:

1. A parallel incision was made above the upper eyelid with 2mm from this margin: The 2 edges of this incision were dissected to create a flap that could be grafted from lower eyelid to correct the lagophthalmia.
2. A crescent-shaped skin flap of 70 x20 mm was created from the lower eye lid (a parallel marginal

2mm incision was made at the lower eyelid with another lower incision). The head of flap was at medial canthus and the pedicle at the lateral canthus. This pedicle was too big to nourish the flap.

3. The donor area of lower eyelid was then closed with simple sutures to avoid ectropion of lower eyelid.

4. Lastly the crescent-shaped flap from the lower eyelid was rotated clockwise to the upper eyelid. The head of this flap was sutured to medial canthus, the upper flap to upper incision of upper lid, and the lower flap to lower incision. The pedicle of flap was the lateral canthus and was directly sutured.

5. One week following the graft, the pedicle was severed and the sutures will be cut off..

3. Results:

Case 1: Lagophthalmia post zona:

A 56-year-old female presented with a 7 months history of *Herpes zoster ophthalmicus* (HZO) in her left eye. For more than 6 months she had received intermittent treatment, largely in the form of pain relief, at a provincial hospital. Two weeks ago she experienced severe left frontal headaches and eye ache for which oral steroids were prescribed by another (private) doctor. She was admitted to the author's hospital.

Ocular examination revealed the following: visual acuity 20/20 OD, light perception OS, intraocular pressure 18mmHg OD, 10mmHg OS. The upper lid of left eye had an adherent scar and contracted scar that caused upper eyelid to shorten and thus exposed all of the cornea and part of ocular conjunctiva (Figure 4). The conjunctiva of upper lid was totally exposed with a round ulcer 1.5mm diameter. There was also a corneal ulcer of 10 mm diameter, with irregular surface, that gave a positive to fluorescein. The anterior chamber was not observed. Laboratory finding included: RBC=3,900,000/mm³. WBC=7,600/mm³. HIV=Negative. Normal chest X-ray and ECG.

Diagnosis: LE=Lagophthalmia post zona causing contracted scar upper lid,.

Treatment: corneal ulcer with antibiotic collyre, tear natural drop for 3 weeks corneal ulcer was become corneal scar. One month later: Surgical treatment by autoskin graft for correction lagophthalmia.

Case 2: Lagophthalmia post Bell's palsy:

A 45- year-old female suffered from facial drooping on the affected half, eye watering tear for many months and no receiving any drugs for treatment.

Eye examination revealed: RE=VA6/6 Normal. LE=VA 6/12. Corneal exposure 2mm when closed eye. Fluoresceine (+) with scattered points. Laboratory finding included: RBC=3,900,000/mm³ WBC=7,600/mm³. HIV=Negative. PCR Herpes (+). Normal chest X-ray and ECG.

Diagnosis: Recurrent Bell's palsy 1st episode.

Treatment: Steroid: prednisolone dose for 3 weeks. One month later: repeated treatment but lagophthalmia was not ameliorated and poor vision 6/12. Three months after Bell's palsy this surgical technique for lagophthalmia correction was done. Post-operative course: One month later cornea is clear and visual acuity 6/9. Six months later cornea exposed is 0mm when closed eye. VA 6/6.

4. Discussion:

4.1 *Herpes zoster lagophthalmia*. Lagophthalmia caused by *Herpes zoster* is rarely seen. Lagophthalmia due to adherent scar and contracted scar of upper eyelid caused by herpes zoster is rarely seen but this condition needs to treat early for protective vision. With lagophthalmia there are both aesthetic and functional problems. Surgical treatment is satisfying these problems. A new technique will describe details as above. A split level eyelid graft was used to repair a vertical full thickness defect. In this patient, a pedicle flap from the lower to the upper lid (Mustarde's method) was used, associated with a split-level eyelid on the outer surface [1, 2, 3]. There are several advantages to this technique [3,4, 5]. The first advantage for this patient was a shrinkable lower lid. The laxity of the lower lid skin was sufficient for reconstruction of the upper lid lagophthalmia. The contracted scar of frontal skin of this patient could not be used for the upper lid graft. The second advantage was that the tarso plate and conjunctiva were remain. The levator muscle remained in good condition both before and after surgery. This is the most important structure in upper lid reconstruction [2, 3]. According to Mustarde's method, the pedicle should be about 8 mm wide, but we created a 20 mm pedicle in order to permit a one-stage procedure [3,4]. The skin flap was nourished by two sides: one from direct suture, the other from the pedicle. The root of the pedicle (2 cm) was covered by a vaseline

bandage for one week. The pedicle was severed one week following the surgery. The third advantage was one stage in grafting helping the patient satisfied at district level in developing country. In case 1 tarsography was not necessary because of out of lagophthalmia with surgical treatment. After medical treatment, corneal ulceration became big scar that should be done a perforated corneal grafting in later [2, 3,4].

4.2 Lagophthalmia dues to facial paralysis, with paralysis of peripheral VII nerve for constricted muscles of upper lid and without paralysis of elevator muscle. Lagophthalmia caused around of all cases of 40% keratitis, 40% of uveitis cases, as well as necrosis retinitis, secondary glaucoma, ocular motor nerve palsies, cataract, and scleritis [1, 2]. The case 2 Bell's palsy (facial paralysis) is characterized by facial drooping on the affected half, due to malfunction of the facial nerve (VII cranial nerve), which controls the muscles of the face. Named after Scottish anatomist Charles Bell, who first described it, Bell's palsy is the most common acute mononeuropathy (disease involving only one nerve), and is the most common cause of acute facial nerve paralysis. The paralysis is of the infranuclear/lower motor neuron type. Most people with Bell's palsy will recover fully in time, even without treatment, but current treatments reflect the belief that viral inflammation of the seventh cranial nerve causes the compression and resulting paralysis. For the inflammation and swelling of the nerve, corticosteroid like prednisone was used, along with an antiviral medication such as acyclovir or valacyclovir if a viral infection was suspected. According to the Mayo Clinic, evidence from clinical trials shows that treatment with steroids tends to be more successful than treatment with antivirals. Antiviral drugs were taken and associated with steroids may be helpful in relief all symptom in swallowing as well as eye lid closing in case 2. After the failure of medical treatment for 3 months, an upper lid reconstruction was done in this case [3,4, 6,7]. Bell's Palsy with genetic problem should be detected. In 2 cases mentioned above did not showed relationship [8].

4.3. Herpes Zoster Ophthalmicus (HZO) and HIV [9, 10]: In Kenya a study of Haroon Awan, Henry Alada showed 98% of AIDS patients having ocular manifestations and 23 % of ophthalmic zona with

HIV (+) in the age range 8 to 47 years old. Our case 1 and 2 is out of this age group. Ophthalmic zona may be a marker for AIDS. Diagnosis of typical zona is usually easy with the eruption of vesicles distributed along trigeminal nerve but in the atypical case is difficult and now with polymerase chain reaction (PCR) is a gold standard in diagnosis DNA of zona virus. The general practitioners, eye doctors should be cautious in atypical cases of zona, as well as particularly in the phrase of pre-eruption of vesicles because of transmission both zona and HIV. In the author 'unit, the 2 patients were HIV negative. Strabismus: may be caused by the paralysis of ocular muscles need to be surgical correction [11]. Cornea: The decreasing of corneal sensibility post herpetic zoster may reversible or irreversible because of corneal epithelial damages. Surgeries in these patients as glaucoma, cataract has to be warning. The paralysis of constricted sphincter of iris may lead to dilation of pupil so-called atypical Argyl Robertson syndrome [1,2].

4.4. Prevention: Adults 60- year-old and over should have a single dose of zoster vaccine whether they have had herpes zoster or not. This vaccine has been shown to decrease the incidence of zoster [12]

5. Conclusion: A new surgical techniques for lagophthalmia correction by an autoskin-graft from lower lid skin flap to upper lid skin is easily done with one stage procedure and satisfying results for appearance as well as good vision after one year follow-up. After the failure of medical treatment of lagophthalmia by Bells paralysis, this simple surgical treatment should be done as soon as possible, helping without tarsography prevention of corneal damage.

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Author Profile



Duong Dieu received the MD (1978) and PhD (2003). He was chief of Ophthalmology Department for over 30 years with clinician/surgeon. From 2010 to now he is senior lecturer of Faculty of Medicine of Nguyen Tat Thanh University in HCM city- Vietnam.

