A Case of Lagophthalmos after a Corrective Rhinoplasty

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Corrective rhinoplasty, a commonly performed plastic surgery, is occasionally followed by numerous risks and complications. In this report, we present, with discussion of the causes and proper management, a case of lagophthalmos that occurred after a rhinoplasty. A 35-year-old female visited our outpatient clinic due to continuous nasal obstruction even after septoplasty. After thorough evaluation, corrective rhinoplasty was performed to release the patient’s nasal symptoms and manage the deviated external nose and nasal septum. During the surgery, we encountered excessive nasal bleeding after percutaneous osteotomy. In addition, immediate postoperative findings presented left periorbital edema without limited eye movement or reduced eye vision associated with the paralysis of the eyelid localized to the medial side of the left upper palpebra. Surgeons should be aware of rare but possible complications of corrective rhinoplasty such as lagophthalmos, and a rapid and intensive care is recommended for early management and better prognosis of postoperative complications.

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terior turbinates. Radiologic findings from osteomeatal unit CT confirmed septal deviation to the left side and hypertropic inferior turbinates (Fig. 1). Therefore, a corrective rhinoplasty was performed to release the patient’s nasal symptoms and manage the deviated external nose and nasal septum for cosmetic purposes.

Surgical procedures involved revision septoplasty, conchotomies, synechiolysis, and dorsal hump reduction. Extended septal graft and shield graft were also performed to adjust the short nose, and osteotomies were done to correct the deviated external nose. For complete correction and satisfactory repositioning of the bones, percutaneous transverse osteotomy was done on the left medial canthus after left lateral osteotomy. During this procedure, we encountered an excessive nasal bleeding which was instantly controlled by topical epi-nephrine-soaked gauze packing and ice-bag compression. Immediate postoperative findings presented left periorbital edema without limited eye movement or reduced eye vision. Close observation and conservative care were given to the patient. After being discharged from the hospital, the patient was followed up after 7 days of operation. The patient’s periortbial edema improved; however, the patient complained of incomplete upper eyelid closure and orbital pain. The paralysis of the eyelid was localized to the medial side of the left upper palpebra (Fig. 2A).

Oral steroid therapy with methylprednisolone was treated to the patient for 3 weeks; 20 mg/day on the first week, 10 mg/day on the second week, and 5 mg/day on the third week. Also, a consultation was made to the ophthalmic department. The patient was diagnosed with lagophthalmos and corneal erosion. Eye drops and patches were prescribed to the patient for conservative care. On the following week, further investigation of the facial nerve was carried out with electromyography (EMG). The results did not show any abnormal findings.

After three weeks of oral steroid therapy and conservative care, the patient’s upper eyelid paralysis showed improvement (Fig. 2B). Three months postoperatively, the patient was capable of complete upper eyelid closure (Fig. 2C).

The facial nerve paralysis was reexamined, with the EMG resulting in the normal ranges. During the 6-months of follow-up and close observation, no evidence of recurrence or additional complications was noticed.

![Fig. 1. Preoperative osteomeatal unit CT. Septal deviation to the left side, hypertrophy of both inferior turbinates, synechia in left nasal cavity (arrow) are observed.](image)

![Fig. 2. Facial photos show the patient symptoms improved gradually over 3 months. Incomplete eye closure is observed in postoperative (POD) 1 week (A), a slightly improved status in POD 3 weeks (B), and a completely relieved symptom in POD 3 months (C).](image)
Discussion

The word lagophthalmos refers to the symptoms of incomplete upper eyelid closure or impaired upper palpebral movement, associated with ocular hyperemia similar to a hare. Currently the term refers to a condition of ocular exposure due to incomplete upper palpebral function. The causes of this condition include a decrease in the orbicularis oculi muscle tone by the facial nerve paralysis, exophthalmos from orbital tumor, traumatic or cicatricial palpebra injury and thyroid diseases. Continuous ocular exposure in lagophthalmos frequently causes conjunctivitis and exposure keratitis. It may lead to more severe conditions, such as corneal drying, ulceration and blindness. The patient in our case also presented exposure keratitis and corneal erosion due to lagophthalmos.

During a corrective rhinoplasty, various surgical techniques such as osteotomies or spreader grafts are used for the modification of the deviated external nose. These methods may cause bleeding, edema, canthal ligament damage, dysosmia, nasal obstruction, and other numerous complications. Ecchymosis, also a complication of corrective rhinoplasty, is developed by an injury to the lateral nasal artery branches or nasal mucosa. Others, such as hematoma, may lead to visual impairment or conjunctival congestion, whereas a ligament injury may cause diplopia.

Percutaneous transverse osteotomy, one of the procedures of corrective rhinoplasty, was first introduced by Goria in 1955 and became widely known by Straatsma. It is indicated when the medial and lateral fracture lines do not intersect after endonasal osteotomies. This surgical procedure initiates with a vertical stab incision just above the medial canthus. A 2 mm osteotome is then used to completely fracture the lateral wall transversely from just above the canthus to open roof. Because the procedure demands the surgeon’s tactile sensation with limited visualization, it is an invasive method, with the risks of injury to the vessels, supporting mucosa and periosteum.

In our case, left percutaneous transverse osteotomy was performed after medial and lateral osteotomies. The procedure was done on the left medial canthus with a 2-mm osteotome, which led to excessive bleeding caused by injury of the left dorsal nasal artery. In the left periorbital region, ecchymosis and edema dominantly surrounded the upper palpebra. These postoperative physical findings were subsided 7 days after the operation: however, the patient suffered from left orbital pain, continuous epiphora, and incomplete closure of the left upper eyelid.

To verify the cause of these findings, EMG was done after two weeks from the operation. During EMG, separate needle electrodes were inserted in the medial and lateral side of the palpebra, both resulting in normal action potentials. From these results, we assumed that the patient’s upper eyelid paralysis did not indicate high possibilities of severe or irreversible facial nerve injury. Also, Bell’s palsy was differentiated from diagnosis as the palsy was localized only on the medial upper eyelid. Furthermore, the possibility of direct muscle injury by osteotome was very low since the percutaneous transverse osteotomy site was relatively distant from the orbicularis oculi muscle.

Thus, we predicted that the intraoperative bleeding that developed from the percutaneous transverse osteotomy led to hematoma on the medial left upper palpebra, obstructing the nerve conduction stimulation of the temporal branches of the facial nerve which innervates to the orbicularis oculi muscle. In other words, the hematoma caused increase of pressure of the facial nerve which led to neuropraxia. Neuropraxia is the 1st degree of nerve injury of Sunderland’s classification indicating local myelin injury but no axon injury or Wallerian degeneration. It is the least severe injury of the nerves which may cause a temporary paralysis of the nerve fiber and recovers in an average of 6 to 8 weeks. In our case, by resorption of hematoma and dissolving edema, the patient’s recovery of the left upper eyelid paralysis was noticed within 3 weeks after the operation and full recovery after 3 months of the operation.

In the case of Bell’s palsy, the disease generally develops suddenly with unknown causes. Maximum paralysis is observed within 48 hours of the onset, and more than 80% recovers after several weeks to months. Generally, a recovery is seen in 4 to 6 months, and the complete facial movements are noted within a year. In our case, the definite onset of the upper eyelid paralysis was noticed within 3 weeks after the operation and full recovery after 3 months of the operation. Based on the unknown onset time of the upper eyelid paralysis, improvement by the steroid therapy and the period of the full recovery, a differentiation from Bell’s palsy may be argued.

In corrective septorhinoplasty, the surgeon should have a thorough knowledge of the intraoperative risks and potential complications of the various surgical techniques of the corrective rhinoplasty. When complications such as bleeding or hematoma occur during surgery, a rapid and intensive care is recommended for the early management and better prognosis of the postoperative complications.
REFERENCES
