

Unilateral Visual Loss after a Nasal Airway Surgery: A Case Report

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Abstract

Background: Nasal airway surgery is recommended for treatment of damaged or diseased nasal cavity. Septoplasty is a common type of nasal airway surgeries that is intended to correct septal deformity that can obstruct airflow through the nose and cause difficulty breathing which is usually performed with rare complications however blindness is one major- despite being rare- complication of nasal septoplasty with a devastating occurrence reported by a few cases in the literature.

The present report documents one case of complete unilateral blindness from direct optic nerve trauma following an unfortunate septorhinoplasty under general anesthetic.

Conclusion: Unilateral blindness is a rare, but a devastating complication following septoplasty and hence, Ophthalmologists and otolaryngologists should therefore be aware of the possible occurrence of such complication.

Keywords: Blindness/Etiology; Optic Nerve/Injury; Rhinoplasty/Adverse Effects; Postoperative Complications; Visual Loss; Case Reports

Introduction

Nasal airway surgery is the surgical repair of abnormal structures in the nasal cavity. Septoplasty and turbinoplasty are common types of nasal airway surgeries; ear, nose, throat (ENT) procedures, which are intended to straighten the nasal septum and reduce nasal obstruction. The procedures are routinely completed as a day case procedure due to its low complication rates [1], however despite having Septoplasty as a frequently performed ENT surgical procedure and the well-established anatomical reference points, it can be associated with rare but very serious complications [2]. The operation can either be performed under general anesthetic, local anesthetic, or a combined general and local anesthetic. ENT surgeons are able to provide appropriate pain relief and homeostasis by infiltrating the nasal septum and the inferior turbinates [3].

The pre-operative preparation of the nose with topical decongestant and vasoconstrictive agents prior to nasal surgery is an attempt to minimize bleeding and optimize conditions for surgery. Occasionally, this can lead to pupillary dilatation due to inadvertent contamination of the eye/eyes with the sympathomimetics. Ocular injury is more commonly attributed to endoscopic sinus surgery and endoscopic orbital decompression. Orbital complications associated with sinus surgery include injury to nasolacrimal duct, extraocular muscle, and optic nerve. Intraorbital haemorrhage and orbital surgical emphysema have also been reported [4]. However, unilateral blindness following septoplasty and septorhinoplasty can also occur due to retinal embolism following intra-arterial injection of substances into the nasal turbinate or from direct optic nerve trauma following apparently uneventful surgery [5].

Blindness following a minor operative procedure can be a devastating complication for both the patient and surgeon. Very few cases of visual loss following septorhinoplasty, a simple and frequently performed operation for the correction of nasal septum deviations have been reported [6,7].

In most of these cases, visual loss was attributed to retinal embolism following the retrograde flow of an intra-arterial injection of substances into the turbinates.

Here, we report a case of unilateral visual loss post septoplasty as a result of direct trauma to the optic nerve in the orbital apex, and discuss the current evidence available in this rare complication.

Case Report

A 55-year-old male was presented to the Otorhinolaryngology, ENT department for a surgical correction of a rightward deflection of the nasal septum. The patient was under a general anesthetic, the mucous membrane on both sides of the nasal septum was elevated and parts of both the cartilaginous and bony septum were removed. The operation was described as routine and uneventful. Upon awakening the following day, the patient noticed that he could not see with the right eye (OS). An ophthalmic examination revealed a visual acuity of 20/20 in the left eye (OD) and no light perception in OS. There was a slight right lid edema and a small hematoma in the medial portion of the inferior eyelid. There was no proptosis. Pupils were equal in size but there was no direct reaction to light in the right one. Ophthalmoscopy and the rest of the ophthalmic examination were normal in both eyes. A computerized tomography (CT) scan revealed multiple fractures of the left medial orbital wall, including one near the optic canal. Treatment with high doses of intravenous corticosteroids was initiated and two days later an optic canal decompression was performed through frontal craniotomy. During surgery, when viewed from above the optic nerve appeared normal and without any evidence of hematoma. However, a direct visualization of the inferior and nasal aspects of the nerve was not possible. Vision did not improve after surgery and total optic nerve atrophy developed two months later in OS.

Discussion

Visual loss is known to be a common complication of surgical procedures like ethmoidectomies while very uncommon following nasal surgery; for which we could find very documentation in the current literature.

One cause of visual loss reported in the literature is embolization involving the retinal, choroidal, or retrobulbar circulation from intranasal anesthetic injection. Although this cannot be completely ruled out in our case, it is highly unlikely due to the lack of embolic risk factors given the patient's young age and absence of underlying hypertension, hypercholesterolemia, and diabetes [8,9].

Plate S and Asboe S [10] reported three patients who had visual loss in one eye after submucous resection of the nasal septum, two of which had partial visual loss. Since there were no signs of other cranial nerve palsies in these patients, the authors believed that direct trauma was unlikely and that the visual loss could be attributed to a vascular disturbance in the optic nerve.

They concluded that this could be due to a retrograde flow into branches of the ophthalmic artery with consequent occlusion of the feeding vessels of the optic nerve resulted from a high pressure intra-arterial injection of local anesthetics in combination with adrenalin in the mucosa during the surgery. The third patient reported by the same authors [10] had total visual loss associated with a sixth nerve palsy and X-ray evidence of blurring of the ethmoidal cells and of the maxillary sinus on the same side. In this case, direct trauma was the suspected mechanism.

Two other studies [11,12] suggested that multiple cases of reduced vision were due to the vasospasm induced by the sub-mucosal injection under pressure of anesthetics including epinephrine. The nasal cavity and optic nerve are connected vascularly by the anterior and posterior ethmoidal arteries. These anastomose with the ophthalmic artery, which supplies the short posterior ciliary arteries, the main blood supply to the anterior optic nerve [13]. This connection explains how local anesthetic and epinephrine within the nasal cavity could cause subsequent vasoconstriction to the blood supply of the optic nerve. The patients generalized visual field loss and slow flow of blood represented on fluorescein angiogram supports this hypothesis.

Furthermore, a case of damage of the optic nerve, oculomotor, trochlear, abducens, and ophthalmic portion of the trigeminal nerve resulting ultimately in blindness was reported, which was attributed to a massive hemorrhage resulting in compression of the orbital apex, which is another case of blindness following nasal surgery as part of an orbital apex syndrome [14].

Some authors have reported similar cases in which the mechanism responsible for visual loss was a central retinal artery occlusion following injection of local anesthetics into the nasal mucosa during elective septorhinoplasty [6,7]. One author reported a patient with temporary visual loss after an injection of anesthetics into the nasal mucosa [15].

The present case is a result of direct trauma to the optic nerve following submucous resection of the nasal septum.

Evidence and conclusion was confirmed by a CT-Computerized Tomography- scan.

The incidence of this occurrence could be significant provided that anatomy of the posterior and higher portion of the nasal cavity might probably be deformed subsequent to a preexistent septum abnormality. Although not observed by the surgeon, the instrument used to fracture the bony part of the septum may have been placed too high and too lateral in the posterior nasal cavity in a position that subtly reached the optic canal area.

However, the scarcity of reports on the subject indicates that the occurrence is either very rare or underreported, never the less, considering the medical and legal implications they may come to cope with, ophthalmologists and otolaryngologists should be aware of the possible occurrence of such complications.

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