

Unilateral Pupillary Dilatation Following Septoplasty: Cause for Concern?

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ABSTRACT

We report and explain unilateral pupillary dilatation following routine septoplasty and trimming of inferior turbinates. The unilateral pupillary dilatation was caused by inadvertent instillation of sympathomimetic, (xylometazoline hydrochloride) in the eye during preparation for nasal surgery. The effect was short-lived and the patient made a full recovery. Unilateral pupillary dilatation after sinonasal surgery can be alarming due to the possibility of injury to the globe and intracranial haemorrhage but can also be explained by the mydriatic effect of the sympathomimetic nasal drops and sprays used to decongest the nose. Such possibility should be borne in mind and would help to explain and reduce the anxiety and avoid unnecessary investigations.

Key words: *Unilateral mydriasis. Topical decongestant. Septoplasty. Papillary dilatation.*

INTRODUCTION

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.¹ 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.²

Unilateral pupillary dilatation, although rare, has many causes; including injury to the inferior division of the third cranial nerve secondary to manipulation of adjacent ethmoid tissues has been described, but usually with a co-existing inferior oblique paresis.³ Other causes include the effects of anaesthetic agents, stellate ganglion block, impaired venous return from the head and neck, acute intracranial mass lesion or haemorrhagic, penetrating eye trauma, and inadvertent instillation of α -adrenergic or anticholinergic agents in

the eye.⁴ It is, therefore, not surprising that the finding of a dilated pupil in the postoperative period can lead to considerable alarm, anxiety and investigations.

We present such a case, outline the physiology of this phenomenon with respect to the common topical agents in use, discuss the differential diagnoses and suggest ways of preventing it.

CASE REPORT

A 55 years old Caucasian male underwent a routine septoplasty and endoscopic trimming of the inferior turbinates for septal deviation and hypertrophied inferior turbinates. Suction diathermy was used to achieve haemostasis after trimming of the turbinates. In the recovery room, the patient was found to have right pupillary dilatation of 6 mm compared to the left pupil which was 2 mm in diameter. The patient had no previous history of pupillary asymmetry. There were no other ocular or neurological symptoms in the post-operative period i.e. blurring of vision, photophobia or pain in eyes. The examination revealed normal ocular motility with no evidence of chemosis or proptosis. The direct light reflex was present in the affected eye and the consensual light reflex was present in the unaffected eye. Suction diathermy was considered as a possible source of thermal injury of the globe due to the lateral transmission of the heat but in the absence of visual deficit or extra-ocular muscle dysfunction, alternative explanations were sought. The obvious suspect was inadvertent instillation of sympathomimetic, otrivine nasal drops into the eye.

No further investigations were requested in anticipation of spontaneous resolution due to the abatement of the mydriatic effect of the sympathomimetic drops. The patient was reassured and routine postoperative observations were carried out. Spontaneous recovery

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did occur over the period of 6 hours. The patient was discharged home on the same day.

DISCUSSION

This report aims to highlight the strong possibility of inadvertent instillation of commonly employed sympathomimetic agents for nasal decongestants pre-and intra-operatively. Topical contamination may occur through spillage during application, or via the nasolacrimal duct.⁵ Commonly used agents include (xylometazoline 0.05% and antazoline 0.5%) combinations; Moffat's solution (2 ml 10% cocaine, 1 ml epinephrine [1:1000] and 2 – 7 ml sodium bicarbonate); lidocaine/phenylephrine solution (non-proprietary; 5% lidocaine and 0.5% phenylephrine). Cocaine, epinephrine and phenylephrine are also sympathomimetic agents with α -adrenergic activity. It is the stimulation of α_1 -adrenergic receptors in the radial muscle of the iris that leads to pupillary dilatation. In contrast, antazoline, an H_1 -receptor antagonist with anticholinergic properties, can reduce parasympathetic stimulation of the circular muscle of the iris, causing its relaxation and resultant pupillary dilation. Lidocaine can cause rapid mydriasis by causing temporary paralysis of the iris muscles. In all cases, direct and consensual light reflex is usually intact.

The effects of iatrogenic pharmacological mydriasis include blurring of vision and photophobia. They are usually short-lived, with a typical duration of several hours dependant on the half-life of the drug used. A period of observation is advisable. If anticipated resolution does not occur, further investigations are warranted. A similar problem has been reported with

ipratropium bromide used with an ill-fitting nebuliser mask in the treatment of asthma.⁶

In an effort to minimise inadvertent instillation, we routinely apply gauze over the eye which reduces the possibility of contamination by absorption of any contaminants. It is authors' practice to routinely examine and document size and symmetry of the pupils pre- and postoperatively.

Whilst unilateral mydriasis can be the result of iatrogenic ocular injury during sinonasal surgery, the role of commonly employed sympathomimetic agents for nasal preparation needs to be kept in mind. By understanding the pharmacological effects of these topical agents on the eye and taking simple precautions during their administration, undue anxiety and unnecessary investigations can be avoided.

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