



Unrevealed Cause of Intraoperative Nasal Bleeding: Rhinitis Medicamentosa

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ABSTRACT

Background: Oxymetazoline can be used as one of the methods to stop epistaxis. However, it can cause unexpected profuse intraoperative nasal bleeding. The fast-acting mechanism and usually effective decongestion effect of the medication cause patient with rhinitis misuse it. Long duration of usage of the nasal vasoconstrictors can lead to rhinitis medicamentosa.

Case Report: We would like to discuss a case of a 28-year-old lady with rhinitis medicamentosa due to prolonged misuse of oxymetazoline nasal spray who underwent nasal surgery and had unexpected profuse intraoperative bleeding.

Conclusion: It is important to stop the topical decongestant and maximize medical treatment for rhinitis medicamentosa before any nasal surgery.

Keywords: Epistaxis, oxymetazoline, rhinitis

INTRODUCTION

Rhinitis medicamentosa is a condition characterized by nasal congestion due to rebound vasodilatation due to prolonged usage of topical nasal decongestant.

Nasal decongestants are effectively administered to reduce the nasal congestion. However, continued administration of topical nasal decongestants can cause rhinitis medicamentosa. The nasal decongestants stimulate the alpha-adrenergic receptors over the lining of nasal mucosa and leads to fast onset vasoconstriction and relief of congestion (1). Overtime, tachyphylaxis will occur where patients will experience reduced efficacy of the medication, which will cause the patient to increase the dosing amount and frequency. This drives a vicious cycle of nasal congestion, temporary symptoms relief, and rebound congestion needing a higher dose of medications.

Treatment is difficult and those who do not respond to supportive care may be considered for nasal surgery (2, 3). However, the continuation of the decongestant before the surgery increases the risk of uncontrolled intraoperative nasal bleeding (4).

CASE REPORT

A 28-year-old Malay lady with no known medical illness presented with nasal blockage for 2 years. It was associated with runny nose, sneezing, and posterior nasal drip. She had been consistently using oxymetazoline nasal spray without getting any proper medical advice for the past 2 years. Otherwise, she had no epistaxis, neck swelling, or otological symptoms. Her deteriorating nasal blockage had brought her to visit our center. The nasal endoscopic examination showed that her bilateral inferior and middle turbinates are hypertrophic and congested, bilateral osteomeatal complexes are obliterated, and her nasal septum deviated to the left. She was instructed to cease the oxymetazoline topical nasal spray and was started on nasal steroid spray. She was troubled with her persistent nasal obstruction despite those medical therapies and was scheduled for elective bilateral turbinoplasty and septoplasty.

During the surgery, the patient was under general anesthesia and pledgets impregnated with Moffett's solution, which contained 2 ml 10% cocaine, 2 ml 8.4% sodium bicarbonate, and 1 ml 0.1% adrenaline were placed intranasally. Each inferior turbinate was given local anesthesia with 2.2 ml of mepivacaine 2% and adrenaline 1:100,000 in the respective nose. Bilateral medial flap turbinoplasty was performed. Just before the end of the procedure, there was profuse bleeding from the incised mucosa (Fig. 1). The bleeding was profuse with the Wormald grading system Grade 9 (5). Hemostasis process was challenging, and multimodalities such as monopolar and bipolar diathermy, warm saline irrigation, and adrenaline packing were used. The hemostasis was subsequently achieved with nasal packing with ribbon gauze impregnated with adrenaline for 30 min and later followed

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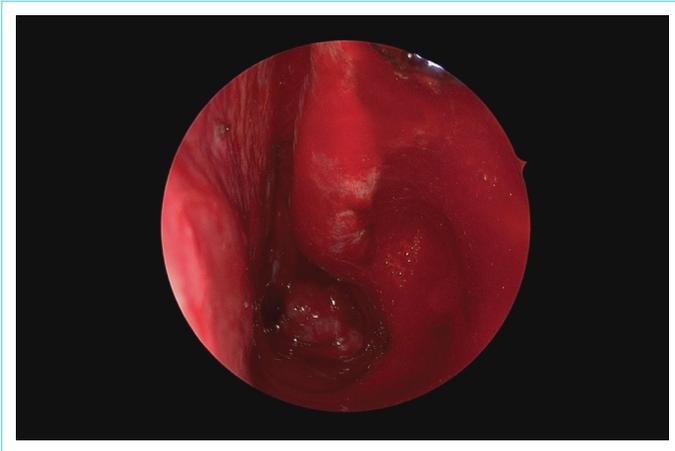


Figure 1. Left nasal cavity. Blood covered the nasal mucosa

by definitive bilateral nasal packing with bismuth iodine paraffin paste ribbon gauze. Intraoperative estimated blood loss was 1.5 L. Coagulation profile and platelet count taken intraoperatively were within normal range. The hemoglobin level had dropped from 12 g/dL to 11 g/dL. Postoperatively, the patient revealed that she had used her topical nasal decongestant every day for the past 1 month.

Bilateral nasal cavity packings were kept for 48 h. However, the patient required a second nasal packing after removal of first nasal packing due to persistent epistaxis. She was well after total duration of nasal packing for 96 h. The inferior turbinate tissue from the turbino-plasty was sent for histopathological examination showed chronic inflammatory process of the mucosa with mixed inflammatory cells infiltration with occasional eosinophils and mast cells. Scattered thin wall blood vessels are also observed between the hyperplastic seromucinous glands.

DISCUSSION

Nasal blockage is a common symptom with as high as 33% prevalence and significantly correlated with nasal congestion (6). Nasal congestion has a tremendous effect on the quality of life as it can disturb the sleep, work performance, and even social activities. The remarkable efficacy of topical nasal decongestants to improve nasal congestion leads to the misuse of the medication (7).

Rhinitis medicamentosa predominantly occurs in young- and middle-aged adults and accounts for up to 9% of visits to otorhinolaryngology clinics (8). Nonetheless, the pathophysiologic mechanism is not well understood (3). Few hypotheses are proposed. One proposal holds that the stimulation of alpha-2 receptors induces intense vasoconstriction of submucosal arterioles. Chronic vasoconstriction impairs the blood flow to mucosa which causes hypoxemia and subsequent ischemia and leads to the development of interstitial edema (7). Besides that, overstimulation of alpha- and beta-adrenergic vasoconstrictor mechanism leads to tachyphylaxis and reduction in sensitivity to endogenous catecholamines.

This is implicated as the reason behinds the decreasing therapeutic response (7). A third hypothesis is that long duration increased parasympathetic activity which counter the effect of sympathomimetic drugs has altered the vasomotor tone, causing mucosal edema (3, 7).

The treatment of rhinitis medicamentosa includes medical and surgical. Cessation of topical decongestant is the mainstay of treatment. Systemic decongestants, topical antihistamines, oral corticosteroids, or topical corticosteroids help in symptom control. Zucker et al. (3) had emphasized the importance of patient education in the treatment process. Counseling should be done to the patient as understanding the disease helps the patient to compliant to the treatment. Control of intranasal mucosal inflammation such as quit smoking and reduction of anxiety is believed to help in nasal decongestant discontinuation (9). Topical nasal steroid use is recommended as it has been found to activate the beta-adrenergic receptors, resulting in a cascade that inhibits endothelial adherence of leukocytes and subsequently the activation of prostaglandin synthesis, thereby promoting resolution of the nasal mucosa edema.

Surgical intervention can be considered in failed medical treatment. Turbinate surgery has a major role in the management of intractable nasal congestion. Various technical modalities (turbino-plasty, radiofrequency, laser, and microresection) can be applied (2, 7). However, caution needs to be taken when carrying out a nasal surgery in rhinitis medicamentosa patient. Robison et al. (4) had reported a case of rhinitis medicamentosa in which the planned microdebrider-assisted submucosal resection of the inferior turbinates and septoplasty was aborted in view of intraoperative uncontrolled bleeding. Nonetheless, there is a lack of studies regarding the intraoperative bleeding incidence in the patient with rhinitis medicamentosa and its correlations.

Histologic features of rhinitis medicamentosa have been reported as edema of epithelial cell layer, loss of cilia, mixed inflammatory cell infiltration, increased submucosal glands, goblet cell hyperplasia, increased intercellular widening, and increased vascularity (1, 10). The widened gaps are demonstrated between capillary endothelial cells on transmission electron microscopy (10). It might account for the failure of topical decongestants to induce vasoconstriction and limit intraoperative bleeding control. Besides, the effect of tachyphylaxis also contributes to the limited effect of vasoconstrictors during nasal surgery. The reduced ciliary function in rhinitis medicamentosa predisposes the patient to infection, which can increase the risk of intraoperative bleeding if an inflamed nose is operated (11).

The topical nasal decongestant is mandatory to be stopped before turbinate surgery to avoid uncontrolled intraoperative bleeding. The duration of medication to be stopped before the surgical intervention still to be determined. Optimal medical treatment of rhinitis medicamentosa might help to control the intraoperative bleeding. The relative efficacy of multiple vasoconstrictive agents or increased duration of decongestion with vasoconstrictive-soaked pledgets preoperatively or intraoperatively is currently unclear but might provide some added benefit (1). Cauterization of major feeding vessel such as sphenopalatine artery and administration of tranexamic acid can be one of the methods to control refractory intraoperative bleeding.

CONCLUSION

Intraoperative bleeding during nasal surgery for a patient with untreated rhinitis medicamentosa can be tremendous and disastrous. Thus, it is of utmost importance to stop topical decongestant

and adequately treat a patient with rhinitis medicamentosa before surgery to prevent profuse intraoperative bleeding and minimize bleeding associated morbidities.

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REFERENCES

1. Ramey JT, Bailen E, Lockey RF. Rhinitis Medicamentosa. *J Investig Allergol Clin Immunol* 2006; 16(3): 148–55.
2. Alwabili M, Alanazy S. Highlighting the new advancements in rhinitis medicamentosa: A review article. *Int J Med Res Prof* 2019; 5(2): 1–5.
3. Zucker SM, Barton BM, McCoul ED. Management of rhinitis medicamentosa: A systematic review. *Otolaryngol Head Neck Surg* 2019; 160(3): 429–38. [\[CrossRef\]](#)
4. Robison JG, Pant H, Ferguson BJ. Rhinitis medicamentosa as a cause of increased intraoperative bleeding. *Laryngoscope* 2010; 120(10): 2106–7. [\[CrossRef\]](#)
5. Wormald PJ. *Endoscopic Sinus Surgery: Anatomy, Three-Dimensional Reconstruction, and Surgical Technique*. 4th ed. New York: Thieme; 2018. [\[CrossRef\]](#)
6. Akerlund A, Millqvist E, Oberg D, Bende M. Prevalence of upper and lower airway symptoms: The Skovde population-based study. *Acta Otolaryngol* 2006; 126(5): 483–8. [\[CrossRef\]](#)
7. Mortuaire G, de Gabory L, François M, Massé G, Bloch F, Brion N, et al. Rebound congestion and rhinitis medicamentosa: Nasal decongestants in clinical practice. Critical review of the literature by a medical panel. *Eur Ann Otorhinolaryngol Head Neck Dis* 2013; 130(3): 137–44. [\[CrossRef\]](#)
8. Lockey RF. Rhinitis medicamentosa and the stuffy nose. *J Allergy Clin Immunol* 2006; 118(5): 1017–8. [\[CrossRef\]](#)
9. De Corso E, Mastrapasqua RF, Tricarico L, Settimi S, Di Cesare T, Mele AD, et al. Predisposing factors of rhinitis medicamentosa: What can influence drug discontinuation? *Rhinology* 2020; 58(3): 233–40.
10. Knipping S, Holzhausen HJ, Goetze G, Riederer A, Bloching MB. Rhinitis medicamentosa: Electron microscopic changes of human nasal mucosa. *Otolaryngol Head Neck Surg* 2007; 136(1): 57–61. [\[CrossRef\]](#)
11. Albu S, Gocea A, Mitre I. Preoperative treatment with topical corticoids and bleeding during primary endoscopic sinus surgery. *Otolaryngol Head and Neck Surg* 2010; 143(4): 573–8. [\[CrossRef\]](#)