Medical Treatment of Nasal Airway Obstruction

Daniel R. Cox, MD, Sarah K. Wise, MD, MSCR*

KEYWORDS

• Nasal obstruction • Medication • Pharmacotherapy • Intranasal corticosteroid
• Decongestant

KEY POINTS

- Anatomic aberrations, structural deficiencies, nasal mucosal inflammation, and edema all contribute to nasal obstruction.
- Common causes of nasal mucosal inflammation include viral upper respiratory infections, allergic and nonallergic rhinitis, and nasal irritants.
- Medical therapy for nasal obstruction is aimed at controlling mucosal inflammation and swelling.
- Medications include topical and oral preparations. The choice of medical therapy depends on the underlying cause.

OVERVIEW

Nasal airflow obstruction is often a multifactorial problem caused by a combination of anatomic aberrations, structural (bony/cartilaginous) weakness or deficiency, swelling of the nasal mucosa, and inferior turbinate enlargement. Anatomic and structural issues, such as nasal septal deviation and nasal valve collapse, are generally managed surgically. Medical therapy for nasal obstruction is directed at reducing nasal mucosal edema and inflammation.

Nasal obstruction occurs when swelling of the mucosa is sufficient to cause symptomatic blockage of airflow. Allergic rhinitis (AR), non-AR, and nasal polyposis are all examples of disease processes involving pathologic mucosal swelling and nasal obstruction that are improved with medical therapy.

Pharmacotherapy for nasal obstruction is aimed at reducing mucosal inflammation and/or edema. The medications used have various mechanisms of action and include systemic and topical preparations. This article discusses the most common medical

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Department of Otolaryngology–Head and Neck Surgery, Emory University, 550 Peachtree Street, MOT 11th Floor, Atlanta, GA 30308, USA
* Corresponding author.
E-mail address: skmille@emory.edu

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therapies for nasal obstruction including current evidence on efficacy and side effect profile for each. This is summarized in **Table 1**.

INTRANASAL CORTICOSTEROIDS

The most widely used medications in the management of nasal obstruction are the intranasal corticosteroids (INCS). The favorable safety and efficacy profile makes this class of medication an appropriate first-line selection for the most cases of nasal obstruction, regardless of the specific underlying cause. The mechanism through which corticosteroids decrease nasal inflammation is complex and incompletely understood. What is known is that they bind intracellular glucocorticoid receptors, resulting in upregulation of genes that encode anti-inflammatory mediators and cytokines and decreased transcription of proinflammatory genes.[1] They also inhibit recruitment of inflammatory cells to the nasal mucosa and decrease mucus production by goblet cells.

Numerous studies have been published that support the efficacy of INCS in the treatment of nasal airway obstruction. For example, one early study showed that after a 4-week course of therapy, intranasal budesonide reduced nasal airway resistance compared with placebo, as measured by subjective symptom scores and objective measures of nasal airway resistance.[2] A more recent randomized controlled trial (RCT) found that intranasal mometasone furoate significantly improved nasal obstruction symptom scores and peak nasal inspiratory flow compared with placebo after a 4-week course of treatment.[3] A 2008 meta-analysis of 16 RCTs comparing mometasone furoate with placebo found mometasone furoate to be superior.[4]

There are several different INCS agents currently available in the United States. Current evidence shows little difference in efficacy among the various INCS agents when used to treat seasonal AR (SAR).[5] For patients with perennial AR (PAR), there is some evidence that high-dose (256 μg every day) budesonide aqueous nasal spray may be more effective at relieving nasal obstruction than intranasal fluticasone propionate or mometasone furoate.[6] Budesonide nasal spray is also noted to be more cost effective than other agents.[7] In addition to nasal spray preparations, budesonide is frequently added to saline and delivered to the nasal mucosa via irrigation, particularly in patients with nasal polyps. There is evidence that this delivery method has a good safety and efficacy profile.[8,9]

Another important consideration that differentiates INCS sprays is patient preference related to the sensory experience associated with using these medications (ie, smell, taste, spray force). Results of patient preference studies suggest that budesonide and triamcinolone nasal sprays are preferred over fluticasone and mometasone sprays.[7]

Generally, an extended course of therapy (2–4 weeks) is recommended to reach full effect. There is, however, some evidence that INCS may demonstrate efficacy when used on an as-needed basis. In one RCT, patients with nasal polyposis receiving mometasone furoate nasal spray experienced a statistically significant improvement in peak nasal inspiratory flow by Day 2 of therapy and statistically significant symptomatic relief of nasal congestion by Day 3.[10]

The most common side effects of INCS include nasal irritation and discomfort, dryness, and epistaxis. Septal perforations have been associated with INCS use.[11] Concerns have been raised about the possibility of more serious side effects, such mucosal atrophy, glaucoma, cataracts, and hypothalamic-pituitary-adrenal (HPA) axis suppression; however, current evidence suggests that INCS use does not increase the risk of development of any of these complications. One study showed no evidence of HPA axis suppression with budesonide irrigation use out to 2 years