

## Nasal Obstruction and Sleep-Disordered Breathing

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### Abstract

Nasal obstruction is a common complaint among individuals seeking medical attention for sleep-related issues. This case study explores the intricate relationship between nasal obstruction and sleep-disordered breathing, focusing on the diagnostic process, treatment modalities, and patient outcomes. A comprehensive assessment combining clinical history, physical examination, and diagnostic tests led to the identification of nasal obstruction as a significant contributor to sleep-disordered breathing in our patient. Multidisciplinary management, including medical therapy, surgical intervention, and continuous positive airway pressure (CPAP) therapy, resulted in significant improvement in sleep quality and daytime symptoms. This case highlights the importance of recognizing and addressing nasal obstruction in the management of sleep-disordered breathing.

**Keywords:** Nasal obstruction; Sleep-disordered breathing; Obstructive sleep apnea; Diagnosis; Treatment

### Introduction

Nasal obstruction, characterized by difficulty breathing through the nose, is a common complaint encountered in clinical practice. It can result from various etiologies, including structural abnormalities, inflammatory conditions, and allergic rhinitis. Nasal obstruction has been linked to sleep-disordered breathing, a spectrum of disorders ranging from snoring to obstructive sleep apnea (OSA) [1]. Sleep-disordered breathing can have significant health implications, including daytime sleepiness, impaired cognitive function, cardiovascular disease, and decreased quality of life. This case study aims to elucidate the relationship between nasal obstruction and sleep-disordered breathing and to highlight the importance of comprehensive evaluation and management in optimizing patient outcomes [2]. While nasal obstruction can arise from various causes, including structural abnormalities, inflammation, or allergic reactions, its association with sleep-disordered breathing (SDB) is increasingly recognized as a significant concern. Sleep-disordered breathing encompasses a spectrum of breathing abnormalities during sleep, ranging from snoring to obstructive sleep apnea (OSA), a condition characterized by repeated episodes of partial or complete upper airway obstruction during sleep [3]. Nasal obstruction plays a crucial role in exacerbating SDB by further compromising airflow and contributing to the severity of symptoms. Moreover, the relationship between nasal obstruction and SDB is bidirectional, as the presence of SDB can also exacerbate nasal congestion and obstruction.

Understanding the intricate interplay between nasal obstruction and sleep-disordered breathing is essential for effective management and treatment strategies. This review aims to explore the pathophysiology of nasal obstruction, its impact on sleep quality and breathing patterns, and the implications for the diagnosis and management of sleep-disordered breathing [4]. By elucidating the relationship between these two conditions, clinicians can better tailor interventions to improve patient outcomes and alleviate the burden of nasal obstruction and sleep disturbances.

### Case presentation

A 45-year-old male presented to the sleep clinic with complaints of loud snoring, witnessed apneas, excessive daytime sleepiness, and fatigue for the past six months. His medical history was notable for allergic rhinitis and nasal congestion, which worsened at night. He

denied a history of hypertension, diabetes, or cardiovascular disease. Physical examination revealed a mildly overweight individual with a body mass index (BMI) of 28 kg/m<sup>2</sup>. Nasal examination revealed bilateral nasal septal deviation with inferior turbinate hypertrophy. The patient underwent an overnight polysomnography (PSG), which demonstrated severe obstructive sleep apnea with an apnea-hypopnea index (AHI) of 40 events per hour, predominantly in the supine position.

### Diagnostic assessment

The diagnostic evaluation focused on elucidating the contribution of nasal obstruction to the patient's sleep-disordered breathing. A comprehensive assessment included a detailed clinical history, physical examination, and diagnostic tests [5]. The patient underwent nasal endoscopy, which confirmed the presence of bilateral nasal septal deviation and inferior turbinate hypertrophy. Computed tomography (CT) imaging of the paranasal sinuses revealed septal deviation causing nasal airway obstruction. Allergy testing demonstrated sensitivity to dust mites and pollen.

### Management and treatment

The patient was counseled on lifestyle modifications, including weight loss and avoidance of supine sleep position. He was initiated on intranasal corticosteroids and oral antihistamines for allergic rhinitis. Continuous positive airway pressure (CPAP) therapy was recommended as the primary treatment for obstructive sleep apnea [6]. However, the patient reported intolerance to CPAP due to nasal congestion and discomfort. Surgical intervention was discussed, and the patient opted for septoplasty and inferior turbinate reduction.

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## Outcome and follow-up

The patient underwent septoplasty and inferior turbinate reduction without complications. Postoperative follow-up demonstrated significant improvement in nasal airflow and subjective symptoms of nasal obstruction. Subsequent PSG showed resolution of obstructive sleep apnea with an AHI of less than 5 events per hour. The patient reported improved sleep quality, decreased daytime sleepiness, and increased energy levels [7]. Long-term follow-up revealed sustained benefits with no recurrence of sleep-disordered breathing.

## Discussion

Nasal obstruction is a common comorbidity in patients with sleep-disordered breathing, particularly obstructive sleep apnea. It can exacerbate upper airway collapse during sleep, leading to increased severity of respiratory events [8]. A multidisciplinary approach involving otolaryngologists, sleep medicine specialists, and allergists is crucial for the comprehensive evaluation and management of these patients. Treatment strategies may include medical therapy, surgical intervention, and CPAP therapy, tailored to individual patient characteristics and preferences [9,10].

## Conclusion

Nasal obstruction is a significant contributor to sleep-disordered breathing and should be carefully evaluated and managed in patients presenting with symptoms of snoring, witnessed apneas, and excessive daytime sleepiness. A thorough diagnostic assessment, including clinical history, physical examination, and diagnostic tests, is essential for identifying nasal obstruction and formulating an appropriate treatment plan. Multidisciplinary collaboration is paramount in optimizing patient outcomes and improving quality of life in individuals with sleep-disordered breathing.

## Acknowledgment

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## Conflict of Interest

None

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