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Case Report

Comprehensive Endoscopic Management of Chronic Nasal Obstruction in a 30-Year-Old Male: A Case Report

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Abstract

Chronic nasal obstruction significantly impacts quality of life and often involves multifactorial etiologies such as deviated nasal septum (DNS), inferior turbinate hypertrophy, concha bullosa, and adenoid hypertrophy. This case report describes a 30-year-old male with chronic nasal obstruction, snoring, and rhinorrhea. Diagnostic nasal endoscopy and NCCT PNS revealed DNS, bilateral inferior turbinate hypertrophy, right-sided concha bullosa, and grade 3 adenoid hypertrophy. After thorough preoperative evaluation, the patient underwent endoscopic septoplasty with spurectomy, bilateral inferior turbinate reduction, right-sided bullectomy, and adenoidectomy with debridement. Postoperative outcomes were favorable, with significant symptom relief. This report emphasizes the effectiveness of a comprehensive, endoscopic surgical approach in managing complex nasal pathologies.

Keywords: Adenoids; Adenoidectomy; Deviated Nasal Septum; Endoscopic-Assisted Microdebrider Adenoidectomy; Nasal Obstruction; Endoscopic Septoplasty

Introduction

Chronic nasal obstruction is a prevalent condition that significantly affects quality of life. The etiology of nasal obstruction is multifactorial, often involving structural anomalies, mucosal diseases, and systemic conditions. Deviated nasal septum (DNS), inferior turbinate hypertrophy, concha bullosa, and adenoid hypertrophy are common anatomical variations contributing to nasal obstruction. This case report details the comprehensive endoscopic surgical management of a 30-year-old male with chronic nasal obstruction, highlighting the effectiveness of a tailored approach addressing multiple anatomical abnormalities.

Case Report

Patient presentation

A 30-year-old male presented to our clinic with a 2-year history of nasal obstruction, snoring, and runny nose. The patient reported intermittent smoking but had no significant past medical history. The symptoms had progressively worsened, impacting his sleep quality and daily activities. Initial physical examination revealed no external nasal deformity, but anterior rhinoscopy indicated bilateral nasal obstruction.

Diagnostic evaluation

The comprehensive diagnostic evaluation included:

Diagnostic Nasal Endoscopy: This revealed:

- Deviation of the nasal septum towards the left.
- Bilateral inferior turbinate hypertrophy.
- Right-sided concha bullosa.
- Grade 3 adenoid hypertrophy.

Non-Contrast Computed Tomography (NCCT) of the Paranasal Sinuses (PNS): Findings included:

- Deviated nasal septum with a prominent spur on the left side. (Figure 1: Coronal section of NCCT PNS at septal spur level)
- Bilateral inferior turbinate hypertrophy.
- Right-sided concha bullosa.
- Sinusitis.
- Bulky adenoids. (Figure 2: Coronal section of NCCT PNS at Adenoids level)

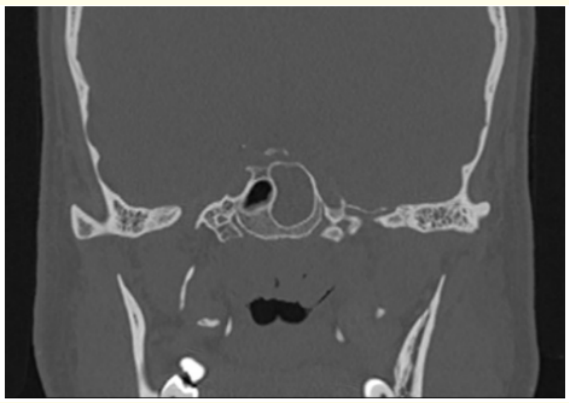

Figure 1: Coronal section of NCCT PNS at Adenoids level.

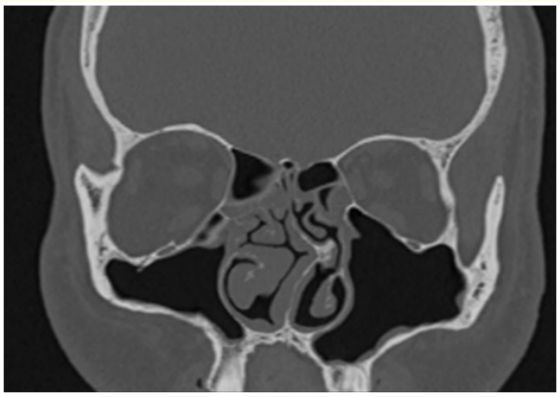

Figure 2: Coronal section of NCCT PNS at septal spur level.

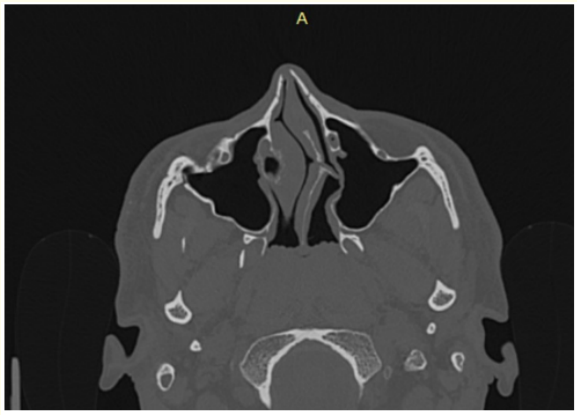

Figure 3: Axial section of NCCT PNS at level of septal spur.

Given the obstructive symptoms and anatomical findings, a comprehensive surgical plan was developed.

Preoperative management

Preoperative assessments included routine blood tests (complete blood count, coagulation profile, liver and kidney function tests) and chest X-ray to rule out any underlying conditions that might complicate surgery. An adenoid biopsy was performed, which was negative for malignancy. The patient was counseled on the surgical procedure, risks, benefits, and expected outcomes, and informed consent was obtained.

Surgical procedure

The surgical intervention was carried out under general anesthesia. The steps included:

- **Endoscopic Septoplasty with Spurectomy:** Using endoscopic guidance, the deviated portion of the nasal septum was identified and carefully resected. The prominent spur was also excised, facilitating improved nasal airflow.
- **Bilateral Inferior Turbinate Reduction:** Submucosal diathermy was employed to reduce the volume of the hypertrophic inferior turbinates. This technique minimizes mucosal trauma and preserves the mucosal lining, reducing postoperative complications.
- **Right-Sided Bullectomy:** The concha bullosa on the right side was excised using a microdebrider. This step was crucial in alleviating the obstruction caused by the air-filled turbinate.

- **Adenoidectomy with Debrider:** The hypertrophic adenoids were removed using a microdebrider, ensuring complete debridement to prevent recurrence. Endoscopic visualization ensured the precise removal of the adenoid tissue.

Postoperative care

Postoperatively, bilateral nasal packing was applied to control bleeding. The patient was monitored in the hospital for 2 days, during which the nasal packs were removed. The patient was discharged with instructions to use saline nasal drops, antihistamines, and fluticasone nasal spray, and to perform alkaline nasal douching regularly.

Follow-Up

The patient was followed up at 1 week, 1 month, and 3 months post-surgery. At each visit, nasal endoscopy was performed to assess healing and ensure no residual obstruction or complications. The patient reported significant improvement in nasal breathing, resolution of snoring, and a marked decrease in rhinorrhea. Endoscopic examination showed well-healed surgical sites with no signs of infection or residual hypertrophy.

Discussion

This case exemplifies the need for a comprehensive diagnostic and therapeutic approach to managing chronic nasal obstruction with multifactorial etiology. The successful outcome in this case can be attributed to the detailed preoperative evaluation, precise surgical intervention, and diligent postoperative care.

Anatomical considerations

The patient's symptoms were attributable to multiple anatomical factors:

- **Deviated Nasal Septum (DNS):** A common cause of nasal obstruction, DNS can significantly impact airflow and sinus drainage. Surgical correction via septoplasty is often required for symptomatic relief [1,2].
- **Inferior Turbinate Hypertrophy:** Hypertrophy of the inferior turbinates contributes to nasal obstruction and can exacerbate symptoms in patients with DNS. Submucosal diathermy effectively reduces turbinate size while preserving mucosal integrity [3,4].
- **Concha Bullosa:** An air-filled cavity within the middle turbinate, concha bullosa can cause significant nasal obstruction. Endoscopic bullectomy provides effective symptom relief [5,6].
- **Adenoid Hypertrophy:** Common in children, adenoid hypertrophy can persist into adulthood and contribute to nasal obstruction and sinusitis. Endoscopic adenoidectomy using a microdebrider ensures thorough removal and reduces recurrence rates [7,8].

Surgical approach

The use of endoscopic techniques in this case offered several advantages:

- **Enhanced Visualization:** Endoscopy provides superior visualization of the nasal cavity and sinuses, allowing precise identification and treatment of anatomical abnormalities [5].
- **Minimized Trauma:** Endoscopic approaches are less invasive compared to traditional open techniques, resulting in reduced postoperative pain and faster recovery [9].
- **Improved Outcomes:** Combining multiple procedures in a single surgical session addresses all contributing factors to nasal obstruction, leading to better overall outcomes.

Literature Review

Several studies support the efficacy of the surgical techniques used in this case:

- **Septoplasty:** Kim., *et al*. (2011) demonstrated that septoplasty significantly improves nasal airflow and patient satisfaction. The correction of septal deviation is crucial in alleviating nasal obstruction [1].
- **Septoplasty and Long-term Outcomes**: Mladina., *et al*. (2002) found that septoplasty significantly improves long-term outcomes in patients with chronic nasal obstruction [2].
- **Inferior Turbinate Reduction:** Mabry (1985) highlighted the effectiveness of submucosal diathermy in reducing turbinate size and improving symptoms. This technique offers a balance between efficacy and safety [3].
- **Long-term Effects of Turbinate Reduction:** Lee., *et al*. (2009) reported that inferior turbinate reduction offers sustained improvement in nasal obstruction symptoms [4].

- **Bullectomy:** Stammberger., *et al*. (1991) reported that endoscopic bullectomy effectively treats concha bullosa and improves sinonasal function. The use of a microdebrider allows precise removal of the bulla [6].
- **Endoscopic Management of Concha Bullosa:** Kamel (1990) found that endoscopic bullectomy is a safe and effective technique for managing concha bullosa [6].
- Adenoidectomy: Koltai., *et al*. (2002) found that endoscopic adenoidectomy using a microdebrider reduces adenoid tissue with minimal recurrence. The technique ensures complete removal and minimizes postoperative complications [7].
- **Endoscopic Adenoidectomy:** Cannon., *et al*. (2003) reported that endoscopic adenoidectomy using a microdebrider significantly improves airway patency with a low recurrence rate [8].
- **Endoscopic Sinus Surgery and Asthma:** Wright., *et al*. (2000) highlighted the positive effects of endoscopic sinus surgery on asthma control, emphasizing the systemic benefits of addressing sinonasal pathology [9].
- **Endoscopic Sinus Surgery:** Stammberger., *et al*. (1990) discussed the concepts and techniques of endoscopic sinus surgery, underscoring its role in managing complex sinonasal diseases [5].

Postoperative care and patient compliance

Postoperative care is critical in ensuring successful outcomes. The use of saline nasal drops, antihistamines, and fluticasone nasal spray helps in reducing inflammation and promoting healing. Alkaline nasal douching assists in keeping the nasal passages clean and prevents crust formation. Patient compliance with postoperative care instructions is essential for optimal recovery [3,4].

Challenges and considerations

While the outcome in this case was favorable, several challenges must be considered:

- **Patient Selection:** Careful selection of patients based on clinical evaluation and diagnostic findings is crucial. Not all patients with nasal obstruction will benefit from surgical intervention [1,2].
- **Surgical Expertise:** The success of endoscopic procedures depends on the surgeon's expertise and experience. Adequate training in endoscopic techniques is essential [5].
- **Postoperative Follow-Up:** Regular follow-up is necessary to monitor healing, identify complications early, and ensure long-term success [9].

Conclusion

This case report highlights the importance of a comprehensive approach in managing chronic nasal obstruction with multifactorial etiology. Endoscopic surgical intervention, tailored to address specific anatomical abnormalities, provides significant symptom relief and improves quality of life. The use of advanced endoscopic techniques offers enhanced visualization, reduced trauma, and improved outcomes. Careful patient selection, surgical expertise, and diligent postoperative care are critical for achieving successful results.

Acknowledgment

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