

## Comprehensive surgical management of chronic multisinusitis with bilateral nasal polyps, nasal septal deviation, and inferior turbinate hypertrophy

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### Abstract

**Background:** Chronic rhinosinusitis is an inflammation of the paranasal sinus mucosa accompanied by nasal inflammation that persists for more than 12 weeks. Sinusitis involving multiple sinuses is referred to as multisinusitis. One of the primary contributors to chronic rhinosinusitis (CRS) is anatomical obstruction, such as nasal septal deviation, inferior turbinate hypertrophy, and nasal polyps, which can lead to impaired airflow and mucociliary dysfunction. These structural abnormalities not only perpetuate sinus inflammation but also reduce the effectiveness of medical treatment. In such cases, comprehensive surgical correction—including Functional Endoscopic Sinus Surgery (FESS), septoplasty, turbinectomy, and polypectomy—is essential to restore normal sinonasal physiology and achieve long-term symptom resolution.

**Case Description:** A 56-year-old male presented with nasal obstruction, rhinorrhea, facial pain, and headaches lasting more than three months. Nasal endoscopy and CT imaging revealed multisinusitis, bilateral nasal polyps, septal deviation, and inferior turbinate hypertrophy. The patient underwent complete Functional Endoscopic Sinus Surgery (FESS), bilateral polypectomy, septoplasty, and turbinectomy. Postoperative follow-up showed favorable outcomes, with resolution of symptoms.

**Conclusion:** A comprehensive surgical approach combining FESS with polypectomy, septoplasty, and turbinectomy is effective in managing chronic multisinusitis associated with multiple anatomical abnormalities.

**Keywords:** Chronic Sinusitis; Multisinusitis; Nasal Polyps; Nasal Septal Deviation; Inferior Turbinate Hypertrophy

### 1. Introduction

Sinusitis is an inflammation of the paranasal sinus mucosa, which may also involve inflammation of the nasal mucosa, thus commonly referred to as rhinosinusitis [1]. When the condition persists for more than 12 weeks, it is classified as chronic rhinosinusitis (CRS) [2,3]. CRS is a multifactorial condition characterized by impaired sinus drainage and ventilation due to persistent inflammation or anatomical obstruction [4,5]. When inflammation affects more than one sinus, it is referred to as multisinusitis [1].

According to the European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS) 2020, the global prevalence of chronic rhinosinusitis ranges between 5–12%, while in Asia, the prevalence varies more widely, from 2.1% to 28.4% [3,5]. The diagnosis of CRS is established based on clinical symptoms lasting longer than 12 weeks, with at least two of the following four main symptoms: nasal obstruction, nasal discharge (anterior or posterior), facial pain or pressure, and olfactory disturbance [2,3]. Diagnosis is confirmed through nasal endoscopy or CT imaging, which reveals mucosal abnormalities or structural obstruction in the osteomeatal complex [3,6,7].

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CRS is frequently associated with anatomical abnormalities such as nasal septal deviation, inferior turbinate hypertrophy, and nasal polyps [6–10]. These abnormalities can lead to disrupted airflow and mucociliary dysfunction, which exacerbate sinus inflammation, increase the risk of recurrent infections, and contribute to the failure of long-term medical therapy [4,6,9]. In such cases, effective management requires a comprehensive surgical approach to correct the underlying anatomical defects and restore normal sinonasal function [11,12].

Common surgical interventions include Functional Endoscopic Sinus Surgery (FESS) to clear the sinus cavities and open drainage pathways, polypectomy to remove nasal polyps, septoplasty to correct septal deviation, and turbinectomy to reduce inferior turbinate hypertrophy [12–14]. The combination of these procedures is considered effective in managing chronic rhinosinusitis with anatomical abnormalities and provides improved long-term outcomes for patients [13,15,16].

## 2. Case report

A 56-year-old male patient presented to the ENT clinic with a primary complaint of nasal obstruction persisting for more than three months, which had worsened over the past week. The obstruction was bilateral and significantly interfered with his daily activities. The patient also reported continuous rhinorrhea, facial pain, and headaches. He had previously used medications without relief. There was no history of dental disease, food or drug allergies, smoking, or a family history of similar complaints.

On physical examination, the patient was alert and fully oriented, with vital signs within normal limits. Nasal endoscopy revealed a smooth, grayish mass in both nasal cavities, hypertrophy of the left inferior turbinate, pink mucosa, nasal secretions, and a deviated nasal septum. Ear and throat examinations were unremarkable. A contrast-enhanced CT scan of the head revealed maxillary and ethmoidal sinusitis, septal deviation, and left inferior turbinate hypertrophy. Based on clinical and radiological findings, the patient was diagnosed with multisinusitis, bilateral nasal polyps, septal deviation, and turbinate hypertrophy. He was prescribed nasal irrigation and scheduled for surgery under general anesthesia. Preoperative blood tests were within normal limits.

The surgical procedure began with functional endoscopic sinus surgery (FESS) to treat multisinusitis. After preoperative placement of adrenaline and local anesthetic tampons in both nostrils for 10 minutes, the nasal cavities were evaluated. FESS commenced with the identification and removal of the uncinate process via uncinectomy using a microdebrider. This was followed by a middle meatal antrostomy to access and ventilate the maxillary sinuses. Subsequently, anterior and posterior ethmoidectomies were performed to open the ethmoid sinuses, followed by sphenoidotomy and frontal sinusotomy to ensure drainage and ventilation of all affected sinuses.

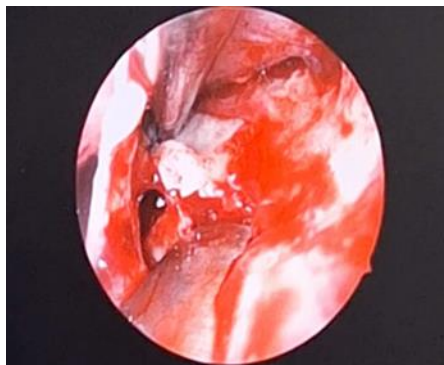
After full sinus access was achieved, bilateral polypectomy was performed using a microdebrider under endoscopic guidance (Figure 1). All visible nasal polyps were carefully removed from both nasal cavities to restore airflow and reduce the inflammatory burden. The nasal passages were examined to confirm complete removal of polypoid tissue before proceeding with the next step of surgery.



**Figure 1** Intraoperative view during bilateral polypectomy showing removal of nasal polyp using microdebrider

Endoscopic septoplasty was carried out using the Killian incision technique. The nasal septum was infiltrated with 0.9% normal saline to facilitate tissue dissection. A Killian incision with a posteriorly curved path was made down to the nasal floor. Mucoperichondrial dissection was then performed using an elevator to lift the mucosa (Figure 2). Next, a

hemitransfixion incision was made on the septal cartilage, followed by elevation of the contralateral septal mucosa. The quadrangular cartilage and bony septum were removed as needed, while preserving the L-strut to maintain nasal support and structure.



**Figure 2** Endoscopic view during septoplasty

The final step of the surgery was a conventional inferior turbinectomy. The mucosa of the inferior turbinate was resected using scissors in a longitudinal direction from anterior to posterior (Figure 3). Hemostasis was achieved by cauterization. Following the resection, tampons soaked in adrenaline and local anesthetic were reinserted into both nasal cavities for 10 minutes. After confirming the absence of active bleeding, new tampons were placed in both nostrils to support postoperative healing.



**Figure 3** Resection of inferior turbinate mucosa with scissors

Two days after surgery, the patient reported nasal pain. The tampon in the left nasal cavity was removed, and no active bleeding was observed. On the fifth postoperative day, the right nasal tampon was removed, and the patient had no complaints. At the follow-up visit on day 12 post-surgery, the patient complained of blood and mucus discharge from both nostrils. Examination revealed residual blood and secretions, and the patient was advised to continue regular nasal irrigation. By day 26 post-surgery, the patient returned for follow-up without complaints, indicating a good recovery without complications.

### 3. Discussion

This case illustrates a comprehensive management approach for a patient with chronic multisinusitis accompanied by anatomical abnormalities, including deviated nasal septum, inferior turbinate hypertrophy, and bilateral nasal polyps. This combination of anatomical abnormalities can cause nasal airflow obstruction and mucociliary dysfunction, contributing to chronic inflammation of the paranasal sinuses [2,3,6]. As outlined in the EPOS 2020 guidelines, chronic rhinosinusitis (CRS) is classified as a multifactorial disease in which anatomical factors play a significant role in sustaining chronic inflammation [3]. A deviated septum, turbinate hypertrophy, and nasal polyps impede sinus drainage and exacerbate mucus stasis, which provides a medium for microbial growth and leads to recurrent infections [7–10]. Therefore, medical therapy alone is often insufficient, especially in the presence of significant anatomical obstruction [3,4,13].

The choice of surgical technique in this case was based on the principles of restoring optimal sinus drainage and ventilation, as well as correcting anatomical obstructions. Functional Endoscopic Sinus Surgery (FESS) was chosen as the primary approach because it allows direct access and clear visualization of the sinus structures through a minimally invasive technique [12,13]. FESS has several advantages over more radical techniques like Caldwell-Luc (CWL) and lateral rhinotomy. One advantage is its minimally invasive nature, where the procedure requires only small incisions in the nasal mucosa, reducing tissue trauma and speeding up recovery compared to more invasive open techniques such as CWL and lateral rhinotomy, which involve large incisions and more tissue damage [12,17]. FESS also carries a lower risk of complications, including the risk of infection, septal perforation, or cosmetic issues, due to its more precise and tissue-sparing approach to removing problematic tissue [13–15].

Another benefit of FESS is its ability to preserve important nasal structures, such as the L-strut of the septum, which is essential for long-term nasal stability [1,12,18]. More radical techniques like CWL or lateral rhinotomy can damage this structure, leading to changes in nasal shape and functional impairment [17]. Additionally, FESS enables faster recovery and less postoperative pain, with reduced postoperative morbidity compared to more invasive open surgical techniques [13,14,16]. FESS has also proven to be more effective in opening the obstructed osteomeatal complex and allowing better sinus drainage, which is crucial in the treatment of chronic rhinosinusitis [3,12,13].

Bilateral polypectomy was performed due to the presence of nasal polyps, which further aggravated upper airway obstruction and chronic inflammation. The removal of polyps helps to open the airway and significantly reduce the inflammatory burden. The endoscopic technique was used because it offers better visualization and minimizes damage to surrounding healthy tissues [3,11,18].

Septoplasty using the Killian technique was selected because the significant septal deviation obstructed access to the nasal and sinus cavities. The Killian technique allows for correction of the deviation while preserving the structural support of the septum (L-strut), which is crucial for postoperative nasal stability [1,7]. The endoscopic approach also facilitates the integration of this procedure with FESS in a single surgical session [12].

Inferior turbinectomy was performed due to inferior turbinate hypertrophy, which narrows the nasal lumen and worsens the obstruction [8,9,18]. A conservative partial mucosal resection of the turbinate was performed to avoid complications such as empty nose syndrome. The longitudinal resection technique using conventional surgical scissors was chosen as a safe and effective method to reduce turbinate tissue volume [1,18].

Postoperative evaluation showed good clinical outcomes. Although there were mild complaints such as pain and bloody discharge after surgery, all symptoms improved progressively with conservative treatment and nasal irrigation. This confirms that a comprehensive surgical approach is highly effective in managing CRS with multisinusitis and complex anatomical abnormalities [13–16].

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#### 4. Conclusion

Overall, this case report confirms that the proper selection and combination of surgical techniques based on the patient's anatomical conditions and functional principles contribute to long-term improvements both structurally and functionally, significantly enhancing the patient's quality of life.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

##### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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