

CHRONIC RHINOSINUSITIS: MODERN APPROACHES TO DIAGNOSIS AND TREATMENT

Otamuratova Durdona Umar kizi
3rd-Year Student at Alfraganus University,
Faculty of General Medicine and Pediatrics

D. A. Kalandarova
Scientific Supervisor, PhD in Medical Sciences, Associate Professor,
Department of Surgical Diseases, Alfraganus University

Abstract

Chronic rhinosinusitis (CRS) is one of the most prevalent chronic inflammatory disorders encountered in otorhinolaryngology, exerting a profound impact on patients' quality of life. This pathology is defined by persistent inflammation of the nasal cavity and paranasal sinus mucosa lasting more than 12 weeks. In recent years, advancements in endoscopic, radiological, and laboratory diagnostic tools have expanded opportunities for early detection and targeted management. This article analyzes the etiopathogenesis, clinical presentation, diagnostic criteria, and conservative as well as surgical treatment modalities for CRS in accordance with IMRaD standards. The study demonstrates that a comprehensive, structured approach provides high efficacy in improving clinical outcomes and minimizing recurrence rates.

Keywords: Diagnosis, endoscopy, computed tomography, functional endoscopic sinus surgery, conservative treatment.

Introduction

Chronic rhinosinusitis (CRS) represents a major clinical and socioeconomic challenge in modern otorhinolaryngology. Global epidemiological data indicate that the disease affects approximately 10–15% of the population, resulting in substantial healthcare expenditures, reduced work productivity, and impaired quality of life. Pathologically, CRS is driven by sustained inflammatory remodeling of the nasal and paranasal sinus mucosa.

Multiple etiologic factors drive the onset and persistence of the disease, including infectious agents, allergic hypersensitivity, sinonasal anatomical variations, immune dysfunction, and environmental triggers. In particular, nasal septal deviation, polypoid tissue remodeling, and chronic allergic inflammation frequently impede sinus ostial drainage, sustaining chronic inflammation.

Early identification and accurate phenotyping of CRS are essential not only for symptom relief but also for preventing orbital and intracranial complications. Accordingly, the objective of this study is to deliver an evidence-based clinical analysis of modern diagnostic methods and therapeutic interventions for chronic rhinosinusitis.





Materials and Methods

This study utilized both retrospective and prospective observational methods. The study cohort included 60 patients aged 18 to 65 years diagnosed with chronic rhinosinusitis who presented to the otorhinolaryngology department between 2024 and 2026.

Patient inclusion criteria were based on the presence of two or more of the following clinical signs persisting for over 12 weeks:

- *Nasal obstruction / congestion;
- *Anterior or posterior mucopurulent discharge;
- *Facial pain, fullness, or pressure;
- *Hyposmia or anosmia (impaired sense of smell).

The diagnostic protocol encompassed:

- *Detailed clinical history and physical examination;
 - *Anterior and posterior rhinoscopy;
 - *Rigid and flexible diagnostic nasal endoscopy;
 - *Computed tomography (CT) scan of the paranasal sinuses;
- Complete blood count (CBC) and inflammatory biomarker assessment.

Management was conducted in two sequential stages:

Conservative therapy: Broad-spectrum and culture-directed antibiotics, intranasal corticosteroids, and isotonic/hypertonic saline irrigations.

Surgical intervention: Functional Endoscopic Sinus Surgery (FESS) performed in patients refractory to maximal medical therapy.

Statistical analysis was conducted to evaluate therapeutic efficacy based on symptom resolution and objective endoscopic mucosal staging.

Results

Among the 60 enrolled patients, the baseline complaints were distributed as follows:

Nasal obstruction: 41 patients (68.3%)

Mucopurulent nasal discharge: 35 patients (58.3%)

Facial pressure and pain: 29 patients (48.3%)

Decreased sense of smell: 22 patients (36.6%)

Paranasal sinus CT scans confirmed maxillary sinus involvement in 73% of patients and ethmoid sinus involvement in 52%. Diagnostic nasal endoscopy revealed sinonasal polyposis in 30% of the cohort.

Following standardized conservative medical therapy, 42 out of 60 patients (70%) showed marked clinical improvement and symptom control. The remaining 18 patients (30%) demonstrated inadequate disease control and subsequently underwent Functional Endoscopic Sinus Surgery (FESS). At the 3-month postoperative evaluation, 83% of the surgically treated group reported complete or near-complete resolution of their presenting symptoms.

Overall, post-treatment assessments confirmed a significant improvement in validated patient quality of life parameters.





Discussion

These clinical results underline the necessity of an individualized, step-wise management strategy for chronic rhinosinusitis. While medical therapy remains effective for the majority of uncomplicated cases, surgical intervention becomes indispensable in the presence of irreversible mucosal hypertrophy, sinonasal polyposis, or severe ostiomeatal complex obstruction.

Current international consensus guidelines highlight nasal endoscopy and computed tomography as the "gold standard" diagnostic modalities. The findings of this study reinforce this paradigm: CT accurately defined anatomical variations and opacification severity, while endoscopy permitted direct mucosal visualization and targeted sampling.

Functional Endoscopic Sinus Surgery (FESS) remains the standard of care for medically recalcitrant disease. In this cohort, FESS effectively restored paranasal sinus ventilation and mucociliary clearance while maintaining mucosal integrity. Long-term recurrence prevention relies heavily on extended postoperative monitoring, control of underlying allergic comorbidities, and daily maintenance regimens.

Conclusion

Chronic rhinosinusitis is a multifactorial condition requiring prompt objective diagnosis and targeted therapeutic pathways to restore physiological sinus function and patient quality of life.

The core findings are:

Nasal endoscopy and computed tomography provide essential, highly detailed diagnostic data;

Conservative medical therapy is effective as a first-line intervention in up to 70% of cases;

Functional endoscopic sinus surgery provides high success rates (83%) in medically refractory disease;

A tailored, multimodal treatment plan is essential to maintain long-term disease remission. Integrating modern diagnostic algorithms and endoscopic surgical techniques significantly optimizes outcomes in the clinical management of chronic rhinosinusitis.

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