

Medical Management of Frontal Sinusitis



Maheep Sohal, MD^a, Belachew Tessema, MD^{a,b}, Seth M. Brown, MD, MBA^{a,b,*}

KEYWORDS

• Frontal sinus • Medical management • Rhinosinusitis • Sinusitis • Pharmacotherapy

KEY POINTS

- Frontal sinusitis is a diverse entity that requires identification of the unique disease process to implement appropriate treatment.
- Isolated acute bacterial frontal sinusitis occurs primarily in adolescents and young adults secondary to pneumatization of the frontal sinuses and requires aggressive medical therapy and sometimes surgery to avoid complications.
- Intranasal corticosteroids have proved an effective long-term treatment of both acute and chronic frontal sinusitis.
- Oral corticosteroids are a powerful adjuvant in the treatment of chronic frontal sinusitis, especially for chronic frontal sinusitis with nasal polyposis.
- The use of bioabsorbable steroid-eluting stents, although currently not Food and Drug Administration approved for the frontal sinus, holds considerable promise for the maintenance of frontal sinus ostial patency.

INTRODUCTION

Rhinosinusitis is a term that has long been used to describe a diverse disease entity that encompasses several related but distinct conditions involving the paranasal sinuses. These distinctions are based on several factors, including chronicity, presence of polyposis, pathogens involved, and, of particular pertinence to this discussion, the specific sinus involved. Frontal sinusitis represents one such disease process with its own unique treatment considerations. Like rhinosinusitis as a whole, the role of medical management in the treatment of frontal sinusitis cannot be overlooked. To better understand both the indications and limitations of medical management, however, it is of paramount importance to recognize the various presentations of frontal sinus disease and the unique treatment consideration of those specific manifestations.

^a Division of Otolaryngology, Department of Surgery, University of Connecticut School of Medicine, Farmington, CT, USA; ^b The Connecticut Sinus Institute, 21 South Road, Suite 112, Farmington, CT 06032, USA

* Corresponding author.

E-mail address: sethmbrown@msn.com

ACUTE FRONTAL SINUSITIS

Sinusitis, as defined by the American Academy of Otolaryngology–Head and Neck Surgery Task Force on Rhinosinusitis, is an inflammatory disease of the paranasal sinuses with several major and minor criteria required for diagnosis.¹ Acute rhinosinusitis, more specifically, is defined by up to 4 weeks of sinonasal symptomatology.² The chronicity of disease, or lack thereof, has ramifications in regard to the likely pathogens involved. Acute frontal sinusitis typically occurs in the context of a recent or concurrent upper respiratory infection. As such, the most likely pathogens are viral and treatment is largely supportive, aimed at improving sinonasal drainage.

Microbiology

Acute bacterial frontal sinusitis, on the other hand, typically occurs in the context of a more diffuse process with involvement of other paranasal sinuses and is suggested by failure to respond to conservative management in a timely fashion. Isolated acute bacterial frontal sinusitis is an uncommon entity when viewed in the larger context of sinonasal disease and most commonly occurs in the adolescent or young adult population. This is thought to be due to the rapid pneumatization of the frontal sinuses that occurs between 6 and 20 years of age and is elaborated on later.³ Studies evaluating the bacteriology of acute bacterial frontal sinus infections have typically shown *Haemophilus influenzae*, *Streptococcus pneumoniae*, and *Moraxella catarrhalis* as the causative organisms.⁴ In this regard, antimicrobial management of acute frontal sinusitis does not dramatically differ from that of acute maxillary sinusitis.⁵ The increasing incidence of penicillin resistant and β -lactamase-producing bacterial colonies has subsequent ramifications on antimicrobial therapy.

Antibiotic Therapy

For those patients who meet indications for antimicrobial therapy, treatment of acute bacterial frontal sinusitis must be targeted towards these commonly cultured microbes. Several evidence-based antibiotic treatment guidelines have been published and recommended amoxicillin with or without clavulanate for 5 to 10 days as a viable first-line option.^{6,7} The decision to opt for amoxicillin-clavulanate versus amoxicillin alone is based on several factors, such as patient age, preceding antibiotic use, severity of infection, and underlying health. To optimize therapy, local resistance patterns must also be taken into account and may influence the decision to expand coverage. Other options for antibiotic therapy include either second-generation or third-generation cephalosporins as well as fluoroquinolones. Additionally, for penicillin-allergic patients, options include doxycycline and fluoroquinolones. Ideally, antimicrobial therapy should be culture directed and consideration should always be given to obtaining endoscopically guided sinonasal cultures.

Adjuvant Therapy

In addition to antibiotics, medical management for acute bacterial frontal sinusitis should be aimed at improving sinus ventilation and drainage. Adjuvant pharmacotherapy includes decongestants, mucolytics, nasal saline, and corticosteroids. Decongestants, whether systemic or intranasal, result in mucosal vasoconstriction and thus improve drainage via the frontal sinus drainage tract and the ostiomeatal complex. Intranasal decongestants, however, avoid the systemic side effects of α -agonists while offering superior nasal mucosal decongestion.⁸ Care should be taken to avoid prolonged courses of topical decongestant given the risk of rhinitis medicamentosa. Nasal saline solutions have also been demonstrated to improve mucociliary

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