Extended Endoscopic and Open Sinus Surgery for Refractory Chronic Rhinosinusitis

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KEYWORDS

- Endoscopic sinus surgery • Extended maxillary antrostomy
- Endoscopic modified medial maxillectomy • Nasalization
- Extended sphenoid sinusotomy • Extended frontal sinusotomy
- Modified Lothrop procedure • Modification of Lothrop procedure

KEY POINTS

- Chronic recalcitrant maxillary sinusitis may require extended sinus surgery for adequate management, including the endoscopic maxillary mega-antrostomy and the endoscopic modified medial maxillectomy. The sublabial anterior maxillotomy is an external approach that can also be used in these patients.
- Revision total ethmoidectomy should be considered in refractory chronic rhinosinusitis with the goals of resection of all remaining ethmoid partitions, removal of all osteitic bone, and potential ethmoidal mucosal stripping (nasalization) to prevent recurrence.
- Chronic recalcitrant sphenoid sinusitis may require an extended sphenoid sinusotomy with creation of a single, large common cavity. This decreases the potential for scarring and obstruction and provides a large pathway for application of topical medications.

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- A variety of extended endoscopic endonasal and open frontal sinus procedures can be used in the management of refractory chronic frontal sinusitis. The goal of these endoscopic procedures is to create a patent nasofrontal outflow tract (frontal sinus drainage pathway) as an egress pathway and to provide access for application of adequate topical medications. The external approaches can be used to preserve frontal sinus function or to obliterate the frontal sinus. Cranialization of the frontal sinus represents the final remedy in treatment of recalcitrant frontal sinusitis.

Abbreviations

AMT	Appropriate medical therapy
BCD	Balloon catheter dilation
CSF	Cerebrospinal fluid
EMMA	Endoscopic maxillary mega-antrostomy
ESS	Endoscopic sinus surgery
IGS	Image-guidance surgery
MCLP	Modified central-Lothrop procedure
MHLP	Modified hemi-Lothrop procedure
MLP	Modified Lothrop procedure
MMLP	Modified mini-Lothrop procedure
MSLP	Modified subtotal-Lothrop procedure

Video content accompanies this article at http://www.oto.theclinics.com.

INTRODUCTION

Over the past 3 decades, the management of patients with chronic rhinosinusitis (CRS) has evolved from significantly invasive procedures to minimally invasive mucosal-preserving options. Currently, the overwhelming majority of patients with CRS can be treated effectively with appropriate medical therapy (AMT). For patients who failed AMT, the next option is surgical intervention. Initial surgical treatment usually involves endoscopic sinus surgery (ESS) with maximal mucosal preservation; this can be achieved using balloon dilation technology or functional ESS. In cases of failed initial surgical treatment, revision ESS using more aggressive techniques is often undertaken. Nonetheless, a subgroup of patients will go on to fail revision treatment with traditional ESS techniques. In these situations, more advanced surgical procedures may be necessary for extirpation of the disease process.[1] In this article, the authors describe advanced surgical techniques used for the maxillary, ethmoid, sphenoid, and frontal sinuses in patients with refractory CRS who have failed AMT and traditional ESS techniques.

EXTENDED MAXILLARY SINUS PROCEDURES

In his 1675 volume *Dissertationes anatomico-pathologicae*, the renowned anatomist Antonio Molinetti reports a case of maxillary sinusitis that was successfully treated via trephination through the anterior maxillary sinus wall.[2] More than 2 centuries later, 3 surgeons would independently publish descriptions of a technique that became the standard for the next one hundred years: George Caldwell (in 1893), Scanes Spicer (in