

Hemostatic Materials and Devices



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KEYWORDS

• Hemostatic • Sinus • Skull base • Materials • Vasoconstrictors • Topical • Agents

KEY LEARNING POINTS

At the end of this article, the reader will:

- Appreciate why bleeding is a problem in endoscopic sinus and skull base surgery.
- Understand the reasons for avoiding traditional nasal packing after endoscopic nasal surgery.
- Be familiar with the evolution of materials and devices in endoscopic sinus and skull base surgery.
- Be able to discuss the benefits and drawbacks of topical materials in use today.
- Be able to apply appropriate mechanisms to avoid bleeding in sinus and skull base surgery.

INTRODUCTION

Functional endoscopic sinus and skull base surgery has become an effective part of the management of chronic rhinosinusitis and tumors of the sinuses and anterior skull base. Technologic advances have been critical in advancing endoscopic surgical procedures, with the introduction of improved optics and lighting, advanced instrumentation, and image-guided surgical navigation. Hemostatic materials and devices have similarly evolved to assist in the management of the surgical field and the postoperative cavity.

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DISCUSSION

Why is bleeding a problem in endoscopic sinus and skull base surgery?

- Decreased visualization can increase the risk of injury
- Early termination of surgery secondary to poor visualization
- Readmission or reoperation for the treatment of epistaxis

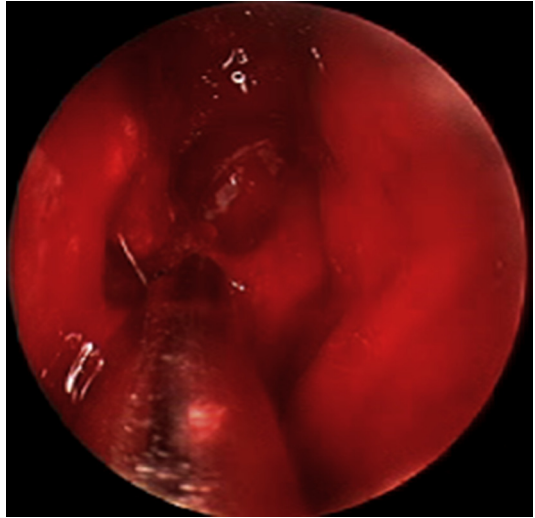


Fig. 1. Endoscopic bloody field.

Hemostasis, both during and after endoscopic procedures, is critical for successful outcomes.^{1,2} Intraoperative bleeding, especially in the setting of highly vascular sino-nasal tumors and polyposis, remains a common pitfall in performing endoscopic sinus and skull base surgery (Fig. 1). Although endoscopic bipolar forceps; suction cautery; and newer technologies, such as radiofrequency coblation, are indispensable for producing intraoperative hemostasis, various topical agents are also effective in controlling diffuse bleeding and, in some cases, also provide postoperative benefits.

Bleeding prevention

- Patient positioning
- Proper surgical technique
- Vasoconstriction

The primary modality to achieve hemostasis in surgery is the prevention of bleeding. The 3 steps to improve the ability to prevent bleeding are patient positioning, proper surgical technique with avoidance of stripped mucosa, and vasoconstriction. The patient's head should be placed in the neutral anatomic position and the operative bed placed in 15° to 20° reverse Trendelenburg with total intravenous anesthesia.³ Proper surgical technique cannot be overemphasized to avoid nuisance bleeding. The stripping of mucosa causes oozing, which decreases visualization and is not amenable to topical vasoconstrictors. If persistent bleeding occurs in the absence of mucosal stripping, vasoconstrictors have an important role in endoscopic sinus and skull base surgery.

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