



# Endoscopic inferior meatal antrostomy

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## KEYWORDS

Inferior antrostomy;  
Endoscopic  
antrostomy;  
Maxillary sinus;  
Inferior window

An inferior maxillary sinus antrostomy is useful for several reasons. In patients with open medial antrostomies who are having persistent infections a secondary ciliary dysfunction may be present. An inferior antrostomy provides an alternate pathway of drainage allowing the cilia to become functional. It also helps for polyp disease, thick secretions, large retention cysts, maxillary related choanal polyps or fungal disease removal. It gives better exposure to the floor and anterior maxillary sinus. The use of an medial based nasal flap which can be elevated prior to the antrostomy enhances healing if a larger permanent window is desired. The window can be made small, if temporary, or large, if permanent, as is necessary.

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Currently, disease of the paranasal sinuses is addressed with an emphasis on restoring mucociliary clearance via native drainage pathways; hence, the term functional endoscopic sinus surgery. Since the late 1980s, proponents of functional endoscopic sinus surgery eschewed the creation of an inferior maxillary antrostomy due to concerns about mucociliary recirculation, as well as needless destruction of functional mucosa.<sup>1</sup> Despite these concerns, normal in vivo mucociliary clearance has been demonstrated in patients following inferior meatal antrostomy.<sup>2</sup>

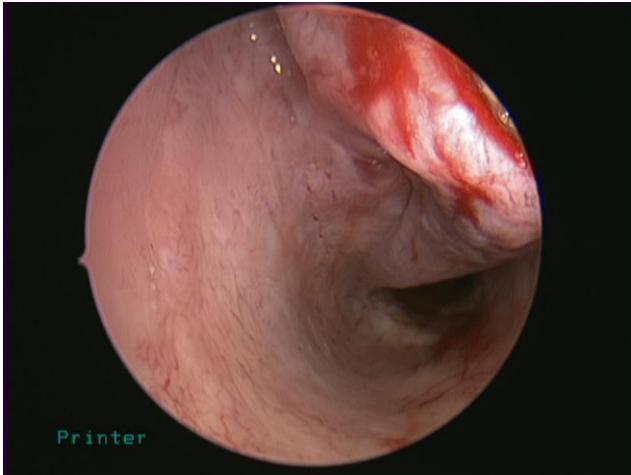
In the vast majority of cases for chronic rhinosinusitis, we perform a middle antrostomy, opening the natural ostium. However, in patients without functional mucociliary clearance, such as in Kartagener's syndrome, cystic fibrosis, or even secondary ciliary dysfunction due to chronic sinus disease, gravity-dependent drainage facilitated by an inferior meatal antrostomy may be of benefit.<sup>3</sup> Additionally, an inferior meatal antrostomy aids in the removal of maxillary sinus disease, including mycetomas, thick secretions, antrochoanal polyps, and allergic fungal disease. Last, an inferior meatal antrostomy greatly improves visualization of the floor and anterior wall of the maxillary sinus and can be useful for postoperative surveillance via flexible endoscope.

## Details of procedure

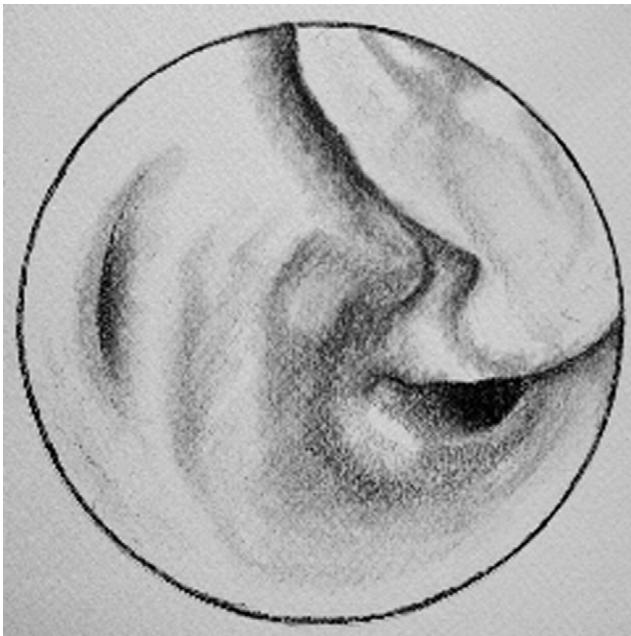
The nose is decongested preoperatively with 2 to 3 sprays of oxymetazoline per nostril. After intubation, a throat pack is placed. The inferior turbinates and septum are then injected with 1% lidocaine with 1:100,000 epinephrine, taking care to aspirate before injection. Four percent cocaine pledgets are then placed along the nasal floor while the operative field is prepared.

Under 0° rigid endoscopic visualization, a Freer elevator is passed into the inferior meatus and the inferior turbinate is up fractured, mobilizing the turbinate so it is perpendicular to the nasal floor (Fig. 1). This maneuver is key to adequate visualization, greatly simplifying the remainder of the procedure. At this point, Hasner's valve, located at the junction of the anterior and middle third of the lateral nasal wall, is identified (Figs. 2 and 3).<sup>4</sup> A 90° curved J-curette is used to puncture the lateral nasal wall approximately 1 cm posterior to Hasner's valve, midway between the nasal floor and the genu of the inferior turbinate (Figs. 4 and 5). After an adequate opening has been created, a universal downbiter is introduced and the antrostomy is extended inferiorly, down to the nasal floor (Figs. 6 and 7). The antrostomy may be enlarged in an anterior-posterior plane with a variety of cutting instruments or punch forceps. A curved suction is then introduced into the antrostomy and the maxillary sinus and its contents are easily visualized with a 30° rigid endoscope (Figs. 8 and 9). If the inferior meatal antrostomy has

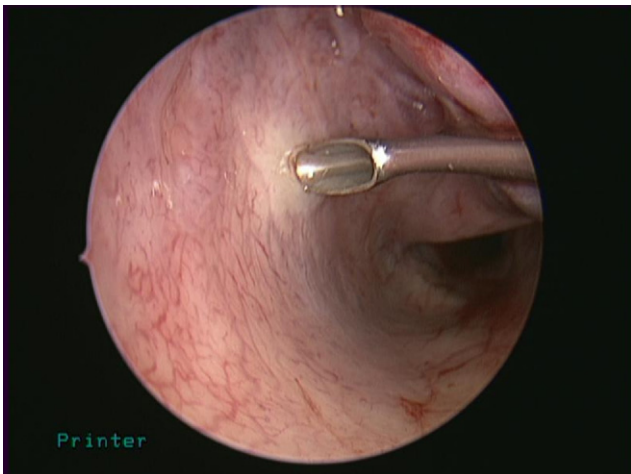
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**Figure 1** Inferior meatus (Hasner's valve outlined in black). (Color version of figure is available online.)

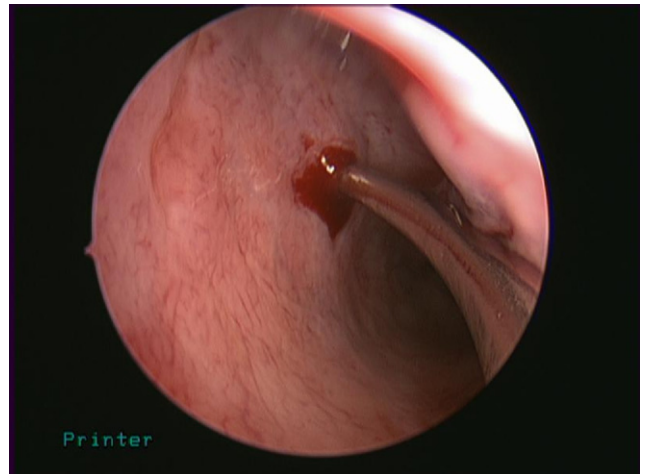


**Figure 2** Inferior meatus (Hasner's valve visible at 9 o'clock).

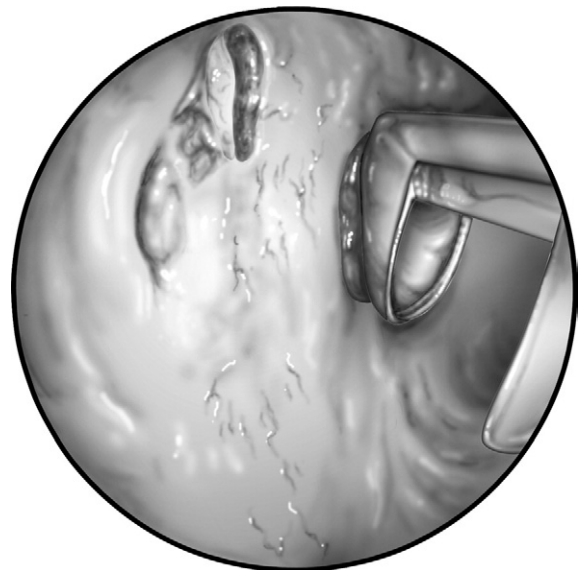


**Figure 3** Location of antrostomy. (Color version of figure is available online.)

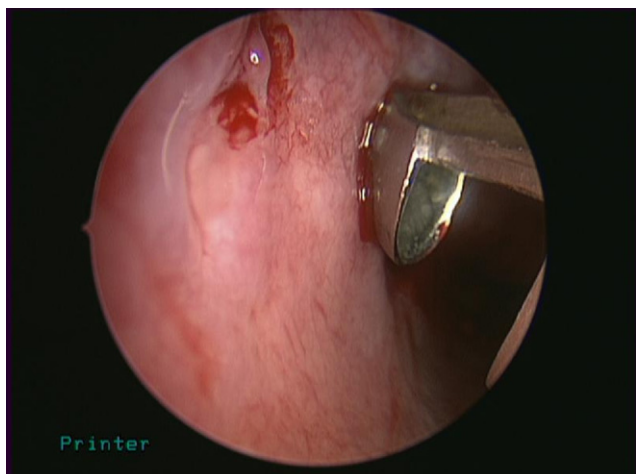
**Figure 4** Puncturing lateral nasal wall with J curette.



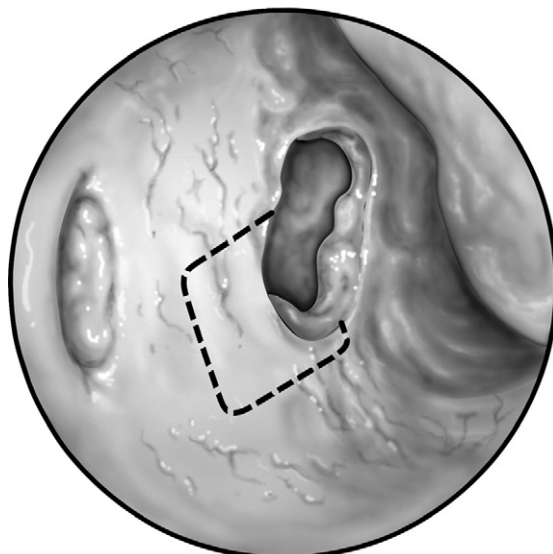
**Figure 5** Puncturing lateral nasal wall. (Color version of figure is available online.)



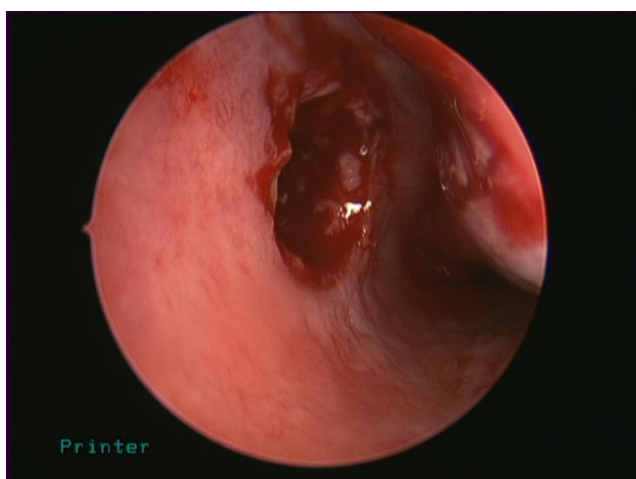
**Figure 6** Introducing universal downbiter.



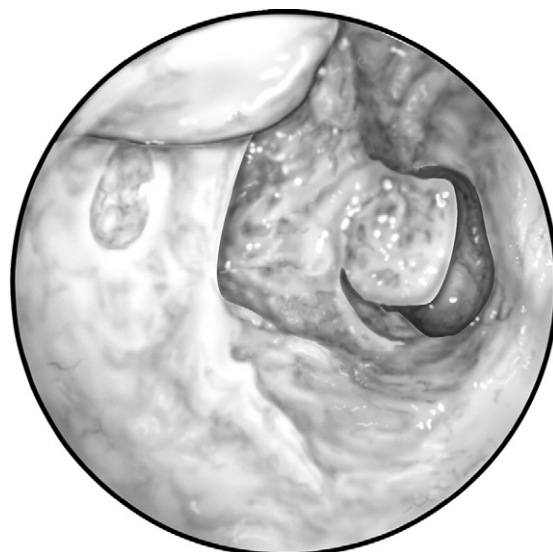
**Figure 7** Introducing universal downbiter. (Color version of figure is available online.)



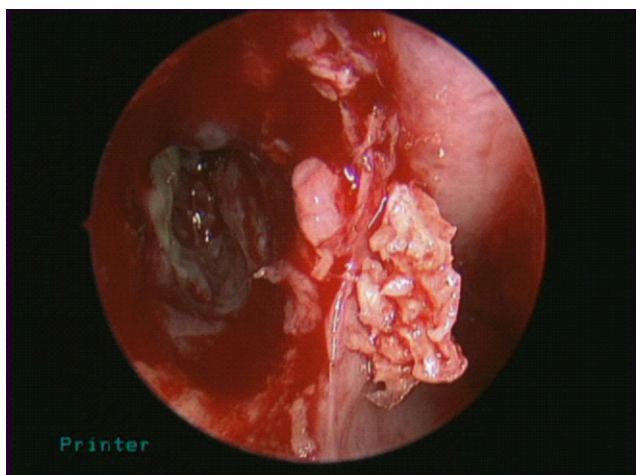
**Figure 10** Completed antrostomy. (Dotted lines indicate potential area of enlargement as indicated.)



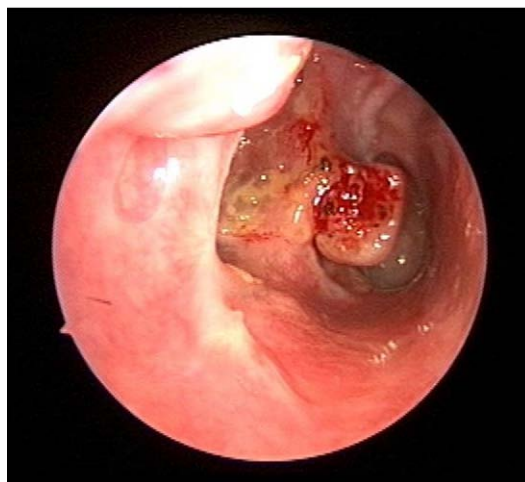
**Figure 8** Completed antrostomy. (Color version of figure is available online.)



**Figure 11** Previous middle antrostomy joined with inferior antrostomy.



**Figure 9** View of maxillary sinus. (Color version of figure is available online.)



**Figure 12** Cystic fibrosis patient with prior middle antrostomy joined with inferior antrostomy (8 weeks after surgery). (Color version of figure is available online.)

been performed only to facilitate removal of maxillary sinus contents (ie, mycetoma or inspissated secretions), then the antrostomy is enlarged as necessary to allow safe removal (Fig. 10). If a middle antrostomy is performed, a 30°, 45°, or 70° scope can be introduced into the middle antrostomy, while a 40° microdebrider is introduced into the inferior meatal antrostomy, providing excellent endoscopic exposure and allowing debridement or removal of the maxillary sinus contents or vigorous irrigation. For patients requiring gravity-dependent drainage, we typically remove the portion of inferior turbinate opposing the antrostomy to prevent subsequent closure. If a middle antrostomy has been performed during a previous surgery, joining the middle and inferior antrostomy prevents recirculation phenomenon (Figs. 11 and 12). Blood loss for the procedure is typically minimal and postoperative packing is typically unnecessary. At the completion of the case, absorbable oxidized cellulose soaked in triamcinolone is laid across the wound bed to encourage hemostasis. An inferior medial based flap extending to the floor of the nose can be fashioned endoscopically prior to making the antrostomy. This flap is folded into the antrostomy at the end of surgery enhancing healing and patency. Figure 10 outlines area of flap creation as well.

## Conclusions

While rare, indications for an inferior meatal antrostomy continue to exist, despite the widespread application of functional endoscopic sinus surgery. Indications include mucocilliary dysfunction, maxillary sinus disease not easily addressed with a middle antrostomy, and improved visualization of the anterior maxillary wall and floor. The procedure is safe and relatively simple to perform. An inferior medial based flap extending to the floor of the nose can be fashioned endoscopically prior to making the antrostomy. This flap is folded into the antrostomy at the end of surgery enhancing healing and patency. Figure 10 outlines area of flap creation as well.

## References

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