Treating sinonasal crusting and infection after palatal and sinonasal cancer resection with topical antibiotic irrigations

Madeline Goosmann
Steven S. Chang
John R. Craig

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Letter to the editor

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After palatal or sinonasal cancer resections with or without midface and nasal reconstruction, there can be a significant amount of exposed bone in the sinonasal cavities. Until the exposed bone is remucosalized through wound healing, sinonasal crusting ensues and can inhibit wound healing [1,2]. Concurrently, the intact or regenerated sinonasal mucosa will secrete mucus, and the obstructive crusting will promote mucostasis and infection. Additionally, free tissue transferred to this region to reconstruct the maxillary defect lacks respiratory epithelium, which could further promote sinonasal crusting, mucostasis, and infection. This local infectious rhinosinusitis can significantly decrease quality of life, in patients who have already been through significant physical and emotional stress from their head and neck cancer management [2-4].

Sinonasal crusting, with or without infection, is a very common postoperative complication after sinonasal and skull base surgery, occurring in up to 98% of patients [2]. Despite how common crusting and infection can be after these surgeries, very little has been published with regard to treating this frustrating postoperative condition. However, there have been some encouraging outcomes in the rhinologic literature on managing local sinonasal infection and crusting with topical intranasal antibiotics in the setting of refractory chronic rhinosinusitis (CRS) [5,6]. These practices could be applied to head and neck cancer patients after palatal and sinonasal cancer resection and reconstruction for sinonasal crusting and infections.

Topical intranasal antibiotics have received less attention in the literature for CRS management compared to topical saline and steroids [5,6]. While publications have shown mixed results with different classes and formulations of topical antibiotics for sinusitis management, reviews have suggested them as an option for refractory CRS cases, especially after sinus surgery and with culture-directed therapy [5,6]. Amongst reported topical intranasal antibiotics for rhinosinusitis, mupirocin has shown most promise in managing CRS with associated Staphylococcus aureus (S. aureus) infection [7].

S. aureus is one of the most common organisms associated with postoperative sinonasal infection, and can produce biofilms that are 100–1000 times more resistant to antibiotics than their planktonic forms [7]. Given the potential for biofilm production in refractory sinusitis, it has been suggested that topical antibiotics be formulated with anti-biofilm intent [8]. Notably, Ha et al. performed in vitro testing of mupirocin on S. aureus and showed that a concentration of 125 μg/mL was able to reduce biofilm mass by over 90% [7].

As important as the antibiotic itself, is the mechanism of drug delivery. Low-volume sprays and nebulizers are inadequate for delivering antibiotics topically into all sinus cavities, and they also do not provide the force necessary to mechanically debride dense sinonasal crusting [5]. Multiple studies have shown no clinical improvements in CRS when applying topical antibiotics with low volume delivery devices. Instead, topical antibiotics should be dissolved in saline and delivered through a high-volume irrigation device that can deliver at least 100 mL per side [5,9].

Regarding clinical studies demonstrating benefit from topical mupirocin irrigations, Jarvis-Brady et al. showed in a small randomized trial that 1 month of culture-directed mupirocin irrigations outperformed saline irrigations in short-term treatment of 25 patients with surgically recalcitrant S. aureus positive CRS [8]. Uren et al. also showed in a small prospective cohort study that mupirocin irrigations improved endoscopic and symptom scores in 16 S. aureus positive CRS patients. In this study, 15 of 16 patients’ cultures were negative after treatment, though no long-term follow-up was reported [10].

Reported risks with topical antibiotic irrigations have been minimal. Topical antibiotics such as mupirocin undergo rapid degradation with minimal penetration into serum, so should pose minimal risk to patients. Most commonly reported side effects include local irritation with headaches or burning sensation, though these issues are rare [9]. Antimicrobial resistance is a potential concern as well. Resistance rates of 11–65% have been reported in areas of widespread topical mupirocin use. Therefore, short-term use is typically recommended [9].

Based on the aforementioned features, in the setting of sinonasal crusting and local infection after palatal or sinonasal cancer resection and reconstruction, the authors empirically initiate topical antibiotic high volume irrigations with mupirocin 30 mg dissolved in 240 mL saline (125 μg/mL). This antibiotic solution is delivered through a 240 mL delivery device, with half of the solution being delivered through each nasal cavity, twice daily. Antibiotic solution formulation can be achieved through local or mail order pharmacies, as formulation capabilities differ between pharmacies. If there is purulence associated with the crusting, then the purulence is cultured, and culture-directed topical antibiotic irrigations are implemented. To reduce the risk of developing resistance, the authors prescribe the antibiotic irrigations for 1–2 months at a time, then reassess with nasal endoscopy to follow progress. In-office sinonasal debridement to remove excess crusting may also be necessary to optimize topical drug delivery to the underlying mucosa.

In summary, patients frequently develop sinonasal crusting with or without infection after palatal or sinonasal cancer resection and reconstruction. While more research is necessary to demonstrate the efficacy of high volume topical antibiotic irrigations, they are a viable option for managing local sinonasal crusting and infection after these complex cancer resections.

Declaration of Competing Interest

The authors declare that they have no known competing financial
interests or personal relationships that could have appeared to influence the work reported in this paper.

References


Madeline Goosmann*, Steven Chang, John Craig
Henry Ford Health System, Department of Otolaryngology-Head and Neck Surgery, United States

* Corresponding author.
E-mail address: (M. Goosmann)