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## Comparison of Topical Medication Delivery Systems after Sinus Surgery

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Timothy R. Miller, MD; Harlan R. Muntz, MD; M. Erik Gilbert, MD; Richard R. Orlandi, MD

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**Objectives:**

To compare the distribution patterns of topical medication delivery systems in the sinonasal region and upper respiratory tract after functional endoscopic sinus surgery.

**Study Design:**

Prospective descriptive evaluation.

**Methods:**

Four topical delivery systems (spray bottle, atomizer, nebulizer, and bulb syringe) were studied. Using a dye solution as a marker, we independently applied the four topical delivery systems to a population of patients with chronic rhinosinusitis who had undergone functional endoscopic sinus surgery. The anatomic distributions were videotaped using flexible fiberoptic endoscopy. Three blinded observers independently rated the anatomic distribution of dye using a 4 point scale. Statistical analysis was performed using analysis of variance (ANOVA) and Dunn posttesting.

**Results:**

Seven participants completed the study. All participants had undergone bilateral maxillary an-trostomies, bilateral total ethmoidectomies, and bilateral sphenoidotomies. Five sinonasal sites and the larynx were evaluated for dye deposition. Interobserver agreement reached 95.6%. There was no statistical difference between the atomizer and spray bottle. The bulb syringe was statistically superior to the nebulizer in all sinonasal sites and statistically superior to the atomizer and spray bottle in the ethmoidal region. Dye was rarely seen within the larynx.

**Conclusions:**

The delivery systems tested were shown to have significant differences in their capability to place dye in specific sinonasal areas. Because topical medications are commonly administered to postoperative patients, these differences may have important clinical implications.

Key Words: Irrigation; sinus surgery; chronic rhinosinusitis; topical medications; nebulization

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From the Division of Otolaryngology-Head and Neck Surgery, University of Utah, Salt Lake City, Utah, U.S.A.

Send Correspondence to Dr. Timothy R. Miller, Division of Otolaryngology-Head and Neck Surgery, University of Utah, 50 North Medical Drive, 3C120, Salt Lake City, UT 84132, U.S.A. E-mail: timothy.miller@hsc.utah.edu

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