

A Comparative Study of the Distribution of Normal Saline Delivered by Large Particle Nebulizer vs. Large Volume/Low Pressure Squeeze Bottle

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Introduction: Rhinologists often recommend topical administration of therapeutic agents after endoscopic sinus surgery. In theory, a large particle nasal nebulizer (LPNN) device offers more effective drug delivery into open sinuses.

Methods: A blinded panel of four rhinologists assessed the distribution of dilute fluorescein in isotonic saline solution by LPNN device (Nasoneb 9070, MedInvent LLC) and by a large-volume /low-pressure (LVLP) squeeze bottle (SinusRinse, NeilMed Pharmaceuticals) using a 4-point scale at 5 anatomic sites in 10 post-operative sinus surgery patients (18 sides).

Results: Fluorescein staining was higher than baseline for both LPNN and LVLP devices. No difference between LPNN and LVLP was noted, but a trend favoring LVLP at the frontal recess/sinus was observed. For LVLP, a fixed concentration produced statistically significant greater fluorescein staining at all sites. For a fixed amount of dye, LPNN scored better than the LVLP at the ethmoid sinuses and olfactory cleft.

Conclusions: Both LPNN and LVLP delivered dye to all sites. The LPNN may offer advantages in the delivery of high concentrations of drug in relatively small volumes. LVLP may provide greater drug delivery at the frontal recess/sinus. The practical significance of these observations is unclear, but further investigation seems warranted.