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### What are the Real Factors Associated with Postoperative Sore Throat?

*To the Editor:*—I read with interest the recent article by Loeser *et al.*<sup>1</sup> concerning the incidence of postoperative sore throat in association with the use of endotracheal tubes with various cuff designs. This seemed like a straightforward, concise study until I read a companion study done by Loeser *et al.*<sup>2</sup> which appeared in the *Canadian Anesthetist's Society Journal* the same month. The second study dealt with lubricants and the incidence of postoperative sore throat. In comparing these two studies, the issue became clouded. In the study in *ANESTHESIOLOGY*, the authors used 5 per cent lidocaine ointment to lubricate all endotracheal tubes (this ointment contains polyethylene and propylene glycols), and reported incidences of sore throat with currently employed endotracheal tubes to be 24–58 per cent, depending on cuff design. The National Catheter<sup>®</sup> narrow cuff tube was reported by the authors to be experimental and was not included in this range. Based on these results, the authors conclude that the new National Catheter narrow cuff tube or the Portex<sup>®</sup> Taper cuff tube may be preferable. However, in the companion article in the Canadian journal, the authors conclude from their study that polyethylene and propylene glycols are irritating to tracheal mucosa and may be responsible for a high incidence of postoperative sore throats. If this were true, were the sore throats in the study in *ANESTHESIOLOGY* due to cuff design or these glycols? Second, 4 per cent lidocaine jelly was the lubricant

employed in the report in the Canadian journal, and its chemical composition differs markedly from that of lidocaine ointment. I am not familiar with a 4 per cent lidocaine jelly that contains polyethylene or propylene glycols. Last, if cuff design is a major factor in postoperative sore throats, is there a statistically significant difference between a 47 per cent incidence with National Catheter medium cuffs and a 40 per cent incidence with uncuffed tubes?<sup>2</sup> I feel the question of absolute factors involved in the incidence of postoperative sore throat still needs study and clarification before we discard our existing endotracheal tubes and lubricants.

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#### REFERENCES

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2. Loeser EA, Stanley TH, Jordan W, et al: Post-operative sore throat: influence of tracheal tubes lubrication versus cuff design. *Can Anaesth Soc J* 27:156–158, 1980

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*In reply:*—As mentioned in the discussion, our findings from our several studies do suggest that lidocaine lubricants with preservatives such as polyethylene glycol and propylene glycol are irritating or damaging to the mucosa of the trachea or upper airway. The preservatives in the jelly seem to give a similar result.

The lidocaine jelly contains methyl and propyl parabens as preservatives, and the 4 per cent solution contains methyl paraben. Why the marked difference between the solution and the jelly despite some similar-

ities in the preservatives? The amounts of the two substances remaining on the tube are certainly different. Also, the solution is the only preparation whose pH is adjusted to 7.0. The lubricant preparations are acidic, whereas normal tracheal secretions are slightly alkaline.

We were not able to determine the *uncuffed* endotracheal tube–mucosal interface, but were curious to see what the patient response would be. However, current studies do indicate (Loeser, unpublished data)