

# THE PAXPRESS AIRWAY CAUSES MORE PHARYNGEAL IRRITATION THAN THE REUSABLE LARYNGEAL MASK AIRWAY

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*This study aimed to determine whether the PAXpress airway (Vital Signs, Totowa, NJ) should replace the standard laryngeal mask airway (LMA Classic) in our practice. Records of patients who had been ventilated with a PAXpress airway or an LMA were examined. Responses of patients in the postanesthesia care unit (PACU) or from routine postoperative calls the following day were noted.*

*Insertion of the airway was easy in all of the LMA patients but in only 20% of the PAXpress patients. Blood was noticed on 27% (4/15) of the PAXpress airways but on none of the LMAs. None of the LMA patients complained of pharyngeal soreness in the PACU, whereas 33% (5/15) in the PAXpress*

*group had a sore throat. The next day, only 2 patients in the LMA group (13%) complained of a slightly sore throat. In the PAXpress group, all but 2 of the 13 patients interviewed (85%) reported a sore throat. The average degree of soreness for this group (4.5) was significantly higher than that reported in the LMA group ( $P < .001$ ).*

*The PAXpress airway is more likely to cause irritation (often severe) of the airway and, therefore, should not replace the standard LMA in our practice.*

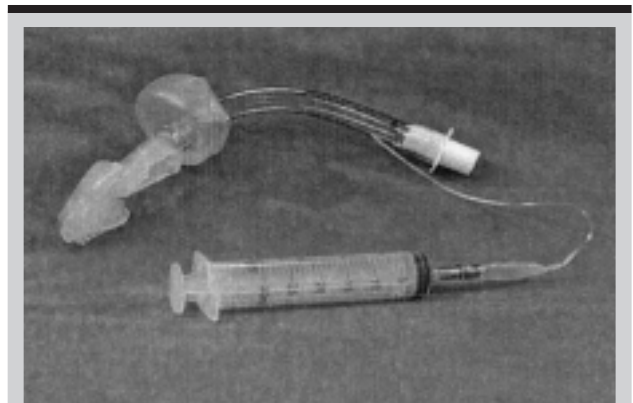
**Key words:** Laryngeal mask airway, PAXpress, reusable, reuse.

Supraglottic airways have become increasingly popular in recent times because they are convenient for anesthesia providers and are well tolerated by patients. The laryngeal mask airway (LMA) has been on the market the longest, but other similar devices, such as the PAXpress (Figure) and the Cobra Perilaryngeal Airway (Engineered Medical Systems, Indianapolis, Ind), have become available recently.

The PAXpress airway (Vital Signs, Totowa, NJ) is composed of a hollow tube connected to a malleable structure on the patient's end. This structure, which has a rubbery consistency, sits on top of the esophageal opening in the hypopharynx. The distal structure has horizontal strips of flexible material, described by the manufacturer as a "gilled" appearance. Above the distal portion is a rigid structure that contains a wide orifice through which ventilation occurs. This orifice is simply the end of the hollow tube that is connected on the other side to the anesthesia circuit. Above the rigid structure containing the orifice for air outlet is a high-volume, low-pressure, inflatable cuff. Between 30 and 60 mL of air is needed to inflate the cuff in an adult.

Insertion of the PAXpress airway is blind, similar to most supralaryngeal airways. The gilled tip of the PAXpress is usually lubricated before placement of the airway. After induction of anesthesia, the PAXpress is

**Figure.** The standard PAXpress airway (Vital Signs, Totowa, NJ) comes in only one size.



It is composed of a tube with an inflatable balloon attached for a better seal. There is a fixed element at the distal end, which sits on the pharyngeal opening to the esophagus.

advanced down the patient's airway, with the gilled tip sliding along the hard palate and into the pharynx. The device is inserted in the midline, and no rotation is necessary because it is seated in the hypopharynx above the esophageal opening. Once resistance to further insertion is noted, the device is withdrawn a small amount (0.5-1.0 cm), and 30 mL of air is injected into the cuff. The anesthetic circuit is connected to the patient end of the airway, and gentle

positive-pressure ventilation is provided to determine if there is an adequate seal. Peak inspiratory pressure should not exceed 20 cm H<sub>2</sub>O. To improve the seal in the patient's airway, increments of 10 mL of air, up to an additional 30 mL of air, can be added to the cuff.

The PAXpress airway comes in 1 size that is meant to fit any adult airway. The cuff on the airway is inflated to a lesser or greater extent to compensate for differences in size of adult airways.

As part of an evaluation process to determine whether we should predominantly use the PAXpress instead of the LMA Classic (LMA North America, San Diego, Calif), we reviewed our experience for a 2-month period with this airway.

## Methods

Approval from our hospital's institutional review board was obtained before we reviewed the charts of patients who had a PAXpress airway or an LMA Classic placed for their surgery. These procedures took place between June 2001 and August 2001 at our Mentor, Ohio, ambulatory center. The 2 anesthesiologists (E.J.Z. and A.M.D.) who placed all the supralaryngeal airways in this study had years of experience placing LMAs and were very proficient in their placement.

For each case, the patient's age, height, and weight were noted. The records were examined for information about the difficulty of airway placement and any mention of blood being on the airway device. The presence of pharyngeal pain in the postanesthesia care unit (PACU) was determined from routine questions asked in that area. In addition, the severity of the pharyngeal irritation the next day (0-10 on a visual analogue score scale, with 10 the worst) was noted from information obtained in routine postoperative calls.

For each patient who had a PAXpress placed for the procedure, a patient who had been ventilated with an LMA Classic airway was included for comparison.

Statistical significance was determined using the *t* test.

## Results

A total of 15 PAXpress airways had been used during the 2-month interval. These airways and the 15 LMAs included for comparison were inserted with a simple forward motion without any twisting of the device for smooth placement. No oral or nasal airways were used during any of the procedures.

Before the supraglottic airways were inserted, they were coated with lubricating gel that did not contain local anesthetic. After the insertion, the cuffs were inflated with the minimum amount of air that would

provide an adequate seal when 15 to 20 cm H<sub>2</sub>O of positive pressure was applied.

The 2 groups did not differ in demographic variables. However, there were more women in the PAXpress group (12 [80%]) than in the LMA group (9 [60%]). The PAXpress size was the standard size, and the other patients received size 4 LMAs.

Insertion was listed as easy for all LMAs but in only 3 (20%) of the PAXpress airways. Despite the difficulty, all PAXpress airways except 1 were inserted on the first attempt. The PAXpress airway was placed 3 times in this outlying case, and when adequate ventilation still could not be achieved, an LMA was placed instead. Interestingly, this patient had no complaints of pharyngeal pain in the PACU and rated the pharyngeal pain the next day as only 1 out of 10.

No mention of blood on the airway device was found on the record of patients in the LMA group, whereas in 27% (4/15) of patients in the PAXpress group, mention was made of blood on the device on its insertion or removal. None of the patients in the LMA group complained of pharyngeal soreness in the PACU, whereas 33% (5/15) in the PAXpress group had a sore throat. The next day, only 2 patients in the LMA group (13%) complained of a sore throat, and they graded the soreness as 1.5 and 3, respectively. In the PAXpress group, 2 patients could not be reached the next day. Of the patients who were contacted, all but 2 (85%) reported having a sore throat. These patients complained bitterly about this soreness. Several claimed that the discomfort was interfering with their ability to swallow food normally. More than half the people in this group graded their soreness as 5 or higher, and the average degree of soreness for this group (4.5) was significantly higher than that reported in the LMA group (*P* < .001). No long-term sequelae were reported by any of the patients, even patients who had complained of very sore throats.

## Discussion

As a result of our findings, we decided against favoring the PAXpress airway in our practice. Although the number of patients we assessed was small, their complaints of pharyngeal soreness were sufficiently impressive to be a cause of concern.

The more frequent reports of blood on the PAXpress airways that we discovered agreed with the findings of Dimitriou et al.<sup>1</sup> They also found no incidence of blood on the LMAs, whereas there was blood present on 22% of the PAXpress airways.

The large percentage of patients with sore throats in the present study is similar to that reported by Huda et al.<sup>2</sup> However, they found that complaints of sore throat

early in the postoperative period were twice as frequent as late complaints. We found that the opposite was true. Whether the pharyngeal discomfort took longer to develop in our patients or whether the patients were too drowsy in the recovery room to notice the discomfort is difficult to determine.

Our negligible incidence of pharyngeal complaints with patients who had LMAs is lower than the reported rate of 7% to 13%<sup>3-5</sup> who have (mostly mild) sore throats postoperatively. The few patients included in this study undoubtedly explains the differences.

There were more female patients in our study who were ventilated with the PAXpress airway than with the LMA. Although women are more prone to pharyngeal discomfort after being ventilated with a supra-glottic airway,<sup>6</sup> this is at most an 8% difference. In our study, the majority of patients in the PAXpress group had pharyngeal complaints. The large difference between the 2 groups could not be explained by the slightly increased sensitivity of the female pharynx.

We found that PAXpress airways caused severe throat soreness in a high percentage of patients. Although airway placement and ventilation were performed with ease in nearly all patients, the degree of dissatisfaction of the patients in the postoperative period with the irritation in their throat has led us to discontinue the use of the PAXpress airway.

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