The effects of prematurity on incidence of aspiration following supraglottoplasty for laryngomalacia

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ABSTRACT

Objectives: To determine if patients who were born premature have a higher incidence of aspiration following supraglottoplasty compared to patients born full term.

Study Design: Retrospective study.

Methods: Two thousand three hundred sixty (n=2360) patient charts from Riley Hospital for Children were reviewed retrospectively. Patients had already been treated for laryngomalacia with supraglottoplasty by Dr. Bruce Matt. Estimated weeks gestational age at birth was recorded for each patient. Prematurity was defined as below 37.5 gestational age [WGA], very low (28-31 WGA), or extremely (<28WGA). Patients were excluded from the study if they had suspected aspiration with chronic cough, pneumonia, chronic lung disease or documented aspiration prior to supraglottoplasty.

Results: As previously shown, seventy-five patients (n=75, 3.2%) had aspiration following supraglottoplasty. 20 If these patients were preterm infants at birth. The rate for aspiration following supraglottoplasty for former premature infants was statistically significant (5.9%, OR=2.3, p=0.0032).

Conclusions: Children who were born premature have a higher rate of postoperative aspiration following supraglottoplasty; however, supraglottoplasty should still be considered as treatment for laryngomalacia as the rate is still relatively low (5.9%).

MATERIALS AND METHODS

We retrospectively reviewed the charts of patients previously treated by the senior author for laryngomalacia with supraglottoplasty from July 1, 1989, to December 31, 2008. All patients had been referred to the Division of Pediatric Otolaryngology, Department of Otolaryngology—Head and Neck Surgery, Indiana University School of Medicine, Indianapolis, for evaluation of stridor associated with various disorders, including OSA, failure to thrive, and episodes of apnea or cyanosis. All patients were diagnosed as having severe laryngomalacia on the basis of flexible and/or rigid endoscopic findings, as well as the presence of associated disorders, as verified by the appropriate diagnostic evaluations (e.g., polysomnogram and others).

When floppiness of the epiglottis or aryepiglottic folds was encountered, the aryepiglottic fold(s) were allowed to pass for the airway into the airway upon inspiration. As is standard practice for the senior author, all patients who underwent supraglottoplasty for laryngomalacia also received direct microlaryngoscopy and bronchoscopy at the time of supraglottoplasty to evaluate the airway for synchronous lesions.

Prematurity at birth may be an additional risk factor due to the decreased sensorimotor integrative function of the larynx and the decreased laryngeal adductor reflex (LAR) [19]. Limitations on this study include its retrospective nature. If patients developed aspiration postoperatively but received care at an outside institution, that information would not be collected by us. However, we believe that this likelihood is rare since the majority of premature infants are transferred to Riley Hospital at birth since it is the only free-standing comprehensive children’s hospital in the State of Indiana.

Furthermore, children who did develop postoperative aspiration may have had preoperative aspiration. As we did not routinely test for aspiration preoperatively, we do not know how many patients actually had aspiration prior to the operation. In the study by Richter, postoperative VFS was only performed on patients with clinical signs of aspiration or dysphagia after evaluation with a clinical bedside swallowing evaluation by a pediatric speech pathologist at the first postoperative oral feeding. However, they even conclude that there may be children with silent aspiration preoperatively without any clinical consequences that may have reached clinical detection postoperatively.

In order to document accurately the incidence of aspiration following supraglottoplasty, a prospective study with a pre- and post-operative video feeding study would need to be done.

CONCLUSIONS

Supraglottoplasty is a safe and effective means for treatment of laryngomalacia and has a low rate of aspiration. This rate is significantly higher in children who were born premature; however, the rate overall is still low (5.9%, RR=2.2) and should not be prohibitive for proceeding with supraglottoplasty.

REFERENCES