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How I Do It

Transoral Rigid 70-Degree Laryngoscopy in a Pediatric Voice Clinic

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Objective: Complaints of dysphonia and dysphagia frequently require rigid or flexible laryngoscopy in the office to aid in diagnosis. For young children, flexible laryngoscopy can be uncomfortable and often requires multiple adults to restrain the child. Rigid laryngoscopy does not result in crying but does require patient cooperation; thus, it is used primarily in adults. This project describes our experience using rigid laryngoscopy in a pediatric cohort.

Methods: This was a retrospective chart review of patients at a pediatric voice clinic who underwent laryngoscopy from December 2011 through March 2017. Data analysis is via Student t test and descriptive analysis.

Results: Three hundred and eleven patients were identified with 423 unique laryngoscopy exams. Of those, 212 of the exams were flexible and 210 were rigid. One patient did not tolerate either rigid or flexible exam. There was a statistically significant difference in age between children diagnosed via rigid mean 10.92 years (range 2.39–19.14 years) versus flexible mean 6.51 years (range 0.41–19.29 years), P ≤ 0.01. Of the 44 children under 3 years of age, flexible laryngoscopy was used almost exclusively, with 43 of 44 (97.7%) flexible scope exams. Rigid laryngoscopy was performed on 24 of 115 (20.9%) children aged 3 to 5 years, 26 of 40 (65%) aged 6 years, and 159 of 223 (71.3%) aged 7 and older.

Conclusion: Transoral 70° rigid laryngoscopy can be used in select children as young as 3 years of age. This modality allows for improved visualization of lesions with greater comfort for patients.

Key Words: Laryngoscopy, pediatric, Hopkins rod.

INTRODUCTION

Office examination of the larynx can be performed with a laryngeal mirror, transoral rigid Hopkins rod, or flexible nasolaryngoscopy. The scopes available for flexible nasolaryngoscopy (FNL) can be either a fiberscope or distal chip technology. Distal chip scopes allow for improved image resolution and brightness; however, they are larger in caliber, which can be a problem in small pediatric noses.1,2 Transoral rigid laryngoscopy using a 70° versus 90° Hopkins rod allows for higher quality, magnified views of lesions and vibratory patterns compared to flexible laryngoscopy.3,4

In both adults and infants, FNL can be uncomfortable and cause statistically significant changes in heart rate, blood pressure, and oxygen saturation.5,6 In addition, 25% of adults undergoing FNL have reported gagging, and 10% have dyspnea with the procedure.7 For young children, FNL often requires two or more adults to restrain the child. Rigid laryngoscopy causes less discomfort and crying but does require patient cooperation; thus, it is used primarily in adults. Previous groups have shown that transoral rigid laryngoscopy can be performed in children with a mean age of approximately 10 to 12 years.1,8–11 This project describes our experience using rigid laryngoscopy in a young pediatric cohort.

MATERIALS AND METHODS

With institutional review board approval, a retrospective chart review was performed of all patients at a pediatric voice clinic who underwent laryngoscopy from December 2011 through March 2017. Information including method of laryngoscopy and age were collected. Data analysis is via Student t test and descriptive analysis.

All children undergoing laryngoscopy in the pediatric voice clinic were assessed by the speech pathologist (SLP) prior to the procedure. The children were given a small booklet with pictures of both the transoral and transnasal approach, and the SLP coached and prepared them on what to expect. The children were also allowed to see and touch the scope.

If a child was able to sit still in the exam chair, either alone or in a parent’s lap, and follow directions, the transoral approach was attempted first by the senior author [J.O.]. The patient was asked to lean forward from the waist with the neck extended and chin elevated “like a turtle coming out of its shell.” The child’s tongue was grasped by the examiner and the scope advanced into the oropharynx (Fig. 1) (Supporting Video...
Rigid laryngoscopy. At age 7 years and above, rigid laryngoscopy could be performed on 24 of 115 (20.9%) children between the ages 3 through 5 years and on 26 of 40 (65%) 6 year olds. At age 7 years and above, rigid laryngoscopy could be performed in 159 of 223 (71.3%) of the children (Fig. 2).

DISCUSSION

Whereas there is no data on the physiologic impact of FNL on the pediatric population in an outpatient setting, all otolaryngologists are acutely aware of the crying that ensues when performing FNL on small children. The movement and secretions from crying and screaming can result in an inadequate view of the true vocal folds.

Transoral examination allows for excellent visualization of vocal fold lesions; however, it does place the larynx in an unnatural phonatory posture. In addition, it can be difficult to assess subtle vocal fold movement adequately with transoral rigid laryngoscopy. Moreover, it can be difficult to make the assessment of subtle movement impairment with FNL in a screaming child. Although we did not prospectively assess the children’s preference for rigid versus flexible laryngoscopy, there was no crying in our experience with the transoral approach. Additionally, previous groups have found that both children and adults prefer transoral rigid laryngoscopy to transnasal flexible.13,14

CONCLUSION

A weakness of the Study is its retrospective design. We did not collect data on the perceptual discomfort of rigid laryngoscopy; however, no children (or parents) cried using this approach. There may be some selection bias because rigid laryngoscopy was not attempted on all children. If a child was unable to sit still in the exam chair, whether alone or in a parent’s lap, or if a child was unable to follow directions, then flexible laryngoscopy was performed without first attempting rigid laryngoscopy. Thus, the number of children who could tolerate rigid laryngoscopy may be underestimated. We also did not collect data on how frequently rigid laryngoscopy needed to be converted to flexible. Finally, in preschool-aged children, success of rigid laryngoscopy hinges on the ability of the speech language pathologist and laryngologist to engage and reassure the child. The care of the pediatric voice patient is truly a collaborative team approach.

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