

GLOTTIC AND SUBGLOTTIC INJURY AND DEVELOPMENT OF PEDIATRIC AIRWAY STENOSIS

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Background: The objective of this study is to determine how often children with airway injury at the time of tracheostomy go on to develop airway stenosis.

Materials/Methods: A seven-year retrospective database review (January 2014-December 2020) of 222 pediatric patients who underwent endotracheal intubation followed by tracheostomy with concurrent and follow-up direct laryngoscopy was conducted. Data included demographics, neonatal and congenital cardiovascular diagnoses, Down syndrome, prematurity, number and length of intubations, endotracheal tube size, and diagnosis of gastroesophageal reflux. Outcomes included glottic or subglottic injury and progression to stenosis. Univariate and multivariate analyses were performed via SPSS.

Results: Of the 222 patients (median age at surgery 0.55 years, 54% male) who met study criteria, 46% had airway injury at time of tracheostomy. Patients with congenital cardiovascular disease had 2.33 times increased risk of developing airway injury ($p=.0127$). Patients with airway injury on initial DL developed stenosis significantly more frequently than those without injury (30% vs 12% respectively, $p < .01$). Risks factors for developing stenosis in children with airway injury include prematurity ($p=.02$), younger age at time of surgery ($p < .01$), endotracheal tube size ($p < .01$), Down syndrome ($p=.03$) and neonatal ($p=.02$), and/or congenital cardiovascular diagnoses ($p < .01$). However, none of these variables were significant on multivariate analysis.

Conclusions: Intubated patients with evidence of glottic or subglottic injury seen at time of tracheotomy are more likely to develop airway stenosis than those without. Congenital heart disease was associated with twice the risk of developing airway injury, while progression to stenosis was associated with younger age, prematurity, and/or comorbid diagnoses.

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