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Review Article

Special considerations for medical management post supraglottoplasty in various clinical contexts

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ABSTRACT

Laryngomalacia is the most common cause of stridor in the pediatric population. A subset of patients with laryngomalacia ultimately require surgical repair in the form of supraglottoplasty. Variability exists not only in surgical technique but also in the post operative medical management regimen. By reviewing the existing literature, we aim to summarize unique clinical contexts that should be considered and that necessitate modifications to medical management post operatively for optimal healing and outcomes.

Keywords: Laryngomalacia, Supraglottoplasty, Steroids, Reflux

INTRODUCTION

Laryngomalacia, the most common cause of stridor in pediatric patients, results from the dynamic collapse of supraglottic structures. Severity is classified according to functional symptoms. Mild and moderate forms are typically managed conservatively with specialized feeding techniques, positioning and possibly anti-reflux medications. Severe laryngomalacia (apnea, cyanosis, failure to thrive, pulmonary hypertension and/or cor-pulmonale) constitutes up to 20% of cases and may require diagnostic laryngoscopy and bronchoscopy with supraglottoplasty. The goal of surgery is to reduce obstructive supraglottic structures, while preserving mucosa prone to stenosis. Post supraglottoplasty complications are rare and most are related to the surgical site (granulation tissue, bleeding, infection, and scar tissue formation). These are best avoided by careful and targeted surgical technique.[1] Post-operative medical management with anti-reflux medications, nebulized steroids, and systemic steroids have been advocated, however, condition specific recommendations are lacking. This best practice statement addresses medical management following supraglottoplasty in various clinical contexts.

LITERATURE REVIEW

Post supraglottoplasty complications are estimated at about 7.4%. Minor complications (granuloma, edema or small web) occur in ~3% of cases. Failure or partial improvement in laryngomalacia (respiratory or swallow symptoms) occurs in <10% of cases. Supraglottic stenosis is rare with an estimated incidence of ~3% after supraglottoplasty.[2] Clinical contexts that increase the risk of post operative complications deserve tailored management. Accordingly, expert recommendations regarding ideal management vary widely. In a survey regarding supraglottoplasty and perioperative management completed by otolaryngologists, 92% of these respondents reported using intravenous steroids intraoperatively, namely dexamethasone. The 39% of the surgeons reported a single dose of IV steroids intraoperatively while 38% extended the dosing to every 8 hours for 24 hours postoperatively and only 6% used IV steroid for 36 hours or longer. Authors did not report on the use inhaled or nebulized steroids as a part of

postoperative management. The 89% of the respondents reported using anti-reflux therapy post operatively, proton pump inhibitors or H2 blockers, in addition to reflux precautions.[3]

In a systematic review by Flood et al pH monitoring indicating acid reflux and endoscopic findings suggestive of reflux (glottic/ supraglottic edema and lingual tonsillar hypertrophy) were more common in patients with laryngomalacia. Post supraglottoplasty complications including need for intubation or other airway support were statistically higher in those with untreated acid reflux. This evidence in addition to expert opinion leads to the best practice recommendation of 1 month of postoperative aggressive reflux therapy that may be weaned if laryngomalacia symptoms are improving.[4] Global contraindications to acid suppression or specific anti-reflux agents have been described and should be considered when appropriate.

The mucosal injury associated with supraglottoplasty provides an opportunity for granulation tissue formation.[2] Limited data suggest topical corticosteroids (with an antibiotic) reduce granulation tissue formation after open airway reconstruction. However, there is no data regarding the distribution of this treatment across centers post supraglottoplasty and literature lacks supporting data for such treatment in uncomplicated cases.[3] Use of a topical corticosteroid (with or without antibiotic) is expensive and potentially delays in discharge if a nebulizer is necessary. Furthermore, when supraglottoplasty is performed in conjunction with procedures in which scarring is desired (such as laryngeal cleft repair), topical steroids could interfere with scar formation and contribute to failure of the repair.

Topical corticosteroids post supraglottoplasty might be beneficial in patients with recurrent croup and concurrent laryngomalacia as well as more distal airway lesions. Gitomer et al recommend a full airway evaluation including a bronchoscopy and airway sizing for those presenting with recurrent croup as that may be related to anatomical changes such as subglottic stenosis. Prophylactic inhaled corticosteroids in patients with recurrent croup, especially those who have had >5 episodes, have demonstrated improved symptoms, decreased frequency of episodes and no negative side effects. This was true in those with anatomical lesions such as tracheobronchomalacia, laryngeal edema or subglottic stenosis that likely contributed to recurrent croup episodes or those with normal operative airway evaluation whose benefit from ICS was thought to be related to improved chronic inflammation.[5] Thus, patients undergoing supraglottoplasty with history of recurrent croup, or with newly discovered or known synchronous airway lesion, should receive topical corticosteroids as inhaled or nebulized post operatively.

CONCLUSION

Data and expert opinion support the routine use of anti-reflux medications for at least 1 month postoperatively so long as a contraindication is not present, and patients/families should be counseled regarding potential adverse effects. Few data support systemic steroid after discharge or inhaled corticosteroids except in cases of recurrent croup or multiple airway lesions.

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