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Case Report

Type I posterior glottic stenosis: an endoscopic approach

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ABSTRACT

Type I posterior glottic stenosis (PGS) is a rare and challenging entity that is defined by the presence of a posterior glottic scar band separate from interarytenoid mucosa. This case reports a child who developed PGS-I secondary to prolonged intubation submitted to an endoscopic approach. 11-year-old boy presented with a 4 years complaint of stridor triggered by physical efforts and sleep. He had an history of mechanical ventilation with entubation for a thirty day period. On indirect laryngoscopy it was observed a complete adduction and incomplete abduction of vocal folds. He underwent a diagnostic laryngotracheoscopy, where it was possible to observe and confirm the diagonis of a PGS type I. A suspension microlaryngoscopy was performed and the interarytenoid band tissue was sectioned and dilatation of this area with a balloon was done. Endotracheal intubation is the primary cause of PGS in children. Different surgical interventions have been described, from open to endoscopic techniques. A careful preoperative assessment helps achieve better outcomes.

Keywords: Posterior glottic stenosis, Pediatric, Endoscopic

INTRODUCTION

Type I posterior glottic stenosis (PGS) is most prevalent as a result of prolonged endotracheal (ET) intubation.[1] The main reasons to post-intubation stenosis are: intubation trauma and injuries caused by ET tube pressure. Due to oro-pharyngeal curvature the ET tube, at all times, lies in the posterior glottis.[2]

PGS is a group of laryngotracheal stenosis which is defined by the presence of fibrotic process to the interarytenoid glottis that results in partial or total fixation of the vocal folds.[3,4] In addition to prolonged endotracheal intubation otlher mechanisms may be responsible for the appearance of PGS such as: radiation exposure, systemic autoimmune disease, external trauma and caustic ingestion.[4]

PSG is classified based on the classification made by Bogdasarian and Olson in 4 types.[5] In type I PSG there is an interarytenoid synechia/adhesion that is separate from the posterior interarytenoid mucosa.[3,6]

Type II envolves stenosis of the posterior commissure. Type III is posterior commissure stenosis with unilateral cricoarytenoid ankylosis, and type IV is posterior commissure stenosis with cricoarytenoid bilateral ankylosis.[5]

Of the 4 subtypes, type I PSG is the rarest and the least described in literature. The treatment of this pathology involves the lysis of the interarytnoid scar with CO_2 laser division or microsurgical techniques. Adjunct treatments with botulinum toxin or steroid injections can be considered.[7]

CASE REPORT

An 11-year-old boy presented to the otorhinolaryngology consultation with a 4 years complaint of stridor triggered

by physical efforts and sleep. He had a history of respiratory failure after smoke inhalation that required mechanical ventilation with entubation for a thirty day period. On indirect laryngoscopy (he didn´t tolerate direct laringoscopy or flexible nasopharyngoscopy) it was observed a complete adduction and incomplete abduction of vocal folds, causing a reduced glottic gap; the mobility of the aritnoids appeared normal. He underwent a diagnostic laryngotracheoscopy, where it was possible to observe and confirm the diagonis of a PGS type I (Figure 1).

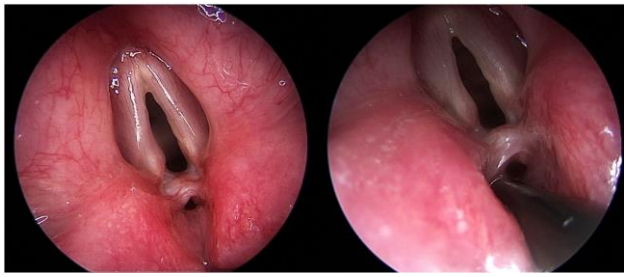

Figure 1: PGS type I seen through laryngotracheoscopy.

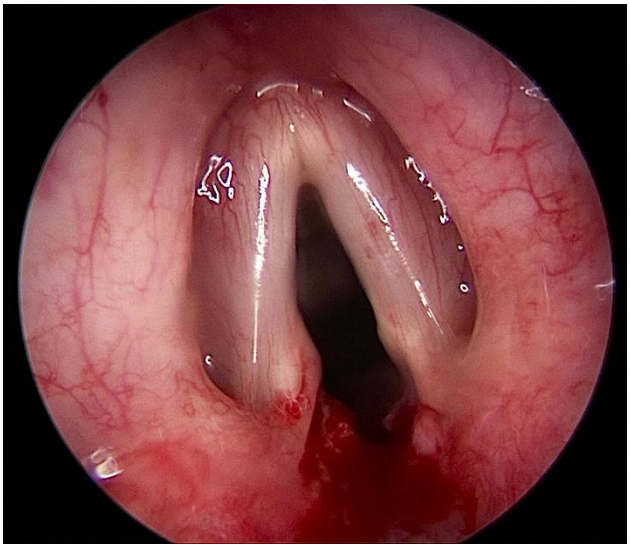

Figure 2: Final result after band tissue section.

After that, a suspension microlaryngoscopy under spontaneous ventilation was performed. During that procedure the interarytenoid band tissue was sectioned and the most medial segment was removed (Figure 2). The local was injected with methylprednisolone. Then, dilatation of this area with a 10 mm balloon at 7 atmospheric pressure during two minutes was done. At the end, the airway was calibrated and it was possible to pass a 6.5 orotracheal tube, no leak.

One month after the procedure, the child reported complete resolution of previous complaints. Six months after the procedure, he remains symptom free.

DISCUSSION

PGS can result in glottic flow compromise with limited vocal fold abduction.[3] PGS type I is the rarest type and is frequently caused by intubation injury to interarytnoide tissue that causes pressure necrosis, mucosal breakdown, formation of granulation tissue, and subsequent scarring.[1,7] Laryngotracheal trauma during intubation should be minimized in pediatric patients.

Treatment of PGS type I envolves surgical intervention and the goal is establishing an appropriate airway patency and, at the same time, preserving voice and swallowing function.[8] Surgical success depends on the careful characterization of airway stenosis and surgical technique must be customized.

CONCLUSION

Because it is the rarest type of posterior glottic stenosis, it is also the least described in the literature. There are diferente surgical approaches and they are not always associated with complete resolution of complaints. The endoscopic approach with scar lysis, dilatation with a balloon and steroid injection was minimally invasive and effective.

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