



Contents lists available at ScienceDirect

## International Journal of Pediatric Otorhinolaryngology

journal homepage: [www.elsevier.com/locate/ijporl](http://www.elsevier.com/locate/ijporl)Supraglottoplasty for laryngomalacia: The experience from Concepcion, Chile<sup>☆</sup>Sahba Sedaghat<sup>\*</sup>, Felipe Fredes, Mario Tapia

Otolaryngologist at University of Concepcion and Hospital Guillermo Grant Benavente, Concepcion, Chile

## ARTICLE INFO

## Keywords:

Stridor  
Laryngomalacia  
Supraglottoplasty  
Synchronous airway lesions  
Airway

## ABSTRACT

**Objective:** To review the clinical manifestations and outcomes of supraglottoplasty in patients with moderate to severe laryngomalacia at Guillermo Grant Benavente Hospital between January 2015 and January 2017.

**Methods:** Retrospective study of patients with laryngomalacia who underwent CO<sub>2</sub> laser supraglottoplasty at a tertiary referral center. A review of medical records of these patients was performed. Epidemiological data along with symptoms, comorbidities, morphological type of laryngomalacia, synchronous airway lesions, surgery outcomes and satisfaction of parents after the procedure were recorded. Surgical success was defined as the resolution of the criteria of severity of laryngomalacia.

**Results:** Twenty-four patients were operated, 1 was excluded due to prior tracheostomy. Twenty-three patients were included, the median age at the time of surgery was 5.5 months. All the patients had stridor, 87% presented feeding difficulties, 34.8% had cyanosis and 21.7% had failure to thrive. Six cases had congenital anomalies and four cases had nongenetic comorbidities. Fifteen patients (65.2%) had synchronous airway lesions. 17.4% had type I laryngomalacia and 82.6% were type 2. The postoperative average hospital stay was 1.3 days. The average follow-up was 14 months and no complications were reported. The overall success rate of surgery was 95%.

**Conclusions:** Patients with laryngomalacia and any symptom of severity should undergo a full airway evaluation, to rule out synchronous airway lesions, and supraglottoplasty if needed, as it has been shown to be a safe and effective technique for the management of these patients.

## 1. Introduction

Laryngomalacia is the most common cause of stridor in newborns and infants, the most common congenital anomaly of the larynx [1] and is present in up to 70% of infants with stridor. The typical clinical manifestation is inspiratory stridor caused by a dynamic airway obstruction secondary to the collapse of supraglottic structures [2]. Its physiopathology is not completely clear but the proposed neurological theory, in which a neuromuscular discordination affects the supraglottic airway is currently the most likely cause backed by current literature [3]. The old theory based on the anatomical conformation of the infant larynx has been losing ground over time [4].

Gastroesophageal reflux is the most common comorbidity of laryngomalacia and is found in 70–80% of all cases [5], especially in moderate and severe ones [6] although no direct cause-effect relationship between both entities has been found [7].

Laryngomalacia typically presents itself as inspiratory stridor that increases with agitation, crying, feeding and the child laying on his back. Usually symptoms start during the first weeks of life, increase

towards the 6th to 8th month of life and then slowly regress and tend to disappear before age 2 with a resolution rate of approximately 90% [8].

The diagnosis is made by transnasal fiberoscopy, in which it is possible to observe a collapse of the supraglottic structures during inspiration. Different classifications for the type of collapse have been proposed, the most commonly used is that which classifies laryngomalacia in types I through III. Type I is defined by the collapse of supraarytenoid tissue, type II by the shortening of the aryepiglottic folds with an omega shaped epiglottis and type III by a retroflexed epiglottis that collapses towards the laryngeal inlet during inspiration [9].

Since laryngomalacia behaves mostly as a self-limited disease, treatment usually consists of wait-and-see for mild to moderate cases while surgery mostly in the form of supraglottoplasty (SGP) has been reserved for severe cases. There are other clinical manifestations besides classical inspiratory stridor that confer a degree of severity to laryngomalacia. These are dyspnea, intercostal and/or suprasternal retractions, hypoxia, apnea, recurrent cyanosis, feeding difficulties, failure to thrive and/or cor pulmonale [10]. Patients that present

<sup>☆</sup> **Presentation information:** Partial results were presented at 13th Congress of the European Society of Pediatric Otorhinolaryngology (ESPO 2016).

<sup>\*</sup> Corresponding author. Departamento de Especialidades, Facultad de Medicina Universidad de Concepción, Chacabuco esquina Janequeo S/N, Concepcion, Chile.  
E-mail address: [sahbasedaghat@gmail.com](mailto:sahbasedaghat@gmail.com) (S. Sedaghat).

multiple of these severe manifestations have been classically candidates for SGP [11,12]. The success rate for SGP is up to 95% and is currently the gold standard of treatment for laryngomalacia [13]. Patients with comorbidities, congenital anomalies, prematurity, neurological disease and obesity have lower rates of success [14].

Our objective is to review the clinical manifestations and outcomes of patients with moderate and severe laryngomalacia who underwent SGP at our institution between January 2015 and January 2017.

## 2. Methods

Retrospective study was conducted by reviewing medical records of patients that underwent SGP in the Otolaryngology Department of Hospital Guillermo Grant Benavente of Concepcion, Chile, between January 2015 and January 2017. The only exclusion criterion was the presence of tracheostomy as that would negate respiratory symptoms associated with laryngomalacia. Epidemiological data along with symptoms, comorbidities, morphological type of laryngomalacia, synchronous airway lesions (SALs), surgery outcomes, time to follow up and satisfaction of parents after the procedure were recorded. Parental satisfaction was defined as the caregivers being satisfied with the resolution of symptoms. The Olney classification was used for the morphological classification of laryngomalacia [9]. The diagnosis of laryngomalacia was based on clinical evaluation, preoperative nasopharyngolaryngoscopy in awake patients and direct laryngoscopy and scoping under general anesthesia with spontaneous ventilation for a dynamic evaluation.

SGP indications were laryngomalacia characterized by inspiratory stridor associated with one or more of the following signs or symptoms: dyspnea, sternal-intercostal retraction, desaturation, cyanosis, witnessed breathing pauses, feeding difficulty with or without failure to thrive.

The procedure was performed using a Benjamin-Lindholm operating laryngoscope (Storz, Germany) for exposure of supraglottic structures. An Acupulse CO<sub>2</sub> laser (Lumenis, Israel) with an Acublade micro-manipulator (Lumenis, Israel) on a microscope (Storz, Germany) was used for the SGP. Our usual laser setting is in Super Pulse mode with energy output of 8 W. Depending on morphological type of laryngomalacia the proposed surgeries were as follows: in the case of type I laryngomalacia (Fig. 1) we performed the resection and/or vaporization of the redundant mucosa over the arytenoid, corniculate, and cuneiform cartilage (Fig. 2). For type II (Fig. 3), we sectioned the shortened aryepiglottic folds and resected/vaporized the lateral edges of the epiglottis plus resection or vaporization of the redundant mucosa of the arytenoids (Fig. 4). Finally, in the case of type III laryngomalacia an epiglottopexy was proposed.

Surgical success was defined as the resolution of the criteria of severity of laryngomalacia. The persistence of stridor with no other symptom was not considered as failure of SGP.



Fig. 1. Prolapse of supraarytenoid tissue in type I LM.

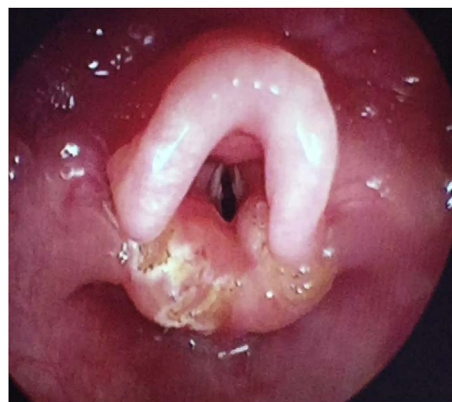


Fig. 2. Floppy supraarytenoid tissue laser vaporization in a type I LM.

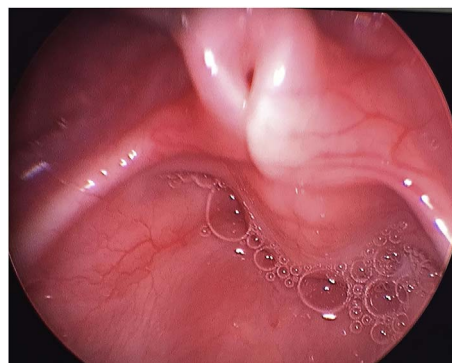


Fig. 3. Type II LM with a severely curled epiglottis, shortened aryepiglottic folds and floppy supraarytenoid tissue.

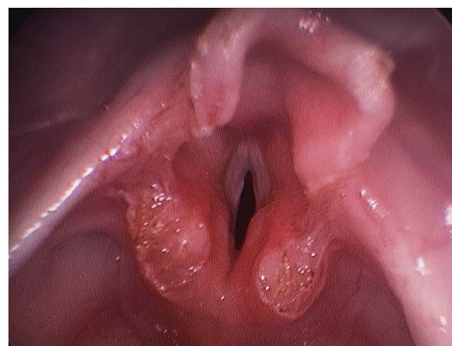


Fig. 4. Immediate view after laser supraglottoplasty. Same patient as Fig. 3.

## 3. Results

We performed 24 SGP during this period, and only 1 case was excluded from our results. The excluded case was a tracheotomized 2 year old female patient with a grade III subglottic stenosis (SGS) and type I laryngomalacia in whom a SGP was performed prior to laryngotracheal reconstruction. The included patients were 23, of which 14/23 were male (60.9%) and 9/23 were females (39.1%). The median age was 5.5 months (average 13.6, range 0.33–96 months). All patients had inspiratory stridor associated with one or more symptoms of severity. Feeding difficulties were present in 87% of our cases but only 21.7% had failure to thrive. Cyanosis was recorded through parental observation and desaturations were recorded with a pulse oximeter, and they were present in 34.8% of patients. Because of persistent oxygen desaturations some patients (17.4%) were on oxygen therapy or continuous positive airway pressure (CPAP). The distribution according to morphological type of laryngomalacia in the preoperative evaluation

Download English Version:

<https://daneshyari.com/en/article/5714495>

Download Persian Version:

<https://daneshyari.com/article/5714495>

[Daneshyari.com](https://daneshyari.com)