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CASE STUDY

# Laryngeal Cleft: Diagnosis and Endoscopic Surgical Treatment. Report of 2 Cases☆

## Hendidura laríngea: diagnóstico y tratamiento quirúrgico endoscópico. Presentación de 2 casos

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### Case 1

A 14 month male patient with a background of unilateral right canal stenosis, enteral nutrition through percutaneous endoscopic gastrostomy (PEG) due to dysphagia from weaning, hospital admittance for bronchopneumonia, dysphoric crying, coughing after swallowing, and asphyctic episodes was referred to our hospital for study and treatment. Examination revealed small low inward facing auricles, a narrow auditory canal, a palmiped uvula and wide nasal bridge. A nasopharynx and laryngeal tracheoscopy and rigid laryngoscopy were performed to examine the aerodigestive tract and these revealed an excess of protruding mucosa (Fig. 1) in both arytenoids which deposited an interarytenoid solution that impeded posterior laryngeal closure without cutting across the glottis plane. Evaluation was completed with a video fluoroscopic swallowing study and an isotopic swallowing study using Tc99 gamma graphics. Endoscopic surgical closure using $CO_2$ laser and microsutures was indicated for the diagnosis of secondary dysphagia to type II laryngeal diastema in the patient with a polymalformative condition compatible with OpitzG/BBB syndrome. The postoperative video fluoroscopic study confirmed safety in swallowing.

### Case 2

A 4-year-old female patient with a medical history of repeated pneumonia with several hospital admittances to the Paediatric Intermediate Care Unit (PIMC) from the age of 2, presented with a single clinical swallowing condition of a productive cough, which was on occasion related to ingestion of liquids. Aerodigestive airway examination was performed under sedation using a nasopharynx and laryngeal tracheoscopy procedure, which established the diagnosis of bronchiectasis and the suspicion of type I laryngeal cleft. The video fluoroscopic swallowing study confirmed the presence of tracheal aspiration with small volumes of 5 cc liquid density (Fig. 1). Instrumental examination during direct laryngoscopy in suspension under anaesthesia with spontaneous ventilation confirmed the diagnosis, whilst (Fig. 2) we proceeded simultaneously to closure, using the $CO_2$ laser

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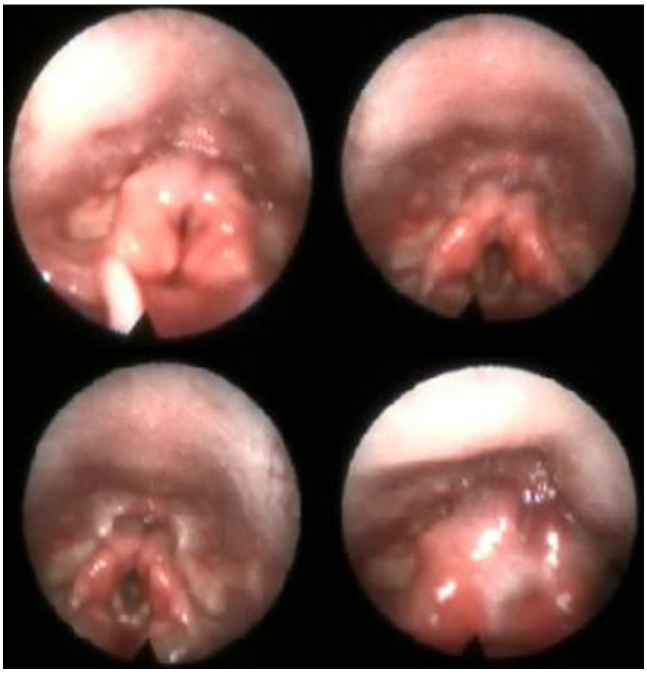

**Figure 1** Case 1 video endoscopy where protruding hypertrophic mucosa of the arytenoids secondary to the defect is noted.

and microsuture. The patient was extubated during the initial 24 h, with continued respiratory monitoring in the PIMC. A video fluoroscopy of swallowing was subsequently programmed which confirmed the absence of aspiration (Fig. 3).

## Discussion

Laryngeal cleft or diastema (LD) is a rare congenital condition with a classically reported incidence of one case per 10,000–20,000 live newborns.[1] Greater awareness and a higher index of suspicion has increased the incidence of its diagnosis.[2,3] It may present in conjunction with complex syndromes (Opitz–Frias and Pallister–Hall) or nonsyndromic anomalies of other systems.[3] LD is a fissure arising between the larynx and/or the trachea and the pharynx and oesophagus system, due to a fault in the separation of the laryngo tracheal groove and the oesophagus.[4] Many classifications have been used to describe it, the most frequent currently being the modified version made by Sandu and Monnier[5] of the classical Benjamin and Inglis classification[6]: type 0: submucosa cleft; type I: supraglottic, interarytenoid cleft type II: the defect compromises the vocal cords and in part the cricoid cartilage; type IIIa: compromise of all cricoid cartilage up to the trachea with no compromise of the later; type IIIb: compromise of the cricoid cartilage and cervical trachea; type IV: compromise of the thoracic trachea and may descend to the carina. Clinical manifestations are correlated with its extension and may vary from asymptomatic patients (21% in several series)[7] to moderate symptoms including stridor, a hoarse cry, pharyngeal hypersecretion, problems swallowing and slight pulmonary repercussion for type I. In types II and III the most marked symptoms are pulmonary aspiration and infection. Finally, in type IV there is almost immediate respiratory distress, massive aspiration with difficulty in ventilation.[4]

The low incidence of LD makes it a diagnostic challenge, with a need for high clinical suspicion and a systematic instrumental examination to include probing of the posterior

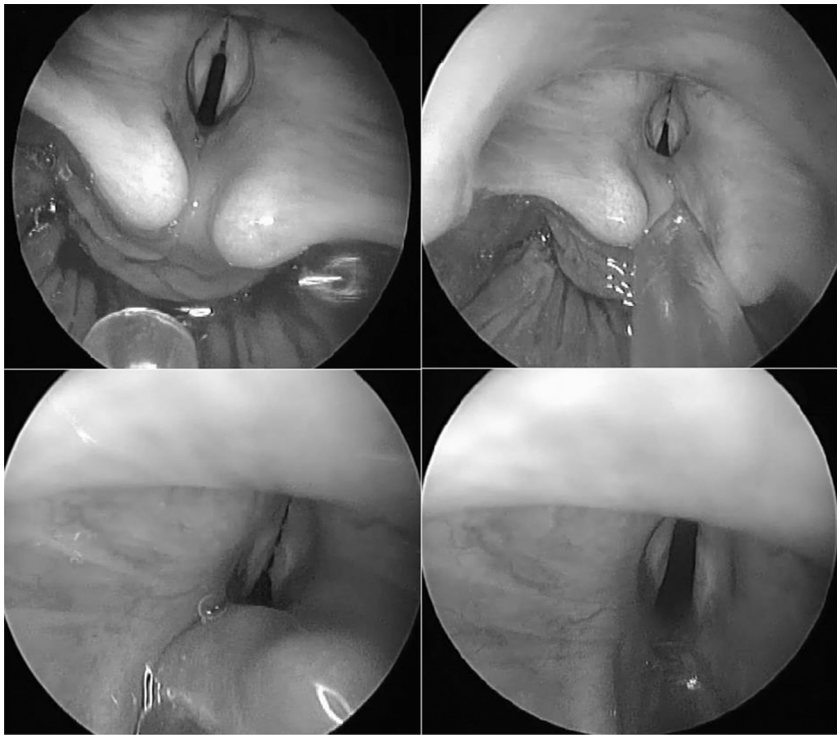

**Figure 2** Confirmation of the defect on probing of the cleft while pushing back the posterior laryngeal wall.

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