Case Report

Introduction

Paradoxical vocal cord movement (PVCM) is a rare entity with an unknown incidence due to underdiagnoses. PVCM is the paradoxical adduction of the true vocal cords during inspiration or non-phonation expiration resulting in upper airway obstruction. (1) It often presents with wheeze, stridor, and shortness of breath, symptoms that is frequently misdiagnosed as asthma. There is a 2:1 predominance in females, children and young adults. (2)

Case Report

We present a case of PVCM in a 6-year-old female with VACTERL association status-post repaired tracheoesophageal fistula with a history of tracheostomy dependence since 3 months of age. Our patient presented with stridor, shortness of breath and the inability to tolerate Passy-Muir valve or capping trials despite a patent airway.

A year prior to this she was found to have a 50-75% airway obstruction from suprastomal tracheal collapse requiring laryngotracheoplasty with costal cartilage graft and stent placement. At that time there was significant skin scarring surrounding the tracheostomy and atrophy of subcutaneous tissues with resultant deep retracted stoma. A new stoma was created below the original incision and the suprastomal stent was removed a month later.

Despite this, the patient continued to have difficulty capping and subsequently underwent two further direct laryngoscopy with rigid bronchoscopy for suspected subglottic stenosis with excision of suprastomal granulation tissue. Each time, there was dynamic narrowing from movement of the posterior membranous trachea, however the airway was patent with clear and mobile true vocal cord.

She then presented to us for her last direct laryngoscopy and bronchoscopy due to continuation of the above symptoms. Patient ventilated well until stage 2 of anesthesia was intentionally induced. Closure of the glottis was visible during inspiration with audible stridor and desaturations which improved immediately once she was deepened with propofol. This phenomenon resulted each time the patient’s plane of anesthesia was lightened and patient started to wake up.

Images

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Images

Figure 1: Vocal cord adduction. (4) This image shows paradoxical adduction under anesthesia with vocal cords tethered.

Patient was diagnosed with PVCM where outcomes cannot be corrected with further surgical intervention. She is currently undergoing speech and language therapy which has improved anxiety associated with capping trials.

Discussion

Potential adverse effects of under recognizing this condition include increase morbidity related to tracheal intubation or tracheostomy, long term psychological and behavioral dysfunction, and side effects of high corticosteroid doses. (3)

The exact etiology is unknown however both organic (GERD, irritant induced) and non-organic (psychological or emotional stress) have been implicated in the pathogenesis. (1) The standard diagnostic test requires evidence of true vocal cord adduction under laryngoscopy. (1) There may also be a role for methacholine challenge testing as many have concurrence of asthma and therefore it is important to differentiate between the two. PVCM is an under diagnosed entity. Further research on the pathogenesis, diagnostic criteria and treatment is required to obtain optimal care for patients with PVCM.

References