


MANAGEMENT OF CONGENITAL BILATERAL ABDUCTOR VOCAL CORD PALSY FOR TRACHEOSTOMY IN A NEONATE

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ABSTRACT

Bilateral abductor vocal cord palsy is very rare, and is still the second most common cause of congenital stridor in neonates. It can also cause breathing difficulty and cyanosis in neonates during increased crying spells, and hence eventually might require invasive airway management. This is a case report of a 7-day old neonate posted for tracheostomy under general anaesthesia.

Keywords: Vocal Cord Palsy, Stridor, Bilateral Abductor Palsy

1. INTRODUCTION

Stridor refers to noisy high-pitched breathing typically originating from larynx or trachea. Depending upon the area of upper airway involved, it can be inspiratory stridor which involves supraglottis/ glottis, biphasic stridor which involves subglottis/ upper trachea and expiratory stridor which involves lower trachea. If it is present right from the birth, it is called as congenital stridor. Most common causes of congenital stridor include laryngomalacia, bilateral vocal cord paralysis, and congenital subglottic stenosis etc.

2. CASE REPORT

A 4-hour old neonate born via lower segment cesarean section at term in an outside hospital due to non-progression of labour to a primigravida mother, cried stat and started having noisy breathing right after birth and he had difficult shallow breathing presented to casualty for further management. There was no history of birth asphyxia or meconium-stained liquor. Birth weight was 3.12 kgs.

On examination, neonate was tachypneic with respiratory rate of 50/min, subcostal recession and nasal flaring was present. Bilateral conducted sounds were present. Neonate was admitted immediately, started on oxygen at 6L/min via high flow nasal cannula and was on intravenous fluids.

On further evaluation with flexible bronchoscopy, bilateral abductor palsy of vocal cords was diagnosed. Echocardiography revealed patent ductus foramen (0.24 cm) with left to right shunt, Trivial TR, and normal left ventricular function. Ultrasound cranium was within normal limits.

Neonate had history of bluish discoloration on excessive crying. On initiation of breastfeed, he had an episode of desaturation, and hence was continued on nasogastric feeds.

On day 7, neonate was electively planned for tracheostomy. Pre-operative vitals were: Heart rate of 135/min, Saturation of 99 percent on 5L/min HFNC, Respiratory rate of 49/min.

All blood investigations were within normal limits except for aPTT which was deranged and hence neonate was transfused with 1 unit of fresh frozen plasma (45ml) pre-operatively. General anaesthesia was planned for the neonate with stress upon the anticipated difficult airway. Airway trolley was made ready with all the necessary neonatal difficult airway equipment. Neonate was given oxygen at 5 litres/min and sevoflurane 2.5 percent. Patient was ventilated and once it was found adequate, injection succinylcholine 1.5 mg was given intravenously and ventilated for one minute. Laryngoscopy was attempted via Macintosh blade no. 1, larynx was anteriorly placed and after applying cricoid pressure, vocal cords could be visualized and intubated with 2.5 mm endotracheal tube. Eventually, the neonate was tracheostomised using a 3mm tube with minimal blood loss.

3. DISCUSSION

The most common causes of congenital stridor are laryngomalacia, vocal cord paralysis (VCP), congenital subglottic stenosis.

Vocal cord paralys reports for 10-15 percent amongst all causes of stridor. Bilateral vocal cord paralysis can lead to biphasic stridor, whereas unilateral VCP is commoner and can occur due to injuries at birth, aberrant vessels, and atrial enlargement. [Kaushal et al. \(2005\)](#)

The commonest cause of paediatric bilateral VCP is congenital and in this group of patients, idiopathic cause is the most common where male gender is found to be more susceptible. [Scatolini et al. \(2018\)](#)

Even though the most common cause of VCP is idiopathic, other well known causes include Arnold Chiari malformation, meningoencephalocele, intraventricular hemorrhage, surgeries like PDA ligation, mediastinal surgeries leading to recurrent laryngeal nerve injury (RLN). [Rupa & Raman \(1991\)](#)

All the intrinsic muscles except the cricothyroid are supplied by the RLN which is a branch of vagus nerve. These muscles control the movement of vocal cords, and

palsy can be caused by any lesion lying in brainstem nuclei of vagus nerve to the point where RLN enters the larynx. [Kwong et al. \(2012\)](#) Amongst nerve injuries, injury to RLN is most common, leaving the vocal cords in a paramedian position if unilateral and in a median position when bilateral. [Salik & Winters \(2023\)](#)

Investigations done to make a diagnosis include CT scan or MRI of head and neck, barium swallow and endoscopy. Laryngotracheobronchoscopy is the gold standard in the assessment of stridulous neonate. [Benjamin et al. \(1993\)](#) This is mostly done under general anaesthesia in spontaneous ventilation, and thus drugs causing vocal cord immobility are avoided. [Scatolini et al. \(2018\)](#) Tracheostomy is required in 25 percent cases of congenital stridor and its most common indication is bilateral VCP. It provides the greatest diameter to the airway, maintains laryngeal structure and is also possibly reversible. [Rupa & Raman \(1991\)](#), [Salik & Winters \(2023\)](#) With the advent of sophisticated cardio-respiratory monitoring equipment, tracheostomy can be delayed until other attempts have been made to improve adequacy of airway with surgical interventions. [Grundfast & Harley \(1989\)](#) Recent studies suggest that an external arytenoidopexy and arytenoidectomy combined together is more effective than other ablative procedures. Other options that are tried are botulinum toxin injections into the vocal cord adductors and reinnervation techniques. More recently, research has targeted on neuro-modulation, laryngeal pacing and stem cell therapy. [Li et al. \(2017\)](#) For VCP resulting from birth trauma and other traumatic conditions, the only course is to wait as the affected nerve generates. [Daniel \(2006\)](#)

Every neonatal airway manipulation should be considered a critical event. [Garcia-Marcinkiewicz & Matava \(2022\)](#) Size, surface area, resistance, compliance, resistance are all very different in every age group and neonates must certainly not be treated like small adults. Newborns have an anterior larynx, a relatively large tongue and a U shaped epiglottis. A neonatal airway emergency can be managed by a strategy for anticipation, identification, preparation, and execution. [Swain \(2022\)](#)

4. CONCLUSION

VCP is a sign and it is very important to find out the cause behind it. The first and foremost concern in such a neonate is airway stability. The operating room in which any diagnostic or therapeutic procedure is being performed should have appropriate sized airway equipment, along with the necessary resuscitation and emergency supplies.

CONFLICT OF INTERESTS

None.

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