

## A Stitch in Time

Janhvi J Bhate, Unnikrishnan K Menon, K Madhumita

### ABSTRACT

Bilateral vocal cord paralysis is the one of the common childhood laryngeal lesions. The treatment modalities include interim tracheostomy and, where needed, permanent irreversible procedures.

We report a case of idiopathic bilateral vocal cord palsy in a child, which was managed effectively by the procedure of suture lateralization of the vocal cord. The procedure, its rarity and follow-up of our case is described.

**Keywords:** Bilateral vocal cord paralysis, Tracheostomy, Suture lateralization.

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### INTRODUCTION

Bilateral vocal cord paralysis (BVCP) is the second most common cause of congenital stridor. The management usually mandates tracheostomy and follow-up with the impending possibility of irreversible procedures to widen the glottis chink. The same would hold true even for an idiopathic BVCP of childhood. We report such a case for which we performed the historically described suture lateralization procedure. This not only prevented permanent damage to the vocal cord, but also has so far been successful in maintaining an adequate airway for the child.

### CASE REPORT

A 5 years old girl was admitted from casualty under pediatrics with complaints of episodic noisy breathing and associated breathing difficulty since 9 months. There was previous history of twice admission elsewhere with worsening of above symptoms and requiring ventilatory support. She was discharged after the last admission with improvement, but no apparent diagnosis. Now parents gave a history of recurrence since 3 days. On examination, she had dramatically loud inspiratory stridor, tachypnea, alar flaring and intercostal retraction. However, she was maintaining SpO<sub>2</sub> on room air. Indirect laryngoscopy, using a rigid 45° nasal endoscope showed both vocal cords in median position with only minimal flicker of movement (Fig. 1). Auscultation of chest was clear with only conducted sounds heard in bilateral infraclavicular areas. Thus with a history of previous similar intermittent episodes and no desaturation, there was a diagnostic dilemma. Although the most obvious possibility was bilateral abductor vocal fold

palsy (BAVFP), the clinical features were not conclusively in favor of this. Nonlaryngeal issues (neurologic/cardiac/surgical) were ruled out. At our suggestion, trial of intubation was given by pediatrics, but there was recurrence of symptom each time after extubation. We were now left with the option of considering definitive management for BAVFP. This would mean either tracheostomy or Kashima's cordotomy. The former has its own morbidity while the latter is an irreversible procedure. Considering the age of our patient, we were keen to avoid the above issues.

The alternative was a procedure not often done now viz suture lateralization of the vocal cord. Its main feature is reversibility. Thus, in the hope that this child may recover her vocal cord mobility at some later stage, we decided to give a trial for the said procedure.



**Fig. 1:** Endoscopic picture of video capture of indirect laryngoscopy showing maximal abduction of the vocal folds, preoperative. Flicker of movement was appreciated at this time



**Fig. 2:** Operative picture of the exposed left thyroid ala by the external surgeon



**Fig. 3:** Intraoperative picture of microlaryngoscopic view of 18G needle in the subglottis

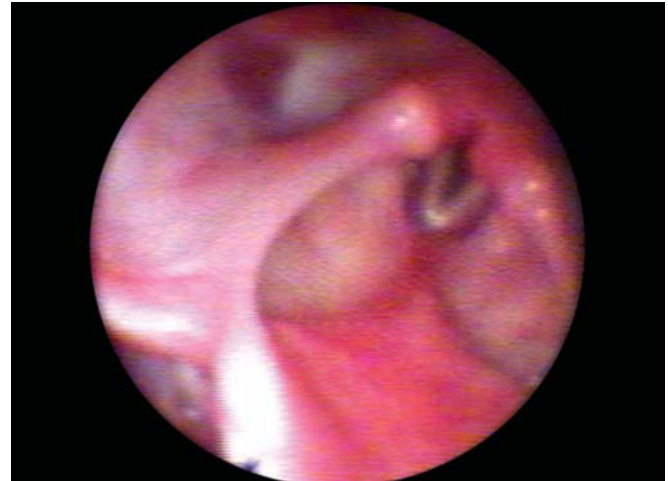


**Fig. 4:** Intraoperative picture of microlaryngoscopic view of the 1/0 Prolene suture being threaded back into the needle under endoscopic view



**Fig. 5:** Intraoperative picture of microlaryngoscopic view of the suture pulled from outside and secured in position

It was decided to lateralize the left vocal cord, purely from the convenience point of view. Under general anesthesia, it was a two surgeons approach. One, at the



**Fig. 6:** Endoscopic picture of flexible nasopharyngolaryngoscopy view at 1 year postoperative showing adequate glottic chink

patient's neck, exposed the thyroid cartilage (Fig. 2); the other approached the vocal cord endoscopically. A wide bore needle (18G) was first inserted into the subglottis, from the neck side, with the endoscopic surgeon confirming the entry (Fig. 3). Next, a 1/0 Prolene suture was passed via the needle into subglottis. The endoscopic surgeon pulled this suture up and out and secured it. Similarly, another needle was then placed in the supraglottis. Next, the surgeon under endoscopic guidance threaded the same suture into the needle in the supraglottis (Fig. 4) till it emerged from the neck end. This needed some dexterity. The position of the suture was fixed at a level just anterior to the vocal process (Fig. 5). Finally, the suture threads were knotted several times over a piece of silastic sheet placed on the soft thyroid cartilage. The external wound was sutured in layers.

The child was extubated the next day. There was no stridor and she maintained SpO<sub>2</sub> on room air. She was discharged on the 5th postoperative day with no noisy breathing or breathing difficulty. She is currently 1 year postoperative and has not had any further episodes of respiratory distress. She is completely asymptomatic at rest and during sleep. Parents have noticed slight noise while breathing on exertion (after playing/running). Follow-up flexible laryngoscopy has shown the left vocal cord to be adequately lateralized at the last visit, 15 months postoperative (Fig. 6).

**DISCUSSION**

Stridor in children is a distressing symptom for the entire family. Bilateral vocal cord palsy, often congenital, is one of the commonest documented causes. Approximately half the cases of vocal cord paralysis in children are bilateral.<sup>1</sup> A classic cause of congenital bilateral vocal cord palsy is hydrocephalus with the Arnold-Chiari malformation. However, most cases are idiopathic. Recovery is the norm

in more than half the cases, with about 10% reported to take more than 5 years to recover.<sup>1</sup> More than half of these children undergo tracheostomy at some point of time, while awaiting the anticipated vocal cord function recovery. This has its own morbidity, with one issue being the difficulty for decannulation in smaller children.

In the event of nonrecovery, further surgical procedures would have to be considered. These would basically mandate the creation of space at the level of the glottis. Removing a part or the whole of one membranous vocal fold, excising a major bulk of one arytenoids and lateralizing one vocal fold have all been described.<sup>2,3</sup> Very occasionally, even bilateral arytenoidectomy along with suture lateralization has been reported.<sup>4</sup> The obvious drawback of any of these procedures would be the compromise of voice and swallowing functions. Hence, the procedure chosen has to maintain a delicate balance between the desired outcome of adequate breathing and the undesired loss of phonation and possible aspiration.

Standard textbooks support the use of endoscopic laser cordotomy or external or endoscopic arytenoidectomy at the age of 11 or over if vocal cord movement does not recover and/or airway does not become adequate as a result of laryngeal growth.<sup>1</sup>

Laryngeal reinnervation has also been tried. This is a technically challenging procedure and takes at least 6 months to show results.

The procedure of suture lateralization of the vocal cord was first described by Ejnell in 1982.<sup>5</sup> Lichtenberger later devised an instrument specific for this procedure.<sup>6</sup> Literature search about this procedure revealed several reports and series in the 80s and 90s. However, with the advent of improved tracheostomy tubes and their maintenance during the phase of observation, the relevance of the procedure has witnessed a decline. There was also the issue of only short-term benefit due to the possibility of the suture giving way or cutting through.

However, we could find at least one series report, from India, with a reasonably good long-term follow-up.<sup>7</sup> One interesting case reports the use of suture lateralization to decannulate a patient after 22 years.<sup>8</sup> A recent review article has pointed out the relevance and efficacy of this procedure in indicated cases. It argues the case for considering the advantages of suture laterofixation as a potential treatment for pediatric patients.<sup>9</sup>

In our patient although a procedure that is not-so-commonly done nowadays was performed, it has helped so far in avoiding both tracheostomy and any loss of voice

and swallowing functions. We hope this case highlights the relevance of this procedure in children.

## CONCLUSION

Vocal cord lateralization is a simple and effective method for treating idiopathic BVCP, especially when there is a chance for recovery of vocal cord function. Its use in children is recommended.

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