



Changing Trends in Management of Bilateral Vocal Fold Paralysis

Manjula BV* and Rashmi D*Department of ENT, Bangalore Baptist Hospital, India****Corresponding Author:** Manjula BV, Department of ENT, Bangalore Baptist Hospital, India.**DOI:** 10.31080/ASOL.2024.06.0640**Received:** January 22, 2024**Published:** February 09, 2024© All rights are reserved by **Manjula BV* and Rashmi D.****Introduction**

Bilateral vocal fold immobility describes a condition in which the vocal folds do not move and may result from paralysis of the vocal folds, cricoarytenoid joint fixation and interarytenoid scar [1]. Most cases of Bilateral Vocal Fold Paralysis (BVFP) are iatrogenic; surgical injuries (55.5–82.8%), with the majority occurring during thyroidectomies. The remainder of cases may be due to trauma, malignancy, neurologic disease, intubation trauma or idiopathic etiology [2-4]. Patients of BVFP usually present with dyspnoea of varying degree or stridor which can be life threatening [3]. But their voice quality may be normal due to the typical near-midline position of the vocal folds. If the vocal folds are in a more abducted position, patients may have minimal airway symptoms but a weak, breathy voice quality with dysphagia or aspiration. Presentation of Idiopathic BVFP in adults is of gradual onset respiratory symptoms and diagnosis may be delayed for many years; misdiagnosed and treated as Asthma. In infants, the etiology of BVFP includes birth trauma, neurological, iatrogenic and idiopathic causes [5].

Management of BVFP

The primary aim of treatment is maintenance of airway and ventilation. BVFP may represent a respiratory emergency often requiring tracheostomy to bypass site of obstruction and ensure an adequate, safe airway. It is often used in the short term while a return of vocal fold mobility is awaited in 6 – 12 months time. Several temporary, short term options as well as more permanent treatment options have been proposed for management of BVFP. Short term treatment options include suture lateralization and laryngeal botulinum toxin injection techniques. More permanent treatment options include glottic widening surgeries such as unilateral posterior cordotomy with or without arytenoidectomy or bilateral cordotomy both in adults and pediatric population [6]. It has been demonstrated that successful decannulation is possible

post cordotomy without phonation or deglutition problems. However, there are reports of failed decannulation, need for revision ablative procedures like contralateral cordotomy or arytenoidectomy and aspiration problems infrequently. Current endoscopic techniques typically employ laser technology to perform the cordotomy though cold steel and diathermy have also been used in the past.

Laser cordotomy

The aim of Posterior Transverse Cordotomy procedure is to widen the glottic aperture through resection of laryngeal soft tissues [7]. Use of carbon dioxide (CO₂) laser was first described by Dennis and Kashima in 1989 as an alternative to tracheostomy in patients with BVFP [8].

The procedure is performed via microlaryngoscopy, and CO₂ laser is used to make an incision transversely through the true vocal fold just anterior to the vocal process of arytenoid. This is extended laterally 3–4 mm through the thyroarytenoid muscle till the thyroid perichondrium. The muscle then retracts anteriorly, resulting in an increase in the posterior glottic chink once healing is complete. Part of the false cord also can be resected using laser to further increase the airway. Improved ventilation and breathing is achieved in most patients with BVFP following Laser assisted posterior cordotomy with some studies reporting an improvement percentage of 95% to 100% [9]. Most common complications reported in literature were post-operative charring, odema, granulation tissue formation which can be successfully removed with surgical excision, poor voice quality and post-operative pain [10]. Rarely scarring of the cordotomy site requiring ipsilateral revision or contralateral cordotomy is also reported. This is rare with laser because separation of vocal fold from vocal process of arytenoid during cordotomy allows for the muscular portion of the vocal fold to scar and retract anteriorly thus separating the mucosal areas incised by the laser.

What are the current trends?

Coblation cordotomy

The first coblation tonsillectomy was performed in the late 1990s [11]. Since that time, the coblator has been increasingly used in the field of otolaryngology [12]. The coblator uses radio-frequency energy through a saline medium to create a plasma that breaks molecular bonds in the tissue, causing the tissue to dissolve at relatively low temperatures [13]. This helps to avert considerable lateral heat distribution into the tissue, while also reducing the risk of airway fire. Coblation can be used for cordotomy and the procedure is same like laser via microlaryngoscopy and coblation wand is used to make an incision transversely through the true vocal fold just anterior to the vocal process of arytenoid. This is extended laterally 3–4 mm through the thyroarytenoid muscle till the thyroid perichondrium. Part of the false cord also can be resected using coblation to further increase the airway. However, coblator when compared to CO₂ laser causes minimal surrounding tissue charring and damage owing to a lesser rise in temperature in the adjacent tissues. This property of coblator is also responsible for a lesser postoperative edema and can help in early decannulation.

Coblation cordotomy also has lesser operative and setup time as well as easier learning curve and coblator set up is widely available in most centers nowadays. The coblation hand piece also offers the surgeon the ability to work tangentially, with less need to adjust the microscope as one might for a CO₂ laser mounted on a micro-manipulator or pattern generator. The coblation wand also offers bipolar cautery that may be useful if bleeding is encountered [14]. Though charring and odema are less with coblation, it is rarely noted that widened glottic chink might reduce due to healing of mucosal edges requiring ipsilateral revision procedures but coblation is a cost-effective alternative when compared to laser devices.

Conclusion

Unilateral posterior cordotomy stands out as simple and instrumental in treatment of BFVP with infrequent complications like poor voice quality, dysphagia and need for revision procedures. Coblation offers a more affordable solution for patients and health-care institutions, making it accessible to a larger number of individuals within a private healthcare system as it is widely available. The utilization of a coblator for posterior cordotomy yields similar results with minimal harm to the surrounding tissues when compared to laser with equal decannulation rates.

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