CASE REPORT

MANAGEMENT OF BILATERAL ABDUCTOR PALSY: A CASE SERIES

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ABSTRACT: Bilateral abductor palsy is comparatively a rare vocal cord lesion especially in a patient with no history of neck mass, previous surgery or trauma. The treatment of bilateral abductor palsy is a balance between phonation, airway and swallowing. Various techniques of endoscopic approach for the treatment of BILATERAL abductor palsy have been proposed and have been modified by various surgeons. We describe the various techniques and their advantages.

KEYWORDS: Bilateral abductor palsy, LASER, Posterior cordectomy, Coblation.

INTRODUCTION: BILATERAL vocal fold immobility is commonly caused due to damage to both recurrent laryngeal nerve. Embryology has made the course of recurrent laryngeal nerve rather complicated and highly variable. Various causes include surgery (post thyroidectomy), trauma, neurological, laryngeal and extra laryngeal malignancies, intubation and idiopathic.¹ Clinical features of BILATERAL abductor palsy of vocal cords include stridor due to airway compromise, near normal voice.

The symptomatic treatment for this condition is a balance between phonation, airway and swallowing. Surgeons have been long searching for techniques to safely widen the glottic airway without detracting from vocal quality or causing aspiration. Since 1992 there was no alternative to tracheostomy to present times where there are multiple options available. Introduction of kleinsasser suspension laryngoscope revolutionised endolaryngeal surgical procedures and treatment of Bilateral abductor vocal fold paralysis.

DISCUSSION: A paralysed cord, especially the BILATERAL vocal cords involvement will compromise the airway. It increases the risk of aspiration pneumonia. Unilateral palsy usually get compromised from the opposite cord, whereas the BILATERAL non-functioning cord depending on the final site they were rested will determine whether the remaining airway is too wide that lead to aspiration or too narrow that will compromise the respiratory tract.

BILATERAL vocal cord palsy can present as acute emergency condition to otolaryngologist. Although majority of the Bilateral abductor palsy patients were non stridorous, a superimposed upper respiratory tract infection can lead to a life threatening condition. An oedema to the paralysed cord will compromise the airway. Permanent tracheostomy can be offered. However the patient with permanent tracheostomy tube needs to be well educated on how to manage the tube at home, which include regular cleaning, humidification, tube change, suction and others. Disadvantage is the extra effort to enable him to talk (to occlude or use a speaking valve).

The surgical procedure introduced by Dennis and Kashima in 1989 revolutionised the airway management of the Bilateral abductor vocal fold palsy.² This technique is based on resection of soft tissue and transection of conus elasticus. A C-shaped wedge of posterior vocal fold is excised beginning from the free border and extending to about 4mm laterally.

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Basic rationale in this procedure is the release of tension of the glottis sphincter rather than actual removal of glottic tissue. If airway is not adequate then the same procedure can be carried out on the opposite side also. REKER & REDERT modified the original kashima procedure which involved complimentary resection in the body of lateral thyroarytenoid muscle anteriorly from the initial triangular incision. This produced airway with good voice. The method adopted by Chevalier Jackson introduced ventriculocordectomy, where by entire vocal cord and ventricle was excised,³ created an excellent airway but resulted in breathy voice. Submucosal resection of vocal fold proposed by HOOVER resulted in excessive scarring and thus leading to glottis stenosis and post-operative dysphonia.

Procedures on arytenoid included extralaryngeal arytenoidectomy⁴ in which arytenoid cartilage was freed from all its muscular and laryngeal attachments except the vocal muscle. In lateralization procedure, the arytenoids are fixed laterally to the thyroid ala. This was modified by fixation of the corresponding vocal fold in order to conserve a good glottic opening.⁵ Reports of laryngofissure with arytenoidectomy with lateralization of the vibratory portion of the vocal cord with stainless steel suture creating glottic airway of 4-6mm at its posterior aspect are also documented.⁶

CO₂ laser is arguably the most appropriate tool for cordectomy with the advantage of increased precision, better hemostasis and minimal tissue handling.⁷ CO₂ laser is coupled with acublade, a automated scanning device. This laser is coupled to an operating microscope (KARL ZEISS) for surgery. Laryngeal microsurgical instruments adapted for laser surgery with suction and cautery attachments are used.

Diode laser is used as a complimentary laser system in cases of bleeding in posterior glottis. The setting on the laser machine are as follows acublade mode with 0.5 to 2.0 mm length, 0.2 to 0.5 mm depth and 8 W of power for subtotal arytenoidectomy, 5 W of power for posterior cordectomy.

LASER application is done on continuous mode with super pulse. The surgical procedure usually last for 25 to 30 mins. After the resection of the arytenoid the surgical site is covered with neurosurgical cottonoid with 2ml of mitomycin (1mg/ml) for 2 minutes to prevent fibrosis. The bed is then covered with fibrin glue to prevent formation of granuloma. Up on awaking, non-tracheostomy patients are extubated in OT room.

Performing kashima procedure using coblation technique is really promising. Advantages are blood less ablation, precise ablation of tissue, no collateral damage to adjacent tissue, no oedema of tissue around the larynx, early decannulation is possible.⁸

PRE-OPERATIVE WORK UP: A detailed history is recorded to identify the possible etiology. Most of the patients either present with stridor or have distressed breathing on exertion or during sleep.

Each patient is investigated with endoscopy and radiology. A high resolution CT imaging of the neck and mediastinum is done to rule out any external cause. Anti-reflux management was started in all patients three weeks before surgery and continued for 12 weeks following surgery.

Patient with tracheostomy are anesthetised using red rubber endotracheal tube through tracheal stoma. A wet cottonoid pack is then placed in subglottis to protect the endotracheal tube. The cuff is inflated with normal saline tinted with methylene blue in order to reveal any possible damage during the course of surgery. The intubation tube is removed at the end of surgery to clear up the posterior most part of vocal cords and arytenoid.

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POST OPERATIVE MANAGEMENT: Post operatively, the patients are kept in intensive care unit for 24 hours for observation. The patients are observed for respiratory difficulties due to possible surgical oedema. All the patients receive postoperative therapy include broad spectrum antibiotics for 7 days, nebulization with steroids and mucolytic agents. Antireflux treatment is given for 12 weeks. Patients do have some dysphonia postoperatively but usually may be achieved in most cases with formation of neocord.

CASE-1: A 48 years old female with bilateral abductor palsy came to hospital for decannulation of the tracheostomy tube. She had a history of thyroid surgery, then she had history of difficulty in breathing, noisy respiration for which tracheostomy was done. History of right posterior cordectomy with CO₂ laser. Her symptoms were not relieved. Investigations were done. She was taken up for surgery. Left posterior cordectomy is done using CO₂ laser. She was decannulated after 4 weeks.

Pre

Post

Case 2: A 19 yrs. old female with noisy respiration, difficulty in breathing since 10 years came to our hospital. No history of previous surgery in the neck. Tracheostomy was not done. On endoscopy both the cords are seen in midline, immobile and was diagnosed as bilateral abductor palsy. CT neck was normal. Right posterior cordectomy was done using CO₂ laser and discharged after 1 week.

Pre

Post

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Case 3: bilateral abductor palsy, posteriorcordectomy done using microdebrider and coblator.

Post

Case 4: A 28 yrs. old female with idiopathic bilateral abductor palsy, no history of previous surgery, tracheostomy was not done. She was taken up for surgery and posterior cordectomy done using coblator.

Pre

Post

Sl. No.	Age/sex	History	Tracheostomy	Procedure	Follow up	Decannulation
1	48yrs/f	h/o thyroid surgery	done	Left posterior cordectomy (LASER)	6 months	6 weeks
2	19yrs/f	idiopathic	Not done	Right posterior cordectomy(LASER)	Symptoms relieved immediate post op. follow up done for 6 months	-----
3	25yrs/m	idiopathic	done	Left posterior cordectomy (microdebrider and coblator)	Symptoms relieved.	2 weeks
4	28 yrs/f	idiopathic	Not done	Right posterior cordectomy (COBLATOR)	Symptoms relieved	-----
5	50 yrs/f	h/o thyroid surgery	Not done	Left posterior cordectomy(LASER)	Symptoms relieved	-----
6	52 yrs/f	h/o thyroid surgery	done	Left posterior cordectomy(LASER)	Follow up done for 6months	1week

Table 1

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CONCLUSIONS: Bilateral abductor palsy can be treated by Kashima procedure using different modalities like Laser and coblator and early decannulation in case of tracheostomised individuals.

In all 6 cases were studied. Cases 1 to 4 are supported with pre & postop photographs. In case no. 1 decannulation was possible after six weeks which was also a revision procedure. In cases 2, 4 & 5 which were not tracheostomised symptoms were relieved after the procedure. In case 3 decannulation was done after 2 weeks and in case No. 6 after one week.

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