Thyroarytenoid Muscle Ablation for Treatment of Spasmodic Dysphonia

1Jyoti Dabholkar, 2Shraddha Deshmukh, 3Neeti Kapre, 4Priya Shah, 4Arpit Sharma

1Professor and Head, Department of ENT, Seth GS Medical College and KEM Hospital, Mumbai, Maharashtra, India
2Resident, Department of ENT, Seth GS Medical College and KEM Hospital, Mumbai, Maharashtra, India
3Audiologist and Speech Therapist, Department of ENT, Seth GS Medical College and KEM Hospital, Mumbai, Maharashtra, India
4Assistant Professor, Department of ENT, Seth GS Medical College and KEM Hospital, Mumbai, Maharashtra, India

Correspondence: Jyoti Dabholkar, Professor and Head, Department of ENT, Seth GS Medical College and KEM Hospital Mumbai, Maharashtra, India, e-mail: drjyotidabholkar@gmail.com

ABSTRACT

Adductor spasmodic dysphonia is the most common form of laryngeal dystonia and comprises about 80% of all laryngeal dystonias. It is characterized by strained and strangled voice quality causing significant impairment to the patient. This article focuses on the surgical treatment of adductor spasmodic dysphonia by thyroarytenoid muscle ablation. It provides longlasting control of symptoms and patient satisfaction is very high.

Keywords: Thyroarytenoid, Ablation, Spasmodic, Dysphonia.

INTRODUCTION

Adductor spasmodic dysphonia is a voice disorder characterized by the spasms of the adductor muscles causing strangled voice breaks and a strained-strangled voice quality. In the past, Botulinum toxin injection has emerged as an accepted modality of treatment but it has some disadvantages in the form of temporary effect, need for repeated injections and high cost of treatment. This article focuses on the surgical treatment of adductor spasmodic dysphonia by thyroarytenoid muscle ablation. It provides longlasting control of symptoms and patient satisfaction is very high.

MATERIALS AND METHODS

Two female patients aged 40 and 45 years and a male patient 22 years of age with adductor spasmodic dysphonia were included in this study. In both the female patients, the average duration of symptoms was 11 years and the male patient was symptomatic since 2 years. Their voice assessment was done by the speech pathologist. In all the three patients voicing was effortful with strain and occasional hoarseness, but the essential symptom was voice breaks. Speech was characterized by strained or strangled phonation with inability to vary loudness and pitch range. A subjective evaluation of voice quality by the patient was done to determine the deviance of voice quality and the severity of disability or handicap in daily life and to determine the possible emotional repercussions of the dysphonia. All the patients showed high voice handicap index (VHI) scores. The presurgery VHI score for the three patients were 97, 104 and 100 respectively. Videostroboscopy procedure was performed by an experienced otolaryngologist, which was suggestive of adductor spasmodic dysphonia. Written informed consent was obtained before the surgery.

SURGICAL TECHNIQUE

The patients were taken under local anesthesia which enabled us to monitor the voice changes intraoperatively. Standard neck flexion with head extension was used for positioning. A horizontal skin crease incision was taken in the neck between the thyroid cartilage and the cricoids cartilage. The subplatysmal skin flaps were elevated. Strap muscles were dissected away and thyroid cartilage was exposed. A window of approximately 4 × 8 mm was designed on the thyroid ala, starting 5 mm from the midline (Fig. 1). A patent lower rim of cartilage was maintained just below the window. The perichondrium overlying

Fig. 1: Window made in thyroid cartilage for accessing the muscle
the cartilage window was incised, elevated and removed. This exposed the thyroarytenoid muscle which was ablated by a bipolar cautery. The same procedure was repeated on the opposite side, and thus bilateral thyroarytenoid muscle was ablated. The patient was asked to phonate intraoperatively and there was marked improvement in voice. The wound was closed in layers and the patient was discharged next day.

RESULTS

Post surgery, in all the three patients, easy onset of phonation was observed. There were no voice breaks or strain in the voice. The voice was less effortful because of less forceful closing of the vocal cords. The patients were able to vary their loudness and pitch, and even sing to rhythm. VHI was repeated post-surgery which showed a reduced score, i.e. 24 in first patient, 32 in the second patient, 30 in the third one, thus indicating improvement in the quality of life which was earlier disrupted due to the voice handicap.

DISCUSSION

Laryngeal dystonia is a focal action-induced dystonia that affects laryngeal muscle control. These patients suffer from hyperfunction of the laryngeal muscles with excessive closing or opening of the glottis during phonation or respiration. Laryngeal dystonia is also referred to as spasmodic dysphonia.

Laryngeal dystonias can be classified as adductor type, abductor type, mixed type and adductor laryngeal breathing dystonia.1 The adductor spasmodic dysphonia is characterized by spasms of the adductor muscles with resultant strangled, strained short-lived speech with frequent voice breaks. Repeated, effortful phonation leads to fatigue and a resultant breathy voice quality.

Since the mid 1980s, Botulinum toxin injection has emerged as an effective and standard treatment for spasmodic dysphonia. However, it is characterized by certain limitations like transient effect, need for repeated injections, a high cost of treatment, a breathy voice quality and development of resistance over a long period of time. Furthermore, a meta-analysis of botulinum toxin suggested that botulinum toxin treatments were not uniform as an effective and standard treatment for spasmodic dysphonia.2

In two of our patients the average duration of spasmodic dysphonia was 11 years and the third patient had been symptomatic for 2 years. Post procedure they described a much improved voice quality, a significant improvement in self confidence and a much better quality of life.

We acknowledge the limitations of this study, i.e. few patients and a short follow-up. The final outcome assessment was based on speech pathologist’s voice assessment, the clinician’s assessment of voice, the laryngoscopic appearance of vocal folds and finally the patients self assessment of their voice.

REFERENCES