Short and long term outcomes after Silastic medialization laryngoplasty: Are arytenoid procedures needed?

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ABSTRACT

Objective: To evaluate short and long term vocal outcomes after medialization laryngoplasty (ML) using Silastic implant in patients with unilateral vocal fold paralysis (UVFP). Design and methods: Prospective study of consecutive patients undergoing surgery for UVFP (2009-2011). Patients were excluded if they had a history of arytenoid procedures or medialization laryngoplasty (ML) with other designs of silastic implants. Results were compared to the MLS population as a whole and addition, a selective evaluation was made of patients who had undergone medialization laryngoplasty with Silastic implants or large glottic gaps. Evaluation: Pre and postoperative outcomes were compared to the MLS population as a whole and a selective evaluation was made of patients who had undergone medialization laryngoplasty with Silastic implants or large glottic gaps.

METHODS

Patient Selection: A prospective study was undertaken involving adult patients with unilateral vocal fold immobility (UVFP) who presented to our Institute’s Voice Center and elected to have MLS between 2009-2011. Patients were additionally stratified for review if the etiology of their vocal fold paralysis included both superior and recurrent laryngeal nerve surgical history or EMG. All pre-operative videostroboscopy recordings were evaluated to identify patients who had lateralized vocal folds with poor closure. These patients were excluded if their maximum phonatory time (MPT) was less than 5 seconds. Pts were excluded from the study if they had a history of bilateral vocal fold paralysis, vocal fold scar, laryngeal stenosis, unilateral vocal fold paresis, presbylarynges, <18 years old, those with a UVFP not electing surgical intervention, or postoperative follow-up <6 months. Patients were also excluded if they were having a revision medialization.

Evaluation: Pts were assessed preoperatively and postoperatively utilizing the VHI-30 scale to assess the subjective degree of vocal handicap resulting from their UVFP. Pts were surveyed postoperatively at 1, 3, 6, 12-18 months. From each patient questionnaire, individual and average scores were calculated for the physical, functional, and emotional domains of the VHI, as well as a total score for each treatment group. MPTs were recorded for all pts preoperatively as well as postoperatively during the same postoperative intervals and averaged among treatment groups.

Medialization Laryngoplasty (Figure 1): MLS was performed on patients with chronic UVFP of duration >1 year, those with a poor prognosis for recovery on electromyography (EMG) at 3-6 months, or where return of activity was unanticipated secondary to known iatrogenic nerve section, intentional sacrifice, etc. All laryngoplasties were performed under monitored local anesthesia care without intravenous sedation and guided by intraoperative flexible laryngoscopy. Although there was some variability based on the sex of the patient and size of the thyroid cartilage, ML windows were designed approximately 6-7 mm posterior to the vertical midline of the anterior thyroid lamina with a height of approximately ranging from 0.5 cm by 1.0 cm in length, and positioned about 3 mm from the inferior aspect of the thyroid cartilage. Maximum medialization ranged from 5-8 mm. Windows were designed such that no violation of the internal thyroid periostium was created. Prostheses were individually carved from a silastic block by the senior author to fit within the paraglottic space, such that the lateral edge would interlock within the thyroplasty window. The adequacy of medialization and closure was determined through a combination of vocal quality, intraoperative flexible laryngoscopic assessment, and MPT.

INTRODUCTION

Unilateral vocal fold paralysis (UVFP) is a condition that is frequently multi-factorial and associated with a significant socioeconomic and psychologic toll. There are multiple treatments that have shown to be effective for the treatment of UVFP, including reinnervation, short acting or longer acting injections, or medialization laryngoplasty (thyroplasty). Most of these techniques are designed to improve longitudinal vocal fold movement in a variety of ways, depending on the specific etiology of the UVFP. The safety, cost and efficacy of MLS would support consideration of this procedure alone for permanent treatment of UVFP without fixation.

DISCUSSION

Medialization laryngoplasty has been routinely performed since first described by Iishiki. (1) There have been many different techniques described as well multiple materials used to medialize the vocal fold. Despite the magnitude of the literature on these interventions, the safety, effectiveness and long term outcomes after medialization are not always clearly defined. The purpose of this study was to evaluate short and long term outcomes after medialization laryngoplasty using Silastic implants (MLS). The purpose of this study was to evaluate patients undergoing medialization laryngoplasty using Silastic implants in order to determine the objective effects of the surgery on voice and to compare to reported results in the literature using various procedures and techniques. In addition, a selection for vocal fold paralysis patients who had high vocal lesions or large laryngeal gaps, and their results were compared to the MLS population as a whole and also to the reported literature.

CONCLUSIONS

- Silastic ML significantly improves vocal outcomes in patients with UVFP at short and long term follow up and are comparable (or better) than reported arytenoid procedures.
- The location of the thyroarytenoid window and the design of the prosthesis may be critical in the ultimate voice outcomes.
- The safety, cost and efficacy of MLS would support consideration of this procedure alone for permanent treatment of UVFP without fixation.

REFERENCES


Table 1. VHI preoperatively and at 1, 3, 6 and 9 months postoperatively in entire cohort of 70 patients

Table 2. Preoperative and at 3, 6 and 9 months postoperatively in patients with high vocal lesion/large gap

Table 3. MPT preoperatively and at 1, 3, 6 and 9 months postoperatively in entire cohort of 70 patients

Table 4. MPT preoperatively and at 1, 3, 6 and 9 months postoperatively in patients with high vocal lesion/large gap