Injection versus medialization laryngoplasty for the treatment of unilateral vocal fold paralysis: follow-up at six months

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ABSTRACT

Objective: To determine whether injection laryngoplasty or medialization laryngoplasty is more effective in the long-term treatment of unilateral vocal fold paralysis (UVFP).

Study Design: A retrospective study of patients with UVFP who underwent either injection or medialization laryngoplasty at the University of Arkansas for Medical Sciences (UAMS) between July 29, 2003, and November 18, 2005.

Methods: The data analyzed included patient characteristics and type of intervention, along with the pretreatment and posttreatment parameters of videostrobolaryngoscopy, perceptual analysis, patients' subjective voice assessment, and aerodynamic and acoustic measurements.

Results: Thirty-four patients were evaluated, 15 new and 19 from a previous study (Morgan et al., 2007). The average time from intervention to post-treatment examination in the combined cohort was 6.4 months (range, 1-24 months). Improvements were demonstrated in each of the voice parameters in both the injection and the medialization groups. No significant differences were found in the degree of improvement between the two groups.

Conclusion: Injection and medialization laryngoplasty were comparable in their improvement of subjective and objective voice outcomes at average long-term follow-up of 6 months.

INTRODUCTION

Medialization laryngoplasty has been deemed the gold standard surgical treatment for UVFP since its development by Isshiki in 1974. Although injection laryngoplasty has been practiced since 1911, materials used for the procedure have been found to be less than ideal. The complication of granuloma formation with Teflon injection has been well documented in the literature, and its use in vocal cord medialization has fallen out of favor. More recently, injection laryngoplasty has become a popular alternative treatment due to the development of new injection materials. It is the hope that these materials, namely micronized acellular dermis (Cymetra) and calcium hydroxyapatite (CaHA), will not cause similar problems. One question that needs to be answered is how injection laryngoplasty with these agents compares to medialization laryngoplasty in the treatment of UVFP.

Morgan et al., (2007) presented 19 patients from our institution and found similar outcomes for the two surgical approaches at an average of three months posttreatment. Both Cymetra and CaHA were used as injection materials. As an extension of Morgan et al., this study will examine whether injection or medialization laryngoplasty is more effective in the treatment of UVFP at greater than three months follow-up.

METHODS AND MATERIALS

Patients
Thirty-four patients treated for UVFP were identified from a prospectively maintained database in the UAMS Voice and Swallowing Center.

Perceptual voice analysis
Pre- and posttreatment overall severity, roughness, breathiness, strain, pitch, loudness, asthenia, and hoarseness were assessed using a modified Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V).

Videostrobolaryngoscopy (VSL)
Pre- and posttreatment VSL examinations were digitally archived and evaluated using the Stroboscopy Research Instrument (SRI).

Patients’ perception
The Voice Handicap Index (VHI), a validated questionnaire completed by the patient, was used to determine each patient’s self-perceived degree of morbidity from dysphonia pre- and posttreatment.

Statistical analysis
The signed rank test was used to compare pre- and posttreatment outcomes for both groups. Wilcoxon rank sum tests were used to compare results between the two treatment groups. Correlation between the CAPE-V, SRI, and VHI was calculated using Spearman’s rho correlation coefficient.

RESULTS

Perceptual analysis
No statistically significant differences were observed in the CAPE-V parameters between the treatment groups. This was true even when difference in length of follow-up was considered.

Videostrobolaryngoscopy
The SRI Total parameter for each intervention group was compared using a Wilcoxon rank sum test. There was a statistically significant difference between the groups. However, this finding did not hold true when difference in length of follow-up was considered.

Patients’ perception
Pre-treatment and posttreatment VHI data was available for only 9 injection patients and 5 medialization patients. Although no meaningful statistical analysis could be performed due to limited data, trends were appreciated. In the medialization group, patients’ overall rating of their voice improved from 64.1 prior to treatment to 16 following treatment. In the injection group, patients’ overall rating of their voice improved from 63.7 pretreatment to 30 posttreatment.

Correlation of CAPE-V, SRI, and VHI
Spearman’s rho correlation coefficients were calculated to compare the correlation among CAPE-V, SRI, and VHI. The CAPE-V Overall Severity parameter and the SRI Total Score were statistically significantly correlated.

CONCLUSIONS

In our experience, injection and medialization laryngoplasty appear to yield comparable voice outcomes at six months post-treatment. As demonstrated by the two patients who required a second type of intervention, both treatment modalities should be discussed with each patient and considered for treatment of UVFP. It should be emphasized that the decision regarding treatment choice should be individualized for each patient.

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Consensus Auditory-Perceptual Evaluation of Voice change from treatment, injection (left), medialization (right).