Dysphagia Clinic: Novel Injection Technique into Interarytenoid Area for Dysphagia
Case Study and Literature Review

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ABSTRACT

Injection laryngoplasty is a common method for treating glottic insufficiency, a common cause of dysphagia. This technique has been used to treat pediatric aspiration in patients with type 1 laryngeal clefts. The traditional site of an injection laryngoplasty is the paraglottic space. Our objective is to present an innovative treatment of glottic insufficiency and consequent dysphagia in a patient who had an arytenoidectomy for posterior glottic stenosis. The patient underwent the interarytenoid injection and noticed an immediate improvement in his dysphagia. This novel technique applies the concept of a filler to a non traditional location in the larynx. The patient's clinical course and treatment outcomes confirmed efficacy.

MATERIALS & METHODS

IRB waiver obtained and approved by Drexel Unversity Office of Human Research per DHHS/FDA regulations. 1601 Cherry Street, 3 Parkway Building, Suite 10444, Philadelphia, PA 19102

Case Presentation

A 77-year-old male presented with a 3 year history of dysphonia, bilateral vocal fold paralysis with subsequent glottic insufficiency and dysphagia. The patient had a complicated medical history including non-Hodgkin lymphoma treated with chemoradiation. He was diagnosed with papillary thyroid cancer and underwent a total thyroidectomy, ultimately resulting in bilateral vocal fold paralysis and posterior glottic stenosis requiring a tracheostomy. The patient also developed concomitant dysphagia, which was treated with serial esophageal dilations. He sought a permanent remedy for his dysphonia, airway, and dysphagia in hopes of eventual decannulation.

Several treatment options were discussed with the patient and he ultimately underwent laryngeal dilation and right arytenoidectomy with microflap. He was advised preoperatively of the risk for worsening dysphagia and aspiration. Postoperatively, his airway dramatically improved, but he began choking on his food. Flexible laryngoscopy showed glottis insufficiency, posterior glottic gap and bilateral vocal fold immobility (Figure 1).

Modified barium swallow (MBS) and fiberoptic endoscopic evaluation of swallowing confirmed that he was aspirating. He was advised to take nothing by mouth (NPO), use his G-tube for nutrition, and undergo swallowing therapy with a speech language pathologist. After several months of conservative treatment, the patient sought measures to improve his swallowing and accepted life with a tracheostomy. After the discussion of a laryngeal separation or laryngectomy, he agreed to a temporary injection of the interarytenoid area. He was taken to the operating room with the objective of closing off the posterior glottis gap and improving his aspiration/dysphagia.

Intraoperatively, he was a difficult exposure with the female medium Sataloff endoscope. The remaining cricoarytenoid joint was fixed and there was significant scarring in the posterior glottis. Cymetra (Micronized Alloderm Tissue; LifeCell Coorporation; Bridgewater, NewJersey) was injected into the interarytenoid space, closing the posterior glottic gap under direct visualization. He tolerated the procedure well. After the surgery, he noticed an immediate improvement in his dysphagia. Flexible laryngoscopy showed that the glottic insufficiency and posterior glottis gap was much improved (Figure 2). Although he was not compliant with obtaining an early post operative MBS, his pulmonologist re-evaluated him and felt that he was no longer aspirating.

Figures

Figure 1: Flexible laryngoscopy after the right arytenoidectomy showed glottic insufficiency and a significant posterior glottic gap.

Figure 2: Flexible laryngoscopy after the injection into the interarytenoid area. The glottic insufficiency and posterior glottis gap was much improved. His symptoms of aspiration and dysphagia were also much improved.

DISCUSSION

Injection laryngoplasty (IL) has been a well-documented treatment for glottic insufficiency since first described by Wilhelm Brunings in 1911.[1] Traditionally, the proper site of injection is found at the junction of the superior surface of the vocal fold and the laryngeal ventricle, lateral to the membranous vocal fold.[2,3] Some innovative injection techniques have been reported in the literature. Sato et al. reported the successful and immediate recovery of the normal swallowing function with the injection of autologous fat into the thyroarytenoid muscle, false vocal fold, aryepiglottic fold and medial wall of the pyriform sinus in three patients.[4] Horn et al. studied the role of interarytenoid IL for the treatment of pediatric aspiration. Approximately 57% responded well to this technique, but patients with type 1 posterior laryngeal cleft were less likely to respond.[5]

CONCLUSIONS

Our case described a novel method of treating glottic insufficiency, a common cause of dysphagia. The treatment dramatically improved the patient's dysphagia, and he was able to eat solid food. Augmentation of the interarytenoid space was a simple and innovative alternative to the traditional paraglottic space injection, offering dysphagia relief with low risk to the patient. Although the results are temporary, the procedure may be repeated. It may be more acceptable to the patient than the options of laryngectomy, laryngeal separation, or remaining NPO with a G-tube.

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Key words: Dysphagia, Glottic Insufficiency, Interarytenoid, Laryngoplasty