



# Laryngeal Liposuction

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## Introduction

Soft tissue augmentation utilizing filler material has been used since 1893, with the German surgeon Gustov Neuber performing the first documented autologous fat transfer for correction of a facial defect.<sup>1</sup> Since that time, numerous filler materials have been used. Today, products used in vocal fold injection include relatively long-lasting solutions including not only autologous fat, but also calcium hydroxylapatite (Radiesse™), polydimethylsiloxane (PDMS or particulate silicone), and shorter acting temporary materials such as bovine gelatin, collagen-based products, carboxymethylcellulose, hyaluronic acid (Restylane™), and others.<sup>1</sup> When injecting materials into vocal folds, it is important that convergence of the subglottic area be maintained.

## Case

This 64-year-old male had been referred to a laryngology office for right vocal fold paresis. He reportedly had a weak and breathy voice. Dysphonia had started suddenly after anterior cervical spine surgery. Laryngeal electromyography obtained at presentation was consistent with right severe vocal fold paresis. The patient had been treated elsewhere with bilateral vocal fold calcium hydroxylapatite. Initial injection was successful, and the patient sought an additional injection as effects subsided. After a second injection bilaterally with hyaluronic acid, his voice became increasingly raspy, squeaky, low volume and fluctuated. This acute change in voice was attributed to deposition of filler material into the right subglottic space, with resulting loss of subglottic convergence (Figure 1).

Probable tissue reaction resulted in persistent dysphonia long after the hyaluronic acid should have resorbed. Thirteen months after the procedure, the patient underwent micro-direct laryngoscopy with reduction of right subglottic fullness and

reshaping of the subglottic area using a new technique and instrument described below, along with excision of right vocal fold nodular mass with minimicro flap, excision of multiple left subglottic fibrotic masses and scar with minimicro flap, and bilateral 5-fluorouracil triamcinalone injections for treatment of scar. This procedure improved subglottic convergence and increased pliability in the area of scar (Figure 2). Two weeks after the procedure, his voice was much less hoarse and he was able to speak with ease and clarity. The patient's clinical improvement has persisted at follow up six months after the procedure.

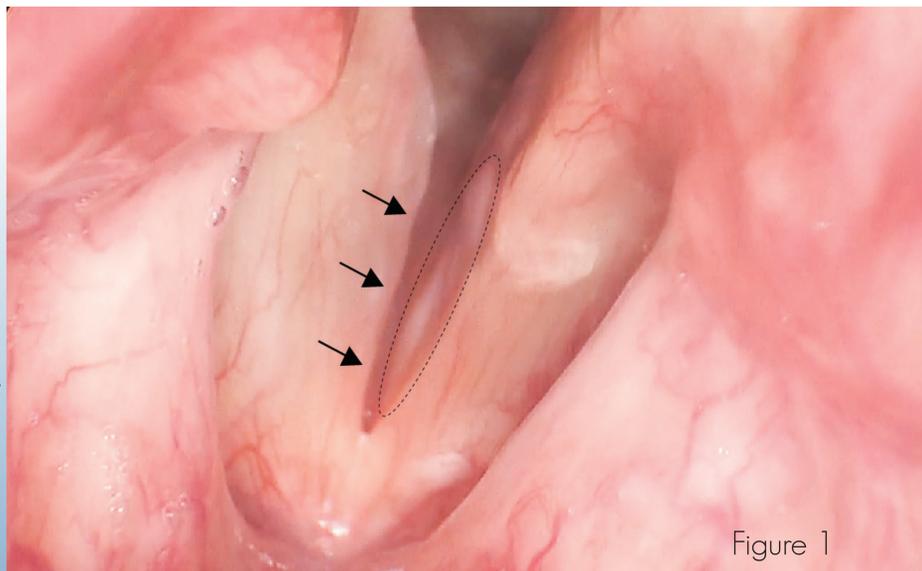


Figure 1

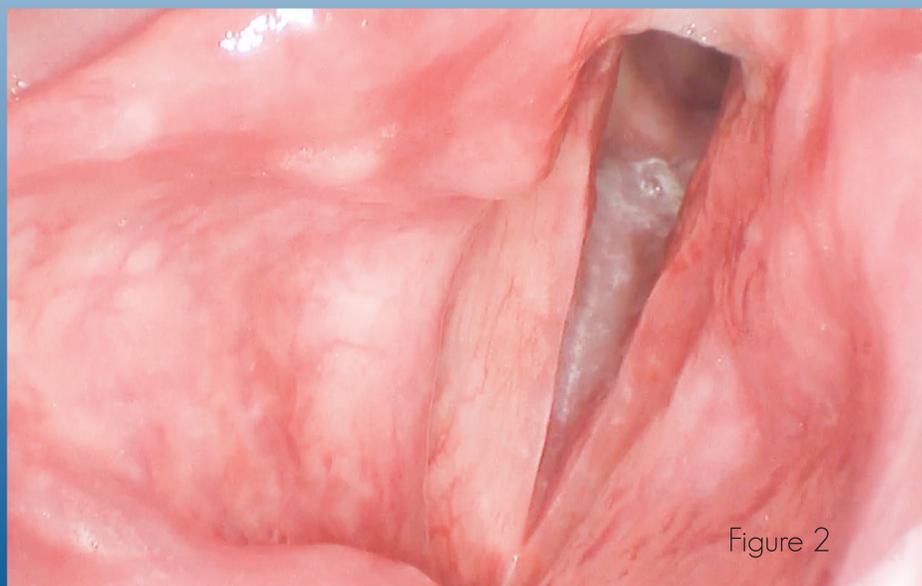


Figure 2

## Discussion

This procedure used a novel technique of laryngeal "liposuction" to achieve improved subglottic architecture. A Sataloff Laryngeal Liposuction Cannula (Figure 3a and 3b) connected to a liposuction machine on wall suction was utilized to remove the subglottic fullness of the right true vocal fold. Removing this excess material and reshaping the area restored subglottic convergence, increasing phonatory efficiency. The vocal fold injection with a mixture of 5-fluorouracil and triamcinolone in this and other areas of scar helped improve vocal fold pliability and mucosal wave.

Vocal fold injection with fillers allows for the treatment of glottal insufficiency from a variety of causes.<sup>1</sup> Although not well represented in the literature, extrusion of filler material is not uncommon. Cosmetic fillers have a viscosity designed to migrate

into narrow spaces and leave a smooth contour. Low viscosity may become a liability when injecting into the vocal folds, as it deposition along fascial planes to unfavorable locations particularly the subglottic and paraglottic areas. A study measuring the turbulence intensity of air in canine larynges using hot wire anometry demonstrated that turbulence of air flow is decreased in the subglottic area and is dependent on the smooth converging shape of the sub-glottis, quantified as the area reduction ratio.<sup>2</sup> If subglottic convergence is disturbed substantially, voice quality and vocal effort worsen. Our case illustrates a minimally traumatic technique to restore convergence by using liposuction to target areas in which filler material has deposited inadvertently.

## References

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- Oren, Liran, et al. "Role of Subglottal Shape in Turbulence Reduction." *Annals of Otology, Rhinology & Laryngology*. 2009; 118(3):232-240.