

Phonosurgery as a Concept

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In 1930, Gluck [1] coined the term “phonetic surgery.” At the end of the 1950s and the beginning of the 1960s, surgery centered exclusively on voice became an accepted surgical modality [1]. The concept of phonosurgery was introduced by Albrecht, whose use of a gynecologic colposcope for microlaryngoscopy was met with skepticism by the otolaryngological community [2]. In 1963, Von Leden [3] defined the term “phonosurgery,” which they would later popularize. Von Leden recalls this event and his personal interactions with Lewy, Kleinsasser, Jako, Lynch, and others who catalyzed the evolution of laryngoscopes and optics.

The basic principle of phonosurgery is to maintain or improve the functional structure of the vocal fold by respecting its layered structure. This is achieved by means of minimal tissue excision, minimal disruption of the superficial layer of the lamina propria and preservation of the epithelium, especially at the vibrating edge [4]. Surgical procedures performed directly on the vocal folds with the aim of (a) improving the vibratory movement restoration of the normal mucosal wave, or (b) correction of vocal folds position and/or tension [1].

Unilateral and bilateral vocal fold paralysis is polyetiologic conditions, the leading causes include surgery (predominantly thyroid surgery) –26 to 59%, intubations maneuver –1 to 31%, trauma –1 to 28%, neurological disorders – 7 to 22%, extralaryngeal malignancies –5 to 17% [5].

Incomplete glottal closure resulting from unilateral vocal fold paralysis can cause impairment of most of the laryngeal functions, including airway protection, breathing and stabilization of the body core during physical activity and phonation. However, dysphonia and vocal efficiency are generally the main concerns of the patient and the treatment team [6]. The decision for surgical or behavioral intervention for patients with vocal fold paralysis is driven by the patient’s perception of a vocal handicap and the expectation on the part of the surgeon, the voice therapist and the patient that treatment will address the patient’s primary concerns [6]. Usually the patients with unilateral vocal fold paralysis used a ‘falsetto register’ to overcome the glottal gap, with an increased and unstable fundamental frequency. After the medialization procedure, the voice recovered to ‘modal register’ and the fundamental frequency could be decreased and stabilized. The stability of the fundamental frequency was also an indicator of a reduction in the jitter and the shimmer [7].

Management options of unilateral vocal fold paralysis include observation, voice therapy, and surgery, and the decision to intervene is based on multiple factors such as the patient’s degree of morbidity and associated comorbidities, the cause of the paralysis, the chances for recovery or compensation, the patient’s personal and professional vocal needs, his or her primary concerns, and the risks and sequelae inherent to each of the therapeutic options [8].

Adduction bilateral vocal fold immobility syndrome may be due by both recurrent laryngeal nerves paralysis - Gerhardt syndrome and all intrinsic laryngeal muscles paralysis - Riegel syndrome.

For centuries tracheostomy has been the golden standard for

securing the airway. A vast majority of surgical interventions have been developed and applied to restore the patency of the airway and achieve decannulation. In the 1950s, the microscopic endoscopic laryngeal surgery boomed. At the end of the twentieth century many of the classical endoscopic operations were performed either with the help of surgical lasers alone, or in combination with other interventions. The surgical procedures for enlargement of the glottic space can be classified in many ways and their major characteristics are: changes at the glottic level; surgical approach: open neck or endoscopic, with or without opening of the mucosal lining; the need for tracheostomy; the equipment used [9].

The current trends from the twentieth century are towards endoscopic minimally invasive techniques. Lasers proved to be a very helpful tool for the surgical intervention itself, but it is impossible to state if they are superior to cold steel techniques concerning the late results. Avoiding tracheotomy during the period of waiting for potential spontaneous reinnervation (for example using temporary lateralization procedures) improves significantly the quality of life of the patients and probably will lead to a major change in the overall clinical management of bilateral vocal fold paralysis in adduction [10].

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