

Anesthesia Care for the Professional Singer



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KEYWORDS

• Anesthesia • Surgery • Voice • Professional singer

KEY POINTS

- Voice is produced by good breath support, smooth vibratory vocal cords for phonation, and an oral cavity for articulation.
- The professional singer should have a detailed informed consent of the risks of anesthesia and/or surgery on the voice.
- Anesthetic considerations include: use smallest possible endotracheal tube or laryngeal mask airway; use low cuff pressure; minimize tube movement; consider corticosteroids and acid reflux prophylaxis.

INTRODUCTION

The administration of anesthesia to a professional voice user warrants special consideration. Whether the patient is a professional singer, actor, radio or TV personality, lawyer, physician, or teacher—all hold exceptional value to their ability to produce voice. To these voice professionals, the ability to produce a clear, strong, and sometimes uniquely distinctive, voice is not only a passion but also a means of livelihood. Therefore this patient may make every effort to protect, conserve, and nurture his or her voice through times of illness, strain, or periods of increased voice demand. To the vocal professional, an upcoming operative procedure requiring anesthesia may be daunting and riddled with anxiety as he or she considers the possible ramifications to the voice.

General anesthesia can affect voice production by interfering with the various components essential for healthy voicing. Voice is produced from a coordinated effort of pulmonary function for adequate breath support, vocal cords capable of phonating with smooth vibratory motion, and an oral cavity that facilitates articulation and resonance. Establishment of an artificial airway and maintenance of general anesthesia may pose risks of altering the voice mechanism postoperatively. This article will focus

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on the application of anesthesia to patients who are professional voice users, with particular attention to the professional singer.

BIOMECHANICS OF VOICE

Although essentially all body systems can directly or indirectly affect the voice, most attention is given to the larynx, the lungs, and the supraglottic vocal tract. For the purposes of this discussion, it is helpful to conceptualize the larynx in 3 main parts: the vocal cords, the intrinsic laryngeal muscles, and the extrinsic laryngeal muscles. From superficial to deep, the vocal cords are composed of an epithelial layer, a superficial lamina propria comprised of gelatinous glycosaminoglycans necessary for smooth vibration of the vocal cords, a vocal ligament extending from the vocal process of the arytenoid cartilage to the anterior commissure, and the muscle bellies of the thyroarytenoid muscle.

As an air column is propelled through the airway, the vocal cords vibrate with smooth and elegant periodicity in an inferior-to-superior manner. Edema or inflammation of the epithelial layer or traumatic injury to the deeper layers of the vocal fold can affect vocal quality. The intrinsic laryngeal muscles adduct and abduct the vocal cords, and the extrinsic laryngeal muscles elevate and depress the larynx (eg, during swallowing). In the trained singer, the extrinsic muscles maintain the larynx in a relatively constant position.¹

The supraglottic vocal tract is comprised of the supraglottic larynx, the pharynx, the tongue, the hard and soft palates, the nasal cavity, and the sinuses. These structures act in concert to create a resonant chamber, which gives a certain quality to the voice. Alteration of this anatomy with adenotonsillar hypertrophy, growth of nasal polyps, or edema from an upper respiratory infection will invoke changes to the resonance of the voice that may be recognized immediately by the trained vocalist.

In singing, the lungs supply a constant flow of air through the vocal cords and generate the power of a voice. Trained singers generally have an increased efficiency of respiratory use. They do not have an increased total lung capacity as assumed by some, but rather use a higher proportion of air in the lungs, thereby decreasing residual volume.²

The abdomen is considered the support system to assist the lungs in maintaining adequate airflow. Although some vocal coaches prefer a distended abdomen, most vocal techniques focus on maintaining the optimal position of the abdomen up and under the rib cage. In each paradigm, an abdominal wall injury is deleterious to the professional voice.

Alterations of the musculoskeletal system may have subtle impacts on the voice. Foot problems may drive the weight of the body to the heels rather than on the metatarsal heads, which in turn increases the strain of abdominal and back musculature enough to affect the voice. Extra tension in the arms and shoulders may cause increased cervical strain and muscle tension dysphonia.

The properly trained singer will assume a favorable position for optimal vocal performance.¹ Surgical intervention on any body part affecting proper vocal technique may have a deleterious impact on the voice mechanism.

PREOPERATIVE CONSIDERATIONS

Treatment of the professional voice user merits careful consideration preoperatively, intraoperatively, and postoperatively (**Table 1**). Appropriate counseling of postoperative expectations should be provided to the professional singer long before the day of surgery. The patient should be provided with realistic expectations about the effects of general anesthesia and intubation on the voice. Following an endotracheal tube intubation, the patient should understand the expected course of mild sore throat, a rough

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