

Voice Masculinization: Surgeries to Lower the Vocal Pitch in Trans Men

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1. Abstract

Gender identity disorder refers to a state in which gender self-awareness and biological sex are different. In these clinical conditions, there are different techniques that allow these patients to improve their quality of life and self-acceptance with a voice compatible with the gender in which they are recognized to be. Current therapies include speech therapy, hormonal therapy and vocal surgery, such as Thyroplasty Type 3 (TP3) that can be performed. TP3 is a surgical technique that aims to reduce the antero-posterior diameter of the thyroid cartilage, contributing to decreasing the frequency of the waves making the voice more severe. The first surgical description involving the laryngeal framework dates back to 1915 by Payr, however this type of procedure became popular through Isshiki techniques, starting in 1970. The basic principle of the Isshiki technique is to decrease the distance between the insertions of the vocal folds, thus reducing their tension allowing to obtain an appropriate vocal final result for each patient. These procedures are indicated for stiff vocal folds and also in cases of inadequately high-pitched voice due to mutational vocal disorders or female-male transsexualism.

2. Introduction

Gender identity disorder refers to a state in which gender self-awareness and biological sex are different. Treatments from Women to Men (TMH)/gender identity disorder include hormone therapy; plastic surgery; sexual reassignment surgery; voice therapy and phono surgery. In most cases hormonal therapy allows

the voice of patients with TMH to become severe [1]. In cases of successful therapy, no phono surgery is necessary.

It is known that 75% of individuals with this disorder believe that they would always have a voice considered to be masculine, and another 25% believe that their voice definitely had a stronger pattern of men than of women. Other data has shown that 12 out of 16 patients have always been treated like men on the phone, in addition to 14 out of 16 patients believing that successful vocal surgery is of similar importance to sexual reassignment surgery (surgical modification of the sexual organs) [2, 3].

In this context, despite the therapeutic availability, it is known that hormone therapy can be ineffective in some cases. In these, ThyroPlasty type 3 (TP3) is performed, a surgical technique that aims to reduce the anteroposterior diameter of the thyroid cartilage. Thus, the vocal folds shorten and relax, reducing the tension and decreasing the frequency of the waves during vocalization, which makes the voice more severe [4, 5]. These procedures are indicated for stiff vocal folds, as it happens, for example, in spasmodic dysphonia of adduction or vocal groove, and also in cases of inadequately high-pitched voice due to mutational vocal disorders or female-male transsexualism [6].

The first surgical description involving the laryngeal framework dates back to 1915 by Payr, however this type of procedure became popular through Isshiki techniques, starting in 1970. This is one of the most dynamic areas of phono surgery and its main objective is to improve the voice without direct intervention in the

vocal folds. The European Society of Laryngology proposed in 2000 a classification and nomenclature of these surgeries according to their purpose [7-10].

The basic principle of the Isshiki technique is to decrease the distance between the insertions of the vocal folds, thus reducing their tension [11]. Isshiki proposed to decrease the tone of the voice by anteroposterior relaxation or TP3. This resulted in shortened vocal folds with reduced tension.

The first version of this relaxation thyroplasty, also called retrusion thyroplasty, consisted of bilateral excision of vertical strips of 2 to 3 mm of thyroid cartilage. A second modified version achieved a similar result by bilaterally incising the thyroid blade and depressing the anterior segment of the thyroid cartilage. This modified version is called medullary relaxation thyroplasty (anterior retrusion commissure), in the classification system of the European Laryngological Society [12-14, 8, 4].

The technique is described below. After positioning the patient, the thyroid cartilage is palpated so that the incision site can be drawn. The midline is also marked on the chin, neck and sternal wish-bone. The incision should be horizontal, approximately 3-4 cm. The strap muscles are identified on each side of the thyroid cartilage, dissected and gently retracted laterally. Hemostatic control must be strict. An incision is made through the perichondrium and blunt dissection is performed anteriorly and posteriorly to lift the perichondral flaps. After dissection by planes, the thyroid cartilage must be widely exposed.

A vertical cartilage tape (about 3-4mm) is then removed at the junction of the anterior third with the middle third of the lateral lamina of the thyroid cartilage (about 7mm away from the midline). This procedure can be performed unilaterally or bilaterally. After removing the cartilage tape, two sutures of the remaining portions of the thyroid cartilage are performed for better fixation.

In the second version, two vertical incisions are made and the entire anterior segment of the thyroid cartilage is subsequently dislocated. The sutures are then made between the fixed parts of the thyroid cartilage [1, 15, 10, 16] (Figure 1).

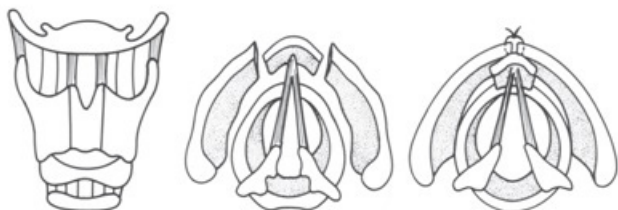


Figure 1: Incising the thyroid lamina bilaterally and depressing the anterior segment of the thyroid cartilage. According to Remacle et al. [1]

3. Variation

In this variation, a rhomboid-shaped cartilage window is prepared while maintaining the anterior commissure centered in the field. The upper and lower corners are not less than 3 mm from the lower

and upper margins of the thyroid cartilage, in order to maintain the structural stability of the entire thyroid cartilage. The lateral corners are extended laterally, at a distance of not less than 10 mm in the direction of the glottic line parallel to the lower border of the lower border of the thyroid cartilage. The cartilage window is then incised with a No. 15 scalpel blade or pierced with a 2 to 3 mm diamond drill [17, 6] (Figure2).

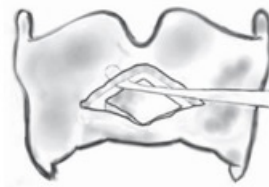


Figure 2: A rhomboid-shaped cartilage window was prepared, while keeping the anterior commissure centered in the operative. According to Kocak et al. [6]

4. Postoperative Care

Vocal rest is recommended for 5-10 days, use of anti-inflammatories, antibiotics, in addition to avoid excessive neck movement for 10 days. After a week of surgery, vocal therapy is then started.

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