

Puberphonia

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ABSTRACT

Puberphonia is a psychogenic voice disorder; so far the treatment for this one is speech therapy. Even though there is no organic lesion, surgical treatment holds good for the resistant cases who does not improve with speech therapy. Here, we are sharing our experience of 7 cases with proper preoperative and postoperative voice analysis.

Keywords: Puberphonia, Thyroplasty type 3, Acoustic analysis.

INTRODUCTION

Normally adolescent males undergo voice changes due to a sudden increase in the length of the vocal cords due to the enlargement of the Adam's Apple (thyroid prominence). This is uncommon in females because their vocal cords do not show a sudden increase in length. This sudden increase in the length of the vocal cords is due to the sudden increase in testosterone levels found in pubescent males.

The persistence of adolescent voice even after puberty in the absence of organic cause is known as puberphonia. This condition is commonly seen in males. The patient has an unusually high pitched voice persisting beyond puberty. This is uncommon in females because laryngeal growth spurt occurs commonly only in males.

Because there is no organic change in the larynx, the disorder is grouped under psychogenic voice disorders. The incidence is 1 in 900,000 people. Even though the incidence is low, for the individual it causes a social and psychological embarrassment.

In infantile larynx, the laryngotracheal complex lies at a higher level than in adulthood. The laryngotracheal complex descends throughout the life, but at puberty there is rapid lowering of larynx relative to base of tongue. The larger larynx means longer cords and deeper pitch. The boy may continue to use high-pitched voice or it may break into higher and lower pitch. The larynx is large and unstable, and the brain is more accustomed to infant voice. At puberty, it will need to retrain in order to cope with larger larynx.

Etiology of puberphonia include emotional stress, delayed development of secondary sexual characters, psychogenic, hero worship of older boy, maternal protection, etc. Puberphonia may also be because of nonfusion of thyroid laminae, in these cases hypogonadism may be the cause and it has to be ruled out.

MATERIALS AND METHODS

All our patients are in the age group of 22 to 37 years, who presented to us with high-pitched voice. All of them underwent

Table 1: Comparison of pre- and postoperative pitch

Patients	Mean pitch in Hz (preoperative)	Mean pitch in Hz (postoperative)
1	222	145
2	198	119
3	232	149
4	247	152
5	234	127
6	211	157
7	227	137

speech therapy over years. The preoperative speech evaluation of all the patients (Table 1) showed an average means pitch of 224.42 Hz.

All the patients were treated by Ishiki type 3 thyroplasty, the length of the vocal cords were shortened, which helps in reduction of pitch of the voice by reducing the tension of vocal cords. Patients were operated under regional anesthesia; cervical plexus block along with local infiltration was given. Regional anesthesia helped in assessing the voice intraoperatively. After exposure of the thyroid cartilage, outer perichondrium elevated vertical strips of the thyroid cartilage, 1.5 cm lateral to the midline were resected, assessed patient voice on table, and then outer perichondrium reapproximated and sutured.

Postoperatively skin sutures were removed after 6 days. Repeated analysis of voice was done after 15 days. This showed the marked reduction in mean pitch of the patients. Average of postoperative pitch of all the patients is 137 Hz.

DISCUSSION

The voiced speech of a typical adult male will have a fundamental frequency from 85 to 180 Hz, and that of a typical adult female from 165 to 255 Hz.^{1,2} Puberphonia being a mutational disorder, speech therapy has been considered as the main stay of treatment. Of late, many surgical techniques have been tried with some amount of success.

The first report of a surgical treatment of puberphonia was in 2001.³ The report described an open technique and after the

elevation of a superior neck flap, two absorbable figure eight sutures were placed around the hyoid bone and cricoid cartilage to reduce the cricothyroid distance.

In another technique, with the help of laryngoscope (Macintosh) vocal cords are stretched, so that they become less taut and the frequency will be lowered. This procedure may require repetitions to achieve the desired result.⁴

Ishiki type III thyroplasty is a laryngeal framework surgical procedure that lowers a patient's pitch. Postoperatively, the vocal folds still vibrated in a regular pattern as described by the myoelastic-aerodynamic theory. There was no increase in jitter or shimmer quotient. The Ishiki type III thyroplasty appears capable of lowering fundamental frequency of speech without adversely affecting the vibratory mode of the vocal folds.⁵

In our study also it proved that by not touching the vocal cord, reducing its tension by framework surgery helps in

changing the voice frequency with retaining its own character. So, this procedure appears to be with more acceptable results when compared with any other procedure.

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