



Puberphonia Treatment by Uvula Manipulation

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Received: September 28, 2020

Published: November 18, 2020

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Abstract

Puberphonia treatment by uvula manipulation treatment acts as neuromuscular aerodynamic expiratory cycle breaker to enhance and improve the efficiency of the performance voice. Puberphonia is characterized by the persistence of childish/girls high pitch voice, breathy and hoarse sometimes associated with pitch breaks after puberty, especially in the absence of organic causes. The condition is most commonly seen in males who continue to use a high pitch in speech in post pubertal adult stage. About 1% of the population, are born with a predisposition to speak in a different manner, among that one is puberphonia. This prospective clinical study was carried out from January 2017 to March 2020 at Siva ENT Hospital with the aim to achieve better voice quality and improvement of pitch range, by direct uvula manipulation in puberphonic males. After uvula manipulation mostly there was immediate improvement in voice quality and permanent change in voice to low pitch by conditioned reflex assisted by recognizing the ancestral voice with breathing training. ENT surgeon can use a laryngoscope or strobe laryngoscope to see if there are any anatomical, physiological, neurological, psychological or improper doer problems. More than 90% of the cases it present as a functional problem where the anatomical and physiological elements are normal. It may be due to some other unknown lifestyle. ENT surgeons can do uvula manipulation to correct the puberphonia speech disorder and reduces the recurrence by breathing exercise.

Keywords: Puberphonia; Manipulation; Resonance; Dysphonia

Introduction

Physical factors influencing voice while breathing, phonation and resonance are the basic building blocks of the voice. The effectiveness of our voices is also affected by expiratory air flow, relaxation of the muscles of the body and the vocal tract. Because the parts of the body which contribute to voice production are connected to many other parts of the body's muscular and skeletal system, the way we align the whole body and the amount of muscle tension or relaxation in the body will influence the voice. Excess tension in the muscles of the larynx, for example, can lead to a strained, harsh voice. It is not due hormonal problem or psychological problem [1]. The problem is a habitual use of high pitch voice that the voice is not broken to change adult male voice at the time of maturity at puberty in male. The main aim with uvula manipulation is to restore the vocal tissue quality, length, tension relationship between muscles and improve bio-mechanical efficiency,

with an overriding goal to improve the efficiency of the vocal tract vibration and voice production.

This explains why most males go through a period where their voice 'breaks'. The vocal cords are trying to adjust to their new dimensions. The Adam's Apple begins to become prominent on the male neck. No such laryngeal changes take place in females who continue using a higher-pitched voice. The pitch range for men's voices is 60 - 180 Hz, and the pitch range of women's voices 160 - 300 Hz. Non breaking of voice can build up easily due to many reasons including breathing issues, neck problems or tension, postural issues, jaw problems, tongue motion, tension and poor support mechanisms. Uvula manipulation assists voice users to break this cycle and retrain their voice and body with aerodynamic, neuromuscular re-education to achieve the most efficient voice production possible. Like any other part of the body, the vocal apparatus

is made up of joints, cartilage, ligaments and muscles. Aim is neuromuscular retraining to the anatomical structures that connect to and are related to the lungs, larynx, pharynx, nose and mouth. A hoarse voice, also known as dysphonia or hoarseness, is when the voice involuntarily sounds breathy, raspy, or strained, or is softer in volume or change in pitch [2,3].

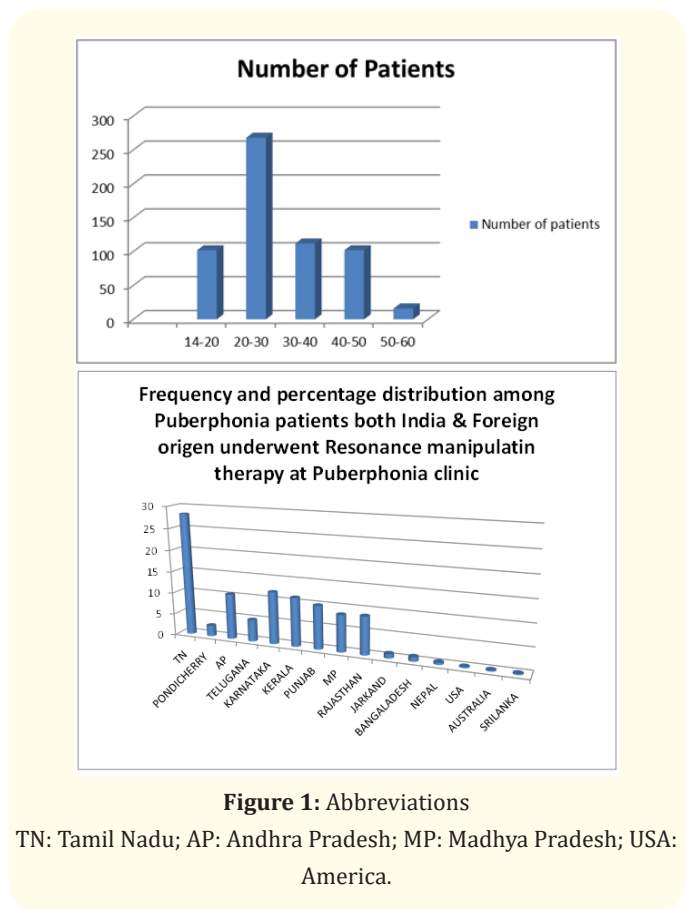
Need for this study

Burden of dysphonia and the prevalence of dysphonia in the society are high [4]. Analyses of cross-sectional data from a large nationally representative United States medical claims database in 2001 revealed the point prevalence of dysphonia to be 0.98% (536,943 patients with dysphonia per 55,000,000 patients) in a treatment-seeking population [5]. The true point prevalence of dysphonia-related conditions is likely higher, as most patients with voice changes are not “treatment seeking,” particularly if the dysphonia is transient and not interfering in their life style. Many accept puberphonia as a lifelong problem and live with that. Their life will be normal. All problems of puberphonia are related to the mindset. They may feel of having a female voice and added to that the public may treat them as important and girls may reject them. It may create a social and psychological problem. Most of the puberphonia gives history of attempted suicide. Voice is a person’s identity. These disorders can lead to inferiority complex or depression. Therefore, it is very important to notice the disorder and treat it in time. There is no age bar to undergo the treatment. This condition is most often treated using voice therapy (vocal exercises). Usually speech-language pathologists or speech therapists treat it by various techniques. Voice therapy usually takes long time in stages and recommended to continue therapy until the patient’s “new” voice is stabilized. In few cases when voice therapy is ineffective, surgical interventions are considered and as a surgical procedure the success is not guaranteed and recurrence is possible. In uvula manipulation therapy 90% get the desired voice in the 1st day itself and the recurrence is almost nil as they recognize the “new” voice as their ancestral voice tone [6].

Materials and Methods

Classical puberphonia/boys talking in female tone can be diagnosed while eliciting the history. Their tone of speech is similar to girls. Identify puberphonia by your ear. The voice pitch range is measured by voice pitch analyzer. 400 puberphonia patients are selected for this study from January 2017 to March 2020 at Siva ENT

Hospital. Otorhinolaryngologists examine the oral cavity, pharynx and larynx, assess the voice and make a diagnosis and assess the social and emotional consequences of the symptoms experienced. The cases of dysphonia having anatomical, physiological or psychological problems are not taken for this study.



These table shows no of the clients underwent uvula manipulation therapy.

Consent was obtained from patient/guardian before the procedure. On counselling, most of the patients were anxious to get the normal adult voice. Patient was called nil by mouth six hours before the procedure. The selected case is taken to the minor operation theatre. Procedure was done in the supine position. Under xylocaine (10% w/v) spray surface anesthesia a silk thread is placed in the uvula by suturing or knots. Treatment method we employ is direct voice therapy and the patient was asked to phonate a long K or la [Palatalised velar consonant - whose pronunciation involves the contact, obstruct uvular consonants or near-contact, fricative

uvular consonants of the uvula and the soft palate with the back of the tongue and Uvular consonants formed by vibrating the uvula (trilled uvular consonants include the French and German “r”) [7]. The procedure was repeated 3 - 4 times in a single sitting. Immediate dramatic improvement in voice quality was noted on the table. Most of the patients were completely happy with their new voice.

S. No	Indian (State wise) and Foreign clients	No of Clients	Percentage %
1	Tamil Nadu	113	28.25
2	Pondicherry	10	2.5
3	Andhra Pradesh	42	10.5
4	Telangana	20	5
5	Karnataka	48	12
6	Kerala	45	11.25
7	Punjab	40	10
8	Madhya Pradesh	34	8.5
9	Rajasthan	35	8.75
10	Bangladesh	4	1
11	Nepal	4	1
12	U.S.A	2	0.5
13	Australia	1	0.25
14	Srilanka	1	0.25
15	Jharkant	1	0.25
	TOTAL	400	100%

We give group voice breathing training as it is a stimulating factor with their treated colleagues. It will give a fun with fire of breathing. They may practice their story telling in the event of treatment.

Group therapy encourages I-relaxing and focusing on posture and breathing, II-preparing to do with phonation by uvula manipulation, III-finding the target voice, IV-advance using the new phonation style-adopting the new muscle technique to daily life. This therapy prepares for Vocal tract volume increases; he vocal tract elongation with pharyngeal enlargement, abdomino diaphragmatic respiration becomes a natural result. It may result in elongation of the vocal tract.

Third day we remove the thread from the uvula. 4th to 21st day they are instructed to do home breathing training to continue low pitch voice as a habit. Puberphonia boys are trained to assess their voice by voice pitch analyzer by their android cellphone. Funda-

mental frequency was assessed pre- and post-therapy for all the patients. On an average the average value of before therapy was 208 Hz, and following therapy, it lowered to an average of 125 Hz, which was a significant improvement. However, 5% patients resist changing their voice in spite of the effort we put, even after review, probably, we think, due to some other unknown lifestyle or pathology.

Result

Enriched 400 puberphonia patients life with ancestral voice by an innovative, noninvasive successful uvula manipulation treatment and follow up for 21 days breathing exercise to prevent recurrence. The study showed that a change in the vocal tract aerodynamic treatment in puberphonia not only improves the voice quality of the patients, but also improves the quality of life of the patient.

Discussion

Presently the treatment modalities available for puberphonia are: 1. Speech therapy, 2. Neck Manipulation, 3. Injection of hyaluronic acid, 4. Surgery. Speech therapy requires a consultation with speech therapist. At rural areas where we have very few or no speech therapist it becomes difficult to treat these patients. Speech therapy is time consuming, needs multiple sittings and lots of patient compliance and encouragement. Many a times the patients are lost for follow up. 2. The next modality of treating puberphonia is neck manipulation. This may be digital laryngeal muscle manipulation. In digital manipulation the thyroid cartilage is compressed and patient is asked to speak. Later on patient is taught to repeat this procedure at home to sustain a male voice [14]. This again needs a lot of patient encouragement and follow up. Trained chiropractic trainers are rare in many places. 3. Injection of hyaluronic acid, which allowed lowering the frequency of the voice, bilaterally and immediately and the effect is temporary and lasting for few days [10]. 4. The surgical treatment for puberphonia was first reported by Pau and Murty in 2001 [11] and modified Ishiki thyroplasty type III [12], wherein shortening and relaxation of vocal cords was done. Type 3 thyroplasty can offer a suitable management option in those cases that fail to respond to voice therapy or fail to sustain the results. But the results are not much guaranteed in all cases.

Uvula manipulation is a quite recent method in the treatment of puberphonia. It was first reported by Dr. M. Kumaresan in 1992

at Stanley Medical College we treated 11 cases with pharyngeal manipulation [13]. That time we do not know recognize the importance of puberphonia. Later our treatment was referred by two Ear Nose Throat surgeons [14-16]. We recognized the importance of the problem.

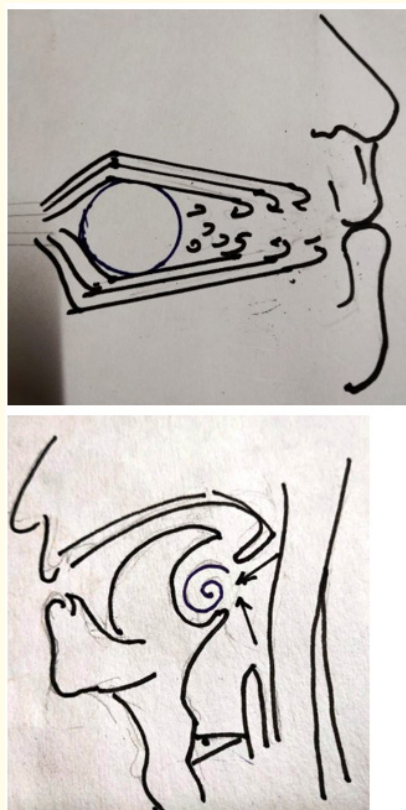


Figure 2

Uvula manipulation can change the airflow on phonation with cul de sac. Bernoulli Effect and Venturi effect at the velopharyngeal narrowing.

Vocal tract air flow and muscle tension have been reported in association with voice production [1,2]. In puberphonia increased muscle tension around the shoulders, neck, and thorax may compromise the quality of the voice [3-5]. The action of laryngeal mechanoreceptors, which trigger reflex adaptations in the vocal cords when stimulated by minute changes in body position, can give correction in the voice break [4]. Vocal tract expiratory air flow can give appropriate muscle tone and a good posture can give a good

quality voice [3,5]. There are many interventions needed in the vocal tract controlling musculature to treat voice disorders [6,7]; however, uvula manipulation which improve posture and muscle tone in relation to voice have been still insufficiently explored. Aerodynamic [16], physiotherapy is one of the major tool in assessment, treatment and neuromuscular retraining in puberphonia. Similar many procedures are followed by speech-language pathologists [8-11], osteopathic physicians [12], and physical therapists [13]. Therefore, more literature also begins to provide scientific evidence showing the efficacy of this type of intervention [10,11].

Conclusion

For a long time voice training has primarily focused on the skill acquisition aspects of optimal voice function for occupational and professional voice users. Recent focus on puberphonia has widened and broadens ENT surgeons horizons. Planning for puberphonia management is a training strategy as well as with optimal vocal function that is characterized by more rapid recovery and less susceptibility to recurrence. This therapy is for the structures involved in voice production include muscles, cartilaginous structures and the myofascia around the larynx, pharynx and buccal. Uvula manipulation is a treatment method directed at breaking this neuromuscular pattern to achieve efficient voice production and improved voice quality in puberphonia boys who suffer without voice break in adulthood transition. Thus we conclude that in peripheral rural set ups where the facilities of trained speech therapist are not available, or where there is scarcity of a speech therapist, this office procedure by uvula manipulation therapy which is cost effective and less time consuming, gives excellent and rewarding results in puberphonia.

Recommendations

- The study can be done with ultra sound, magnetic resonance imaging study to assess the uvula size, shape and position in speech.
- The measurement of air flow in the vocal tract (Appendix).

Funding

This research received no specific grant from any funding agency, commercial or nonprofit sectors.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the institutional research commit-

tee (USWR ethic approval) and with the 1964 Helsinki declaration and its later amendments.

Informed Consent

Informed consent was obtained from all individual participants and their parents included in the study.

Author Contribution

M. Kumaresan: Conceptualization of the study, collection, analysis of the data, writing the manuscript, finalizes the manuscript and will act as the guarantor of the paper; MK NB Conceptualization of the study, collection, analysis of the data, writing the manuscript, finalized the manuscript; MK: Edited and critically evaluated the manuscript.

Acknowledgments

I am immensely thankful to the SIVA ENT staffs that helped me for this manuscript development and function and also the volunteers who have done the heartfelt help for the research.

Conflicts of Interest

Author declares that they have no conflict of interest.

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