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Psychogenic Voice Disorders

Introduction

a) Voice disorders result from faulty structure or function somewhere in the vocal tract, in the processes of respiration, phonation, or resonance.

b) The normal voice and vocal tract reflect the changing emotional state of the individual.

c) Psychological states associated with disturbances of the autonomic system and of the personality that result in voice disorders called Psychogenic voice disorders.

Definition

a) "A manifestation of one or more types of psychologic disequilibrium that interfere with normal volitional control over phonation" Aronson, A.E. (1990)

b) "Psychogenic Voice Disorder occurs in the absence of structural or neurological pathology sufficient to account for the voice difficulty, with onset and maintenance of the voice difficulty caused by disturbed psychological processes." (Baker, Ben-Tovim, et al. 2007)

a) Also sometimes referred to as non-organic, functional or psychosomatic voice disorder

b) More in women (ratio of around 8:1)

c) Sudden voice loss (rather than gradual onset)

d) Generally identifiable psychological stress contributing to onset

Symptoms

a) Many of the symptoms are similar to those patients with muscle tension dysphonias.

b) The voice is frequently effortful to produce and the patients describes vocal fatigue and, in many instances, vocal tract discomfort.

c) The reaction might be excessive for the severity of the presenting problem or remarkably understated where far greater concern and distress would be more realistic in the light of significant impairment.

Signs

a) The signs and symptoms are inconsistent with the clinical examination.

b) The laryngeal findings - normal phonation. i.e. VF's are capable of adduction and there is no structural abnormality but the voice is abnormal.

c) In cases where there is coexisting laryngeal pathology, the voice may be much worse than the appearance suggests.

d) The presentation is not always consistent. A normal vocal note might be heard on vegetative behaviors such as coughing, throat clearing, yawning or laughing, but not when the voice is being used for communication.

e) During conversation the voice varies according to social context, subject matter and the mood of the patient.

f) The history and presentation might be inconsistent with any known condition.

g) Various therapeutic approaches can produce normal voice - fleeting and almost immediate recovery.

h) The voice disorder might be episodic. Abnormal voice or aphonia is interspersed with periods of normal voice.

i) The patient describes, or the history reveals, related stressful events or prolonged stress.

Etiology

a) Anderson and Schalen; 1998 - Psychogenic voice disorders are frequently multifactorial, and mainly they are the result of psychosocial stress and triggered by emotional conflicts.

b) Inability or reluctance to express emotion is a common feature in psychogenic voice disorders and, as a result, the individual retain a tense, stoic countenance.

c) Butcher et al. (1987) found that the stressful situations for these patients could be classified into three groups

d) Family and Interpersonal difficulties

e) Burden of responsibility

f) Stressful factors associated with work

g) Anderson and Schalen (1998), in their study of the etiology of psychogenic voice disorders, confirmed the importance of family and work stresses as a major contributory factors. Rather than a specific life event acting as a trigger, their subjects reveal that the long term effects of conflicts and frustrations finally give rise to the problem.

h) They concluded that psychogenic voice disorders indicated disturbed capacity for emotional expression.

Psychogenic Voice Disorders

a) Psychogenic aphonia

b) Puberphonia

c) Psychogenic Spasmodic Dysphonia

d) Childlike/infantile speech in adults

e) Immature voice in women

A. Psychogenic aphonia

i. Total loss of voice in the absence of organic pathology.

ii. Patients presenting with Psychogenic aphonia can be divided into two groups.

a) Stress related aphonia

b) Conversion symptom aphonia

Stress - related Aphonia

a) The majority of patients become aphonic because of prolonged stress and so produce stress related aphonia.

b) Most of these patients are women who usually present as tense, anxious and distressed by their aphonia.

c) Prognosis is good in patients who are able to develop insight into psychosomatic basis of aphonia - Harris and Thompson, 1999.

d) Although this group has the symptom of non-organic aphonia, stress related aphonia is not necessarily a symptom of underlying psychiatric illness. It is an indication that stress has become intolerable.

Conversion symptom aphonia

a) A Conversion symptom is a physical symptom that occurs in the presence of normal physical structure and potentially normal function of the body involved.

b) It differs from psychosomatic symptoms that are the reaction of the autonomic system to stress.

c) In the individual suffering from a conversion symptom, the physical symptom concerns the somatic nervous system, although it appears to be involuntary and is outside the patient's control.

d) It is essentially a psychogenic illness with a characteristic motive of gain of which the individual is unaware.

e) No voice is produced in conversion symptom aphonia, although the vocal folds adduct and behave normally during other functions.

f) The conversion symptom is not evidence of malingering because it is not produced consciously or for intentional advantage or avoidance.

Symptoms

a) The patient reports complete loss of voice of sudden onset, sometimes after an upper respiratory tract infection.

b) Some patients describe a history of aphonic episodes of increase in frequency and duration, where as others find that they have no voice on waking one morning.

c) The lack of voice may be accompanied by globus sensation. Typically, the patient does not associate the problem with emotional issues.

Signs

a) There is no vocal tract structural abnormality or any neuropathology.

b) Sudden onset and in some cases there is a history of episodes of aphonia interspersed with periods of normal voice

c) Voice can be elicited almost immediately by appropriate strategies in many cases

Specific techniques

Conversion symptom aphonia

a) Explanation that the vocal tract and vocal fold movement are particularly responsive to emotional changes.

b) The patient is reassured that there is no physical reason why voice cannot be produced, apart from an element of habit, and the therapist introduces strategies of eliciting voice.

Facilitating techniques

Manual techniques to reduce tension of the laryngeal musculature.

a) Vegetative techniques

b) Vocal function exercises

c) Counseling

B. Psychogenic Spasmodic Dysphonia

a) Even though spasmodic dysphonia (SD) is a focal laryngeal dystonia of neurological origin there are some psychogenic origins too.

b) In manifestations, the spasmodic adduction and abduction of the vocal folds during phonation dramatically interferes with phonation.

c) The adductor form, resulting in effortful laryngeal spasms, is more common than the involuntary voiceless segments of the abductor type.

d) Emotional elements are significant in both conditions.

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e) Aronson (1918) established that 40 % of the patients he examined have experienced emotional trauma before onset of the condition.

f) In psychogenic SD, the psychodynamics appears to be similar to those of conversion symptoms.

g) Trial voice therapy that resolves the condition confirms the tentative diagnosis (Damste, 1983).

C. Mutational falsetto/Puberphonia

a) It is the failure to eliminate the higher pitched voice of prepuberscence and to substitute the lower pitched voice of postpuberscence and adulthood in the presence of a structurally normal larynx.

b) Because the amount of vocal pitch change that occurs at puberty is about one octave for males and only 3 to 4 semitones in females, mutational falsetto is a voice problem found primarily in postpubescent and adult males.

c) The larynx is perfectly capable of producing the normal lower pitch of adult males.

d) Often, males with falsetto voice are thought of as being effeminate, passive and immature and they frequently endure much teasing from schoolmates, sexual confusion on the telephone

Vocal Tract Changes During Puberty

a) The major changes in voice occur when both sexes show an increase in overall body height and weight, as the body moves towards full growth and sexual maturity.

b) The physical changes tend to occur quite rapidly. Aronson (1990) suggests that the physical changes may be completed within 6 months although Spiegel et al (1997) report that mutational voice changes may last longer and in some cases may take up to three years.

c) The changes of the vocal tract are more dramatic in boys than in girls although both sexes tend to show an increase in dimensions of the vocal tract and changes in the relative size and shape of the vocal tract structures.

d) When born, boy's and girl's vocal folds are of similar lengths, measuring about 2 millimeters long, but they continue to grow as the child grows.

e) Girl's vocal folds grow 0.4 mm in length each year, but boy's vocal folds grow 0.7 mm in length for the same time period – almost twice as much.

f) This growth eventually slows down, leaving girls with a maximum vocal fold length of 10- 15 mm and boys with a length of 16 – 23 mm.

g) During puberty, the female voice tends to drop about 2.5 semitones, so that the average fundamental frequency is 220 Hz -225 Hz when the changes are complete.

h) However the full growth is usually completed by 21 years of age. Typically, male voices drop by one octave, so by age 18, the average fundamental frequency is 130-140 Hz.

i) The longer and thicker the vocal cords the lower the pitch and a longer vocal fold means a deeper voice, which is why males tend to have deeper voice than girls.

j) All the vocal tract changes are more apparent in males. Perhaps the most visible difference is the development of "Adam's Apple",which becomes more pronounced when the angle of the male thyroid prominence has decreased to an angle of nearer 90 degrees. In comparison , the female thyroid cartilage remains at an angle of approximately 120 degrees.

k) The growth spurt in puberty includes changes to both bones and muscles, again, males tend to have the greater increase in the length of their bones and in muscle size and strength (Andrews and Summers,1991).

l) Growth of the facial structures, including the sinuses and completion of dental development add to the overall increase in size and shape of the vocal tract and increase the capacity for loudness and resonance.

m) When combined with an increase in lung size and volume in males this results in greater respiratory capacity and potentially respiratory control (Aronson 1990 and Spiegel et al 1997).

n) These changes in the larynx are all related to the increasing amounts of testosterone in boys during puberty.

o) The increase in testosterone leads to a lengthening of the cartilage of the larynx, the increase in the length of the vocal folds but also a thickening of the vocal folds.

p) Thicker vocal folds lead to a change in the tone and the timbre of the voice.

q) Andrews and Summers (1991) suggest that the physiological changes, which starts with the height spurt and secondary sexual development, is a useful reference point for the speech-language pathologist when considering 'voice breaks'.

r) A high pitched voice is readily explained if a boy of 13 has not yet started a growth spurt, whereas a low pitched voice in a ten year old with no signs of pubertal change may be more probably associated with vocal abuse or misuse.

s) Andrews (1982) suggested that height may be a more useful index of vocal maturity than chronological age.

Etiology

Muscle incoordination/ dysfunction with no known etiology

a) High pitched voice is caused by increased tension and contraction of the muscles in the larynx causing it to elevate.

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b) Congenital abnormalities and asymmetries, paralysis of one vocal fold (Arnold 1961) or congenital web (Baker and Savetsky,1966)

c) Non fusion of the thyroid laminae.

d) A natural tone of voice or small larynx with short vocal folds.

e) In some cases laryngeal development is delayed because of endocrine disorders.

f) Hearing loss

g) Neurological diseases during puberty that caused weakness of the vocal folds or the muscles of respiration

h) A debilitating disease during puberty can affect respiration sufficiently enough to interfere with the development of a lower pitched voice.

Psychosocial factors

a) may have strong feelings of feminine attachment

b) be embarrassed about the newly developing low pitched voice or

c) reject the responsibility and roles of adulthood.

d) Excessive maternal protection.

e) Over identification of a male with his mother.

f) Hero worship of older boy.

g) Social immaturity

A. If the pubertal voice change has been delayed for any reason, embarrassment at switching over to a new and more appropriate voice may ensure the perpetuation of an desirable vocal habit.

B. Aronson (1980) enumerated laryngeal - respiratory postures and movements that have been noted as bases for high pitched mutational falsetto voice:-

a) The larynx is elevated high in the neck.

b) The body of the larynx is tilted downward, apparently having the effect of maintaining the vocal folds in a lax state.

c) With the vocal folds in a flabby state, they are stretched thin by contraction of the cricothyroid muscles.

d) The vocal folds are thus in a state of reduced mass and offer little resistance to infraglottal air pressure.

e) Respiration for speech production is shallow and on exhalation infraglottal air pressure is held to a minimum, so that only the medial edges of the vocal folds vibrate and do so at an elevated fundamental frequency.

Pathophysiology

a) In infants the laryngotracheal complex lies at a higher level. It gradually descends. During puberty in males this descent of larynx is rapid.

b) In puberphonia the larynx tends to be held high in the neck, thereby shortening of the vocal tract.

c) The larynx becoming larger and unstable and on top of it the brain is more accustomed to infant voice. The boy may hence continue to use a high pitched voice or it may break into higher and lower pitches.

d) Physiologically, this is caused by persistent hyperfunction of the cricothyroid muscles and cricoid cartilage is usually tilted backward and vocal folds remain too lax and limited in their ability to adjust to demands in change in tension and vibrational frequency.

e) Because of the inability to compress the vocal folds well, patients with this disorder often are not able to build appropriate subglottic air pressure to increase intensity (Figure 1).

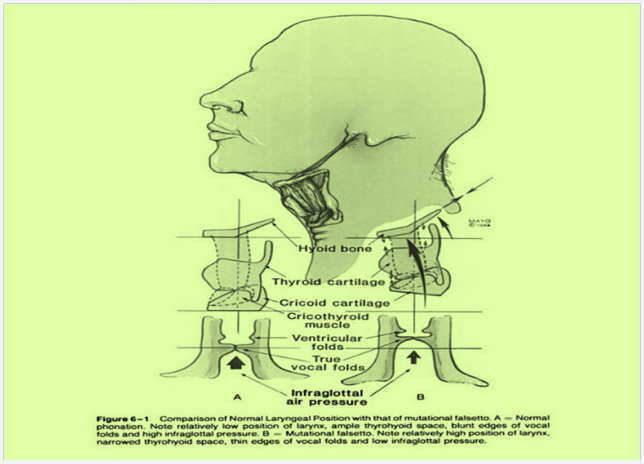

Figure 1: Comparison of Normal laryngeal position with that of mutational falsetto.

f) The higher pitched voice is produced by a larynx that is elevated high in the neck and tilted downward. This laryngeal posture put the vocal folds in a state of laxity.

g) As the individual attempts phonation, the arytenoids adduct so tightly that the posterior portion of the vocal folds is prevented from vibrating and the thyroarytenoid muscle fails to contract.

h) This posture tends to reduce the mass of the vocal folds and permits only the thin glottal edge to vibrate..

People with puberphonia commonly Complain:-

a) Unusual high pitched voice persisting beyond puberty

b) Hoarseness of voice

c) Breathy voice

d) Inability to shout

e) Vocal fatigue some patients experience supralaryngeal

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pain as a result of the larynx being maintained abnormally high in the vocal tract.

f) These patients usually report that there are occasion when the vocal pitch level drops, especially when they shout or attempt heavy lifting

Voice Characteristics

a) Low intensity

b) Breathy

c) Sometimes Hoarse

d) High pitch

e) Pitch breaks

f) Monotonous

g) Cul de sac nasality

Emotional Status

A. Distress at the failure to develop a mature voice is commonly expressed because of the social consequences.

B. The social consequences for males who exhibit falsetto voice are many, often males with falsetto voices are thought of as being effeminate, passive and immature and they frequently endure much teasing from their schoolmates.

C. sexual confusion on the telephone is also a common occurrence.

Who experiences Puberphonia most often?

a) Post pubescent males due to inability to lower their pitch.

b) Individuals with severe-profound hearing impairment due to poor auditory feedback.

Laryngoscopic findings

a) Dimensions of larynx - within normal limits for a post pubertal male

b) VF - structurally normal and are fully mobile

c) On phonation - VFs adduct normally but they are tense and thin with minimal mucosal waves.

d) Diagnosis criteria of puberphonia are - a normal larynx and evidence of secondary sexual characteristics. A voice can also sound puberphonic if secondary sexual characteristics have failed to develop because of a deficiency of testosterone.

e) A laryngeal web can produce a similar effect.

Evaluation

Voice Evaluation includes Medical/Laryngeal examinations, Videostroboscopic examination, Auditory perceptual and Acoustic measurements

A. Medical Examination: Examination of these patients should include a complete physical examination including genital examination also. Secondary sexual characters should be assessed, hypogonadism should be ruled out.

I. Laryngoscopy: Laryngoscope is a medical instrument that is used to obtain a view of the vocal folds and the glottis.

Figure 2: Indirect Laryngoscopy.

a) Indirect laryngoscopy: Indirect laryngoscopy is done using a small hand mirror held at the back of the throat. The doctor shines a light in the client's mouth and wears a mirror on his head to reflect light to the back of the throat. Some doctors now use headgear with a bright light (Figure 2).

b) Direct laryngoscopy: It is used to see deeper into the throat with a fiber-optic scope. The scope is either flexible or rigid. Flexible scopes show the throat better and are more comfortable. Rigid scopes are often used in surgery (Figure 3).

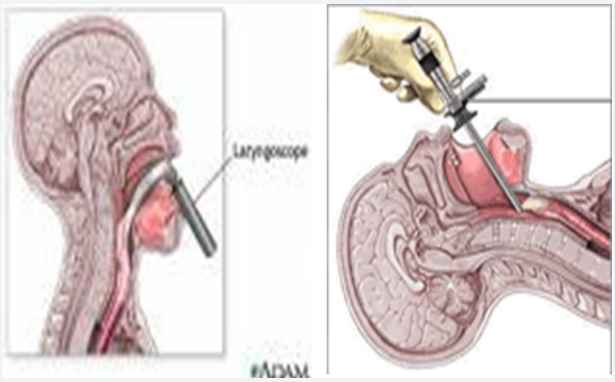

Figure 3: Direct Laryngoscopy.

Typical laryngoscopic findings

a) Usually, the dimensions of the larynx are within

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normal limits for a postpubertal male. The structure of the vocal folds are normal and they are fully mobile.

b) On phonation, the vocal folds adduct normally but they are tense and thin with minimal mucosal waves. Larynx height is often noted as elevated.

I.Video stroboscopic examination

Video stroboscopy is a state-of-the-art technique that provides a magnified, slow-motion view of the vocal cords in action. It enables physicians to make an accurate diagnosis of conditions and diseases of the vocal cords, including masses or lesions, abnormal motion, inflammation, broken blood vessels, scarring and other disorders.

1)Typical video stroboscopic findings:

i. Glottic closure pattern is incomplete. The vocal folds appear stretched and tense, with reduced mucosal wave.

ii. The vocal folds exhibit light contact, with thin edges.

iii. Vibration is characterized by long open phases and very short closed phases.

iv. Reduced amplitude of vibration Is also noted.

2)Voice evaluation:

Auditory perceptual assessment:- Perceptual evaluation typically suggests high pitched voice with occasional downward pitch breaks. The voice may be strained, breathy, weak and low in intensity with little range in either intensity or pitch.

a) Acoustic Analysis Profile: The softwares that can be used to conduct vocal acoustic profile are – Dr. Speech, Praat, CSL, MDVP, Visipitch, etc.

i. Usually, the speaking fundamental frequency falls within the female range.

ii. Intensity and Harmonics -to-noise ratio are within normal limits.

iii. A long open phase and a short closed phase is confirmed by electroglottography (Carlson, 1995).

iv. Treatment

v. Psychological Evaluation: A complete psychological profile of the client should be built to rule out psychological causes and to profile reactions of the clients in different social situations.

vi. The first step in treatment is to ensure that laryngeal maturation has indeed taken place. Medical examination to ascertain the absence of endocrinologic or structural problems is a sensible policy.

vii. Treatment modalities available:

a) Larynx manipulation

b) Surgery

c) Voice therapy

a.Laryngeal Manipulation

a) This is a quite recent method in the treatment of puberphonia. This was first reported by Sudhakar vaidya in Laryngoscope journal in 1995.

b) Patient was asked to come *nil by mouth for six hours before the procedure in the ENT outdoor.*

*c) Patient was examined under xylocaine spray anesthesia by anesthesiologist's intubation laryngoscope (Macintosh).*Long blade of laryngoscope was put in valleculae and patient was asked to speak a long eeeee.

d) Pressure over the valleculae stretched the vocal cords. Sometimes - additional pressure was applied by a laryngeal biopsy forceps over the anterior commissure.

e) The procedure was repeated 3-4 times in a single sitting (Figure 4).

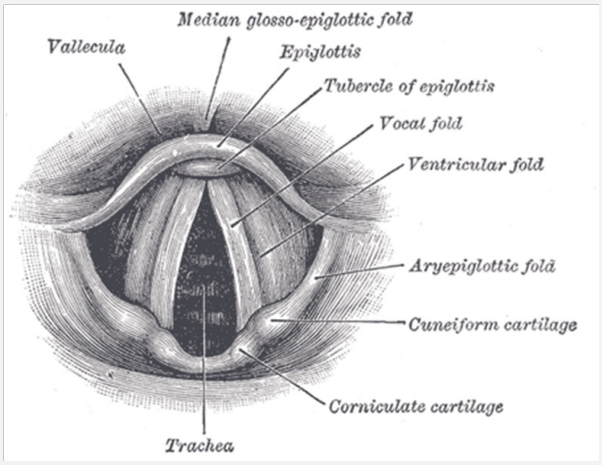

Figure 4: Different folds.

i.Medico surgical Management :-

a) In the relatively few cases where voice therapy is unsuccessful, it has been suggested by Woodson and Murray (1994) that an injection of botulinum toxin into each cricothyroid muscle can be helpful.

1) They hypothesize that mutational falsetto is a habitual vocal dysfunction with inappropriate activation of the cricothyroid muscles, which results in lack of use of the vocal fold adductor muscles.

2) By temporarily deactivating the crycothyroid muscle, the remaining laryngeal musculature functions more normally.

3) Unlike surgery, the effects of botulinum toxin are reversible.

b) Also Type III phonosurgery can be done which includes surgical shortening and relaxation of cord.

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ii.Voice therapy includes

a) Speech range masking

i. Relaxation techniques to relax the laryngeal musculature

ii. Visual feed back using instrumentation like Visi Pitch, Dr. Speech

iii. Lowering of neck to appropriate position

iv. Half swallow Boom technique

v. Phonation with different head positions

iii. Speech range masking:

1. This procedure is known to improve the quality of voice. It has been established that speaking in a noisy background has profound effects on how an individual speaks.

2. It can alter the quality of speech of an individual. This procedure also makes the voice clearer and louder. For this purpose an instrument known as the facilitator is used.

3. The masking bandwidth is between 100 - 8000 Hz. The advantage of using this frequency is that it covers the speech range and masking is possible at much lower sound levels when compared to a white or pink noise which are commonly used for purposes of masking.

4. A tape recording of the voice of the patient during and after masking is provided to the patient and the patient should try to match the voice generated during masking on a consistent basis.

iv. Relaxation Techniques to Relax Laryngeal Musculature:

a. Laryngeal muscles can be relaxed using the following relaxing procedures:

a) Yawn sigh technique: The patient is advised to practice yawning, followed by generation of a sighing sound. This procedure reduces the tension on the vocal folds.

We generally explain the physiology of yawning to the patient and then we demonstrate it and talk about what the yawn feels like.

b) After the patient has yawned, ask the patient to yawn again and then to exhale gently with a light phonation.

c) Once the yawn phonation is achieved the patient is instructed to say words beginning with open mouthed vowels, one word per yawn in the beginning, followed eventually by 4 or 5 words on one exhalation.

d) Then omitting the yawn entirely, demonstrate a quick,normal,open mouthed inhalation followed by prolonged open mouthed sigh.

e) Follow this with a series of words beginning with the glottal /h/. Additional words for practice after the sigh should begin with middle and low vowels.

f) Finally once the yawn sigh approach is well developed, have the patient think of the relaxed oral feeling it provides. Eventually, he or she will be able to maintain a relaxed phonation simply by imagining the approach.

v.Chewing technique

a) The chewing method was developed by Froeschels in 1924.

b) Chewing approach appears to promote more optimum vocal fold size – mass adjustments and better fold approximation.

i. Rather than working on the segments of voice such as pitch,loudness,quality or resonance, one is able to work holistically.

ii. First the act of chewing in an exaggerated manner is practiced.

iii. Then gradually random sounds, words and sentences are added to this task.

iv. This act reduces the tension of the laryngeal muscles.

vi.Open Mouth Approach:

a) Opening the mouth more while speaking and learning to listen with a slight open mouth allow the patient to use his or her vocal mechanisms more optimally.

b) The open mouth approach promotes more natural size mass adjustments and more optimum approximation of the vocal folds, aiding in problems of loudness, pitch and quality.

c) Have the patient view himself in a mirror or on a videotape to observe the presence and absence of open mouth behaviour.

d) To establish further this oral openness, ask the patient to drop his head toward the chest and let the lips part and the jaw drop open.

e) Practice these steps and this usually helps in producing a more optimum.

vii. Respiration Training

a) Demonstrate a slightly exaggerated breath as used in sighing. The sigh is characterized by a slightly larger than usual inhalation followed by a prolonged open mouth exhalation.

b) Demonstrate the quick inhalation and prolonged exhalation needed for a normal speaking task.

After taking a normal breath count slowly from 1 to 5 and at each time the patient does this successfully one more

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number is added in the next attempt until the patient is able to use his best phonation during these counts.

A.Visual feedback by using Visipitch or Dr. speech:

These instruments is commonly used by speech pathologists to treat various speech disorders. This machine helps in extraction of Critical speech and voice parameters and displays them in true real-time on the screen to help clients achieve therapy goals with visual feedback. This machine helps in training the patient in nuances of normal speech production.

B.Half swallow Boom technique:

a) In this technique the patient is asked to swallow. While swallowing is in progress the patient is asked to say «Boom».

b) Then the patient is asked to turn to one side and say «BOOM». The same exercise is repeated by turning the head to the opposite side.

c) The patient is then asked to lower the chin, and say Boom. The patient is taught to add words to the BOOM.

d) The swallow procedure is known to maximize the closure of larynx.

e) The sound Boom is produced by posterior pressure to the larynx. The patient gradually learns to lower the pitch of his voice.

C.Inhalation Phonation:

a) The clinician demonstrates inhalation phonation by phonating a high pitch hum by elevating the shoulders. It is important to time the initiation of the inhalation with shoulder elevation.

b) The shoulder elevation is done so the clinician can mark and stress for the patient the contrast between inhalation (shoulders raised) and exhalation (shoulders lowered).

c) The patient is then asked to repeat the inhalation phonation several times by matching the high pitched inhalation voice with an expiration voice.

d) The clinician demonstrates a continuation of the high pitch, sweeping down from what is the falsetto register to his or her regular chest register on one long, continuous expiration.

e) If the patient is unable to produce the shift from high to low then the patient is asked to repeat the procedure again.

f) If the patient is able to produce the shift to lower pitch by just phonating the hum, the clinician might give the patient a wordlist containing simple monosyllabic words further practice.

g) Stay at the single word practice level until normal voicing is well established.

D.Digital Manipulation:

a. External pressure is applied on the patient's thyroid cartilage by the clinician to alter the position of larynx is effective as manipulation of the larynx into a lower neck position may facilitate the production of a lower pitched voice.

b. Ask the patient to phonate and to extend phonation by hanging on to 'ah' as the phonation is prolonged, apply slight finger pressure to the thyroid cartilage. the patient's voice pitch will lower instantly

c. Then ask the patient to maintain the lower pitch, even when the fingers are removed. If the patient can do this he should continue practicing the lower pitch.

d. If he quickly reverts to the high pitch,the digital pressure method of producing the lower pitch should be repeated.

Sometime should be spent in practicing the production of the lower pitch and in providing the patient with auditory feedback of what his voice sounds like.

a. A variation of the digital pressure technique is to begin by pressing the fingers on the thyroid cartilage and then asking the patient to phonate. Once the lower pitch is produced, raise the finger pressure suddenly there may be immediate rise in voice pitch.

b. This rise should be monitored by the patient with his own fingers and he should be instructed to bring his voice back to lower to the lower pitch.

c. This should result in a lower pitched production

E.Voice Therapy as a Whole

i. Typical puberphonic patient produces a functional lower pitch during the first or second session.

ii. Highly motivated to use their new voice.

iii. Very rare that they need follow up therapy or psychological counseling .

iv. It is recommended to continue Overall voice therapy is very promising .

v. Therapy until the patient's "new" voice is stabilized.

vi. Biofeedback

vii. An audio recording of voice conversation should be played back in the initial session. Audio recording is also an essential tool when mature voice has been elicited so that patient can hear objectively that the 'new' voice is acceptable, although it initially sounds and feel strange as he speaks.

viii. Patients can also benefit from visual feedback about speaking fundamental frequency and pitch range, and from electroglottography (Carlson, 1995) Counseling

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F.Vegetative techniques

i. The patient is asked to cough, clear his throat, laugh or sing down the scale in order to produce low notes.

ii. If the electrolarynx is placed against the thyroid cartilage as the patient is asked to phonate, the sensation and the low pitch can produce a change in phonation.

iii. Gutzman pressure test

iv. Luchsinger and Arnold (1965)

v. In this the person is asked to speak with the thyroid prominence being pressed backwards and downwards to relax the overstretched cords and to produce low tone voice.

vi. In this the pitch should drop.

vii. If it does it is behavioural origin

viii. If it does not it is anatomical defect

a)Procedure

i. Pressure is exerted on the thyroid laminae with finger and thumb while patient hums and drops the chin over therapist's hand, the necessary relaxation of the intrinsic laryngeal muscle may be obtained.

ii. Using a tongue depressor, the SLP depresses the posterior part of the patient's tongue as the patient emits a groan. This results in descent of the hyoid bone and therefore of the larynx, with associated lowering of the pitch of the vocal note.

iii. With head slightly tipped forward and neck and shoulders relaxed, the patient phonates on 'hm' while placing thumb and forefinger on the thyroid laminae, so that any tendency to elevate the larynx on phonation can be monitored.

iv. Patient holds the arms up horizontally and drops them heavily to his sides while saying 'ah'. The arms must drop through force of gravity and not be brought down to the sides by the patient.

v. After a period of relaxed diaphragmatic breathing, the patient vocalizes on a deep sigh on the expiratory air stream.

vi. Froeschels (1948) advocated chewing therapy and voluntary jaw and chin wagging when vocalizing.

G.Establishment of mature male voice

i. The deep voice achieved should be practiced assiduously in meaningless mechanical exercises that will establish the auditory and kinesthetic patterns desired and enable their effortless recall. Intoning meaningless vowels and non sense syllables, when using new voice will be found easier at first than connected speech.

ii. If speech therapy does prove to be unsuccessful in eliciting or establishing the mature voice, referral to a psychiatrist is advisable if patient consents.

iii. Childlike/infantile speech in adults

iv. Immature speech and/or language patterns

v. The habitual pitch is often higher,

vi. 'young' facial expression

vii. Cherubic smiling and demure head movements, bodily postures and gestures.

viii. The person often avoids the responsibility or relating to others as an adult, preferring to elicit protective behavior from others through perceived helplessness.

H.Treatment

i. Test singing range

ii. Produce strong, high /o/

iii. Gradually lower

iv. Stabilize at appropriate pitch with other vowels

v. Utilize auditory and/or visual feedback

vi. Progress from vowels to sentences

vii. Teach Vocal Function Exercises

viii. Immature voice in women

Indication of an immature personality

Women who shun acceptance of adult responsibility and desire to cling to the shelter and security of childhood may cling unconsciously to the vocal pitch of a child hood as a symbolic expression of their unconscious desires. The immature voice may be accompanied by immature articulation. Other psychogenic vocal tract disorders

Globus pharyngeus

i. Globus pharyngeus (globus symptom; globus syndrome) refers to the sensation of a lump in the throat in the absence of true dysphagia.

ii. It may accompany aphonia or dysphonia.

iii. Functional airway obstruction

FAO (also known as paradoxical vocal fold motion) is a non-organic respiratory condition that can occur in isolation or in conjunction with asthma or other respiratory conditions. It imitates asthmatic attacks and usually occurs paroxysmally. It is characterised by inspiratory and early expiratory vocal fold adduction with resulting airflow restriction at the laryngeal level. In some cases airflow restriction occurs on either inspiration or expiration alone.

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Hyperventilation Syndrome

i. Hyperventilation is a serious disturbance of breathing in individuals suffering from anxiety state.

ii. As a result of over breathing the lungs are ventilated in excess of metabolic needs causing arterial hypocapnia, a persistent drop in the CO2 level in arterial blood and expired alveolar air.

iii. A frightening situation triggers an attack which will subside gradually, but individuals may become conditioned and react in this way in similar circumstances or even in at the memory of an attack (Lum, 1976).

iv. Breathing is not only rapid but irregular and maybe accompanied by sighing (Inocenti, 1983).

v. A sudden acute panic attack is accompanied by excessive panting and upper chest, clavicular breathing with heaving shoulders (Figure 5).

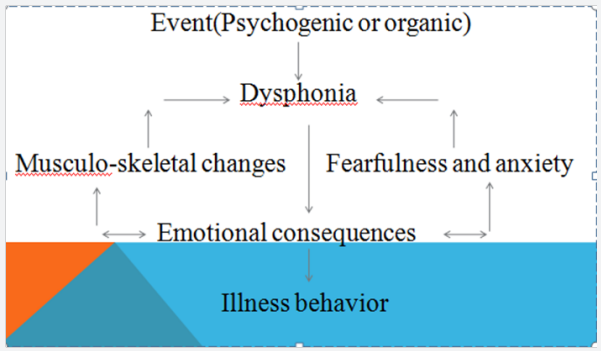

Figure 5: Psychodynamic model of Dysphonia (Maurice Greenberg).

vi. An "event" occurs triggering an episode of Dysphonia. It can be organic or Psychogenic in origin.

vii. Dysphonia then leads to emotional consequences, which in turn reinforce the voice change.eg. Fearfulness or anxiety. Such an emotional state may then cause physical changes in the vocal tract such as tension related musculoskeletal dysfunction. These then further reinforce the voice changes.

viii. The situation can become reinforcing with the development of "illness behavior". The concept of illness behavior draws attention to the relationship between doctor and patient. It particularly emphasizes the role of the doctor in perpetuating symptoms by pursuing an increasing number of investigations, which reinforces the patients' anxiety.

Management

i. Depending on the duration of the problem when the patient attends for treatment, the voice reflects not only the current psychological status of the individual but also vocal habit.

ii. Care must be taken to ensure there is not a physical cause

iii. The treatment of mental or emotional disorders and adjustment problems through the use of psychological techniques rather than through physical or biological means.

Psychotherapy

i. Psychotherapy is a general term for a way of treating mental and emotional disorders by talking about your condition and related issues with a mental health professional. It's also known as talk therapy, counseling, psychosocial therapy.

ii. Therapy may address specific forms of diagnosable mental illness, or everyday problems in relationships or meeting personal goals.

Clinical evaluation

i. If a psychogenic voice disorder is suspected, obtain measurements of acoustic, aerodynamic, and perceptual voice parameters. Laryngeal video stroboscopic assessment also may be performed to more closely visualize the vocal folds' vibratory patterns during selective speech tasks.

ii. A functional voice disorder can be diagnosed only after a complete history, clinical examination, and voice assessment have been performed and no anatomic, Neurologic, or other organic cause can be identified for the dysphonia. The diagnosis of a particular voice disorder is dependent on characterization of the patient's voice symptoms.

iii. Psychological assessments of patients with functional voice disorders can be performed using the Minnesota Multiphasic Personality Inventory. These patients demonstrates elevated levels of anxiety, somatic complaints, introversion, and poor levels of adaptive functioning.

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