

Treatment

Effects of CRT

Patients who undergo **chemoradiotherapy** (CRT) to address their head and neck cancer may experience side effects of the treatment, including:

- *Xerostomia*, or dry mouth
- *Dysphagia*, or difficulty/disordered swallowing
- *Trismus*, or reduced jaw opening
- *Odynophagia*, or painful swallowing
- *Tissue fibrosis*, or hardening of the tissue in the targeted and/or surrounding area

These side effects can cause changes to the voice, including changes in **vocal quality** (rough, hoarse, breathy, strained). These voice changes can be due to reduced movement of the vocal cords, hardening of tissue, dryness of vocal cords, etc.

Effects of Laryngectomy.

A **laryngectomy** involves the removal of all or parts of the larynx (voice box). During surgery, your windpipe is redirected to a permanent opening in the neck - called a **stoma**. This makes the airway separate from the nose, mouth, and throat. The stoma becomes the passageway for breathing. Additional precautions should be taken to protect the stoma with regular cleaning, coverage, and use of a heat/moisture exchange device. Following a total laryngectomy, the patient will lose their natural voice and will need alternative methods to communicate.



Head and neck cancer affects tissues and organs of the head and neck region, including the mouth, throat, larynx (voice box), nasal cavity, and salivary glands. Treatment for cancers affecting the head and neck usually include a combination of surgery, radiation therapy, and chemotherapy, and it can lead to changes in one's voice.

How can we help?

Listed throughout this pamphlet is crucial information related to understanding and addressing potential changes and treatment options for those affects which can, in turn, greatly improve quality of life. Multimodal and multidisciplinary treatment for voice and resonance disorders is often effective for individuals with head and neck cancer (ASHA). Our job includes minimizing long-term effects on speech and swallowing function, including preventing or reducing fibrosis, maintaining range of motion of oropharynx and larynx using strategies such as sliding glissandos, falsetto vocal range, or the Mendelsohn maneuver.

Finding Your New Voice: Understanding Changes After Head and Neck Cancer



Goals

Treatment starts before cancer treatments.

Pre-rehabilitation goals may include:

- Extensive patient education including voice changes to expect, vocal hygiene practices, as well as baseline measures for speech, swallow, and voice function
- Completion of exercise program to maintain as much range of motion as possible
- Talk about and practice with *alternative methods of communication* prior to treatments or surgeries occur

Post-treatment goals may include:

- Patient counseling for psychosocial changes
- Appropriate treatment methods including electrolarynx training, esophageal speech, teaching modes of speech and independence in stoma care, and so forth.

Voice Restoration

Following a total laryngectomy, patients experience a loss of voice. Losing one's natural voice can significantly impact quality of life and sense of identity. Voice restoration aims to reverse these negative changes. Instead of using the vocal fold vibration as the primary sound source, the following methods are used in place:

Tracheoesophageal Voice Prosthesis (TEP)

- What is it? - Implantation involves surgery where a puncture is placed between your breathing pipe and swallowing pipe. A small one-way valve (TEP) is inserted into the puncture. When the patient covers their stoma and exhales, airflow is directed to the esophagus - allowing the upper portions of the esophagus to vibrate for speech
- Advantages - TEP generates the most fluent and natural-sounding speech compared to other restorative methods
- Disadvantages - Requires continuous maintenance including daily cleaning and routine replacement

Electrolarynx (EL)

- What is it? - External vibratory source that can be placed against neck or into the mouth to produce sound.
- Advantages - This method does not require surgery. Though it requires training to operate, it is generally easy to learn
- Disadvantages - EL results in a less natural tone of voice, that is often described as robotic and monotone. Since it is a hand-held device, those with poor dexterity may have difficulty operating. Although new versions now allow for hand free voicing

Esophageal Speech

- What is it? - Speech that is produced by trapping air into the esophagus and pushing it out. This causes the upper esophagus to vibrate and produce speech. The result is a belch-like vocal quality that is understandable
- Advantages - This technique is low-cost, non-surgical, and allows for hands-free speech
- Disadvantages - Requires extensive training and not all patients are able to master. Patients may also have difficulty moving enough air for continuous speech, resulting in shorter utterances

Voice Therapy Options

Treatment of Head and Neck Cancer can potentially impact voice. Patients can see a speech-language pathologist to target deficits in volume, pitch, respiration, and tension. Also, to learn how to improve vocal hygiene and find alternative communication methods.

- Loudness - diaphragmatic breathing, biofeedback
- Pitch - vocal function exercises (ex. pitch glides)
- Respiration - diaphragmatic breathing, EMST
- Reduce Tension - laryngeal manipulation, lymphedema therapy

Vocal Hygiene Practices

- Drink plenty of water
- Talk at a moderate volume
- Stop smoking
- Avoid shouting or talking loudly over noise
- Avoid coughing and throat-clearing

Tracheostomy Effects on Voice

In surgical patients, tracheostomies may be placed in the trachea to facilitate breathing in the airway. Breathing through a tracheostomy tube diverts air away from the vocal cords, impacting one's ability to phonate. There are two options to restore verbal communication:

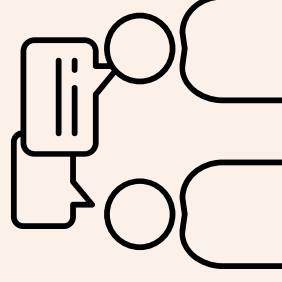
Manual occlusion: place a finger to block the end of the tracheostomy tubes during exhalation. The expired air will flow through your vocal cords instead of through the trach tube

Speaking valve: one-way valve that allows air to enter the trachea on inhalation but directs it through the vocal cords on exhalation, facilitating speech

Psychological and Emotional Support

In addition to the above mentioned medical and therapeutic support options, individuals can often lean on other psychological and emotional support alternatives to address all changes, other than voice, post H&N cancer.

- Some support alternatives include:
- Counseling and support groups
 - Online communities and resources
 - Comprehensive rehabilitation programs
 - Holistic approaches
 - Counseling regarding quality of life outcomes



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