

Total laryngectomy and voice restoration

Blom-Singer®

The voice of experience since 1978

What to expect



INHEALTH®
TECHNOLOGIES

We speak ENT





What now?

Your doctor says your larynx (pronounced *LAIR-inks*), also called your “voice box,” needs to be removed.

Why? It could be for any of the following reasons:

- You have been diagnosed with cancer in your voice box, also known as laryngeal (*lair-in-JEE-all*) cancer
- Your voice box was damaged during radiation treatment
- You had a bad neck injury

As a result, you may need a surgery called a total laryngectomy (*lair-in-JECK-toe-mee*). The voice box is removed during a total laryngectomy.

It is normal to have concerns and questions.

This brochure will give you information about what to expect from your surgery and what your communication choices may be following surgery. It may also help you plan for changes after your surgery. Your healthcare team may have you meet with a speech-language pathologist to talk about these changes and answer questions you may have about surgery.

Your healthcare team will always be your best resource for information.

A closer look at your neck and throat

Let's focus on the following:

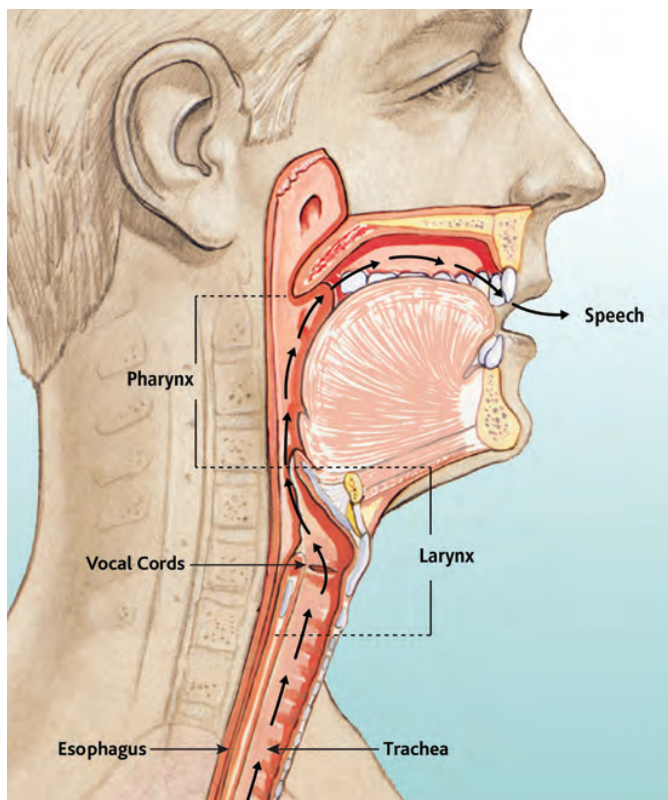
- Larynx (*LAIR-inks*): your voice box
- Trachea (*TRAY-kee-ah*): your "windpipe" or airway
- Esophagus (*ee-SOF-ah-gus*): your "food pipe"
- Pharynx (*FAIR-inks*): the inside of your throat

The larynx sits on top of the trachea and connects the trachea to the pharynx and the pharynx to the esophagus.

The larynx plays an important role in:

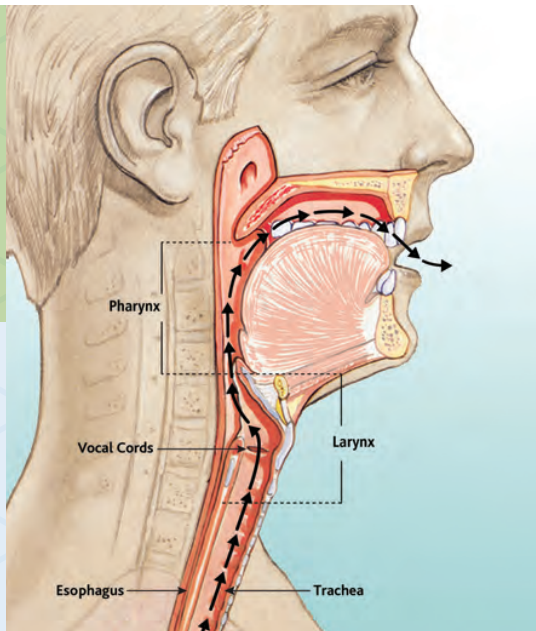
- Breathing
- Talking
- Swallowing

Many changes take place during a laryngectomy. Understanding how breathing, talking, and swallowing work *before* surgery will help to explain the changes that will take place *after* surgery.



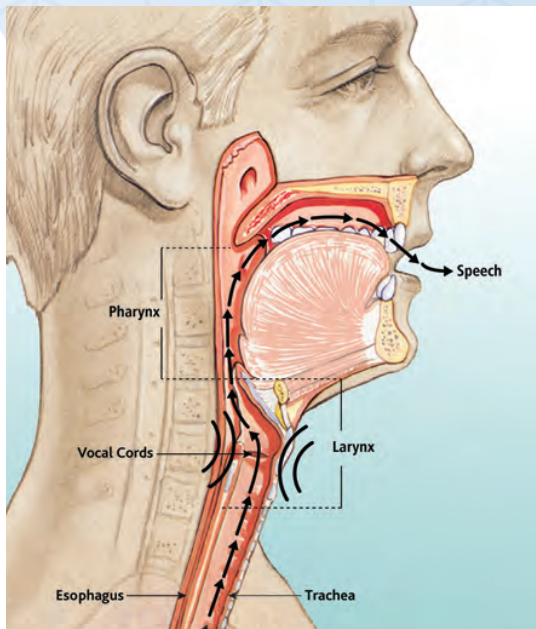
People often will have breathing trouble, hoarseness or voice trouble, and/or swallowing trouble when the larynx doesn't work as it should because of cancer, radiation treatment effects, or injury.

Breathing, talking, and swallowing before laryngectomy



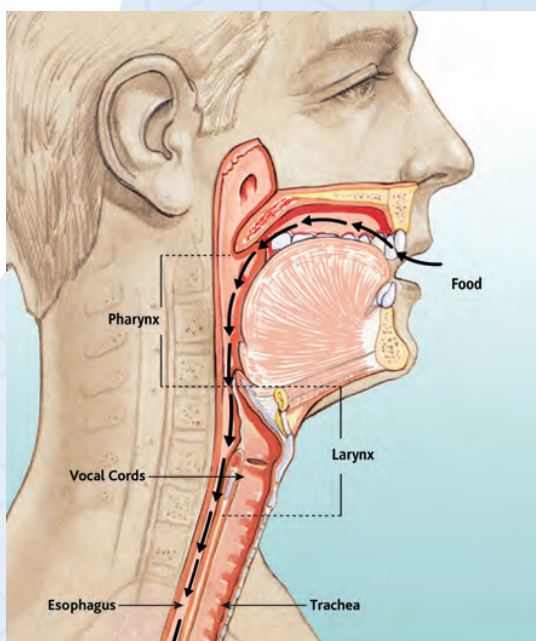
Breathing

When you breathe, air is drawn in through the nose and mouth, passes the vocal cords, and enters the trachea and lungs.



Talking

When you talk, air comes up from the lungs and vibrates the vocal cords, creating voice.



Swallowing

When you swallow, the windpipe closes, allowing the food pipe to open so food and liquid can go to the stomach.

Laryngeal cancer and treatment

The diagnosis of laryngeal cancer means abnormal cells are growing on the structures of the larynx. This could include the vocal cords that produce voice and/or the tissue and cartilage around the vocal cords.

Your doctor will determine your cancer type and the stage of your cancer. This is based on the extent of your cancer and may affect your treatment plan. Your medical team's goal is to get rid of your cancer. This process is different for every person. Some treatment options include:

Radiation: a treatment that uses high-energy particles or waves, such as x-rays, gamma rays, electron beams, or protons, to damage or destroy cancer cells.

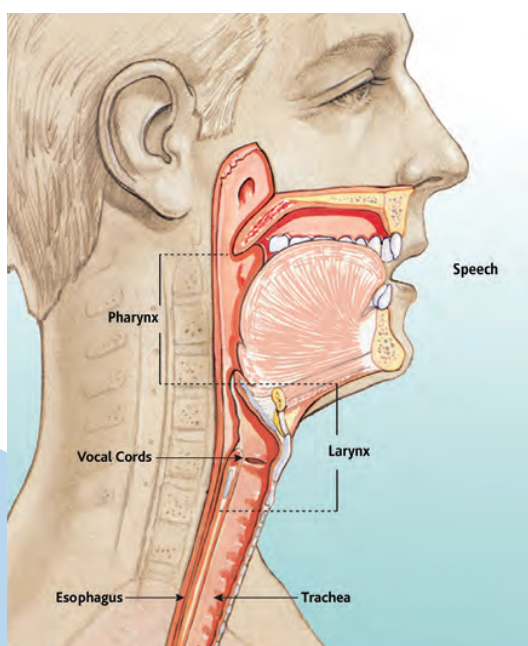
Chemotherapy: a type of cancer treatment that uses medications to increase the effects of radiation therapy and to limit or stop the spread of cancer cells. This is also called "chemo."

Total laryngectomy: a surgery that completely removes the larynx.

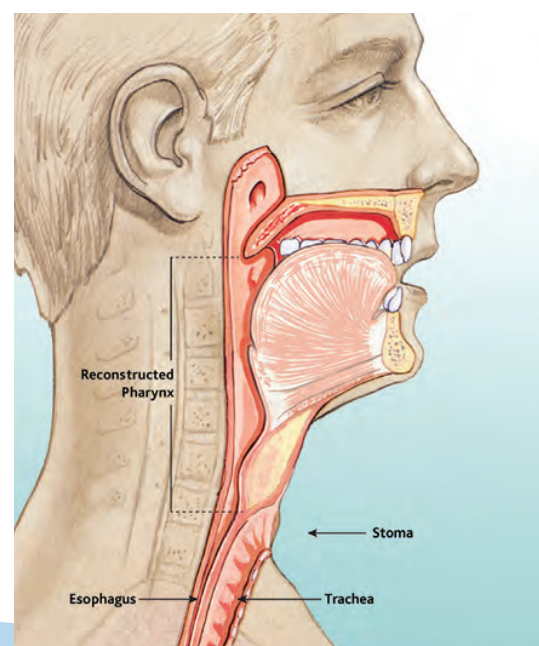
Total laryngectomy

During a total laryngectomy, the larynx is removed and two separate pipes are created for swallowing and breathing/talking. The mouth is connected to the esophagus, forming one pipe for swallowing. The trachea is redirected to create a permanent hole on the surface of the neck, forming one pipe for breathing. This hole is called a tracheostoma (*TRAY-kee-oh STOW-ma*), or "stoma" for short. The nose and the mouth do not connect to the lungs after this surgery.

Pre-laryngectomy



Post-laryngectomy





Changes in breathing

After laryngectomy, you will only breathe through your stoma. The stoma is a permanent hole in your neck and should never close. Your doctor may recommend using a laryngectomy tube to keep the stoma open and round. These soft, silicone, reusable tubes come in different widths and lengths. Your healthcare team will decide if you should use a laryngectomy tube and which size best fits you.



*Blom-Singer®
ClassicFlow™ HME*

Before surgery, you breathed through your mouth and nose, which heated, moisturized, and filtered the air before it reached your lungs. Following laryngectomy, this natural system changes because the nose and the mouth are not connected to the lungs. Your body cannot heat, moisturize, or filter the air you breathe in. Therefore, the air reaching your lungs will be cooler and dryer. It will have more dirt and dust particles. You will also have a lower resistance during breathing.

Your body may produce additional mucus to help protect the lungs. Many patients notice more coughing and hard mucus that is difficult to cough out. These are called “crusting” and “mucous plugs.” Crusting and mucous plugs can be dangerous and make it difficult to breathe.¹ These can be reduced by using heat and moisture exchange systems, or HMEs.¹

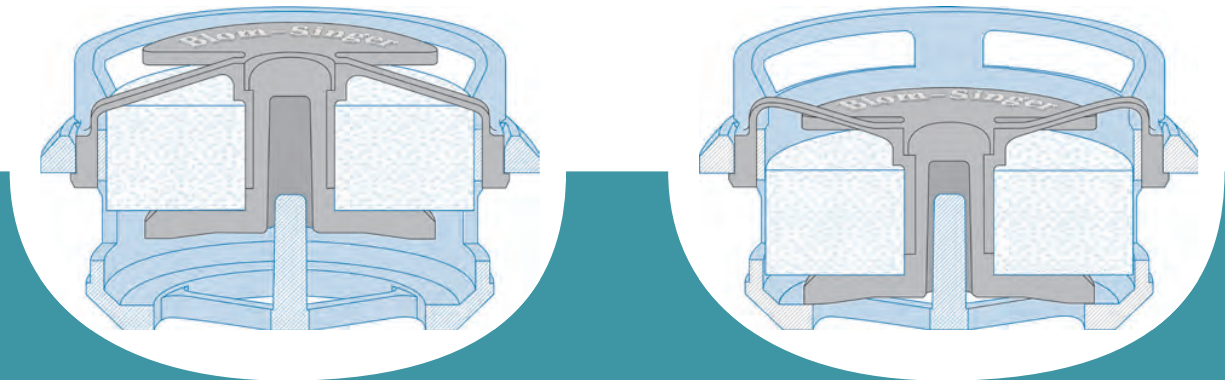


*Blom-Singer®
EasyFlow™ HME*

*Blom-Singer®
HumidiFilter® Holder*



The view inside an HME



An HME system is a small, lightweight cartridge that fits into many different accessories to sit over the stoma. It can be worn 24 hours a day, 7 days a week. It helps humidify, filter, and warm the air you breathe. This may reduce how often you cough, how much mucus you produce, and improve sleep.² It also helps keep your hands and stoma site clean and can help with speaking in some situations. Blom-Singer® HME cartridges feature MucusShield™ technology, which helps protect the foam filter.

After laryngectomy, you should be very cautious around water. Because the stoma is on the outside of your neck and provides a direct path to your lungs, it is harder to prevent water from entering your lungs. You should never let your neck go underwater, and you should avoid activities like swimming or boating to avoid accidental drowning. A "shower guard" or "shower collar" may provide protection for your stoma and lungs during showering.



Shower Guard



Nylon Shower Collar

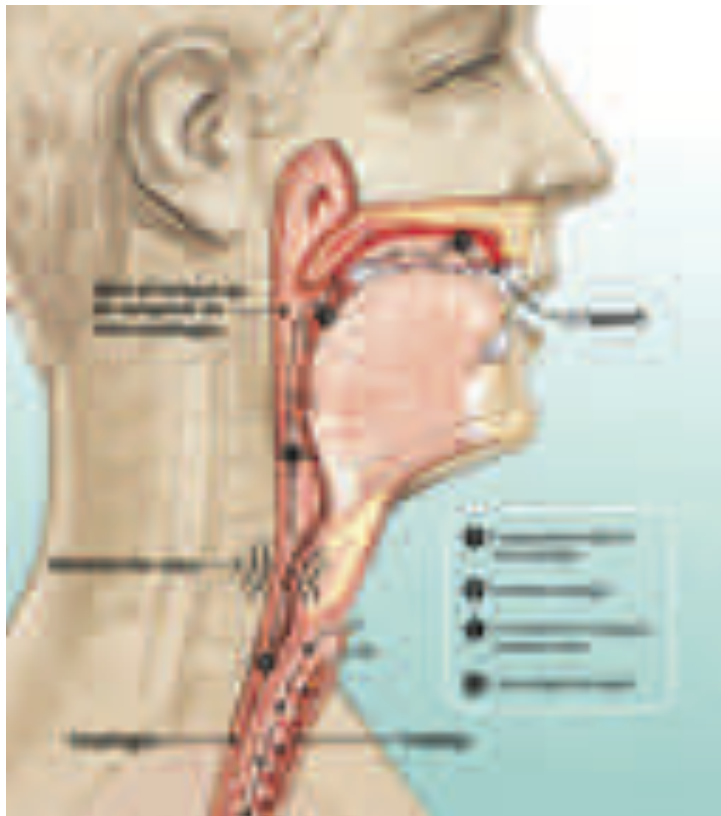


Rubber Shower Collar

Changes in communication

Following a total laryngectomy, you will not be able to produce voice. That's because your larynx and vocal cords are removed during surgery. However, there are several options for communication after laryngectomy. The four most common methods:

- **Nonverbal communication**
- **Esophageal (*EE-sof-ah-JEE-ahl*) speech**
- **Electrolarynx or artificial larynx**
- **Tracheoesophageal (*TRAY-kee-oh-EE-sof-ah-JEE-ahl*) puncture (TEP) voice**



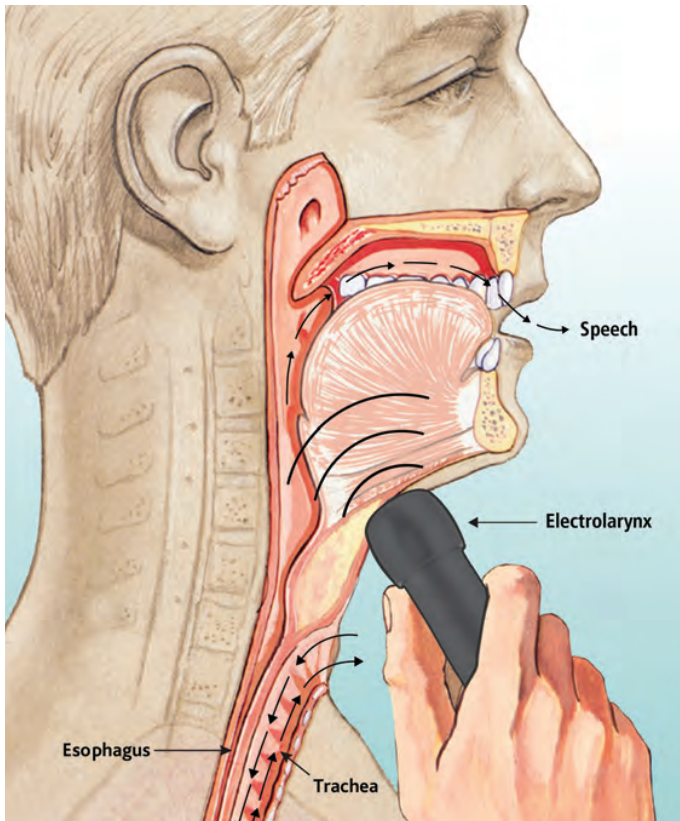
Communicating with esophageal speech

Nonverbal communication

This includes writing, texting or typing, making facial expressions and gestures, and mouthing words. There are even programs on smartphones and computers that speak what you type.

Esophageal speech

In esophageal speech, a small amount of air is swallowed and trapped in the throat. It is pushed back up into the mouth, creating a vibration of the tissue. This vibration, like your voice before surgery, can be shaped in the mouth to create speech. Esophageal speech can be difficult to learn but can be very reliable. You should talk to your healthcare team to see if this is a good option for you.



Communicating with an electrolarynx

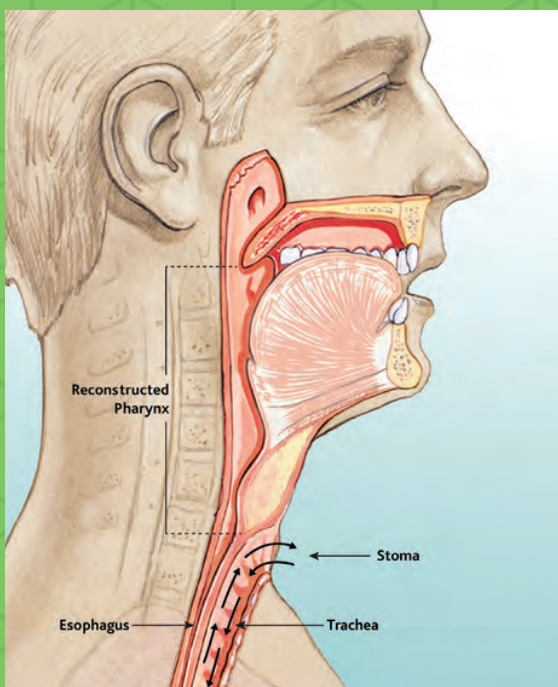
Electrolarynx (or artificial larynx)

An electrolarynx (EL) is a small, battery-operated device that creates vibration. It is placed flat against the neck or cheek to vibrate tissue. A small straw adapter can also be used inside the mouth if skin on your neck or cheek is too sensitive or does not allow sound to pass. When the EL is placed in the best spot for you, vibration is carried into the mouth to be shaped into speech. EL speech may seem mechanical and takes some practice, but it is reliable and low-maintenance. You should talk to your healthcare team about more tips and tricks for using an electrolarynx.

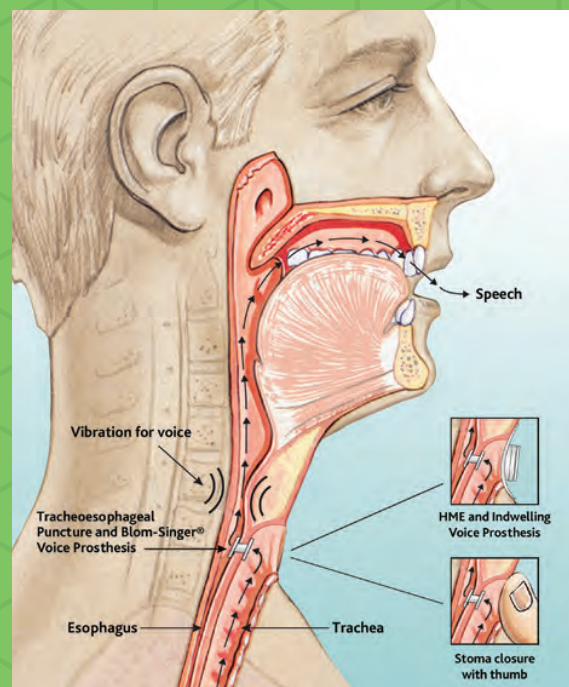
Tracheoesophageal puncture (TEP) speech

In 1978, Dr. Eric Blom and Dr. Mark Singer invented the surgical technique to restore people's ability to speak after laryngectomy. In addition to the surgical procedure, Drs. Blom and Singer created the Blom-Singer® family of products.

Post-laryngectomy



Tracheoesophageal voice prosthesis



*Blom-Singer® Low Pressure
Voice Prosthesis*



Tracheoesophageal (TE) speech is considered the "gold-standard" in voice restoration. It tends to be easier to produce and learn than esophageal speech and sounds more natural than using an electrolarynx. A small hole or puncture is made in the common wall between the trachea and the esophagus. This puncture is visible inside the stoma and becomes a path to allow airflow into the esophagus. A small silicone one-way valve is placed in the puncture to keep it open. It also keeps food and liquid from flowing from the esophagus into the trachea. This one-way valve is called a tracheoesophageal prosthesis, or TEP. TEPs come in many widths and lengths with many different features. Your healthcare provider will determine which valve is best for you.



*Blom-Singer® Classic™
Nonsterile Indwelling
Voice Prosthesis*



*Blom-Singer® Classic™
Sterile Indwelling Voice
Prosthesis*



*Blom-Singer® Dual Valve™
Indwelling Voice Prosthesis*



To talk, breathe in and gently cover the stoma, or press gently on the HME, which covers the stoma. This directs air through the TEP and into the esophagus, vibrating the tissue. This vibration is shaped by your mouth into speech.

The TEP needs regular maintenance, as the valve will begin to leak food and liquid from the esophagus into the trachea. To prevent leaking, regular cleaning with a “brush and flush” technique is necessary. The TEP will also need to be replaced. This is usually done in an outpatient clinic and does not require general anesthesia. Some patients even change the TEP themselves.

Although a TEP is a great option for many people, it is not for everyone. Your healthcare provider will determine if a TEP is the best option for you.



*Blom-Singer®
ElectroLarynx EL 1000*



Changes in swallowing

After a laryngectomy, food and liquid cannot go "down the wrong pipe" because the food pipe and the windpipe are not connected. However, this does not mean that swallowing is perfect. Many people notice some foods are harder to get down and they must drink liquids to help rinse their food down. Some people also notice it takes longer for them to eat a meal. If you have trouble swallowing after your laryngectomy, talk to your healthcare team.

What to expect at the hospital

After your surgery, you can expect to stay in the hospital for several days. This length of time will be determined by your healthcare team. Your doctors will make sure you are healing well, getting enough nutrition, and as comfortable as possible. Consider taking a white board and marker or pen and paper for writing to the hospital with you. You can even use an electrolarynx immediately after surgery to communicate. Laryngectomy Needs Charts can also be helpful when you are tired or need to communicate quickly.

Laryngectomy Needs Chart



A “new normal”

Adjusting to life after laryngectomy can be difficult and anxiety and depression are very common. Your healthcare team, friends, and family can help provide a strong support network. Ask your healthcare team about local laryngectomy support groups in your area. There are also several online resources available. Know that you are never alone in your healing process.



Resources

If you have questions, need more information, or are looking for support, do not hesitate to reach out to the following resources. They are here to help!

American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS)

www.entnet.org

The American Academy of Otolaryngology–Head and Neck Surgery is the world's largest organization representing specialists who treat the ear, nose, throat, and related structures of the head and neck.

American Cancer Society (ACS)

<http://www.cancer.org>

The American Cancer Society is the nationwide, community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer, through research, education, advocacy, and service.

Foundation for Voice Restoration (FVR)

<http://www.getvoicing.org>

The Foundation for Voice Restoration is a non-profit organization founded by a laryngectomee to provide educational material to the laryngectomee, family, caregivers, and medical professionals. Through a variety of outreach programs, FVR has helped many laryngectomees across the country and around the world.

InHealth Technologies

<http://www.inhealth.com>

InHealth Technologies is a global leader in voice restoration systems. Since they first became available nearly 40 years ago, Blom-Singer® products have become the international gold standard for voice restoration, enabling thousands of laryngectomees worldwide to regain their ability to speak.



International Association of Laryngectomees (IAL)

<http://www.theial.com>

The IAL is a non-profit voluntary organization composed of approximately 250 member clubs and recognized regional organizations. These clubs are generally known as “Lost Chord” or “New Voice” clubs. Clubs are composed of from 10 to more than 300 laryngectomees. The IAL helps local clubs support laryngectomees in their area.

National Cancer Institute (NCI)

www.cancer.gov

The National Cancer Institute is the federal government’s principal agency for cancer research and training and the nation’s leader in cancer research. The NCI is part of the National Institutes of Health (NIH), which is one of 11 agencies that comprise the Department of Health and Human Services (HHS).

WebWhispers

<http://www.webwhispers.org>

WebWhispers was started in 1996 for those who had questions about larynx cancer treatments, surgery, recovery, and what life is like after laryngectomy surgery. They are now the largest support group for survivors of larynx and other throat cancers.

Glossary (or what do all those words mean?)

Artificial larynx: an electrolarynx (EL) is a device similar in size to an electric razor that creates vibration. When the EL is optimally placed, vibration is carried into the mouth to be shaped into audible speech. The device is most commonly placed on the surface of the neck, but can also be placed on the face or in the mouth with an oral adaptor.

Blom-Singer® Voice Restoration System: an innovative voice prosthesis system invented in 1978 by Dr. Eric D. Blom and Dr. Mark Singer to help laryngectomees regain their ability to speak using TE (tracheoesophageal) speech.

Chemotherapy: a type of cancer treatment that uses medications to increase the effects of radiation therapy or restrict the spread of cancer cells. Also called “chemo.”

Clinician-placed indwelling voice prosthesis: a type of tracheoesophageal prosthesis (TEP). This particular prosthesis is placed and replaced by a healthcare professional.

Electrolarynx: see “artificial larynx” listed above.

Esophageal speech: in esophageal speech, the individual takes air in through the mouth and traps it in the throat or pharynx. The air is then released, creating vibration of the interior throat. This vibration, like voice before surgery, can then be shaped in the mouth to create audible speech.

Esophagus: the “food tube.” This tube is positioned behind or posterior to the trachea (airway).

Heat and moisture exchange system (HME): this system offers resistance during breathing while filtering inhaled air and maintaining some of the natural humidity that has been lost because of a total laryngectomy. An HME system is a two-part system consisting of a cassette and a baseplate or housing (which can be a tube or button).

Laryngeal cancer: cancer of the larynx or “voice box.”

Laryngectomee: a term used for a person who has had a total laryngectomy.

Laryngectomy: or “total laryngectomy,” a surgical procedure to remove the larynx.

Laryngectomy tube: a hollow tube that may be placed in the stoma during or following a total laryngectomy.

Larynx: the "voice box." The larynx plays an important role in breathing, producing vibration for voice, and swallowing.

Patient-changeable voice prosthesis: a type of tracheoesophageal prosthesis (TEP). This particular prosthesis is intended for individuals who are able to place and care for their TEP themselves.

Pharynx: the space inside your neck, including the interior mouth, nose, and upper airway.

Radiation treatment: a treatment that uses high-energy particles or waves, such as x-rays, gamma rays, electron beams, or protons, to destroy or damage cancer cells. It may be used in combination with surgery and/or chemotherapy. Also known as radiotherapy.

Speech-language pathologist (SLP): a healthcare professional who specializes in the rehabilitation of communication and swallowing function.

Trachea: the "windpipe" or airway.

Tracheoesophageal (TE) speech: a form of voice restoration that involves a surgical puncture in the communicating wall between the trachea and esophagus. A voice prosthesis (TEP) must be placed to make TE speech safe and effective.

Tracheostoma or stoma: a permanent hole created during a laryngectomy by redirecting the airway to the surface of the neck. The stoma is the only way to breathe after a laryngectomy.

Voice prosthesis or tracheoesophageal voice prosthesis (TEP): a small silicone valve that is placed into the surgically created tracheoesophageal puncture. The one-way valve permits air to move into the esophagus to achieve vibration for voicing but remains closed so that food or liquid does not move into the trachea.



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The voice of experience since 1978

1. Foreman A, De Santis R, Enepekides D, Higgins K. Heat and moisture exchanger use reduces in-hospital complications following total laryngectomy: A case-control study. *Otolaryngology Head and Neck Surgery*. 2016;45(1):1-5.

2. Ackerstaff AH, Hilgers FJ, et al. Improvements in respiratory and psychosocial functioning following total laryngectomy by the use of a heat and moisture exchanger. *Annals of Otolaryngology, Rhinology & Laryngology*. 1993;102(11):878-883.

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1110 Mark Avenue
Carpinteria, CA 93013-2918 USA
Toll Free: 800.477.5969
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