

## **What to Expect: Microlaryngoscopy**

### **What is microlaryngoscopy?**

Surgical microdirect laryngoscopy (MDL) involves putting a hollow metal tube or pipe (called a laryngoscope) into the mouth and down the throat to look at the larynx and the vocal folds. You will be asleep so that you are comfortable. We put a tooth guard over your teeth or a soft pad over your gums if you do not have teeth to protect them from the metal tube.

We usually use a microscope or magnifying telescope to allow us to see the vocal cords at high magnification. Thus, the term micro-direct laryngoscopy: we're using a **microscope** to look **directly** at the **larynx**.

Bronchoscopy involves placing a camera between the vocal folds and passing it through the larynx into the airways to look at the trachea and the air passages to the lungs.

Esophagoscopy involves placing a metal tube with a camera behind the larynx into the esophagus (swallowing pipe) in order to look at it throughout its length, sometimes as far as the stomach.

### **The day of surgery:**

The day begins in the preoperative area where you will check in, meet the anesthesia team and OR nurses, speak with me, and have an IV placed in your arm or hand.

When it is time for surgery, you will roll back into the operating room where you will see our team there. The instruments will likely be out and waiting for you. Once everything is confirmed and the safety checks are done, the anesthesia team will begin to put you to sleep.

After you are asleep, we will do the surgery, then wake you up and take you to recovery.

### **After surgery:**

#### **Voice Rest**

You will likely be on voice rest following surgery for a variable length of time depending on what you have done.

### **Pain Control**

After you wake up, your throat may be sore. You'll be provided with the appropriate kind of pain medicine so that you are comfortable but not overmedicated. You will also be given some cough suppressants and sometimes some steroids.

### **Diet**

We usually recommend that you start with an easy diet. For example, soda crackers and Sprite is perfect until you are sure that you are not nauseated and are swallowing well. After that, we generally allow you to eat whatever you would like, but we recommend that you avoid foods that you know will aggravate any reflux that you might have.

### **Follow up**

Most patients will see us again in the office about a week after surgery, sometimes with Dr. Eller or his PA, or with our Speech Team.

### **Risks of surgery:**

Everything we do involves some risk. Even driving to work. What follows is a discussion of the risks involved in this kind of surgery. We want you to be informed, and to be informed fully, you need to know the risks.

The most common risks are due to pressure from the laryngoscope on your teeth, gums, and tongue. This can cause a chipped tooth, bruised gums, or a swollen, painful, and numb tongue. Your anatomy will play a large role in how much pressure is placed on these structures during surgery.

A full discussion of the risks follows on the next pages. Not all of the risks apply to every patient, and if you have questions after reading this, please let us know and we will be happy to explain further.

## **Microdirect Laryngoscopy**

### Hoarseness

Any procedure involving the larynx, especially operations on one or both vocal folds, may result in hoarseness. Even when the operation is being performed to improve hoarseness that exists pre-operatively, there is no guarantee of success; and it is possible that post-operative vocal quality will be worse than it was pre-operatively. While the majority of such surgical procedures result in improvement or cure of voice complaints, when healing problems result in hoarseness, breathiness, decreased volume, voice fatigue, and pitch irregularities, even additional surgery and voice therapy may not be able to restore satisfactory quality. Fortunately, such problems are not encountered often, but it is not possible to know with certainty which patients will have problems.

### Scar and web

One of the common reasons for suboptimal vocal quality following vocal fold surgery is the formation of scar on the vibratory margin of the vocal fold. Often, the scar is due to the underlying pathology for which surgery was performed. Sometimes it is due to the way the vocal folds heal following surgery. Even if the surgery is performed perfectly and the patient is flawless about following postoperative instructions including voice rest, imperfect healing and scar formation may occur. Occasionally, if the pathology or surgery have involved both vocal folds, scar tissue may stick the two vocal folds to each other. When this involves the front of the vocal fold, it is called a web. When vocal fold webs or scars form and are symptomatic (poor voice or partial airway compromise), additional surgery may be required to correct them. Such surgery may involve an incision on the neck.

### Dental fracture

The laryngoscope is a fairly large metal tube designed to provide good exposure and optimize surgical results. In some people, the anatomy of the neck, mouth, tongue, larynx, and teeth make visualization difficult. Particularly in such patients (but everyone is at risk), the laryngoscope can result in chipping or fracture of a tooth. Caps or veneers on the upper front teeth are at particular risk. This complication is common.

### Temporomandibular joint pain

In order to insert the laryngoscope, the mouth is opened widely. Wide mouth opening is also routinely necessary for insertion of the endotracheal (breathing) tube used for general anesthesia. The mouth position necessary for surgery

sometimes strains the temporomandibular (jaw) joints resulting in post-operative ear or jaw discomfort. This usually resolves spontaneously but occasionally requires treatment and persists.

### Neck injury

When performing laryngoscopy to place an endotracheal tube or perform a surgical procedure, the neck is flexed and the head is extended. When performing bronchoscopy and esophagoscopy, the neck is extended. Under normal circumstances, this produces no problems. Rarely, the neck muscles are strained. Cervical fracture (broken neck) is a theoretically possible but extremely rare potential complication. Such an injury would be most likely to occur in someone with known neck problems such as cervical arthritis or previous broken neck or neck surgery (especially cervical fusion). Although none of our patients has ever suffered this complication from direct laryngoscopy or general anesthesia induced for many other surgical procedures, if a broken neck occurred, it could result in paralysis (quadriplegia).

### Arytenoid dislocation

The arytenoid cartilages are parts of the laryngeal skeleton to which the vocal folds attach. They have synovial joints like knees and elbows. Dislocation or subluxation of an arytenoid cartilage can be caused by laryngoscopy performed by the anesthesiologist for placement of the endotracheal tube, pressure from or removal of the endotracheal tube, or by surgical laryngoscopy. This injury is very uncommon but is a well-recognized potential complication of the procedure. If it occurs, surgical repositioning of the arytenoid is usually required. It may or may not be possible to restore completely normal voice following this injury.

When direct laryngoscopy is performed because of previously diagnosed arytenoid dislocation, there is no guarantee that reduction will be possible, or that the arytenoid will remain in good position once it has been reduced. If the arytenoid is returned to good position and slips, it may be necessary to reposition it surgically again one or more times. Even when the arytenoid can be reduced and remains in good position, the vocal fold often remains immobile. In this case, if voice is not satisfactory, additional surgery may be required to medialize (reposition) the vocal fold. Considerable force is required to reposition a dislocated arytenoid. Soft tissue injury to adjacent structures including the vocal fold may occur during this process. Usually, this results in temporary swelling, hoarseness and discomfort; but it is possible for these symptoms to be prolonged or permanent.

## Bleeding

Bleeding following surgery on or near the vocal folds is uncommon and usually stops spontaneously. If it is severe, it may require urgent or emergent surgery to control the bleeding. It is also possible for extensive bleeding to obstruct the airway, in which case emergent re-intubation or tracheotomy may be necessary. Such complications are very rare.

## Infection

Infections following surgery in or near the larynx are uncommon, but they may occur. They are possible after vocal fold injections and may involve soft tissue such as the vocal fold or neck, or the cartilages of the larynx. They usually resolve with antibiotics. Occasionally, intravenous antibiotics or additional surgical procedures are required.

## Airway obstruction

Swelling or bleeding following laryngeal surgery can rarely become extensive enough to block the airway and obstruct breathing. With most conditions for which laryngoscopy is performed, this complication is rare. When extensive surgery is performed for papillomas or cancer, the risk is somewhat higher. If airway obstruction occurs, the use of steroids and tracheal intubation or tracheotomy may be necessary; and hospitalization will be necessary. When there are reasons to suspect a risk of airway problems, hospitalization overnight is often recommended in order to permit close observation and ready access to treatment.

## Recurrence

Most conditions for which laryngoscopy is performed are capable of recurring. Any benign vocal fold lesion can come back after it has been removed (including nodules, cysts, polyps, hemorrhagic masses, and others). Cancers may also recur. Recurrence of papillomas is to be expected. Every effort is made to cure papillomas, but this viral condition is generally considered incurable and may recur quickly or after long periods of remission. Recurrence of soft voice and breathiness can occur following medialization procedures such as fat, collagen, or hyaluronic acid injection. If an excessive amount of the injected material is resorbed by the body, additional surgery may be necessary. This situation is unavoidable and fairly common.

## Laryngeal granuloma

Mucosa lines the entire upper aerodigestive tract including the larynx. Some procedures remove portions of this mucosa. Most of the time, the mucosa can be stretched from other areas to cover areas where the mucosa was removed. This is not always possible. When there is an uncovered area, the body occasionally has an exuberant healing response forming a mounded up area of scar tissue called a granuloma. This may resolve on its own or may need another procedure or some medicine to make it heal properly.

## Pain and scar at fat donor site (fat injections only)

When direct laryngoscopy includes injection or implantation of autologous fat, the fat is usually obtained through an incision in the abdomen, although the thigh, arm or another site may be used. Fat may be harvested by direct resection or liposuction. Pain at the donor site is expected for several days following surgery. Occasionally, pain and discomfort in this area may be prolonged; and unsightly scarring occurs rarely. It is also possible to get a hematoma (blood collection) at the donor site. This may require surgical drainage and is often associated with unsightly bruising that can last for a few weeks. Infection at the donor site also occurs rarely but may require drainage and antibiotic treatment.

## Need for additional surgery

Repeat laryngoscopy or other surgery may be recommended or necessary if the voice results are not optimal, if an abnormality recurs, if a new problem develops at any time following surgery or if complications occur. Many such potential situations are described elsewhere in this document.

## Bronchoscopy

Bronchoscopy may be performed because of known or suspected problems with the air passages in or leading to the lungs. Occasionally, unplanned bronchoscopy is performed because of unexpected findings during direct laryngoscopy.

Bronchoscopy involves all the same risks as direct laryngoscopy, plus the potential risks of penetration of an airway in the lung, and of hemorrhage. If airway penetration occurs, air may escape into the soft tissues of the neck and face, or into the chest. In this case, it may be necessary to insert a chest tube to drain the air. Hemorrhage is most likely to occur in the presence of a vascular malformation, tumor, or when extensive biopsy inside the lungs is required. Rarely, extensive hemorrhage may require not only a chest tube, but also chest surgery.

Complications of bronchoscopy may also result in infection requiring intravenous

antibiotics, surgical drainage, and/or placement of an endotracheal (breathing) tube for respiratory support.

### Esophagoscopy

Esophagoscopy includes all of the potential complications of direct laryngoscopy and bronchoscopy. In addition, it is possible to penetrate the esophagus. This complication is not common and usually occurs when the esophagus contains a stricture (area of narrowing), obstruction, or tumor. When esophageal perforation has occurred, prolonged antibiotic treatment are usually required, and chest or neck surgery may be necessary.