Stephanie Culver, MD
Dale Amanda Tylor, MD, MPH
1819 State Street, Suite A
Santa Barbara, CA 93101
P: (805) 327-6673
F: (805) 679-5183

RIVIERA **ENT**

This information handout is provided for general medical knowledge only. It may or may not relate to your specific medical condition and it does not constitute individualized medical advice.

Vocal Cord (Fold) Paralysis

People have one set of two vocal cords, also known as vocal folds, that work together in your voice box to produce sound. They open when you breathe in to let the air flow through your lungs, and they close and vibrate when you speak (this is called phonation). To produce adequate voice, both vocal cords should move toward each other and close completely to vibrate together (this is called glottic closure).

Your vocal cords move through the contraction of various muscles controlled by your brain and a specific set of nerves. Vocal cord *paralysis* and *paresis* can result from abnormal function of the nerves that control your voice box muscles (laryngeal muscles). Paralysis is a complete absence of vocal cord movement, caused by a complete loss of nerve input; paresis is a weakened vocal cord movement, caused by a partial loss of nerve input. There are two nerves that can be involved:

- The recurrent laryngeal nerve (RLN) carries signals to different voice box muscles responsible for opening, closing, and adjusting tension in the vocal cords. Healthy function of this nerve is needed for breathing, speaking, coughing, and swallowing. The RLN goes into the chest cavity and curves back into the neck until it reaches your voice box. Because the nerve is relatively long and takes a “detour” to the voice box, it can be damaged or compressed by tumors in the neck or chest, or injured after surgery to the neck or chest.
- The superior laryngeal nerve (SLN) carries signals to a small muscle (called the cricothyroid) that controls your pitch. This muscle adjusts the tension of the vocal cord for high notes during singing (like a guitar string). An injury or damage to the SLN can cause inability to increase pitch when singing or reach higher notes.

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Depending on your needs, vocal cord paralysis can cause great difficulty, or only mild problems. For instance, if you're a professional singer, even mild paresis might end your career; if you're a computer programmer, however, you might see little ill effect.

What Are the Symptoms of Vocal Cord Paralysis?

Symptoms of paralysis and paresis of the vocal cords can include:

- *Voice changes*—Hoarseness, breathy voice, weak voice, gurgling quality to the voice, shortness of breath after speaking
- *Airway problems*—Shortness of breath with efforts, noisy breathing, unsuccessful cough
- *Swallowing problems*—Choking or coughing when swallowing food, drink, or saliva, and food sticking in throat

These symptoms can be mild to severe depending on the degree of paralysis, and the ability of your voice box to adapt. Depending on the cause, your symptoms may resolve with time or persist.

What Causes Vocal Cord Paralysis?

Vocal cord paralysis can happen at any age and come from different causes, including:

- *Idiopathic*—An idiopathic vocal cord paralysis means that no specific cause could be found despite diagnostic tests. This happens in up to 50 percent of cases. One theory is that the common cold virus may cause nerve inflammation.
- *Unplanned injury during surgery*—Surgery in the neck (thyroid gland, carotid artery, cervical spine) or in the chest (lungs, esophagus, heart, or large blood vessels) may cause RLN or SLN paresis or paralysis.
- *Breathing tube/intubation*—Though rare, injury to the RLN may occur when breathing tubes are inserted to assist breathing for an extended period of time (in the intensive care unit, for example).
- *Tumors of the skull base, neck, and chest*—Tumors (both cancerous and non-cancerous) can grow around nerves and squeeze them, resulting in varying degrees of paresis or paralysis.
- *Viral infections*—Inflammation from infections may injure a brain nerve (called the vagus) or its nerve branches to the voice box (RLN and SLN). Illnesses affecting nerves in the whole body may also affect the voice box nerves.
- *Auto-immune diseases*—Various auto-immune diseases can cause transient or permanent vocal cord paralysis.
- *Neurological causes*—Strokes and other neurological diseases can cause vocal cord paralysis.

How is Vocal Cord Paralysis Diagnosed?

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If you suffer from symptoms of vocal cord paralysis, you should see an ENT (ear, nose, and throat) specialist, or otolaryngologist, who may diagnose your condition from one or more of these methods:

- *Flexible laryngoscopy*—After asking questions about your symptoms, an examination of your voice box will be carried out, using a small, flexible camera that goes through your nose and down your throat to examine the voice box. If this exam reveals vocal cord paralysis or paresis, further tests can be ordered to determine the cause of the paralysis.
- *CT scan*—A CT scan of the head, neck, and/or chest can be ordered to make sure there is no mass or lesion compressing the nerve along its course in the body.
- *Blood work*—Blood tests can be ordered to test for auto-immune diseases.
- *Laryngeal electromyography (LEMG)*—A LEMG test measures electrical currents in the voice box muscles that are the result of nerve signals. Your doctor may have you perform certain tasks to test these muscles, then look at the pattern of electrical currents to see whether the nerve signals show signs of recovery or repair, and to determine the degree of the nerve problem.

What Are the Treatment Options?

Depending on the severity of your vocal cord paralysis and how much it affects your everyday life, your ENT specialist can offer different treatments options, including:

Voice therapy—Like physical therapy for an injured knee, voice therapy can help improve vocal function before having to consider surgery.

Surgery—The decision to have surgery depends on the degree of the symptoms, voice needs, position of the problem vocal cord, the outlook for recovery, and the cause of the problem, if known. There are two main types of surgical procedures to treat vocal cord paralysis:

- *Vocal cord injection*—A filling material is injected into the vocal cord to close the gap between your vocal cords. This can be done while you are awake (sometimes in your doctor's office or in the operating room) or while you are asleep in an operating room. The duration of results will vary depending on the material injected.
- *Laryngeal framework surgery (also called medialization laryngoplasty)*—Your surgeon will make a small incision in your neck and insert an implant into your voice box to move your vocal cord toward the middle, helping both cords close and vibrate better. Commonly used implants include silastic blocks (silastic is a form of silicone gel) or Gore-Tex sheets. This procedure is often done under local anesthesia in the operating room, and the results are typically permanent.

If you suffer from vocal cord paralysis, your doctor will be able to guide you and find the best treatment options for your symptoms and needs.

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What Questions Should I Ask My Doctor?

1. What is the cause of my vocal cord paralysis?
2. Is my vocal cord completely paralyzed or only partially paralyzed?
3. Does vocal cord paralysis affect my ability to swallow properly?
4. What are the chances of recovery if I don't pursue any treatment?
5. What are the chances of complications (e.g., aspiration pneumonia or swallowing problems) if I don't pursue any treatment?