CONDITION

Laryngeal nerve damage

Laryngeal nerve damage disrupts the nerves controlling the vocal folds, affecting voice, swallowing, or breathing.

WHAT IT IS
Damage to nerves controlling the voice box

BODY SYSTEM
Nervous system and upper airway

MAIN SYMPTOMS
Hoarse voice, weak cough, swallowing trouble, noisy breathing

WHAT CAUSES IT
Surgery, pressure, injury, inflammation, or unknown causes

HOW IT IS DIAGNOSED
Laryngoscopy, sometimes laryngeal electromyography and imaging

MAIN TREATMENT
Voice therapy, procedures, surgery, and swallowing support

CAN IT BE CURED?
Sometimes - nerve recovery or procedures restore function

IS IT AN EMERGENCY?
Sometimes - noisy breathing or severe breathing difficulty

LONG-TERM OUTLOOK
Many improve; lasting weakness is often manageable

Overview

Laryngeal nerve damage affects the nerves that control the larynx, or voice box. These nerves help move and tighten the vocal folds. The vocal folds produce sound, protect the airway during swallowing, and help build pressure for coughing.

The recurrent laryngeal nerves control most vocal fold movement. One runs through the neck, while the other travels into the chest before returning to the larynx. The superior laryngeal nerves help control vocal fold tension, which is important for pitch and voice projection.

Damage may affect one side or both sides. One-sided damage often causes a breathy or hoarse voice because the vocal folds cannot close normally. It can also weaken the cough and allow food or drink to enter the airway.

Damage on both sides is less common. If both vocal folds remain close to the middle of the airway, breathing may become difficult even when the voice sounds fairly normal. This can require urgent treatment.

Nerve damage is not the only reason a vocal fold may stop moving. Joint scarring, inflammation, or a physical blockage can look similar. An examination of the larynx is needed to identify what is happening.

Symptoms

Symptoms depend on which nerve is affected, whether one or both sides are involved, and where the vocal fold rests.

Possible symptoms include:

One-sided recurrent laryngeal nerve damage often causes an obvious voice change. You may need to pause more often for breath while speaking. Some people can produce sound but find that their voice fades with use.

Superior laryngeal nerve damage may be less noticeable. It can cause difficulty changing pitch, projecting the voice, or maintaining vocal strength. This may be especially important for singers, teachers, performers, and others who rely heavily on their voice.

If both recurrent laryngeal nerves are affected, the vocal folds may not open widely enough during breathing. This can cause stridor, a harsh or high-pitched breathing sound. Stridor with breathing difficulty is an emergency symptom.

- A hoarse, weak, breathy, or rough voice
- Voice tiredness or difficulty speaking loudly
- Loss of vocal range, especially higher notes
- Coughing or choking while eating and drinking
- A weak cough or difficulty clearing mucus
- Shortness of breath or noisy breathing
- Repeated chest infections linked to swallowing problems

Causes and risk factors

Laryngeal nerves can be stretched, cut, compressed, or affected by inflammation. Sometimes no cause is found.

Surgery is an important cause because the nerves pass through the neck and chest. Procedures involving the thyroid, parathyroid glands, carotid arteries, cervical spine, heart, lungs, or oesophagus may place a nerve at risk. Nerve problems can also follow breathing-tube placement, although lasting injury from intubation is uncommon.

Other possible causes include:

The left recurrent laryngeal nerve has a longer route through the chest. For that reason, unexplained weakness on the left side may lead to imaging of both the neck and chest.

Some nerve injuries are temporary. The nerve may have been stretched or compressed without being permanently disrupted. Recovery can take months because nerves heal slowly. A nerve that has been severely damaged or divided is less likely to recover without a procedure.

- A neck or chest injury
- A tumour pressing on a nerve
- Swollen lymph nodes or enlarged blood vessels
- Inflammation following a viral illness
- Stroke or another neurological condition
- Scarring or joint damage that prevents vocal fold movement

Diagnosis

Assessment usually begins with questions about your voice, swallowing, breathing, recent operations, injuries, and other health changes. A clinician may listen to your voice and examine your mouth and neck.

Laryngoscopy is the main examination. A thin flexible camera is usually passed through the nose to view the larynx while you breathe, speak, and sometimes swallow. Local anaesthetic spray may be used. This examination shows how each vocal fold moves and whether there are other visible problems.

Stroboscopy uses rapidly flashing light to show vocal fold vibration in greater detail. It may be helpful when the movement problem is subtle or voice quality is the main concern.

Laryngeal electromyography, often shortened to LEMG, measures electrical activity in the laryngeal muscles. It can help distinguish nerve injury from a mechanically fixed joint. It may also provide information about the chance of useful recovery, although it cannot predict the future with certainty.

If there is no clear cause, imaging may be needed along the nerve's route. This may include a CT or MRI scan of the head, neck, or chest. Swallowing tests can be arranged if food or liquid may be entering the airway. These tests may use a camera through the nose or moving X-ray images during swallowing.

Treatment and management

Treatment is based on breathing safety, swallowing, voice needs, the cause, and the likelihood of nerve recovery. Not everyone needs immediate surgery.

If the airway is safe and recovery is possible, monitoring may be appropriate. Follow-up laryngoscopy can show whether movement is returning. Observation does not mean that symptoms must be ignored; voice or swallowing support can begin during this period.

Voice therapy is provided by a speech and language therapist with voice training. It can help you use breath and vocal fold movement more efficiently. Therapy may reduce strain and improve clarity, but it cannot reconnect a divided nerve.

If one vocal fold does not close against the other, an injection can add bulk and move it closer to the middle. This is called injection laryngoplasty. Some injected materials are temporary, making this an option while waiting to see whether the nerve recovers. Longer-lasting materials may be appropriate in other situations.

Medialisation thyroplasty places an implant through the framework of the larynx to move the weak vocal fold inward. An additional procedure may adjust the position of the arytenoid cartilage at the back of the larynx. These operations aim to improve voice and airway protection.

Reinnervation surgery connects another working nerve to the affected laryngeal muscles. The result develops gradually as nerve fibres grow into the muscle. It may improve muscle tone but does not always restore normal movement.

Swallowing management may include changes to food texture, drinking technique, posture, or swallowing exercises. These should be guided by an assessment rather than tried as a substitute for one.

Bilateral vocal fold immobility may require treatment to enlarge or secure the airway. Options can include a temporary breathing tube through the neck, called a tracheostomy, or surgery to widen the opening between the vocal folds. Airway-widening procedures can affect voice and swallowing, so the benefits and trade-offs are considered carefully.

Complications

Incomplete vocal fold closure may let food, drink, or saliva enter the airway. This is called aspiration. Aspiration can cause coughing during meals and, in some people, contribute to pneumonia. "Silent aspiration" means material enters the airway without causing a cough.

A weak cough can make it harder to clear mucus from the lungs. Voice weakness may also affect work, communication, social activities, and emotional wellbeing.

Severe narrowing of the airway is the most serious complication of damage affecting both sides. Breathing may worsen during physical activity or respiratory infections because the airway is already limited.

Complications can also arise from the underlying cause rather than the nerve injury itself. This is why unexplained vocal fold weakness may need imaging and further assessment.

Prevention

Not all laryngeal nerve damage can be prevented. A nerve may be affected by an unavoidable part of an illness, unexpected inflammation, or a growth pressing on it. Sometimes the cause remains unknown.

During neck and chest surgery, surgical teams use detailed knowledge of nerve anatomy to reduce the risk. Nerve monitoring may be used during some operations, but it cannot prevent every injury.

If you are having a procedure near the laryngeal nerves, tell the care team about existing voice, breathing, or swallowing problems. A voice assessment before and after some operations can help document changes. Report a new voice change, choking, or breathing problem after surgery or intubation rather than waiting for a routine review.

Avoiding tobacco smoke does not prevent every nerve injury, but it can reduce additional irritation of the larynx and supports general airway health.

Living with it and what to expect

The course over the first year often depends on how the nerve was injured. A nerve that was compressed or stretched may gradually recover. Improvement can occur over several months rather than days or weeks. Recovery becomes less likely as more time passes, but there is no single deadline that applies to everyone.

Voice quality may change during recovery. Some people regain movement, while others learn

to compensate with the unaffected vocal fold. Compensation can improve sound but may also cause throat tension or vocal tiredness. Voice therapy can help reduce unhelpful strain.

If weakness remains, procedures can often improve voice strength, swallowing safety, or breathing. Treatment aims for useful function rather than a guarantee that the voice will sound exactly as it did before the injury.

Long-term follow-up is tailored to the cause and symptoms. Routine appointments may include repeat laryngoscopy, voice assessment, or review of swallowing. An unexplained or changing problem may require further investigation.

Many people with one-sided damage continue their usual activities after therapy or a procedure. People who use their voice professionally may need more specialised rehabilitation. Bilateral damage can have a greater long-term effect because treatment must balance breathing, voice, and swallowing.

When to get medical help

Call emergency services if you have severe difficulty breathing, blue or grey lips, rapidly worsening stridor, or you cannot speak because you are struggling for air. Do not drive yourself if breathing is severely affected.

Seek urgent medical assessment for new noisy breathing, repeated choking with difficulty recovering, or an inability to swallow liquids. New breathing problems after neck or chest surgery also need urgent assessment.

Arrange a routine appointment if a hoarse or changed voice lasts longer than four weeks. Earlier assessment is appropriate if the change began after surgery or intubation, or if it occurs with a neck lump, coughing up blood, unexplained weight loss, or a history of tobacco use.

Contact your care team sooner than planned if swallowing or breathing is getting worse, you develop repeated chest infections, or your voice change is interfering significantly with communication. These symptoms do not prove nerve damage, but they should be evaluated.

Common questions

Can a damaged laryngeal nerve heal itself?

Sometimes. A nerve that has been stretched, compressed, or mildly injured may recover over several months. A nerve that has been completely divided is much less likely to recover on its own. Tests and follow-up examinations can help estimate recovery, but they cannot provide

certainty.

How long does a paralysed vocal fold take to recover?

When recovery happens, it is usually gradual and may take months. The timing depends on the site and severity of the injury. Temporary injections or voice therapy may improve function while recovery is being monitored.

Is laryngeal nerve damage the same as vocal cord paralysis?

Not exactly. Laryngeal nerve damage can cause vocal fold weakness or paralysis. However, an immobile vocal fold can also result from joint scarring, inflammation, or another mechanical problem. Laryngoscopy and sometimes LEMG help distinguish these causes. "Vocal fold" is the current medical term for "vocal cord."

Can I still talk with one paralysed vocal fold?

Usually, yes. The voice may be breathy, quiet, rough, or tiring because the vocal folds do not meet fully. Voice therapy, an injection, or surgery can often improve closure and make speaking easier.

Why does nerve damage make me cough when drinking?

The vocal folds normally close to protect the airway during swallowing. If they do not close fully, liquid can move toward or into the airway and trigger coughing. A swallowing assessment can identify the problem and guide safer strategies.

Will surgery bring my normal voice back?

Surgery can often improve strength, clarity, and stamina, but it cannot promise the exact voice you had before. Results depend on the type of nerve injury, vocal fold position, other laryngeal changes, and how your voice is used.

Sources

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