PROCEDURE

Botulinum toxin injection - larynx

A botulinum toxin injection temporarily relaxes selected voice-box muscles to improve certain voice or breathing disorders.

PURPOSE
Reduce unwanted spasms or movement in voice-box muscles

PROCEDURE TYPE
Therapeutic, minimally invasive injection through neck or endoscope

WHERE IT IS DONE
Outpatient clinic, sometimes an operating theatre

ANAESTHESIA
None or local; sometimes general anaesthesia

HOW LONG IT TAKES
About 10-20 minutes

PREPARATION
Medication review; fasting only if sedation or general anaesthesia planned

RECOVERY
Same day; no driving after sedation or general anaesthesia

MAIN RISKS
Breathy voice, swallowing difficulty, bleeding, breathing problems

RESULTS
Voice changes within days; benefit judged after one to two weeks

Overview

A laryngeal botulinum toxin injection places a small amount of botulinum toxin into selected muscles of your larynx, or voice box. The medicine temporarily weakens the injected muscles by reducing the nerve signals that make them contract.

The procedure is most often used for laryngeal dystonia, also called spasmodic dysphonia. This neurological condition causes involuntary muscle spasms that interrupt speech. Injections may also help some forms of voice tremor or other unwanted laryngeal muscle movements.

Treatment does not permanently change the muscle or cure the underlying condition. Its effect gradually wears off, so repeat injections are often needed. The dose, muscle and timing are adjusted to your voice pattern and response.

The injection is usually given through the skin of the neck using a fine needle. Electrical muscle recording, called electromyography or EMG, may help confirm that the needle has reached the intended muscle. Some injections are performed through a flexible or rigid viewing instrument called an endoscope.

Why the procedure is performed

Your specialist may recommend this injection when abnormal laryngeal muscle contractions affect your voice or, less commonly, your breathing.

For adductor laryngeal dystonia, the vocal folds close too tightly during speech. This can produce a strained, tight or interrupted voice. Botulinum toxin is usually injected into muscles that close the vocal folds.

For abductor laryngeal dystonia, the vocal folds open unexpectedly during speech, causing breathy breaks. Treatment may target a muscle that opens a vocal fold, but dosing requires particular care because excessive weakening can affect breathing.

An injection may also be considered for certain voice tremors. Results are influenced by which muscles are involved and whether the tremor affects areas beyond the larynx.

Botulinum toxin products are not interchangeable. Approval for specific laryngeal uses also differs between countries, so your clinician should explain which product is being proposed and whether its use is licensed for your condition.

Who should and should not have it

This procedure may be suitable if a voice specialist has identified a muscle movement disorder that is likely to respond to temporary muscle weakening. Assessment usually includes listening to your voice and examining your vocal folds. Some people also need evaluation by a neurologist or speech-language pathologist.

It is not a general treatment for every hoarse, weak or painful voice. Infection, vocal fold injury, reflux-related irritation, a growth or another cause of voice change may require different care.

The injection should not be given if you have:

Treatment may need to be delayed, modified or avoided if you have significant swallowing or breathing problems, a bleeding disorder, or a condition that weakens nerves or muscles. Examples include myasthenia gravis and motor neurone disease. These conditions can increase the effect of botulinum toxin.

Tell your specialist if you are pregnant, planning pregnancy or breastfeeding. Evidence in these situations is limited, so the potential benefits and uncertainties need to be discussed.

- An infection at the planned injection site
- Had a serious allergic reaction to the proposed botulinum toxin product or one of its ingredients

How to prepare

The treating facility's own instructions take priority because preparation differs according to the injection method and type of anaesthesia.

Give the team a current list of medicines, supplements and previous botulinum toxin treatments. Mention any muscle relaxants, injected antibiotics like amoxicillin or doxycycline , medicines affecting nerve-to-muscle signals, or drugs that increase bleeding.

Do not stop aspirin, anticoagulants or other blood thinners like warfarin or apixaban unless the treating team specifically tells you to. Stopping them without a plan can be harmful.

Most clinic injections do not require fasting. If sedation or general anaesthesia is planned, you will receive instructions about when to stop eating and drinking.

Tell the team about allergies, previous reactions to botulinum toxin, current infections, swallowing difficulties and breathing conditions. You may be asked to provide a short voice recording so that later changes can be compared.

Arrange for someone to take you home if you will receive sedation or general anaesthesia.

What happens during the procedure

You may sit upright or recline with your neck supported. The team may listen to your voice and examine your vocal folds before starting.

For an injection through the neck, the skin is cleaned and may be numbed. A fine needle is guided through the skin into the selected laryngeal muscle. The needle may also act as an EMG electrode, recording muscle activity. You may be asked to make a sound, sniff or breathe in so the clinician can confirm its position.

A small amount of botulinum toxin is then injected. One or both sides may be treated. The exact muscle and dose are chosen according to the type of movement disorder, previous response and risk of side effects.

For an endoscopic injection, numbing medicine may be sprayed into your nose and throat. A

thin flexible scope is passed through the nose to view the larynx while the injection is given. Some endoscopic procedures are performed in an operating theatre under general anaesthesia.

You may feel pressure, a brief sting, or the urge to cough. The needle is removed, and you are usually observed briefly before leaving.

Recovery and what to expect afterward

Pain: Mild neck tenderness, throat irritation or a small bruise can occur. Severe or increasing pain is not expected.

Eating and drinking: If numbing medicine was used, wait until throat sensation has returned before eating or drinking, following the facility's instructions. As the toxin begins working, thin liquids may briefly cause coughing. Taking smaller sips and drinking slowly may help. Contact your team if swallowing is difficult or liquids repeatedly enter your airway.

Activity: Most people return to normal light activities the same day. Follow any instructions about strenuous exercise, voice use or caring for the injection site.

Driving: You can usually drive after an injection performed without sedating medicine, provided you feel well. Do not drive after sedation or general anaesthesia. Arrange transport and follow the stated restriction period.

Work: Many people return the same day or the next day. If your work relies heavily on speaking, you may need more time because the voice can become weak or breathy before it improves.

Risks and possible complications

Temporary voice changes are expected as the injected muscle weakens. After treatment for adductor laryngeal dystonia, your voice may initially sound breathy or quiet. After other injection patterns, it may sound rough or strained.

Possible risks include:

Botulinum toxin can rarely affect muscles beyond the injection area. Symptoms can include widespread weakness, drooping eyelids, double vision, difficulty speaking or swallowing, or breathing problems. These effects can begin hours to weeks after an injection and require prompt medical assessment.

- Coughing or choking when drinking, particularly with thin liquids

- A weak, breathy or otherwise unwanted voice change
- Pain, bruising or minor bleeding at the injection site
- Little benefit or weakening of a nearby muscle
- Breathing difficulty, particularly after injections involving airway-opening muscles
- Food or liquid entering the airway, called aspiration
- Allergic reaction

Results and follow up

The medicine does not work immediately. Changes often begin within several days, with the overall response becoming clearer over the following one to two weeks.

Early breathiness or mild difficulty with thin liquids may improve as the effect settles. Your specialist may ask about voice quality, swallowing and how long the benefit lasts. A speech-language pathologist may also assess your voice.

The effect gradually fades over weeks to months as nerve signalling returns. Repeat treatment can be planned if the benefits outweigh the side effects. The interval and dose are individualized rather than fixed.

Contact the clinic for routine follow-up if the injection produces no benefit, wears off sooner than expected or causes side effects that interfere with speaking, eating or work. This information helps guide the next injection.

Alternatives

Alternatives depend on the condition being treated and your priorities.

A further specialist opinion may be useful if the diagnosis is uncertain or the expected benefits and trade-offs are unclear.

- No immediate treatment: This avoids procedure-related side effects, but voice or breathing interruptions may continue.
- Voice therapy: A speech-language pathologist can reduce strain and teach communication strategies. It does not usually stop the neurological spasms of laryngeal dystonia, but it may address additional voice habits and support treatment.

- Medication: Some medicines may be considered for tremor or broader dystonia. They avoid an injection but can affect the whole body and may be less targeted.
- Surgery: Selected people with adductor laryngeal dystonia may consider procedures such as selective laryngeal denervation and reinnervation. Surgery may provide longer-lasting benefit but is more invasive, is available only in specialist centres and has its own voice and airway risks.
- Communication supports: Amplification, text-to-speech tools or work adjustments may reduce the impact of voice symptoms without changing laryngeal muscle activity.

When to call your healthcare team

Contact your treating team during routine hours if breathiness, coughing with liquids or voice weakness is more severe or lasts longer than they told you to expect. Also call if there is increasing pain, swelling, fever, persistent swallowing trouble or no noticeable treatment effect.

Seek urgent medical care if you cannot swallow liquids safely, repeatedly choke, develop marked weakness, or have a rapidly worsening voice or swallowing problem.

Call emergency services for severe breathing difficulty, inability to swallow saliva, blue or grey lips, collapse, or signs of a serious allergic reaction such as facial swelling with breathing trouble.

Common questions

Will I be asleep?

Usually not. Most injections are performed while you are awake, with no anaesthesia or local numbing medicine. General anaesthesia may be used for selected endoscopic procedures.

Can I drive home?

You can usually drive after a clinic injection if no sedating medicine was used and you feel well. You must not drive after sedation or general anaesthesia.

How painful is it?

Most people describe a brief sting or pressure in the neck. An endoscopic procedure may cause temporary nasal or throat discomfort and an urge to cough.

When will I know whether it worked?

Changes usually begin within days. It may take one to two weeks to judge the balance between

benefit and temporary side effects.

Will my voice get worse before it gets better?

It can. A weak or breathy voice is common after injections that reduce excessive vocal fold closure. This often improves as the treatment settles.

Will I need another injection?

Possibly. The effect is temporary, and many people choose repeat treatment when it wears off. Timing is based on your response rather than a standard schedule.

Sources

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