

NEUROCYBERNETIC PROSTHESIS (NCP) FOR VAGUS NERVE STIMULATION

MINCEP® Epilepsy Care successfully works with patients who have intractable epilepsy, using the NCP vagus nerve stimulator. It is approved for treatment of partial seizures, simple and complex. It may also help control generalized seizures.

How effective is NCP?

The average patient experiences a 22-24% reduction in seizures. About 25% of patients have their seizures reduced by half. Only about 5% have their seizures stopped. The NCP is less effective than standard epilepsy brain surgery, but it may help people who are not eligible for brain surgery.

How does the NCP work?

The NCP is a pacemaker device that automatically stimulates the vagus nerve in the left neck, helping to prevent or minimize seizures.

How is the device implanted?

A surgeon implants the NCP device under the skin over the left breast or below the left armpit. Next, the surgeon inserts a wire near the vagus nerve and connects it to the NCP device. You'll need to be admitted to the hospital for a brief stay. Some patients can leave the hospital the same day after morning surgery.

What happens after surgery?

About two weeks after implantation, your physician will turn on the device and customize the stimulation setting that works best for you. The first stimulation session usually takes a half day.

Can I stop my anti-seizure medications?

Almost all patients need to continue their anti-seizure medication.

What will I feel during stimulation?

The rate of stimulation is about every five minutes; it is not continuous. Common sensations you may feel during stimulation are:

- Tingling in the throat
- Hoarseness in the voice
- Brief shortness of breath
- Difficulty swallowing
- Twitching of the neck muscles

What are the complications?

As with any surgery, infection, bleeding, reaction to the anesthesia, or other injury may occur. Other complications include paralysis of the vocal cord and rarely facial weakness, weakness of half of the diaphragm (one of the breathing muscles), and difficulty urinating. If we need to turn off the device for any reason, your seizures may become more frequent.

Does the NCP have to be replaced?

The NCP must be replaced every three to eight years because the batteries run out. This requires minor surgery.

What if the NCP doesn't work?

Your physician can turn off the NCP device and leave it in place. If it is clear that the NCP is not helping, a surgeon can remove the device. This is done by cutting the wire in the neck close to, but not right next to, the vagus nerve. The portion of the wire that is closest to the vagus nerve is often left in place because removing it risks injury to the nerve.

What activities should I avoid with the NCP in place?

- Avoid areas where there are pacemaker warning signs posted.
- Avoid strong magnets such as those found in hair clippers or large audio speakers.
- Avoid all forms of diathermy (deep heat treatments) because it could damage the vagus nerve or carotid artery.

Other precautions:

- Inform all medical staff who you go to for care that there is a pacemaker implanted in your chest.
- Radiation therapy, lithotripsy, and some electrical surgical instruments may damage the NCP.
- You should not have an MRI scan below the head because it could damage the vagus nerve. Some, but not all, MRIs of the head are safe. Ask your physician about this before you have an MRI. The NCP should be turned off during an MRI scan.

Locations

University of Minnesota Physicians MINCEP Epilepsy Care

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952-525-4500
Or 800-359-4477

Neurology Clinic/ Epilepsy Program 1A/1F

University of Minnesota
Medical Center
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Minneapolis, MN 55455
612-273-8383
Or 844-273-8383 (toll free)

University of Minnesota Physicians Neurology Clinic (St. Paul)

Fort Road Medical Building
360 Sherman Street
Suite 350
St. Paul, MN 55102
651-291-1559
Or 844-273-8383 (toll free)

Fairview Maple Grove Medical Center

14500 99th Ave. N
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