

# Phrenic nerve transfer in brachial plexus injury

Information for the public

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## What has NICE said?

Although there isn't much good evidence about this procedure, NICE has decided that it can be offered on the NHS to people with brachial plexus injury. There is not much evidence about how well the procedure works in the long term, and there is evidence that it can cause breathing problems. However, people with brachial plexus injury are often very disabled, and there are very few treatment options.

Hospital units that offer a range of treatment options, and are experienced in managing brachial plexus injuries, should decide which patients should be offered this procedure and should carry out treatment.

## What does this mean for me?

Your health professional should fully explain what is involved in having this procedure and discuss the possible benefits and risks with you, including that the procedure may not bring back the use of your arm, and may cause difficulties with breathing. You should also be told how to find more information about the procedure. All of this should happen before you decide whether you want to have this procedure or not.

## Other comments from NICE

NICE was advised that in theory, this procedure could be harmful in children.

## The condition

The brachial plexus is the bundle of nerves from the neck to the arm which supplies movement and feeling to the shoulder, arm and hand. Damage to the brachial plexus can cause paralysis of the arm or hand, and can be associated with severe pain.

Surgery is usually considered for severe injuries. This involves re-joining the damaged nerves together, or joining a healthy nerve from a different muscle to the damaged nerve to make it work again. Surgeons can use different healthy nerves for this, including the nerves to the rib muscles and the diaphragm.

NICE has looked at using the phrenic nerve to repair damaged nerves in the brachial plexus as a treatment option. Click on to the next page to find out more.

## The procedure

The aim of the procedure is to provide healthy nerves to the muscles in the arm and bring back some use and sensation of the arm. It is carried out with the patient under a general anaesthetic. The surgeon makes a cut in the chest, finds the phrenic nerve, cuts it and joins it to the damaged nerve in the brachial plexus.

After the operation, patients usually wear a cast for a few weeks, and will see a specialist who will give them exercises and therapy that will help them make the most of any improved movement in the arm.

## Benefits and risks

There is not much evidence about how well the procedure works in the long term, and there is evidence that it can cause breathing problems. However, people with brachial plexus injury are often very disabled, and there are very few treatment options, so NICE decided that the procedure can be used in the NHS.

The 7 studies that NICE looked at involved a total of 340 patients.

Generally, they showed the following benefits:

- A year after the procedure, around 30% of patients had got back some arm muscle strength.
- After 2 years, around 80% to 90% of patients had got back some arm muscle strength.
- Recovery was better in younger patients (aged under 40 years), and those who had the procedure within a year after the injury.

The studies showed that the risks of phrenic nerve transfer included:

- Changes to the position, loss of function, or reduction in movement of the diaphragm, which led to shortness of breath and difficulty breathing during physical activity in most patients.
- Reduced lung functions (such as the total amount of air a person can take in).

NICE was also told about some other possible risks: chest deformity, hernia, lung collapse, poor control of the arm muscles after the procedure, and the transferred nerve not attaching to the arm muscles.

If you want to know more about the studies see the [guidance](#). Ask your health professional to explain anything you don't understand.

## Questions to ask your health professional

- What does the procedure involve?
- What are the benefits I might get?
- How good are my chances of getting those benefits? Could having the procedure make me feel worse?
- Are there alternative procedures?
- What are the risks of the procedure?
- Are the risks minor or serious? How likely are they to happen?
- What care will I need after the procedure?
- What happens if something goes wrong?
- What may happen if I don't have the procedure?

## Medical terms explained

### Brachial plexus

The bundle of nerves from the neck to the armpit which supplies movement and feeling to the shoulder, arm and hand.

### Diaphragm

The muscle underneath the lungs that is used for breathing.

### Hernia

A lump that occurs from a weakness in the wall of the abdomen.

### Phrenic nerve

The nerve from the spine to the diaphragm.

## About this information

NICE's HealthTech guidance applies to people who use the NHS in England, Wales, Scotland and Northern Ireland.

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