

## **Replacing worn spinal discs in the neck with artificial discs**

*NICE 'HealthTech guidance' advises the NHS on when and how new procedures can be used in clinical practice.*

This leaflet is about when and how artificial discs can be used in the NHS to treat people with worn spinal discs in the neck. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence).

This HealthTech guidance makes recommendations on the safety of a procedure and how well it works. An interventional procedure is a test, treatment or surgery that involves a cut or puncture of the skin, or an endoscope to look inside the body, or energy sources such as X-rays, heat or ultrasound. The guidance does not cover whether or not the NHS should fund a procedure. Decisions about funding are taken by local NHS bodies (primary care trusts and hospital trusts) after considering how well the procedure works and whether it represents value for money for the NHS.

This leaflet is written to help people who have been offered this procedure to decide whether to agree (consent) to it or not. It does not describe worn spinal discs in the neck or the procedure in detail – a member of your healthcare team should also give you full information and advice about these. The leaflet includes some questions you may want to ask your doctor to help you reach a decision. Some sources of further information and support are on page 7.

### What has NICE said?

There is evidence to say that this procedure works as well as spinal fusion in the short term and may reduce the need for further surgery in the long term. The only safety issues are those already known for spinal fusion. Therefore, this procedure can be offered routinely as a treatment option for people with worn spinal discs in the neck provided that doctors are sure that:

- the patient understands what is involved and agrees to the treatment, and
- the results of the procedure are monitored.

The procedure should only be done in special units that regularly carry out spinal surgery on the neck.

NICE has encouraged further research into artificial spinal disc replacement in the neck.

*This procedure may not be the only possible treatment for worn discs in the neck. Your healthcare team should talk to you about whether it is suitable for you and about any other treatment options available.*

### Artificial spinal disc replacement in the neck

The medical name for this procedure is 'prosthetic intervertebral disc replacement in the cervical spine'.

The procedure is not described in detail here – please talk to your specialist for a full description.

Spinal discs in the neck act like cushions between the bones of the spine (the vertebrae). If the tough outer cover of one of the discs in neck is damaged or weakened, the jelly-like material inside can bulge outwards. This is commonly called a slipped disc or medically known as herniation. If it presses on a nerve it can cause neck and shoulder pain



and stiffness; in the arms it can cause pain and sensations such as prickling or tingling, and weakness and numbness.

Most people recover without an operation. They may need to rest, take painkillers, have physiotherapy or sometimes have injections into the neck (to reduce inflammation of the nerves). But if the symptoms do not improve or there is a likelihood of serious problems involving the nerves, the person may be offered an operation. The conventional operation involves removing all or part of the disc to take the pressure off the nerves (a cervical discectomy for decompression of the nerves). Sometimes the bones in the area are then joined together (spinal fusion) with the aim of making the area more stable. This is done using a bone graft.

Artificial spinal disc replacement involves removing the damaged disc and inserting an artificial disc in its place. The patient is given a general anaesthetic and the procedure is carried out through a cut in the front of the patient's neck. Bone or parts of the disc are removed from around the nerve roots (decompression) and the damaged disc or part of the disc is removed. An artificial disc is inserted that aims to allow painless movement between the bones and prevent damage to the adjacent discs over time. Depending on how many discs are affected, a person may have one or more discs in the neck replaced during the same operation.



### What does this mean for me?

NICE has said that this procedure is safe enough and works well enough for use in the NHS. If your doctor thinks artificial spinal disc replacement is a suitable treatment option for you, he or she should still make sure you understand the benefits and risks before asking you to agree to it.

### You may want to ask the questions below

- 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 operation?
- What happens if something goes wrong?
- What may happen if I don't have the procedure?



*You might decide to have this procedure, to have a different procedure, or not to have a procedure at all.*

## Summary of possible benefits and risks

Some of the benefits and risks seen in the studies considered by NICE are briefly described below. NICE looked at 7 studies on this procedure.

### How well does the procedure work?

Patients who were treated with the artificial disc procedure reported greater improvement (measured by a questionnaire on neck pain and its effect on everyday life) than those who had a spinal fusion operation in a study of 541 patients at 3-month review. However the difference in improvement was no longer significant at 6-month, 1-year and 2-year reviews. In a study of 463 patients, there was a greater improvement for patients treated with an artificial disc compared with spinal fusion at 2-year review. In the studies of 541, 463 and a further study of 209 patients, quality of life (measured by a questionnaire) had improved both in patients who had an artificial disc and those who had spinal fusion at 2 year review.

In a study of 54 patients, some of whom had more than 1 disc replaced, there was no unwanted build up of bone around the artificial disc in 26 out of 77 artificial discs a year after the procedure. In 8 artificial discs, bone grew around the disc but did not prevent movement and in 7 discs the build up of bone prevented movement, resulting in the spine becoming fused at the site of the artificial disc.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. The advisers said that success could be measured using scores for disability, arm and neck pain, quality of life and technical success. Other factors include whether a further operation is needed, range of movement and the rate of problems in the discs next to the treated disc 5 to 10 years later.



## Risks and possible problems

In the study of 541 patients, none of the 276 patients who had an artificial disc needed a further operation to correct problems. Of the 265 patients who had spinal fusion, 5 needed a repeat fusion operation and 9 needed further surgery to help stabilise the spine at the neck by 2-year review. One out of 43 patients who had an artificial disc inserted had a leak of cerebrospinal fluid during surgery in a study of 146 patients. Spinal fractures occurred during the artificial disc procedure in a patient in 1 study. Fragments of bone from the fractures caused bleeding, which was controlled, and the procedure continued without further problems.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. The advisers said that possible problems include the artificial disc moving or loosening, damage to the spine causing paralysis below the neck, injury causing the disc to be pushed out of place, abnormal curvature (kyphosis) of the spine and nerves remaining trapped. Other problems could, in theory, include infection, fusing of the artificial disc, the need to remove it, fragments of disc causing inflammation, wear to the disc and bone breakdown around the disc (osteolysis).



### More information about slipped discs in the neck

NHS Choices ([www.nhs.uk](http://www.nhs.uk)) may be a good place to find out more. Your local patient advice and liaison service (usually known as PALS) may also be able to give you further information and support. For details of all NICE guidance on slipped discs, visit our website at [www.nice.org.uk](http://www.nice.org.uk)



## About NICE

NICE produces guidance (advice) for the NHS about preventing, diagnosing and treating different medical conditions. The guidance is written by independent experts including healthcare professionals and people representing patients and carers. They consider how well an interventional procedure works and how safe it is, and ask the opinions of expert advisers. This guidance applies to the whole of the NHS in England, Wales, Scotland and Northern Ireland. Staff working in the NHS are expected to follow this guidance.

*To find out more about NICE, its work and how it reaches decisions, see [www.nice.org.uk/aboutguidance](http://www.nice.org.uk/aboutguidance)*

*This leaflet is about 'prosthetic intervertebral disc replacement in the cervical spine'. This leaflet and the full guidance aimed at healthcare professionals are available at [www.nice.org.uk/guidance/HTG217](http://www.nice.org.uk/guidance/HTG217)*

*You can order printed copies of this leaflet from NICE publications (phone 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) and quote reference N2154). The NICE website has a screen reader service called Browsealoud, which allows you to listen to our guidance. Click on the Browsealoud logo on the NICE website to use this service.*

*We encourage voluntary organisations, NHS organisations and clinicians to use text from this booklet in their own information about this procedure.*

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ISBN 978-1-4731-8141-0

N2154 1P 12 May 10

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