Complex endovascular aneurysm repair

Plain language summary

SHTG Recommendation | July 2022

This Scottish Health Technologies Group (SHTG) Recommendation is about the endovascular repair of complex aortic aneurysms.

What are complex aortic aneurysms?

The aorta is the major blood vessel that carries blood from the heart to the body. It has a number of branches, or arteries, coming from it that supply blood to organs such as the liver and kidneys. An aortic aneurysm is a bulge or swelling in the aorta.

A **complex aortic aneurysm** includes the arteries, or blood vessels, that come off the aorta.

How are aneurysms repaired?

Aneurysms cause concern because there is a risk of them bursting, or rupturing, which can cause life-threatening bleeding. They also grow over time and the risk of rupture increases as the aneurysm gets larger. If an aneurysm is quite small and not thought to be at immediate risk of rupturing, a doctor may suggest to a patient that it is monitored for growth. With a larger aneurysm, or in someone thought to have a greater risk of an aneurysm rupture, a doctor may recommend surgery. Surgery involves the use of a piece of manmade tubing, called a stent, to strengthen the aorta.

There are two types of surgery for aortic aneurysms:

- open surgery, when a cut is made in the chest or stomach area
- endovascular repair, a minimally invasive approach where the stent is guided into the aorta via a blood vessel which is accessed through a small cut to the skin

Many factors are taken into consideration when deciding whether a surgical approach should be offered to someone. These include age, life expectancy and fitness for surgery. For some people, the potential benefits of surgery may not outweigh the potential risks.

What is complex endovascular aneurysm repair?

Complex endovascular aneurysm repair is commonly shortened to C-EVAR.

The stents used for the endovascular repair of standard aortic aneurysms do not work for complex aortic aneurysms. The stents used in C-EVAR have holes and/or branches added to them, which allows blood to flow from the aorta into the arteries. The stents used for C-EVAR have to be custom-made for each person, so that the holes and branches are in exactly the right place for them. It can take several weeks for these complex stents to be made, and this makes them more expensive than standard stents.

Why is this important?

While open surgery is a well-established treatment for aortic aneurysms, some people may not be well enough for this kind of surgery. This might include people with heart, lung or kidney problems. Endovascular repair was developed as a treatment option for people in this situation. However, with advances in surgical technique and stent construction, endovascular approaches to aortic aneurysm repair have become increasingly common.

Endovascular approaches have more recently been developed for complex aortic aneurysms. This involves the use of either customised stents, or 'off-the-shelf' stents that are used in different ways.

In 2018, we published advice on C-EVAR techniques. This highlighted that there was a lack of high quality published studies, which made it challenging to make strong conclusions. In the last few years, there has been an increase in the number of C-EVARs being carried out. We have been asked to update our advice from 2018, to help update service provision in NHSScotland.

What we did

We looked through the research that has been published since our review in 2018. We created a draft document, and asked Scottish experts to review this and provide their comments. We made changes to the document based on the comments the experts gave us, and we recorded all our actions.

We drafted a recommendation, and this was presented to the SHTG Council in June 2022, along with the draft evidence review and expert comments, for their approval.

What we found

While new research was identified, we still felt that there was a need for some good quality studies before we could confidently say:

- whether the endovascular repair of complex aneurysms offers advantages over open surgical repair, in people in whom open surgery is an option
- whether the endovascular repair of complex aneurysms offers advantages over non-surgical management, in people in whom open surgery is not an option

- what patient groups would be most suitable for this treatment
- whether it offers good value for money

The low quality evidence available suggests that compared with open surgery, people who have their complex aneurysms treated endovascularly might do better in the short-term (for example, they might not have to spend as long in hospital). However, the stent may not last as long as open surgery.

No studies were found that compared the outcomes for patients who were treated with C-EVAR with those who received non-surgical treatment.

What SHTG considered when developing our recommendation for NHSScotland

We looked at how C-EVAR compared with open surgery or non-surgical management. We considered the outcomes of patients, the safety of the treatment, and whether it offered good value for money. We also took account of the views of topic experts.

What is our recommendation to NHSScotland?

C-EVAR is an emerging treatment, and the published research studies are low quality. This means that the advantages of C-EVAR remain unclear compared with open surgical repair or non-surgical management.

C-EVAR may be an option in some people for whom open surgery is too high-risk. The consequences of C-EVAR, including uncertainties around survival and the need for reintervention in the future, should be discussed with each patient prior to making a treatment decision.

Experts should discuss all patients in whom C-EVAR is being considered, and ensure a consistent approach across Scotland. When C-EVAR is done in Scotland, data on this should be collected so that we can learn more about this technique.

This plain language summary has been produced based on SHTG Recommendation for Complex endovascular aneurysm repair, July 2022.