



The Rowan Suite

World Class Private Heart & Chest Care

Trans Apical TEVAR for Repair of Acute Type A Dissection of the Aorta

Emergency Keyhole Surgery to Repair the Torn Aorta



Information for Patients & Families

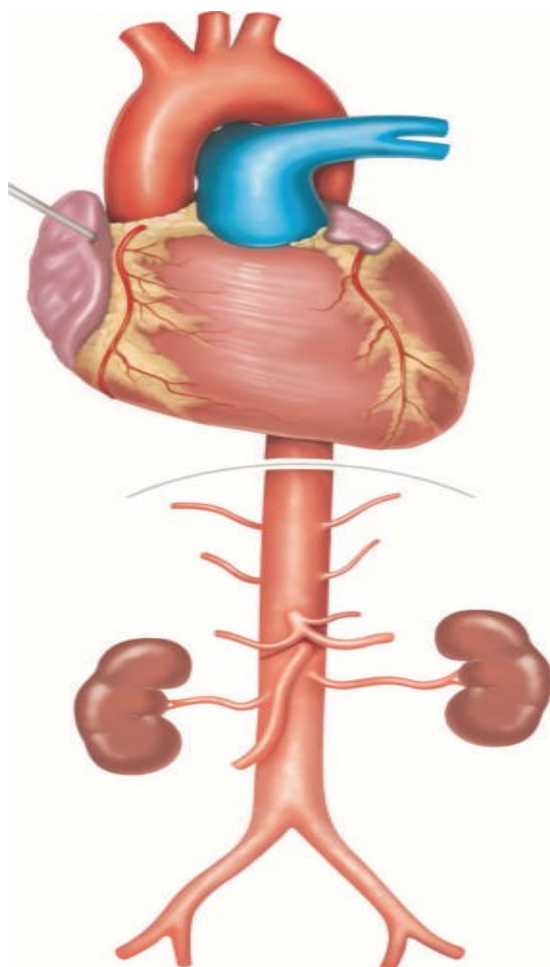
This information leaflet has been written to help you understand more about the condition known as dissection of the aorta and the surgery that is available. It will give provide you with general information about the condition and the options involved.

We hope this information answers some of the questions or concerns you may have about the surgery. It is not intended to replace talking with medical or nursing staff and further details, including the risks and benefits involved in the surgery will be discussed in full during the consent process.

What is the Aorta and what does it do?

The aorta is the largest blood vessel known as an artery in the body. It is an area of high pressure and carries blood from the left ventricle (left chamber of the heart) out of the heart. It is described as a large trunk that leads into an arch then down to the abdomen and branches off into 2 smaller arteries.

It gives off branches to supply blood to the body organs as shown below:



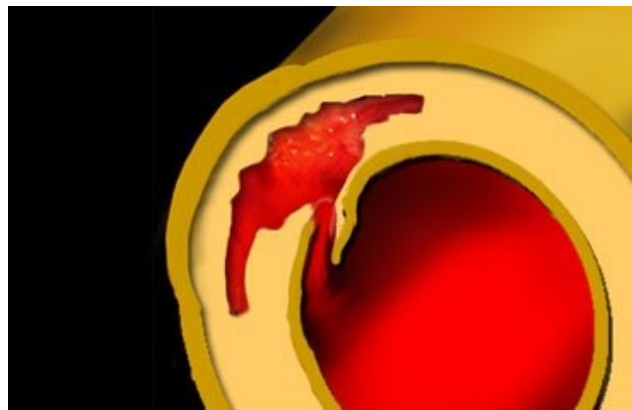
What is Acute Dissection of the Aorta?

A dissection is a splitting of the wall of the aorta. This can happen in patients with a high blood pressure, hardening of the arteries or in certain diseases that result in weak body connective tissues.

When it occurs in the ascending aorta (the initial segment as it leaves the heart) there is a risk that the dissection may interfere with the aortic valve, the coronary arteries or the vessels to the brain. In addition, the dissection may cause blood to accumulate around the heart interfering with its function.

This is a **medical emergency** and very serious as patients need surgery as soon as possible. The risk of the patient dying known as mortality without an emergency operation is extremely high. In some cases, the weakened aortic wall ruptures unfortunately leading to sudden death.

The diagram below will give you more of an understanding of what happens when the dissection occurs.



What does surgery of the dissected aorta involve?

The aim of the emergency surgery is to replace the segment of the ascending aorta which contains the tear using an artificial tube graft. This also helps rebuild the layers of the aorta together, upstream and downstream from the tear, thus allowing the rest of the aorta to heal and lower the risk of future rupture.

The procedure is performed through a sternotomy incision (opening up of the breast bone). A heart-lung machine composed of a pump and an oxygenating chamber is used to take over the role of the heart and lungs while the operation is undertaken. In the vast majority of cases, circulation to the body organs and brain is interrupted completely for a brief period to allow suturing of the artificial graft onto the arch segment of the aorta. This also involves cooling down of the patient's body temperature in a state similar to hibernation to help protect the body organs from the harmful effect of lack circulation. As such, the procedure is extremely complex and carries in itself some risks of death or major complications. These risks, however, are far lower than the risk of not operating. This conventional surgical approach remains the gold standard for repair of aortic dissection.

What does TEVAR stand for?

TEVAR stands for **Thoracic EndoVascular Aortic Repair**. It involves repairing the aorta using a stent (a covered metal scaffold) which sits within the aorta to seal the damaged tear. This stent is positioned through punctures into the blood vessels or through small incisions (key-hole surgery). Catheters (tiny tubes) and wires are used to guide the stent into the correct position. This all takes place in an X-Ray equipped theatre for imaging.

What is TEVAR for Aortic Dissection Repair?

We know that nearly one fifth of patients with aortic dissection who make it to hospital unfortunately are too unwell and not fit enough to undertake the conventional surgery outlined above. This could be related to extremes of age, poor lung functions, hardening of the arteries or as a result of complications of the dissection itself (stroke, heart attack, organ shutdown). These patients carry a very high risk of death.

Using TEVAR to repair the dissected aorta prevents the need for a sternotomy incision to open the breast bone, heart-lung bypass, stopping circulation and body cooling, and therefore minimizes some of the harmful effects of the surgery. The stent is placed through a small key-hole chest incision between the ribs and then proceeding directly through the apex of the left chamber of the heart. This route is widely used for other well-known minimally invasive cardiac procedures, such as percutaneous replacement of heart valves (TAVI).

The use of TEVAR in repairing dissections of the ascending aorta is a new procedure that has only been performed in a handful of specialist centres of excellence and in a small number of patients who are not fit enough to undergo the conventional surgery. In carefully selected cases, this approach carried a favourable outcome in patients who would have otherwise been denied surgery and a chance of survival. Given the lack of long term experience, it is still considered to be in the very early stages but performed by trained surgeons and a technique which has promising future results.

Why am I being offered this novel procedure?

The reason that you or your family member is being offered this new approach is:

- You/they are too sick to have the conventional surgery and the doctors do not think you/they will survive through it.
- There is a chance of saving your/their life with this technique.
- This procedure will be performed by a team of highly trained Consultants from multiple specialties who have special expertise, experience and knowledge of cardiac surgery.

References and Further Reading

- Nienaber CA, Sakalihasan N, Clough RE, Aboukoura M, Mancuso E, Yeh JSM, et al. **Thoracic endovascular aortic repair (TEVAR) in proximal (type A) aortic dissection: Ready for a broader application?** *J Thorac Cardiovasc Surg.* 2017; 153:S3-11.
- Roselli EE, Idrees J, Greenberg RK, Johnston DR, Lytle BW. **Endovascular stent grafting for ascending aorta repair in high-risk patients.** *J Thorac Cardiovasc Surg.* 2015;149:144-51.
- Vallabhajosyula P, Gottret JP, Bavaria JE, Desai ND, Szeto WY. **Endovascular repair of the ascending aorta in patients at high risk for open repair.** *J Thorac Cardiovasc Surg.* 2015;149:S144-50.
- **Aortic Surgery Booklet produced by LHCH.**

For further information visit:

- www.lhch.nhs.uk

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