



Patient Information Guide

# TREO<sup>®</sup>

Your guide to understanding  
Abdominal Aortic Aneurysms



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## Helpful hints

Some words and terms in this guide might be unfamiliar. You can find explanations in the glossary to help you learn more about your Abdominal Aortic Aneurysm.

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# Introduction

This educational information is provided by Terumo Aortic to help you make an informed decision about the TREO® Abdominal Aortic Stent-Graft System to treat your Abdominal Aortic Aneurysm (AAA). Since gaining initial European approval in 2015, the TREO® Abdominal Stent-Graft System has been implanted in **15,000+** patients, in over **36** countries.\*

The TREO® Abdominal Stent-Graft System is manufactured by Terumo Aortic, a global medical device company focused on addressing every patient's aortic needs. Our goal is to work together with your doctor to find solutions that best fit your anatomy.

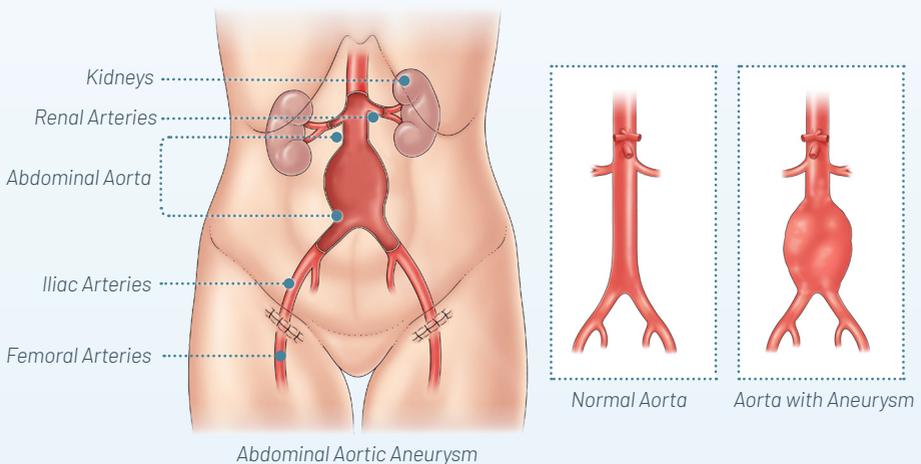
While you are reading this information, it may be helpful to write down any questions you may have so you can discuss them with your doctor and healthcare team. Only your doctor can decide if you are a good candidate for an abdominal aortic stent-graft procedure.

## Abdominal Aortic Aneurysm

### What is an Abdominal Aortic Aneurysm or AAA?

The Aorta is your body's largest artery, normally ranges from 2-2.5cm (3/4"), and carries oxygen-filled blood from your heart to all parts of your body. In the abdomen, the aorta splits into the iliac arteries, which carry blood to your legs and lower areas of your body.

When an abnormal bulge or swelling occurs in your abdominal aorta, it is called an Abdominal Aortic Aneurysm or AAA. An aneurysm can increase in size. The larger the size of an aneurysm, the greater the risk it could burst or rupture. A rupture can lead to severe internal bleeding and possibly death.



\* Based on number of TREO units sold as of August 2025.

# Prevalence and Causes

## What causes an Abdominal Aortic Aneurysm?

Abdominal Aortic Aneurysms are most often caused by a weakening in the aorta, often resulting from vascular disease, traumatic injury, or a genetic defect. In addition, as you age, continuous high blood pressure can cause the aorta to bulge out, thin and/or weaken, thus resulting in an aneurysm.

Your risk for an Abdominal Aortic Aneurysm increases if you:

- ▶ Are male over the age of 60
- ▶ Have high cholesterol
- ▶ Are overweight
- ▶ Have high blood pressure
- ▶ Smoke
- ▶ Have a family history of aneurysms, cardiovascular or peripheral vascular disease (a narrowing of the blood vessels)

A rupture of an abdominal aortic aneurysm is rare but very serious. Fortunately, most abdominal aneurysms grow slowly, and with screening, they can be detected early and repaired through a planned (elective) procedure to prevent rupture. \*

## Symptoms

### What are the symptoms of an Abdominal Aortic Aneurysm?

Abdominal aortic aneurysms may go unnoticed initially because patients do not always feel any symptoms, and are usually detected when doctors are ordering tests for other reasons. When symptoms are experienced, the most common are:

- ▶ Pain in the chest, abdomen, flank or lower back, possibly spreading to the groin, buttocks, or legs. The pain may be deep, aching, gnawing and/or throbbing and may last for hours or days. It is generally not affected by movement, although certain positions may be more comfortable than others.
- ▶ A pulsating sensation in the abdomen
- ▶ Coldness, bruising or pain in your lower leg or foot can occur if the Abdominal Aortic Aneurysm produces a blood clot that breaks off and blocks blood flow
- ▶ Fever or weight loss, if it is an inflamed/infected Abdominal Aortic Aneurysm

**If you experience any of the symptoms listed above, you should contact your doctor immediately.**

\* <https://jamanetwork.com/journals/jama/fullarticle/2757233>

# Treatment

## How is an Abdominal Aortic Aneurysm treated?

Treatment for an Abdominal Aortic Aneurysm depends on its size, location and your overall health. Together with your doctor, you will decide on the best option for treating your abdominal aneurysm. If your doctor feels the aneurysm is at risk to burst or rupture, the treatment is generally the placement of a permanent tube (graft), either by open surgery or Endovascular Aortic Repair (EVAR), which is a less invasive treatment.

### Conventional/Open Surgery

In conventional or open surgery, the surgeon reaches the aneurysm through a large incision in the abdomen. The weakened section of the aorta, where the aneurysm has formed, is usually surgically replaced with a synthetic graft. Open surgery is usually performed under general anesthesia and takes several hours to complete.

After your surgery, you normally stay in the Intensive Care Unit (ICU) a day or two and then another five to seven days in the hospital, depending on how your body heals. Your recovery time may be about three to six months before you feel able to resume your normal activities.

### Benefits of Open Surgical Repair

- ▶ Well-proven surgical procedure seen as a standard method of treatment
- ▶ With lasting results, the likelihood of having additional interventions decreases over time
- ▶ While long term follow-up with your surgeon is recommended, the imaging needed is not as frequent as required after EVAR
- ▶ There is less radiation and contrast dye exposure thus decreasing the risk from imaging requirements

### Risks of Open Surgical Repair

As with any major operation there are potential risks of medical complications. Your surgeon will only recommend treatment for your aneurysm if he/she believes the risk of the aneurysm bursting is higher than the potential risk of an operation. Discuss with your surgeon the risk of:

- ▶ Heart attack
- ▶ Stroke
- ▶ Kidney failure
- ▶ Incision-related complications
- ▶ Infection in the graft used to replace your aorta
- ▶ General anesthesia
- ▶ Major abdominal surgery/ long abdominal cut
- ▶ The surgical complication rate being higher than minimally invasive EVAR
- ▶ A longer hospital stay and recovery time than EVAR
- ▶ Blood loss during the procedure
- ▶ Deep vein thrombosis (DVT)
- ▶ Death

## Endovascular Aortic Repair (EVAR)

An alternate treatment known as Endovascular Aortic Repair (EVAR) or Stent-Grafting has been developed. It involves two small cuts (incisions) in the groin where a small, flexible tube (catheter) containing a stent-graft (fabric-covered, metal mesh tube) is inserted. The catheter is then advanced to the area where the aneurysm is located. The stent-graft is deployed in the aorta where the aneurysm is and sealed to the aorta wall to lower the risk of the aneurysm growing or rupturing.

By avoiding major surgery, this less invasive procedure may result in less blood loss, less trauma, fewer days of hospitalisation and potentially a faster recovery time. Your recovery time may be about two to six weeks before you feel able to resume your normal activities.

### Benefits of EVAR

There are a number of potential benefits to having an abdominal stent-graft procedure. Some of these are listed below:

- ▶ Minimally invasive procedure
- ▶ May be performed under local anesthesia
- ▶ Lower procedural complication rate as compared to open surgery
- ▶ Shorter average hospital stay
- ▶ May reduce the risk of a blood transfusion being required
- ▶ Less time may be spent in the intensive care unit after surgery
- ▶ Quicker recovery time than open surgical repair

### Risks of EVAR

An abdominal stent-graft comes with potential risks. Please discuss these with your doctor.

Major risks include, but are not limited to:

- ▶ Endoleak - when blood continues to flow into the aneurysm
- ▶ Migration - Movement of the stent-graft from its original position
- ▶ Device-related issues such as breaking of the sutures or metal portion of the stent-graft, fabric defects/tears or component separation
- ▶ Continued growth of the aneurysm
- ▶ Aneurysm rupture
- ▶ Additional endovascular or surgical procedures
- ▶ Heart attack
- ▶ Stroke
- ▶ Kidney failure
- ▶ Access site incision complications
- ▶ Conversion to open surgical repair
- ▶ Death

# The Terumo Aortic Difference

## Abdominal Stent-Grafting (EVAR) with the TREO® Abdominal Stent-Graft System

The TREO® Abdominal Stent-Graft is a woven polyester graft (fabric tube), supported by a series of stents made from a strong, thin metal called Nitinol. The TREO® Abdominal Stent-Graft is placed inside the abdominal aortic aneurysm using a delivery system (thin tube that contains and delivers compacted stent-grafts), thus preventing the need for a major surgical incision.

The TREO® Abdominal Stent-Graft consists of two main components: a Main Body Stent-Graft and a Leg Extension Stent-Graft. The struts and barbs at the top of the stent-graft enable the device to stay in place within the anatomy.

Each patient receives at least three stent-grafts by design (one Main Body Stent-Graft and two Leg Extension Stent-Grafts). The TREO® Abdominal Stent-Graft is intended to seal off the aneurysm by allowing blood to flow through the graft, away from the diseased aorta.

Prior to the procedure, your doctor will require you to undergo an imaging procedure called "Computed Tomography", commonly referred to as a "CT" or "CAT" Scan. It is important to understand that there is a small amount of radiation and contrast dye associated with CT imaging. You should discuss the potential risks associated with radiation and contrast dye with your doctor.

Once you and your doctor agree to proceed, the doctor will determine the exact size of the device to implant. The delivery of the TREO® Abdominal Stent-Graft to the location of the aneurysm occurs in three stages.



The procedure begins with the delivery system containing the compressed Main Body Stent-Graft being inserted in the aorta through a small incision made in the groin. The Main Body Stent-Graft is positioned, expanded and secured to the aorta wall with 2 layers of fixation barsbs, with the top edge of the fabric just below the renal arteries.



*TREO® Abdominal  
Stent-Graft delivery system*

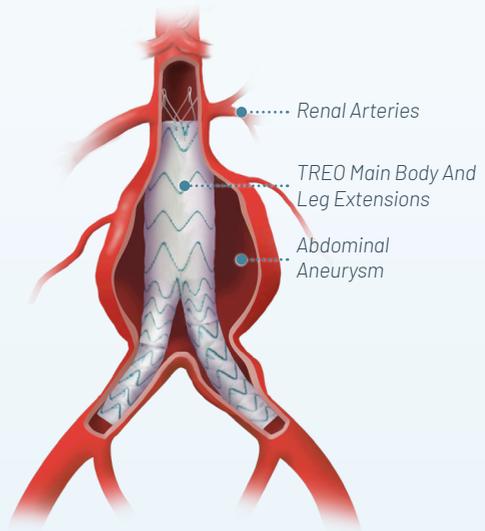
Secondly, the doctor will then use two separate delivery systems to individually attach each Leg Extension Stent-Graft to the Main Body Stent-Graft. These Leg Extensions connect the Main Body Stent-Graft to your iliac arteries (which supply blood to your lower body). Unlike other Abdominal Stent-Grafts, the TREO® Abdominal Stent-Graft has a unique feature called Lock Stent that is designed to minimise the possibility of the Leg Extension Stent-Graft separating from the Main Body Stent-Graft.

Finally, once the TREO® Abdominal Stent-Graft is implanted, your doctor will check that your device is positioned and working properly. All delivery systems are then removed completely, leaving only the stent-grafts in place.

The TREO® Abdominal Stent-Graft procedure can be done under local, regional or general anesthesia and typically takes one to three hours to complete.

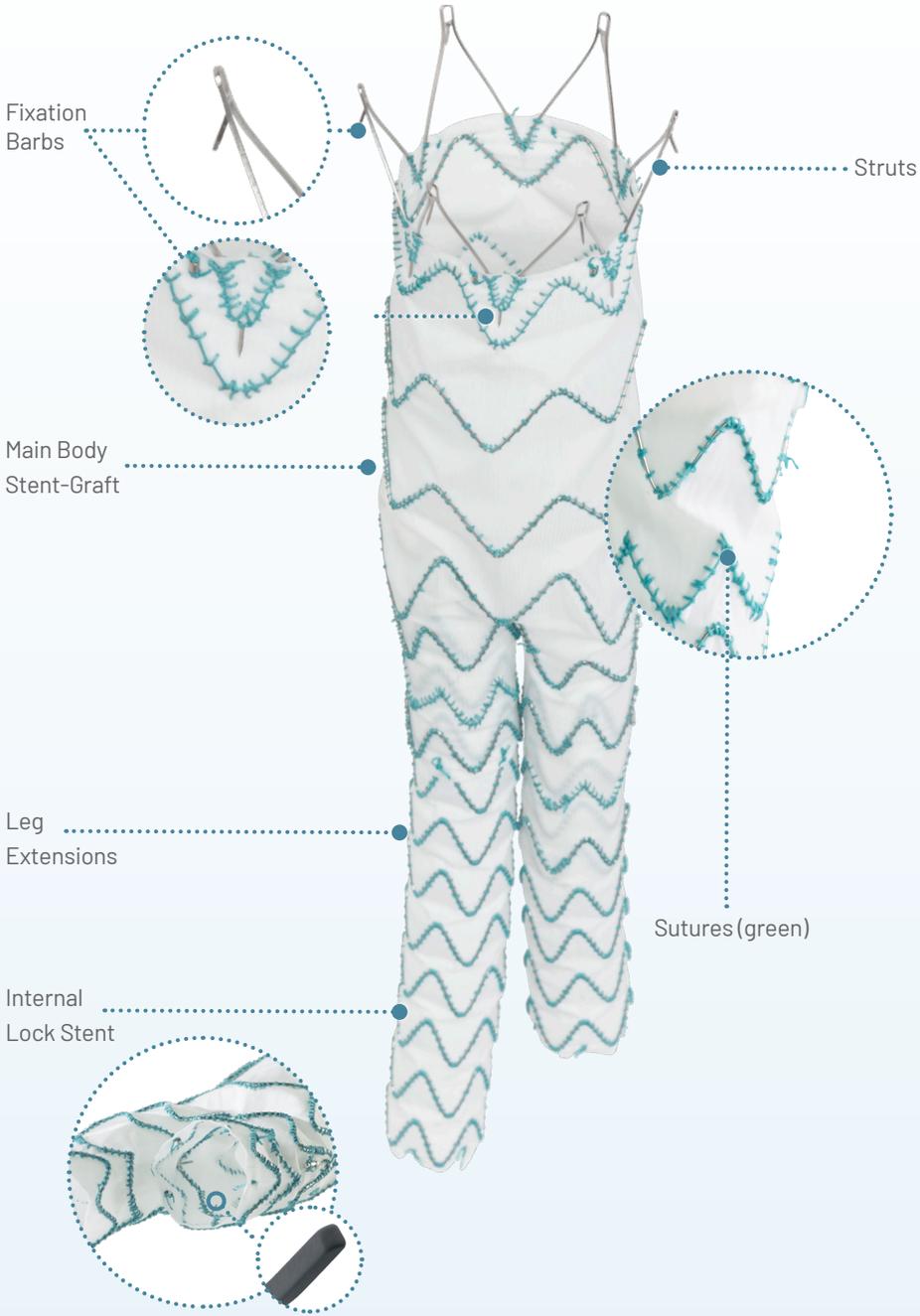
Your hospital stay may only last a few days and you should be back to your normal activities two to six weeks after the procedure. You will need to follow up regularly with your doctor to determine if your device is working properly over time.

The TREO® Stent-Graft System is manufactured by Terumo Aortic, a global established medical device manufacturer with U.S. operations based in Sunrise, Florida.



*Final implanted TREO® Abdominal  
Stent-Graft system*

# The TREO® Abdominal Stent-Graft System



# TREO® Clinical Study Summary

The TREO® Study was conducted in the United States to assess the safety and effectiveness of the TREO® Abdominal Stent-Graft System.

Patients enrolled in this study have been followed for at least five years, some will continue to be followed for 10 years. Safety success was defined as absence of Major Adverse Events through 30 days, which include:

- ▶ All-cause mortality
- ▶ Heart attack
- ▶ Stroke
- ▶ Respiratory failure
- ▶ Paraplegia
- ▶ Renal failure requiring renal replacement therapy
- ▶ Bowel ischemia
- ▶ Procedural blood loss of 1000 cc or greater

Of the 150 participants evaluated at 30 days, 149 (99.3%) had a successful safety outcome. At 1-year, 93.2% (123/132) of participants had successful treatment of their aneurysm.

## One year of participant follow-up has detected the following:

- ▶ 3 out of 137 participants (2.2%) experienced endoleaks, (leakage of blood around the stent-graft into the aneurysm that was related to the device)
- ▶ 4 out of 135 participants (3.0%) had breaks in their device within the fixation struts/barbs without any adverse events or need for second surgery
- ▶ 11 out of 144 participants (7.6%) had additional procedures to treat the aneurysm or related to the stent-graft
- ▶ No participants in the study experienced aneurysm-related death, rupture/burst of aneurysm, migration of device, aneurysm size increase or conversion to open surgery.

## Longer-term data through three years showed the following:

- ▶ 16.2% of participants experienced at least one Major Adverse Event (e.g. Death, Stroke, Heart Attack) but most were not related to the device
- ▶ 9 participants had breaks in their device within the fixation struts/barbs without any adverse events or need for second surgery
- ▶ 16 participants had additional procedures to treat the aneurysm or related to the stent-graft
- ▶ No participants in the study experienced aneurysm-related death, rupture/burst of aneurysm, unintended movement of device, aneurysm size increase or conversion to open surgery.

Your risk of having these events may be higher or lower. **You should discuss the likely risk of these events throughout your life with your doctor and discuss how the risks and benefits of the TREO® Abdominal Stent-Graft System may apply to you.**

# Your Recovery

## What should I expect after the procedure?

### Immediately after treatment

Immediately after recovery from the stent-graft procedure you may be required to lie flat for 4 to 6 hours. This allows for the healing to begin in your groin. Some patients experience mild discomfort such as swelling of the groin area or fever, but this usually resolves in a few days.

Other side effects may include:

- ▶ Numbness of the legs
- ▶ Nausea
- ▶ Vomiting
- ▶ Leg pain or throbbing
- ▶ Lack of appetite
- ▶ Absence of bowel movement for 1 to 3 days



### When to call your doctor

Call your doctor immediately or visit the nearest emergency room if you experience any of the following symptoms:

- ▶ Pain, numbness, or weakness in the legs, back, chest or abdomen
- ▶ Discoloration or coldness in the leg
- ▶ Dizziness
- ▶ Fainting
- ▶ Rapid heartbeat or sudden weakness
- ▶ Pain or swelling at the access site incision

**If you do not seek medical attention for these symptoms, they could seriously harm you or cause death.**

## Follow-up

Your doctor will discuss your follow-up plan, which may include check-ups at one month, six months, twelve months and annually thereafter. Endovascular repair requires that you maintain regular lifelong follow-up with your doctor to ensure that the device is working properly. Some problems do not show symptoms and are not felt by the patient.

During your follow-up examinations, you may routinely receive:

- ▶ X-rays
- ▶ Blood tests
- ▶ CT Scans
- ▶ Ultrasound or MRI scans
- ▶ Physical examinations

Maintaining regularly scheduled follow-up examinations is necessary for your doctor to find out if your stent-graft is working properly and to monitor any changes in your condition over time.

If you do not go, your doctor will not know if:

- ▶ Blood is leaking into your aneurysm (endoleak)
- ▶ The stent-graft has moved (migrated)
- ▶ The stent-graft has other issues

During examination, if the size of the aneurysm shows an increase and/or it is identified that blood flow has returned to the aneurysm, your doctor may also request evaluations to see if additional treatment may be required.

## Implant Card

Before leaving the hospital, you will be given a patient implant card. Along with your personal information, the following is included:

- ▶ Your implant(s) model and ID number
- ▶ Hospital name
- ▶ Doctor's name
- ▶ Nurse's name
- ▶ Date of implant
- ▶ Manufacturer's name and contact information
- ▶ MRI safety conditions



**Keep this card with you at all times.** Please share this information with your health care providers including MRI staff, and make them aware you have been treated with a TREO® Abdominal Stent-Graft.



# Where Can I Get More Information?

## Aneurysms

**Abdominal Aortic Aneurysm (AAA) UK**  
[www.jvsgbi.com/abdominal-aortic-aneurysm-aaa-uk/](http://www.jvsgbi.com/abdominal-aortic-aneurysm-aaa-uk/)

Abdominal Aortic Aneurysm (AAA) UK is a newly formed patient representative group giving national representation to AAA patients and their loved ones, providing a platform for national discussion on the impact of and potential policy changes relating to the condition.

**The Aortic Centre Trust**  
[www.aorticcentrctrust.co.uk/](http://www.aorticcentrctrust.co.uk/)

Diseases of the aorta cause 5,000 deaths per year in the UK. That compares with 11,000 deaths from prostate cancer and a similar number of deaths from breast cancer. We want people who are at risk to be aware of the risk. We want those who have aortic problems to get the treatment that they need before it becomes an emergency. We want to help with research into better treatment and prevention.

**The British Heart Foundation**  
[www.bhf.org.uk/](http://www.bhf.org.uk/)

Since 1961, British Heart Foundation has been at the forefront of research that has helped to halve annual deaths from cardiovascular disease in the UK. But our work is needed more than ever. Our strategy sets out how we aim to help save and improve lives on a scale more ambitious than ever before.

**European Reference Network VASCERN**  
<https://vascern.eu/network/patient-representation/patient-organisations/>

In the EU, up to 36 million people live with over 6,000 rare diseases. Some affect a few patients, while others impact up to 245,000 individuals. Approximately 80% are genetic, with 70% manifesting in childhood and providing high-quality, cost-effective care for rare diseases remains challenging.

**Interventional Therapy**  
**Society of Interventional Radiology**  
[www.sirweb.org](http://www.sirweb.org)

The Society of Interventional Radiology (SIR) is a professional society for doctors who specialise in interventional or minimally invasive procedures. SIR is a non-profit, national scientific organisation deeply committed to its mission to improve health and the quality of life through the practice of cardiovascular and interventional radiology.

**European Society of Vascular Surgery**  
<https://esvs.org/about-esvs/the-society/>

The European Society for Vascular Surgery® (ESVS) is a not-for-profit professional medical society, seeking to advance excellence and innovation in vascular health through education, advocacy, research and public awareness. SVS is the national advocate for more than 5,800 specialty-trained vascular surgeons and other professionals dedicated to the prevention and cure of vascular disease.

## Product Information

**Terumo Aortic**  
[www.terumoaortic.com](http://www.terumoaortic.com)

Terumo Aortic is a global medical-device company dedicated to developing solutions for aortic and peripheral vascular disease.

**Food and Drug Administration**  
[www.fda.gov](http://www.fda.gov)

A US government agency intended to promote and protect the public health by helping safe and effective products reach the market in a timely way, and monitoring products for continued safety after they are in use.

**US Department of Health and Human Services**  
[www.hhs.gov](http://www.hhs.gov)

HHS helps families and individuals stay safe and informed about food, drugs, medical devices, and more. Information is available about medical device safety for consumers, healthcare providers and regulated industry, including device recalls.

# Glossary

## Aorta

The main artery that carries blood away from the heart distributing it to the rest of the body.

## Abdominal Aortic Aneurysm (AAA)

Enlargement and thinning of the abdominal region of the aorta due to a weakening in the aortic wall. This term is often abbreviated as "AAA" and referred to as "triple A."

## Aneurysm

Occurs when part of an artery wall weakens, allowing it to balloon out or widen abnormally. Aneurysms can occur anywhere. An Aortic Aneurysm occurs in the major artery from the heart.

## Angiography/Angiogram

Angiography is a method whereby dye is injected into the bloodstream to view blood flow through the blood vessels under X-ray. Angiography utilises contrast (dye) and small doses of radiation. The resulting images are angiograms.

## Contrast (dye)

A liquid injected into the vascular system that allows a doctor to see a patient's blood flow when the patient is exposed to X-ray.

## Computed Tomography Scan (CT/CAT Scan)

An imaging technique that creates very precise, thin, cross-sectional views of the human body. For patients under consideration for Abdominal Aortic Aneurysm treatment, this scan will focus on the abdomen and aorta. This technique often utilises contrast (dye) and always requires limited radiation exposure.

## Delivery Catheter

A medical tool that resembles a long thin tube used by a doctor to enter the body through the vascular system and enables placement and positioning of an endovascular device.

## Endoleak

Unintended blood flow into the Abdominal Aortic Aneurysm after placement of an endovascular graft.

## Endovascular Graft (Stent-Graft)

A synthetic graft with a mesh frame, implanted within a diseased vessel intended to relieve blood pressure on the weakened vessel walls. Endovascular grafts are placed into the blood vessel using a delivery catheter, which enables the doctor to avoid needing to make a large incision on the patient.

Endovascular grafts are compacted within the delivery system. While still small-in-size, they are able to enter the body through the vascular system. Once in proper position, they are then deployed or expanded to the required size based on the blood vessel being treated.

## Endovascular Aortic Repair

A less invasive option for the repair of an Abdominal Aortic Aneurysm as compared to open surgery. It involves the use of an endovascular graft that excludes (seals off) an aneurysm of a diseased aorta, thereby creating a new path for blood to flow.

The technique uses real time X-rays allowing the doctor to visualise the location of the device and disease to ensure proper device placement. The doctor will also use a variety of other temporarily placed devices (such as guidewires) to perform the treatment.

## Femoral Artery

The main artery within each leg between the area of the hip and knee that brings blood to the lower extremities. Doctors perform many endovascular procedures, including treatment of Abdominal Aortic Aneurysms, using the femoral artery as the primary access site.

## Fluoroscopy

A live X-ray image viewed on a monitor by the doctor which is used to view both the patient's blood vessels and the endovascular graft.

## Guidewire

A long flexible wire used by the doctor to provide a path for the delivery system to move through the patient's vasculature.

## Iliac Artery

The main artery on each side of the body that takes blood from the Abdominal Aorta to the femoral artery. In addition to bringing blood to the lower extremities, the iliac artery also provides blood to the pelvic regions of the body.

Iliac arteries are often included in the treatment of Abdominal Aortic Aneurysms.

## Intravascular Ultrasound (IVUS)

An ultrasound probe on a device temporarily placed inside arteries to determine diameters and lengths of arteries.

## Magnetic Resonance Imaging (MRI)

A diagnostic technique that uses magnetic fields and radio waves to visualise structures inside the body.

## Occlusion

The blocking of a vessel that causes blood flow to be reduced or stop completely.

## Renal Artery

The main artery on each side of the body that brings blood to the kidneys.

## Rupture

A tear in the wall of an artery that allows blood to exit the blood vessel and could be a potentially life-threatening event. The common term for this is hemorrhage.

## Synthetic Graft

A graft manufactured to replace the vessel. It is created by using man-made materials such as polyester.

## Ultrasound

Imagery of the anatomy created using high-frequency sound waves.

## X-Ray

A form of energy allowing medical providers to see anatomical structures in the body, as well as the stent-graft components in your body.

# Indications for Use

The TREO® Abdominal Stent-Graft System is indicated for the endovascular treatment of infrarenal abdominal aortic and aorto-iliac aneurysms in adult patients who have appropriate anatomy as described below:

- ▶ Adequate iliac or femoral access compatible with the required delivery systems
- ▶ Suprarenal neck angle of less than 45 degrees

Infrarenal landing neck length	Distal Iliac landing neck of inside diameter
≥10mm with <60° infrarenal angle and inside diameter of 17mm-32mm	8mm-13mm with length at least 10mm
Or ≥15mm with infrarenal angle between 60°-75° & inside diameter of 16mm-30mm	Or >13mm-20mm with length at least 15mm

# Contraindications of Use for the TREO® System

The TREO® Abdominal Stent-Graft System is contraindicated for the following:

- ▶ Systemic infection
- ▶ Hypersensitivity to polyester or nitinol

Implant Component	Material
Stent	Nitinol (including Nickel)
Graft	Woven Polyester
Sutures	Braided Polyester
Radiopaque Markers	Platinum (90%) - Iridium (10%)





Our goal is to work together with your doctor to  
find solutions that best fit your anatomy.

This leaflet gives only general information for patients.  
Your medical practitioner will be able to answer any specific questions you may have on your condition.  
This information was produced as a service to medicine by Terumo Aortic.



Discover our patient education hub  
[terumoaortic.com/patients](https://terumoaortic.com/patients)



View IFU at [eifu.terumoaortic.com](https://eifu.terumoaortic.com) for more information on use, indications, contraindications and warnings/precautions.  
Caution: Federal Law (US) restricts this device to sale or on the order of a physician.

Product availability subject to local regulatory approval.

PM-09978

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**TERUMO**  
AORTIC