

Abdominal Arterial Disease

Circulating the Facts About Peripheral Vascular Disease

*Brought to you by the Education Committee
of the Society for Vascular Nursing*

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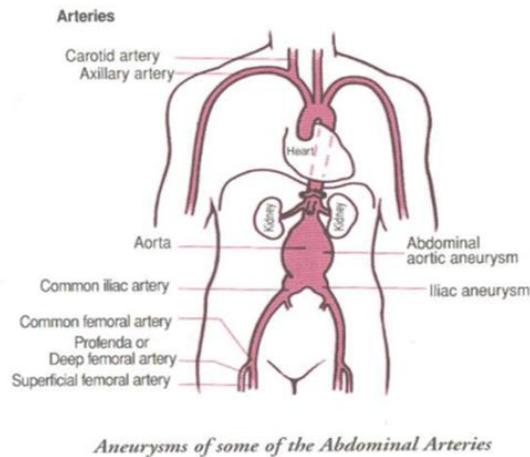
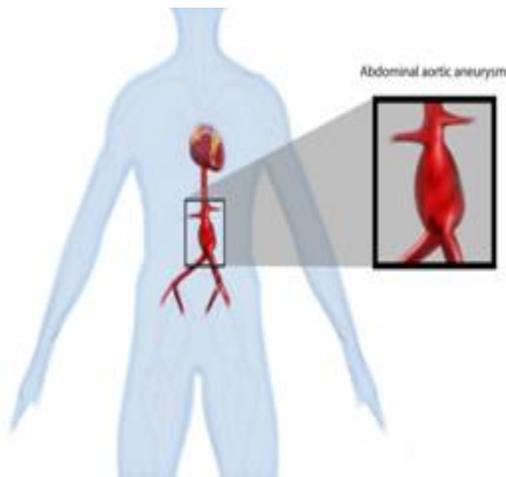
Abdominal Aortic Aneurysms

Objectives:

Define Abdominal Aortic Aneurysm

Identify the risk factors

Discuss medical management and surgical repair of
Abdominal Aortic Aneurysms



Unit 1: Review of Aortic Anatomy

Unit 2: Definition of Aortic Aneurysm

Unit 3: Risk factors for Aneurysms

Unit 4: Types of aneurysms

Unit 5: Diagnostic tests for Abdominal Aortic Aneurysms

Unit 6: Goals

Unit 7: Treatment

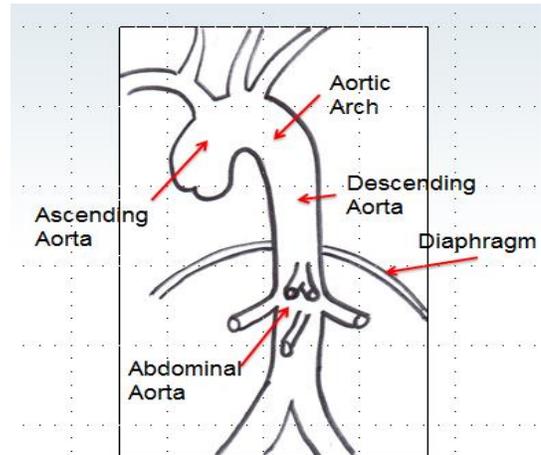
Unit 8: Endovascular repair of Abdominal Aortic Aneurysms

Unit 9: Complications

Unit 10: Post procedure care

Unit 1: Review of Abdominal Aortic Anatomy

The abdominal aorta is the largest blood vessel in the body and directs oxygenated blood flow from the heart to the rest of the body. This provides necessary food and oxygen to all body cells. The abdominal aorta contains the celiac, superior mesenteric, inferior mesenteric, renal and iliac arteries. It begins at the diaphragm and ends at the iliac artery branching.



Unit 2: Definition of Abdominal Aortic Aneurysm

Normally, the lining of an artery is strong and smooth, allowing for blood to flow easily through it. The arterial wall consists of three layers. A true aneurysm involves dilation of all three arterial wall layers. Abdominal aortic aneurysms occur over time due to changes of the arterial wall. The wall of the artery weakens and enlarges like a balloon (aneurysm). The precise cause of an aneurysm is unknown. As the wall dilates, the arterial wall thins. The larger the aneurysm size, the greater the risk for rupture.

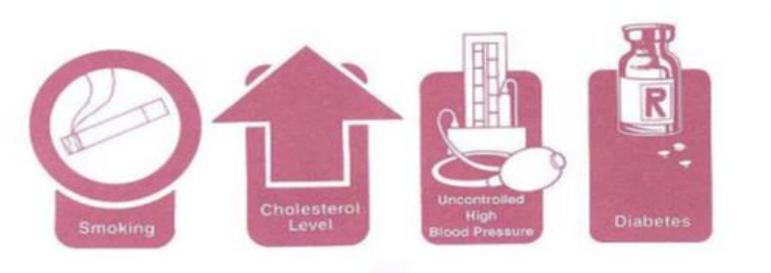
Unit 3: Risk Factors for Aneurysms

Aortic Aneurysms occur 4-5 times more frequently in men than women over the age of 65. Patients, who smoke, have coronary artery disease, and peripheral artery disease are more likely to develop abdominal aortic aneurysms. Smokers die 4 times more often from a ruptured abdominal aortic aneurysm than nonsmokers.

The cause of an abdominal aortic aneurysm is unknown; however, we do know that these factors contribute to their development.

Risk factors that can be changed or treated include:

- Tobacco use and exposure to second hand smoke
- High blood pressure (hypertension)
- High levels of blood lipids (cholesterol)
- Diabetes

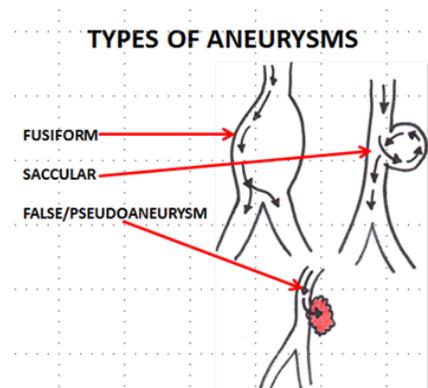


Risk factors that cannot be changed include:

- Aging
- Sex (male/female)
- Family history of aneurysmal disease
- Race
- Genetic conditions

Unit 4: Types of Aneurysms

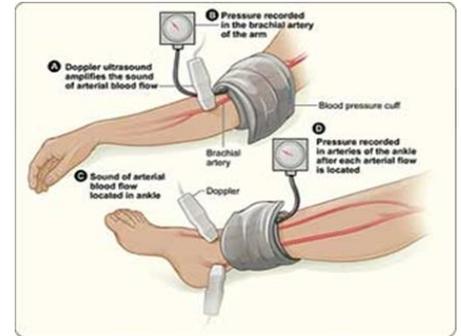
Aneurysms can be either true or false (pseudoaneurysms). True aneurysms involve all three layers of the aorta. They can take on two types of shapes, fusiform or saccular. Fusiform aneurysms are more common and with a more uniform, symmetrical circumferential shape of the aortic wall. Saccular aneurysms are more localized and have a sack-like unilateral out pouching (ballooning on one side) of the aorta wall. A pseudoaneurysm, or false aneurysm, is a result of leakage from an arterial puncture or tear into surrounding tissues. A false aneurysm may result from prior surgery, trauma or cannulation (from catheter placement).



Unit 5: Diagnostic tests for Abdominal Aortic Aneurysms (AAA)

Diagnostic tests begin with a physical exam. The physical exam includes a pulse exam, arterial auscultation and palpation of the abdomen. This will detect only 30-40% of AAA's and this is dependent on aneurysm size. A person's size may make it difficult to examine the abdomen, requiring more diagnostic testing.

Non-Invasive Testing is performed without the use of needles, contrast or x-ray. It is painless and without known risks or side effects. With the use of a special ultrasound, the vascular technician can make recordings of the blood flow at different points along arms and legs. Blood pressure cuffs are placed around your arms and legs and pressure readings are compared. From these tests, the location and severity of your disease can be determined.



Abdominal Aortic Duplex is an ultrasound of the abdomen using high-frequency sound waves and a computer to create images of blood vessels, tissues and organs. It can provide information on a blood vessels location, size, shape and blood flow at a low cost. It does have limitations when it comes to patient's size and bowel gas.

You will be asked to not eat 3-4 hours before this study. You will need to lie flat during the test. Gel will be applied to your skin and a probe will be guided over your abdomen.



Invasive Testing may require some preparation and possibly a short hospital stay. These tests are usually for surgical planning. You may need to sign consent for these studies.

Computed Tomography (CT) Scan or CT Angiography (CTA) is an imaging study utilizing non-contrast and / or intravenous (IV) contrast to identify specific anatomy. You will lie on a table and be asked to remain still while you pass through a donut shaped scanner. X-rays will be taken. An IV will be used if contrast is needed for the study.

Magnetic Resonance Imaging (MRI) / Magnetic Resonance Angiography (MRA) is an imaging study which creates images of blood vessels which can be three-dimensional. This study does not use x-rays; instead, it uses a strong magnet that sends out radio waves to create the images. It may or may not involve the use of contrast or IV's. You will be asked specific questions about your past medical and surgical history. You will lie on a table and be asked to remain still while you pass through a donut shaped scanner. An IV will be used if contrast is needed for the study.

Arteriogram is an x-ray of the arteries using contrast to highlight the blood vessel. It is completed by injecting contrast through a needle in either the groin or the upper arm.

Intravascular ultrasound (IVUS) is a study that sends high frequency sound waves into the blood vessel from a catheter inside the artery forming an image. The technique of doing this test is similar to an arteriogram. No contrast is necessary for this study.

Unit 6: Goals

When a patient is diagnosed with an AAA, there are several goals that your healthcare provider wishes to achieve:

- Relieve any symptoms that you may have related to the AAA
- Stop the growth in size of your aneurysm
- Avoid rupture of the aneurysm

Achieving these goals will ultimately lead to a longer life and prevent death.

No matter the size or location of your AAA, you should be treated from a medical standpoint, which is consistent with the recommendations for any patient with atherosclerotic disease. Your blood pressure should be carefully controlled and you should stop smoking if you do so.

Unit 7: Treatment

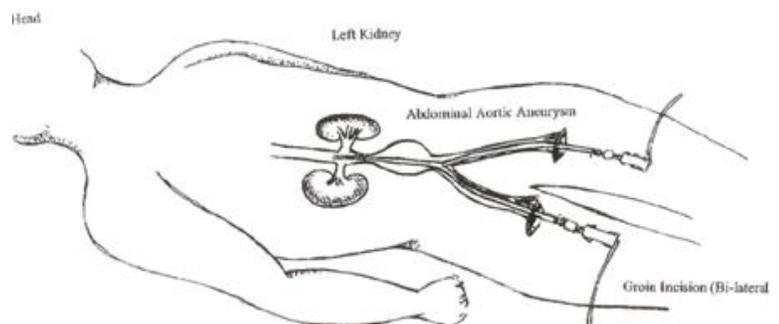
It is recommended that an AAA be treated when the size of the aneurysm is larger than 5.0 cm, has been growing larger than 0.5 cm in the past six months or has grown larger while monitoring the aneurysm size. If your AAA is causing pain, this is an indication for treating your aneurysm.

There are two ways to surgically treat an abdominal aortic aneurysm. One is an endovascular repair and the other is an open repair. Your healthcare provider will determine which procedure is appropriate for you.

Unit 8: Endovascular Surgical Repair for AAA

An endovascular repair of an AAA is a minimally invasive surgical approach. It can be performed under local, regional or general anesthesia. It involves punctures or small incisions of the groins. Using an angiogram image, the aneurysm is identified, measured, and the endograft

device is placed inside the aneurysm sac, lessening pressure on the weakened arterial wall. The length of the procedure varies but is usually one to three hours.



Unit 9: Complications of an Endovascular AAA Repair

There are a few complications that can occur with an endovascular AAA repair.

- Damage to surrounding blood vessels, organs, or other structures by instruments
- Kidney damage
- Limb ischemia (loss of blood flow to leg/feet) from clots
- Groin wound infection
- Groin hematoma (large blood-filled bruise)
- Bleeding
- Endoleak (continual leaking of blood out of the graft and into the aneurysm sac with potential rupture)
- Spinal cord injury

Unit 10: Post Procedure Care

You may or may not be taken to the intensive care unit (ICU); however, you may be taken to a post anesthesia care unit (PACU). You will be connected to monitors that will constantly display your blood pressure, other pressure readings, breathing rate, and your oxygen level.

You will remain in either the ICU or PACU for a designated period of time and then transferred to a regular nursing care unit. You will be given pain medication for incisional pain. You should be in the hospital for 24-48 hours.

Your activity will be gradually increased as you get out of bed and walk around for longer periods of time. Your diet will be advanced to solid foods as tolerated.

It is very important that you keep all follow-up appointments with your healthcare team. Your aneurysm will need to be monitored at regular intervals throughout your life.