Your Guide To: ***Abdominal Aortic Aneurysm***

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What is an abdominal aortic aneurysm?

An abdominal aortic aneurysm, also called AAA or triple A, is a bulging, weakened area in the wall of the aorta (the largest artery in the body) resulting in an abnormal widening or ballooning greater than 50 percent of the normal diameter (width).

The aorta extends upward from the top of the left ventricle of the heart in the chest area (ascending thoracic aorta), then curves like a candy cane (aortic arch) downward through the chest area (descending thoracic aorta) into the abdomen (abdominal aorta). The aorta delivers oxygenated blood pumped from the heart to the rest of the body.

The most common location of arterial aneurysm formation is the abdominal aorta, specifically, the segment of the abdominal aorta below the kidneys. An abdominal aneurysm located below the kidneys is called an infrarenal aneurysm. An aneurysm can be characterized by its location, shape, and cause.

The aorta is under constant pressure as blood is ejected from the heart. With each heart beat, the walls of the aorta distend (expand) and then recoil (spring back), exerting continual pressure or stress on the already weakened aneurysm wall. Therefore, there is a potential for rupture (bursting) or dissection (separation of the layers of the aortic wall) of the aorta, which may cause life-threatening hemorrhage (uncontrolled bleeding) and, potentially, death. The larger the aneurysm becomes, the greater the risk of rupture.

Because an aneurysm may continue to increase in size, along with progressive weakening of the artery wall, surgical intervention may be needed. Preventing rupture of an aneurysm is one of the goals of therapy.

What causes an abdominal aortic aneurysm to form?

An abdominal aortic aneurysm may be caused by multiple factors that result in the breaking down of the well-organized structural components (proteins) of the aortic wall that provide support and stabilize the wall. The exact cause is not fully known.

Atherosclerosis (a build-up of plaque, which is a deposit of fatty substances, cholesterol, cellular waste products, calcium, and fibrin in the inner lining of an artery) is thought to play an important role in aneurysmal disease, including the risk factors associated with atherosclerosis, such as:

- age (greater than 60)
- male (occurrence in males is four to five times greater than that of females)
- family history (first degree relatives such as father or brother)
- genetic factors
- hyperlipidemia (elevated fats in the blood)
- hypertension (high blood pressure)
- smoking
- diabetes

Other diseases that may cause an abdominal aneurysm include:

- genetic disorders of connective tissue (abnormalities that can affect tissues such as bones, cartilage, heart, and blood vessels), such as Marfan syndrome, Ehlers-Danlos syndrome, Turner's syndrome, and polycystic kidney disease
- congenital (present at birth) syndromes, such as bicuspid aortic valve or coarctation of the aorta
- giant cell arteritis - a disease that causes inflammation of the temporal arteries and other arteries in the head and neck, causing the arteries to narrow, reducing blood flow in the affected areas; may cause persistent headaches and vision loss
- trauma
- infectious aortitis (infections of the aorta) due to infections such as syphilis, salmonella, or staphylococcus. These infectious conditions are rare.

What are the symptoms of abdominal aortic aneursyms?

Abdominal aortic aneurysms may be asymptomatic (without symptoms) or symptomatic (with symptoms). About three of every four abdominal aortic aneurysms are asymptomatic and may be found upon routine physical examination by the discovery of a pulsating mass in the abdomen. An aneurysm may also be discovered by x-ray, computed tomography scan (CT scan), or magnetic resonance imaging (MRI) that is being

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done for other conditions. Since abdominal aneurysm may be present without symptoms, it is referred to as the "silent killer" because it may rupture before being diagnosed.

Pain is the most common symptom of an abdominal aortic aneurysm. The pain associated with an abdominal aortic aneurysm may be located in the abdomen, chest, lower back, or groin area. The pain may be severe or dull. The occurrence of pain is often associated with the imminent (about to happen) rupture of the aneurysm. Acute, sudden onset of severe pain in the back and/or abdomen may represent rupture and is a life threatening medical emergency.

The symptoms of an abdominal aortic aneurysm may resemble other medical conditions or problems. Always consult your physician for more information.

How to treat abdominal aortic aneurysm?

Specific treatment will be determined by your physician based on:

- your age, overall health, and medical history
- extent of the disease
- your signs and symptoms
- your tolerance of specific medications, procedures, or therapies
- expectations for the course of the disease
- your opinion or preference

Treatment may include:

- routine ultrasound procedures - to monitor the size and rate of growth of the aneurysm
- controlling or modifying risk factors - steps such as quitting smoking, controlling blood sugar if diabetic, losing weight if overweight or obese, and controlling dietary fat intake may help to control the progression of the aneurysm
- medication - to control factors such as hyperlipidemia (elevated levels of fats in the blood) and/or high blood pressure
- surgery

Abdominal aortic aneurysm open repair

A large incision is made in the abdomen to directly visualize the abdominal aorta and repair the aneurysm. A cylinder-like tube called a graft may be used to repair the aneurysm. Grafts are made of various materials such as Dacron (textile polyester synthetic graft) or polytetrafluoroethylene (PTFE, non-textile synthetic graft). This graft is sewn to the aorta, connecting one end of the aorta at the site of the aneurysm to the other end. The open repair is considered the surgical standard for an abdominal aortic aneurysm repair.

Endovascular aneurysm repair (EVAR)

EVAR is a procedure that requires only small incisions in the groin along with the use of x-ray guidance and specially-designed instruments to repair the aneurysm. With the use of special endovascular instruments and x-ray images for guidance, a stent-graft is inserted via the femoral artery and advanced up into the aorta to the site of the aneurysm. A stent-graft is a long cylinder-like tube made of thin metal mesh framework (stent), while the graft is made of various materials such as Dacron or polytetrafluoroethylene (PTFE). The graft material may cover the stent. The stent helps to hold the graft open and in place.