

## Abdominal Aortic Aneurysms

The aorta is the body's largest artery and carries blood from the heart to all vital organs and the legs and feet. An aneurysm is an abnormal area of localized widening of a blood vessel. When an aneurysm forms in the aorta extending through the abdomen, it is called an Abdominal Aortic Aneurysm (AAA). The formation of an Abdominal Aortic Aneurysm (AAA) is attributed to the progressive weakening of the aortic wall, which results in a dilation, or "ballooning" of the vessel. Basically, a bulge forms in the weakened vessel wall and it may continue to grow and eventually rupture. When an AAA ruptures, massive intraabdominal bleeding occurs and it is usually fatal unless prompt surgery can be performed. Even with emergency surgery, there is a mortality rate of greater than 50%. In a recent case study, it was found that only 18% of all patients with a ruptured AAA were able to reach a hospital and survive surgery. With this in mind, it should come as no surprise that AAAs are the 13th leading cause of death in the United States and that 15,000 people die annually from them.

While the exact cause of an AAA is unknown, there are certain factors that may predispose an individual to AAA development:

- \* Artherosclerosis
- \* >60 years old
- \* Male gender
- \* Immediate relatives with AAA
- \* Hypertension
- \* Smoking history (past or current)
- \* Chronic obstructive pulmonary disease
- \* Amputation above the knee
- \* Spinal cord injury

AAAs develop slowly over many years without symptoms. Patients do not know they have a problem until the aneurysm's walls tear ("dissection") or break ("rupture"). Either causes severe pain, often in the back or deep in the abdomen. If rupture occurs, blood hemorrhages into the abdomen and the patient usually collapses in shock.

The key to surviving an AAA is detecting it before it ruptures. When repaired before rupture, the survival rate is 95% and hospital time is a few days. When emergency surgery is required, the survival rate is less than 50% and the patient is often hospitalized for a month, recovering from shock and damage to most organs.

Obviously, the key is to operate before rupture or dissection creates a disaster – but when? Many people die in old age with small aneurysms that are found at autopsy. It would make no sense to operate on aneurysms that will not even rupture. Research has shown that there is almost no chance of rupture until an AAA is at least 5cm in diameter, which is about twice the size of a normal aorta.

Therefore, our strategy is to measure the AAA by a CT or Ultrasound every 6-12 months and refer to a surgeon if and when the diameter exceeds 5cm.

Sometimes the surgeon waits longer – until the AAA is 5.5 of 6cm, due to other considerations.

Formerly, treatment involved opening the abdomen, cross-clamping the aorta, cutting out the bad portion of the aorta, sewing in a replacement tube made out of tent material (Dacron), then unclamping the aorta and sewing the patient up.

Now a new technology avoids opening the patient at all. Via an artery in the groin, a replacement tube (collapsed) is floated up into the aneurysm (it is sized so it is longer than the aneurismal segment), attached to the aorta both above and below the aneurysm, and inflated. This “stent” provides a new, strong, and safe channel through the center of the aneurysm. The patient usually is home in 1-2 days with only a small scar in the groin.

Unfortunately, no drugs have been shown to slow the progression of AAA. However, rupture and dissection are less likely when blood pressure and cholesterol levels are lower.

Currently, there is no standard screening protocol for early detection of AAAs. Most of the AAAs that are detected early today are found by accident during a routine physical exam or through a test for some other issue (e.g. lumbar spine x-ray, gallbladder or kidney ultrasound, or CT colonography.)

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