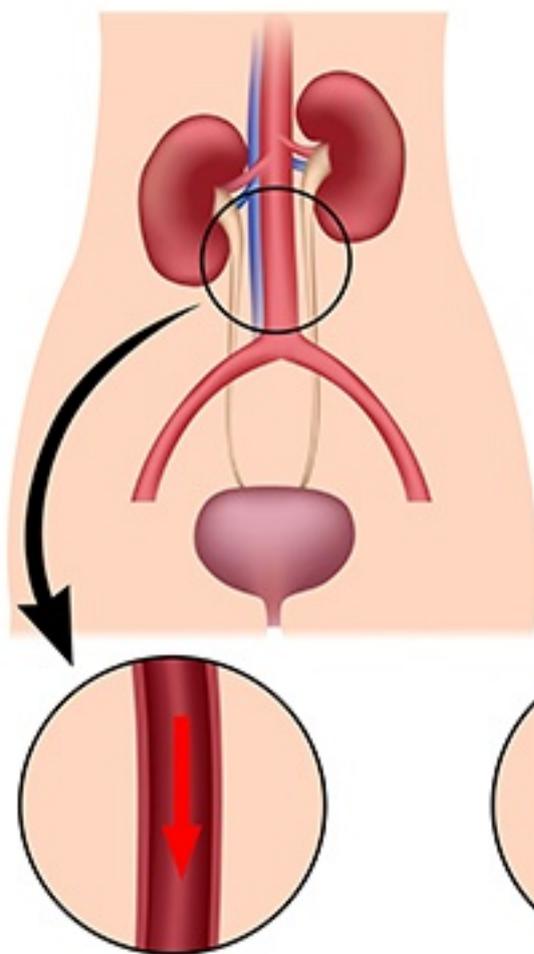
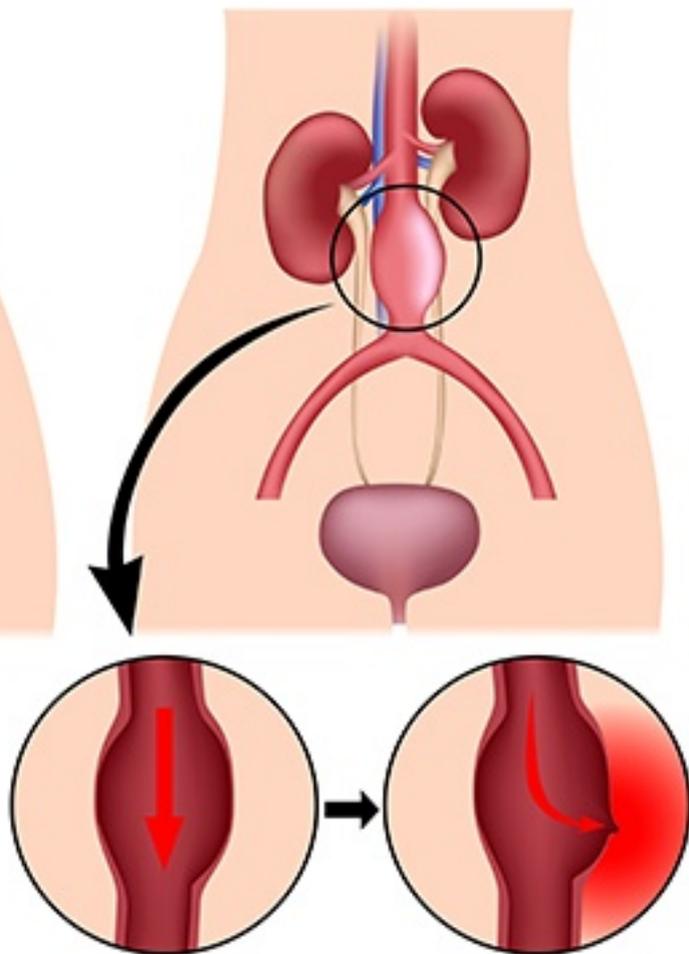


Normal



Abdominal Aortic Aneurysm



A

Stent graft released from catheter (catheter is slowly pulled back)

Catheter inserted into leg artery

Catheter needed for other side

Aorta (cross-section)

Abdominal aortic aneurysm

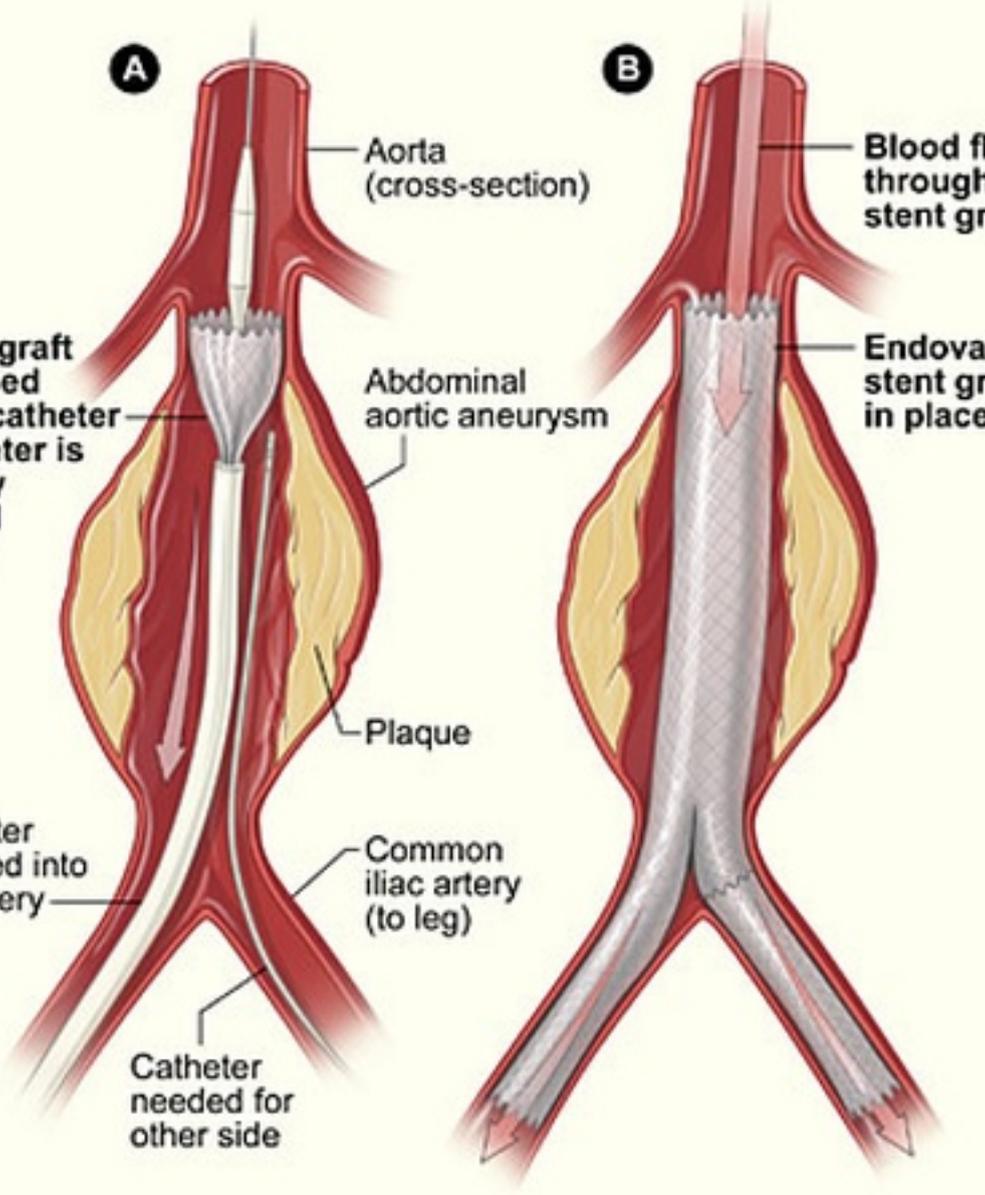
Plaque

Common iliac artery (to leg)

B

Blood flows through stent graft

Endovascular stent graft in place



Abdominal Aortic Aneurysm

An aneurysm is another type of disease that affects the arteries. It is a localized widening or enlargement of an artery compared to its normal size. An aneurysm is a serious health problem because it may rupture, similar to the bursting of a balloon that has been over inflated. When a blood vessel with an aneurysm ruptures, life-threatening bleeding occurs. Aneurysms can also cause pain from pressure on nearby organs or nerves. Occasionally, debris (emboli) contained within the aneurysm can break off and travel to the legs or vital organs, blocking the blood flow to these tissues.

Aneurysms occur most commonly in the abdominal aorta, a large blood vessel in the abdomen. Abdominal aortic aneurysms (AAA's) most often involve the infrarenal aorta, or that portion of the blood vessel that lies below the takeoff of the arteries to the kidneys (renal arteries). About half of AAA's also involve the iliac arteries in the pelvis. Uncommonly, AAA's extend above the renal arteries (suprarenal) and possibly into the chest cavity (thoraco-abdominal).

AAA's affect 6-9% of men over 65 years of age. They are twice as common in men than in women. The major risk associated with AAA's is that they have a high propensity to rupture. Ruptured AAA's are the 13th leading cause of death in the United States. They are also the 10th leading cause of death for men over the age of 55. Approximately 30% to 50% of patients with a ruptured AAA die before they ever reach a hospital. Even with surgery, there is 50-70% mortality rate associated with a ruptured AAA. Therefore, early detection and timely repair are paramount to AAA management.

The rate of aneurysm rupture is related to its size. A 4.0 cm AAA has a 1% risk of rupture per year while a 6.0 cm AAA has a 10% risk of rupture per year. Risk factors such as smoking and high blood pressure (hypertension) may increase the size of the AAA, the rate of growth, and the risk of rupture.

Smoking is the most influential of all the risk factors. Although the mechanism by which smoking causes or worsens aneurysms is not known, it is known that the number of cigarettes and years smoked, increasing depth of inhalation, and the presence of COPD significantly impacts AAA prevalence, size, rate of expansion and risk of rupture.

Signs and Symptoms

Most AAA's are asymptomatic (lack symptoms), which leads to difficulty in detection. Occasionally, aneurysms may be felt as a "mass" or "lump" in the abdomen that pulsates with each heartbeat. Some aneurysms are found during evaluation of pain in the back or side that can occur as the aneurysm grows and presses on the spinal column and nearby nerves. Today, AAA's are most frequently found on X-rays that are done for other reasons, such as an ultrasound of the gallbladder or an MRI or CT scan of the back. When AAA's become symptomatic it is usually because of a rupture of the aneurysm. When rupture occurs, the person experiences severe pain in the back and/or abdomen and may feel faint or become unconscious due to internal bleeding and a sudden fall in blood pressure. Unless the leaking aneurysm is surgically repaired immediately, death results.

Diagnostic Testing

Less than half of small (<5.0 cm) AAA's are detected on routine physical examination. Abdominal ultrasound can detect an aneurysm and investigate its size and location. CT scanning provides detailed anatomic detail and is generally the test of choice when planning therapy. Occasionally, an arteriogram or MRA is necessary for further evaluation.

Treatment

Most experts agree that almost all AAA's larger than 5.0 cm in diameter should be repaired. In some instances, smaller aneurysms may be considered for treatment. If surgical repair is deferred because the AAA is smaller than 5.0 cm, then periodic ultrasound examinations (i.e. every six months) of the aneurysm must be done to monitor the AAA for an increase in size. If during monitoring the AAA expands to larger than 5.0 cm, repair should be done.

At present, there is no proven non-surgical treatment for AAA's. Traditional surgical repair of the aorta and its branches is extremely successful. The traditional technique for repair requires an abdominal incision and a 5-7 day hospital stay. The operation involves the insertion of a synthetic graft to replace the weakened walls of the aneurysm. Complete recovery after surgical repair usually takes 4-6 weeks. Once repaired by the traditional method, only about 5% of patients will require additional treatment in the future.

Over the last 10 years, another method of treating AAA's has been developed. This approach, called endovascular repair or stent grafting, is performed through small incisions in each groin. Endovascular repair carries many of the same risks as the traditional method of surgical repair, including bleeding and infection. However, patients usually spend fewer days in the hospital and recover more quickly with less pain. Because endovascular repair is a relatively new technique, the long-term results of this method are not known. Stent grafting may be a more prudent approach to treating AAA's of "high-risk" patients who are not able to tolerate the traditional method of repair. However, not all aneurysms are suitable for endovascular repair due to specific anatomic conditions that must be met to have a successful repair. After endovascular repair, imaging studies with ultrasound and CT scanning every six months are necessary to continue to monitor the repair. Some patients may require additional procedures after the initial repair due to incomplete aneurysm exclusion.

Conclusion

Patients with AAA's should seek the advice of a vascular surgeon skilled in both methods of AAA repair. If AAA repair is indicated, the vascular surgeon will be able to recommend the most appropriate method of repair.