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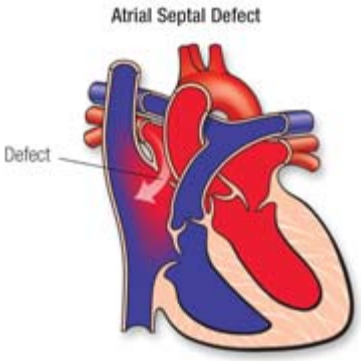
Atrial Septal Defect (ASD)

(Note: before reading the specific defect information and the image associated with it, it will be helpful to review normal heart function.)



What is it?

Atrial septal defect (ASD) is a *defect* in the *septum* between the heart's two upper chambers (*atria*). The septum is a wall that separates the heart's left and right sides. Septal defects are sometimes called a "hole" in the heart.
Everyone is born with an opening between the upper heart chambers called the foramen ovale. It's a normal opening that exists in the fetus (baby) before it is born that allows blood to detour away from the lungs before birth. After birth, the opening is no longer needed and usually closes or becomes very small within several weeks or months. Sometimes this opening is larger than normal and doesn't close after birth. As many as one in five healthy adults still have a small leftover opening in the wall between the atria, sometimes called a Patent Foramen Ovale (PFO).

What causes it?

The cause is usually unknown. Genetic factors can sometimes play a role.

How does it affect the heart?

If the hole is small, it may have minimal effect on heart function. When a large defect exists between the atria, a large amount of oxygen-rich (red) blood leaks from the heart's left side back to the right side. Then this blood is pumped back to the lungs, despite already having been refreshed with oxygen. Unfortunately this creates more work for the right side of the heart.
This extra amount of blood flow in the lung arteries can also cause gradual damage.

How does the ASD affect me?

Some patients with ASD have no symptoms. If the opening is small, it won't cause symptoms because the additional work done by the heart and lungs is minimal. If the opening is large, it may cause mild shortness of breath, especially with exercise. The increased blood in the lung may increase a patient's susceptibility to pneumonia and bronchitis. On physical examination, the only abnormal finding may be a murmur (noise heard with a stethoscope) and other abnormal heart sounds. However, with progressive damage to the lung vessels, the pressures in the lung may rise, and the patient can become more severely limited, eventually developing Eisenmenger's syndrome, described below.

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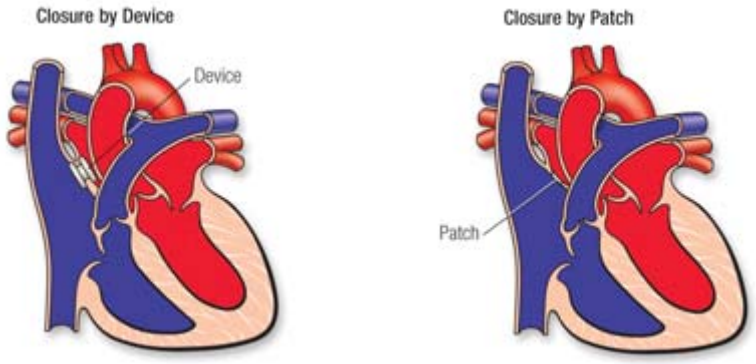
If I had surgery to close an ASD in childhood, what can I expect?

A large ASD is usually closed in early childhood, even in patients with few symptoms, to prevent complications later. Some defects were closed with a patch of pericardium (the normal lining outside the heart) or synthetic material such as Dacron. However, many defects that required surgery may have been sewn closed without using a patch. The prognosis after ASD closure during childhood is excellent and late complications are uncommon.

What if the defect is still present? Should it be repaired in adulthood?

If the opening is small, surgery or other treatments may not be needed.
Most large atrial septal defects now can be closed either with open-heart surgery or during a cardiac catheterization using a device inserted into the opening to plug it (referred to as interventional or therapeutic catheterization). However, if the ASD is in an unusual position within the heart, or if there are other heart defects such as abnormal connections of the veins bringing blood from the lungs back to the heart (pulmonary veins), the ASD cannot be closed with the catheter technique. Then surgery is needed. Even when the defect is discovered in adulthood, patients benefit from closure of large defects.



Problems You May Have

People with small unrepaired or repaired atrial septal defects rarely have any late problems. Those who have palpitations or who faint need to be evaluated by their cardiologist and may need medical therapy. Also, if the ASD is diagnosed late in life, the heart's ability to pump may have been affected, leading to heart failure. This condition can require diuretics, drugs to help the heart pump better and drugs to control blood pressure. If pulmonary hypertension develops (which is uncommon), some people may need extra medications.

Patients who have had a transient ischemic attack (TIA) or a stroke and are found to have a PFO may be treated with aspirin or another blood thinner. If another stroke recurs on medicines, patients may be referred to have a PFO or small ASD closed (see below). There are now special studies in progress to determine whether medications or closure of the PFO is better at preventing stroke. It is important to emphasize that the vast majority of people with small PFOs and ASD's don't have strokes and don't need to have their defects closed.

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Ongoing Care: What will I need in the future?

Patients with a history of ASD should be seen periodically by a cardiologist to look for uncommon problems. For a short time after surgery to close an ASD, a cardiologist must regularly examine you. The long-term outlook is excellent, and usually no medicines and no additional surgery or catheterization are needed.

Medical Follow-up

Sometimes medicines to prevent blood clots and infection are used for a few months after ASD closure. Only rarely will patients need to take medicine after six months. Your cardiologist can monitor you with noninvasive tests if needed. These include electrocardiograms, Holter monitors, exercise stress tests and echocardiograms. They will help show if more procedures, such as a cardiac catheterization, are needed.

Activity Restrictions

Most patients with small, unrepaired atrial septal defects and repaired ASDs do not need any special precautions and may be able to participate in normal activities without increased risk. After recent surgery or catheter closure, your cardiologist may advise some limits on your physical activity for a short time, even when there is no pulmonary hypertension. After successful healing from surgery or catheter closure, no restrictions are usually needed. The exception is that patients who have developed high pressures in the lungs (pulmonary hypertension; see Eisenmenger's syndrome) should refrain from high-level sports.

Endocarditis Prevention

This isn't needed beyond six months after repair either by surgery or device.

Pregnancy

Once the ASD is closed and there's no leftover opening, the risk with pregnancy is very low. The risk from a pregnancy goes up if there's an unrepaired ASD but pregnancy is usually safe unless there is pulmonary hypertension. A large unrepaired ASD may sometimes lead to heart failure during pregnancy but this is usually well controlled with medication *if caught early*. There is a slight risk of stroke during pregnancy, so precautions against blood clots may be recommended.

Will You Need More Surgery?

Once an ASD has been closed, it's unlikely that more surgery will be needed. Rarely, a patient may have a residual hole. Whether it will need to be closed depends on its size.

This content is reviewed regularly. Last updated 09/14/09.