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## Atrial Septal Defect

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### ABSTRACT

An opening or hole (defect) in the wall (septum) that separates the top two chambers of the heart (atria). This defect allows oxygen-rich blood to leak into the oxygen-poor blood chambers in the heart. ASD is a defect in the septum between the heart's two upper chambers. The septum is a wall that separates the heart's left and right sides.

### KEYWORDS

Patent Foramen Ovale (PFO), abnormal heart sounds, pulmonary hypertension, transient ischemic attack (TIA)

### INTRODUCTION

Every child is born with an opening between the upper heart chambers. It's a normal fetal opening 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 the opening is larger than normal and doesn't close after birth. In most children the cause isn't known. Some children can have other heart defects along with ASD.

Normally, the left side of the heart only pumps blood to the body, and the right side of the heart only pumps blood to the lungs. In a child with ASD, blood can travel across the hole from the left upper heart chamber (left atrium) to the right upper chamber (right atrium) and out into the lung arteries. If the ASD is large, the extra blood being pumped into the lung arteries makes the heart and lungs work harder and the lung arteries can become gradually damaged. If the hole is small, it may not cause symptoms or problems. Many healthy adults still have a small leftover opening in the wall between the atria, sometimes called a [Patent Foramen Ovale](#) (PFO).

Children with an ASD often have no symptoms. If the opening is small, it won't cause symptoms because the heart and lungs don't have to work harder. If the opening is large, the only abnormal finding may be a murmur (noise heard with a stethoscope) and other abnormal heart sounds. In children with a large ASD, the main risk is to the blood vessels in the lungs because more blood than normal is being pumped there. Over time, usually many years, this may cause permanent damage to the lung blood vessels. If the opening is small, it doesn't make the heart and lungs work harder. Surgery and other treatments may not be needed. Small ASDs that are discovered in infants often close or narrow on their own. There isn't any medicine that will make the ASD get smaller

or close any faster than it might do naturally. If the ASD is large, it can be closed with open-heart surgery, or by cardiac catheterization using a device inserted into the opening to plug it. Sometimes, if the ASD is 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 can't be closed with the catheter technique. Then surgery is needed. Closing a large ASD by open-heart surgery usually is done in early childhood, even in patients with few symptoms, to prevent complications later. Many defects can be sewn closed without using a patch. 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.

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. 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. All in all, 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.

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