

## Patent Foramen Ovale

Patent foramen ovale is defined as an opening between the right and left atrium. This is caused by failure of atrial septal tissue fusing. Patients may be asymptomatic, experience a paradoxical embolism or stroke. If asymptomatic, no treatment is needed. However, if the patient is at high risk for symptoms, or stroke, then surgery and anticoagulants are recommended.



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### Characteristics

#### Failure of Atrial Septal Fusion

##### Failure A-atrium Scepter-heart Fusion

Following birth, the atrial septum primum will fuse with the septum secundum due to increased left atrial pressure. This fusion results in the closure of the foramen ovale and a complete atrial septum. However, in a patient with patent foramen ovale, this fusion does not take place and leads to a persistent foramen ovale.

#### Atrial Septal Defect (ASD)

##### A-atrium Scepter-heart Defect

Patent Foramen Ovale (PFO) is very similar to Atrial Septal Defect (ASD). Remember that PFO involves a problem with the fusion of the septal tissue, while ASD is caused by a defect in the atrial septal tissue itself. In other words, PFO is a physiological hole that is left open, while ASD is a pathological hole that is a result of missing or defected tissue.

### Clinical features

#### Asymptomatic

##### Thumbs-up

Patent foramen ovale is a common congenital malformation. It is asymptomatic in the majority of patients.

#### Paradoxical Embolism

##### Parrot-Ox Elmo

A thrombus is a blood clot that forms in a vein. If the thrombus breaks off, it can cause an embolism to eventually severely block the flow of blood to an organ. In a paradoxical embolism, a clot can cross from the right to the left side of the heart and then pass into the arteries. This movement occurs because there is a hole in the atrial wall.

#### Stroke

##### Stroke-crew

A clot that reaches the arterial circulation can travel to the brain and lead to an ischemic infarction. The majority of thrombi are formed in the deep veins of the legs. Under normal circumstances, these clots are incapable of entering the arterial circulation. However, in patients with a patent foramen ovale, there is a possible "shortcut" in the atria which allows venous clots to enter the arterial circulation.

## Management

### No Treatment if Asymptomatic

#### No-treats Sign with Thumbs-up

As long as patients with patent foramen ovale remain asymptomatic, there is no indication for treatment.

### Surgery

#### Surgeon

Surgery may be recommended in patients with a patent foramen ovale and new or worsening hypoxemia. Patients at risk for strokes may also be managed operatively.

### Anticoagulation

#### Ant-tie-clogs

Anticoagulants are recommended for patients who have a history of stroke, regardless of whether their patent foramen ovale has been closed by surgery or not.