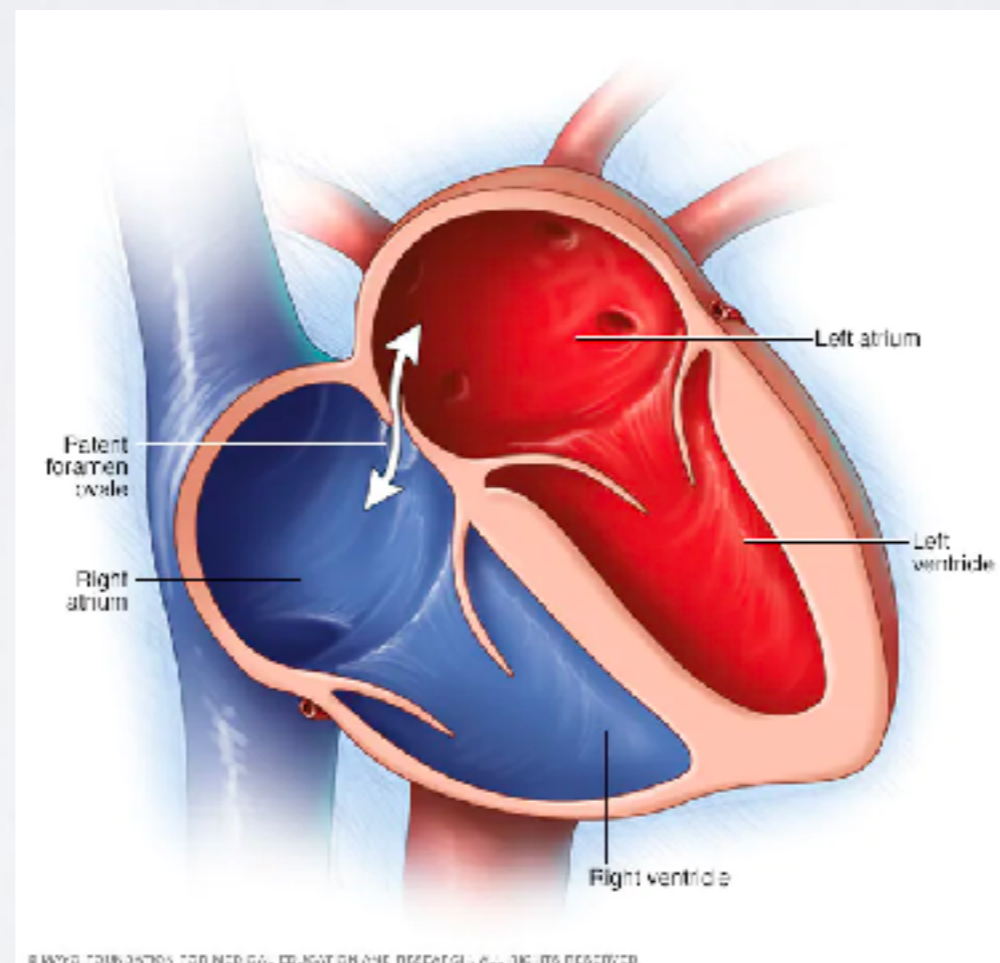


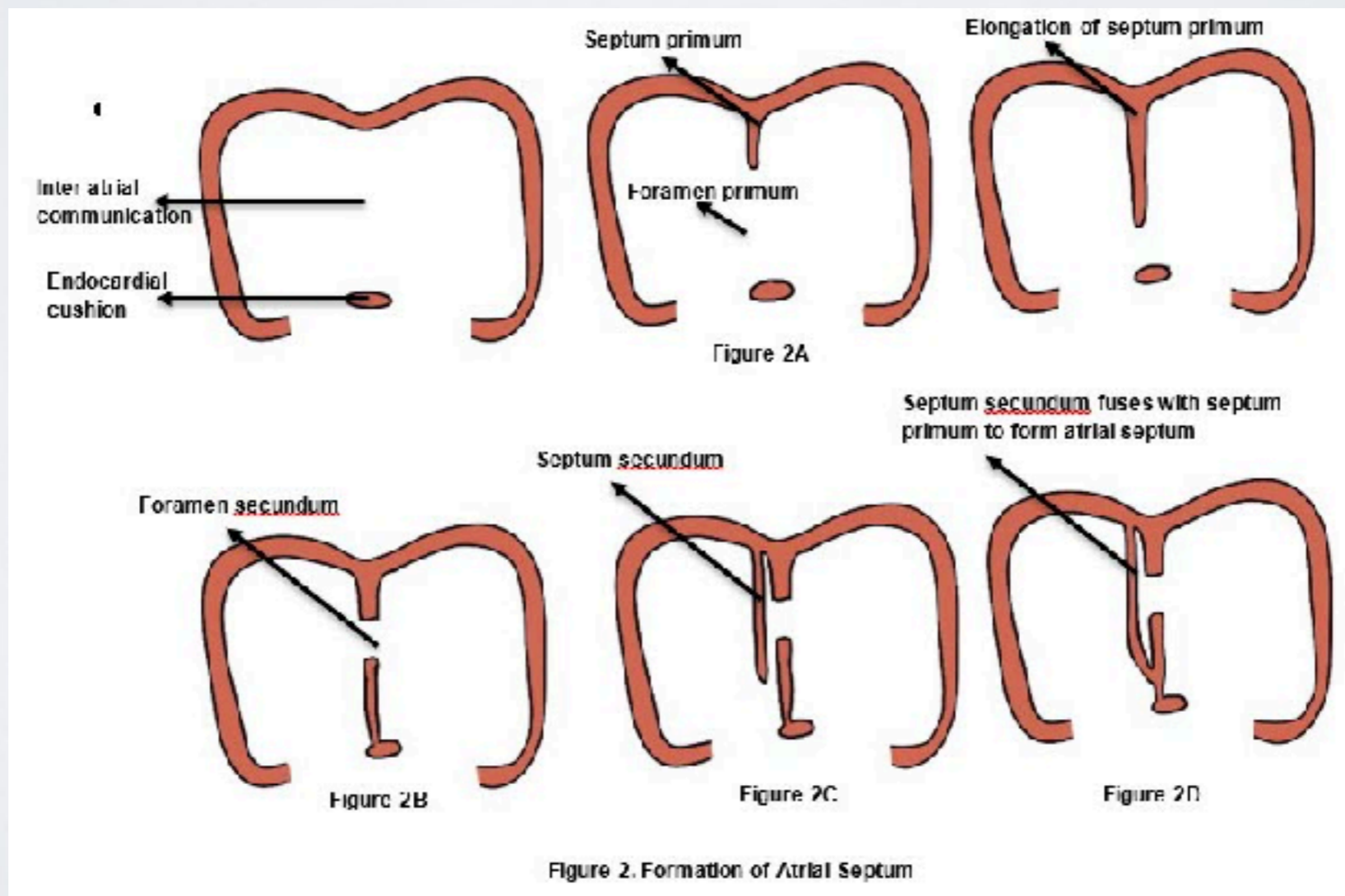
PATENT FORAMEN OVALE

- POOJA MURTHY



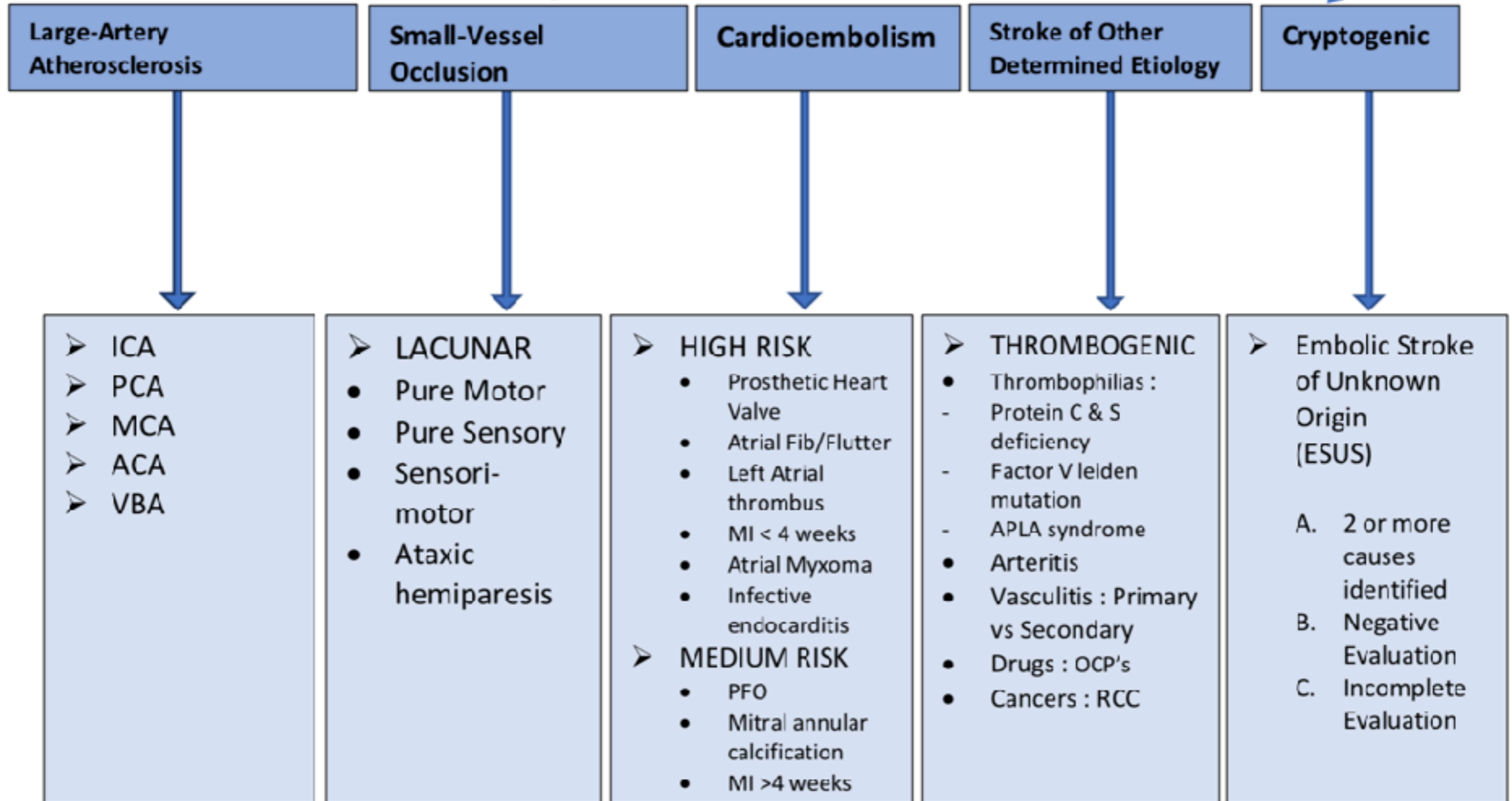
DEFINITION AND EMBRYOLOGY

A patent foramen ovale (PFO) is an embryological remnant found in 27% of adults. It is a **potential right-to-left intracardiac shunt**.



TOAST Classification

Trial of Org 10172 in Acute Stroke Treatment



Sharma N, Chahal M

<https://houstonmedicalclerkship.com/neuro-flow-charts/>

TRIALS

- The Patent Foramen Ovale Closure or Anticoagulants Versus Antiplatelet Therapy to Prevent Stroke Recurrence (**CLOSE**) trial evaluated PFO closure in patients who had a recent cryptogenic stroke attributed to PFO with an associated atrial septal aneurysm or large interatrial shunt.
- Gore **REDUCE** Clinical Study (REDUCE) did not mandate a specific size or atrial septal aneurysm, but the trial showed that patients undergoing PFO closure with Cardioform Septal Occluders (Gore and Associates) plus antiplatelet therapy experienced a 77% lower relative incidence of clinical ischemic stroke and a 49% reduction in the composite of clinical and radiographic new brain infarctions as compared to patients receiving antiplatelet therapy.
- The **RESPECT** trial sought to compare outcomes after PFO closure with the Amplatzer PFO Occluder over medical therapy in patients with cryptogenic stroke and evidence of a PFO.

Risk of Paradoxical Embolism (RoPE) score, which is primarily based on age and vascular risk factors, has been routinely used to evaluate the probability of whether a PFO is the cause of cryptogenic stroke.

Disadvantage :

Because the presence or absence of the PFO is the dependent variable, there was no way to put anatomic and physiologic features of the PFO [like shunt size or presence of an atrial septal aneurysm] into that equation.

TABLE 1. RoPE SCORE CALCULATOR		
Characteristic	Points	Score
No history of hypertension	1	
No history of diabetes	1	
No history of stroke or TIA	1	
Nonsmoker	1	
Cortical infarct on imaging	1	
Age (y)		
18–29	5	
30–39	4	
40–49	3	
50–59	2	
60–69	1	
≥ 70	0	
Total score (sum of individual points)		
Maximum score (a patient < 30 y without vascular risk factors, no history of stroke or TIA, and cortical infarct)		10
Minimum score (a patient ≥ 70 y with vascular risk factors, prior stroke, and no cortical infarct)		0

The **PFO-Associated Stroke Causal Likelihood (PASCAL) Classification System** stratifies patients into three categories of causal relatedness—**unlikely, possible, and probable**—and “incorporates these anatomic and physiologic features, and after doing that, it seems to really improve the performance quite a bit in terms of selecting the patients who can most benefit.”

Features	Casual Relatedness	
	< 7 RoPE Score	≥7 RoPE Score
ANY of: 1. PFO + ASA 2. Large shunt PFO	Possible	Probable
Small shunt PFO without ASA	Unlikely	Possible

MANAGEMENT OF PFO

- About 25% of the general population has a PFO, but it is only worth closing if it is the likely cause of the stroke.
- If no large artery stenosis, no high-risk source of cardioembolism such as atrial fibrillation or major structural cardiac anomaly, and no prothrombotic disorder, neurologists should counsel the patient that the PFO is most likely an incidental finding and probably not the cause of his or her stroke and therefore should not be closed.
- Neurologists may order the echocardiogram that identifies the PFO in a patient with a recent stroke.
- Cardiologists will be best able to determine if closure is technically feasible and which device is most appropriate for the given anatomy.
- In patients who opt to receive medical therapy alone without PFO closure, clinicians may recommend an antiplatelet medication such as aspirin or anticoagulation

In 2020, the AAN released a revised advisory regarding PFO closure. It states “In patients younger than 60 years with a PFO and embolic-appearing infarct and no other mechanism of stroke identified, clinicians may recommend closure following a discussion of potential benefits (absolute recurrent stroke risk reduction of 3.4% at 5 years) and risks (periprocedural complication rate of 3.9% and increased absolute rate of non-periprocedural atrial fibrillation of 0.33% per year)”