

INTRODUCTION

- The foramen ovale is an opening in the atrial septum that allows for oxygenation of the fetal brain and myocardium.¹
- The fossa ovalis typically closes around 6-7 months of age but remains as a patent foramen ovale (PFO) in 20-25% of cases.¹
- Persistent PFO is typically asymptomatic and hemodynamically insignificant but can predispose to paradoxical emboli, cryptogenic stroke, platypnea-orthodeoxia syndrome, migraine headaches.
- Previous studies have associated PFO closure with time of diagnosis, defect size, and other heart defects.²

RESEARCH QUESTION

What is the rate of spontaneous closure of an enlarged fossa at our center? Are the prenatal size of the enlarged fossa ovalis or other patient and maternal factors associated with PFO closure?

MATERIALS & METHODS

Retrospective Review at Pediatric Cardiology Clinic

Patients identified to have had enlarged fossa ovalis on prenatal echo
Determined using percentage over predicted size³ ($PFO (cm) = -0.0017 + 0.0165 * GA$ (in weeks))

Charts pulled if:
At least 1 postnatal echo age 5m-3yrs between Jan 2009- Jul 2020

Exclusion criteria:
Premature
Complex congenital heart disease

Sample size: 70

Postnatal echo(s) examined for closure up to 7 years of age

Stata/SE analysis

RESULTS

PFO spontaneous closure

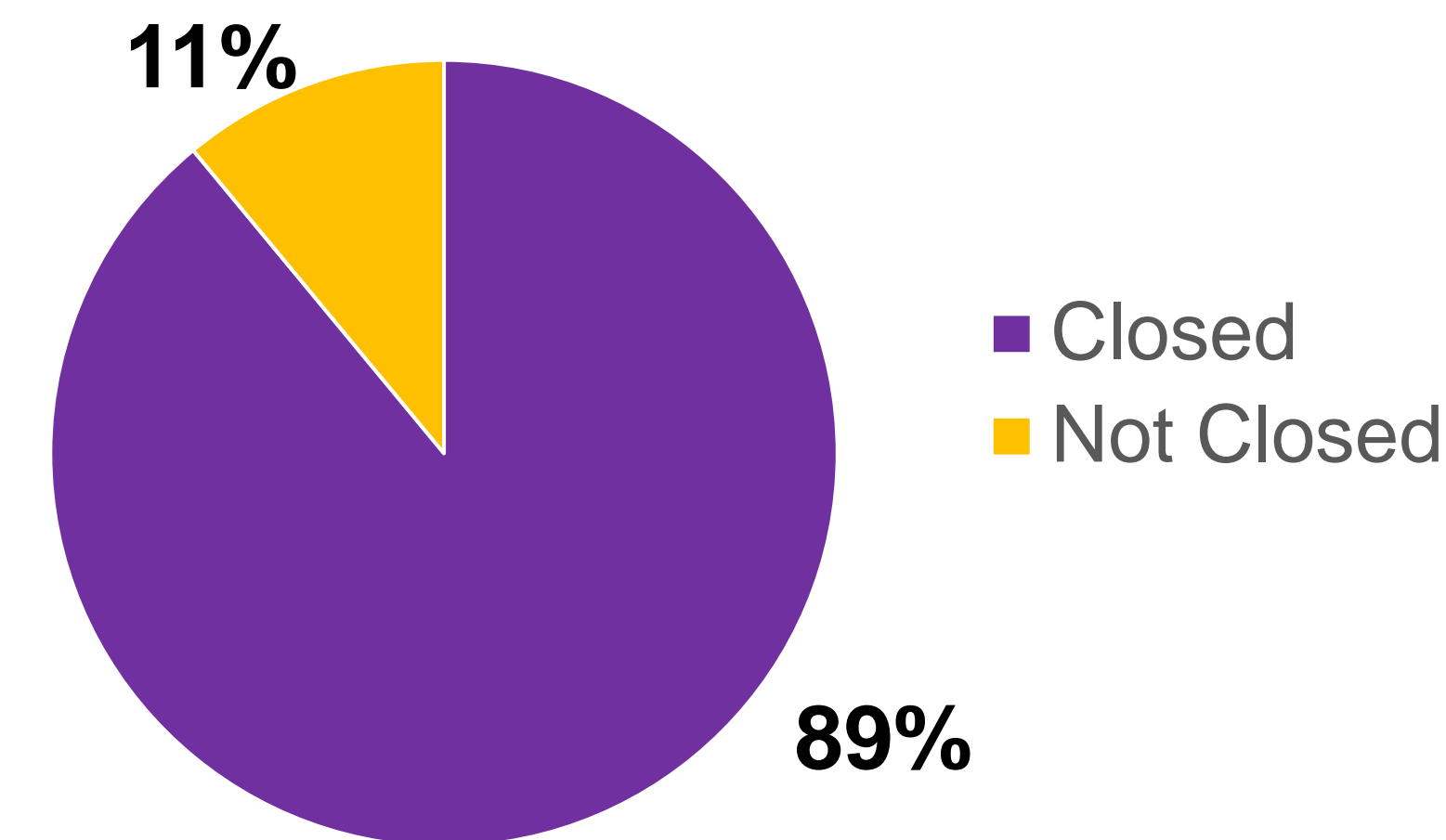


Figure 1. Of 70 patients, 62 experienced spontaneous closure (89%).

Maternal Factors	Fetal factors
Advanced maternal age	Prenatal fossa ovalis size (% of predicted)
T2DM	Associated structural defect
HTN	Respiratory distress at delivery
Obesity	Hyperbilirubinemia
Smoking	
GBS +	
Polyhydramnios	
Twin gestation	
Autoimmune disease	

Table 1. Neither the percent over the predicted fossa ovalis size, maternal history, nor perinatal comorbidities were associated with PFO closure.

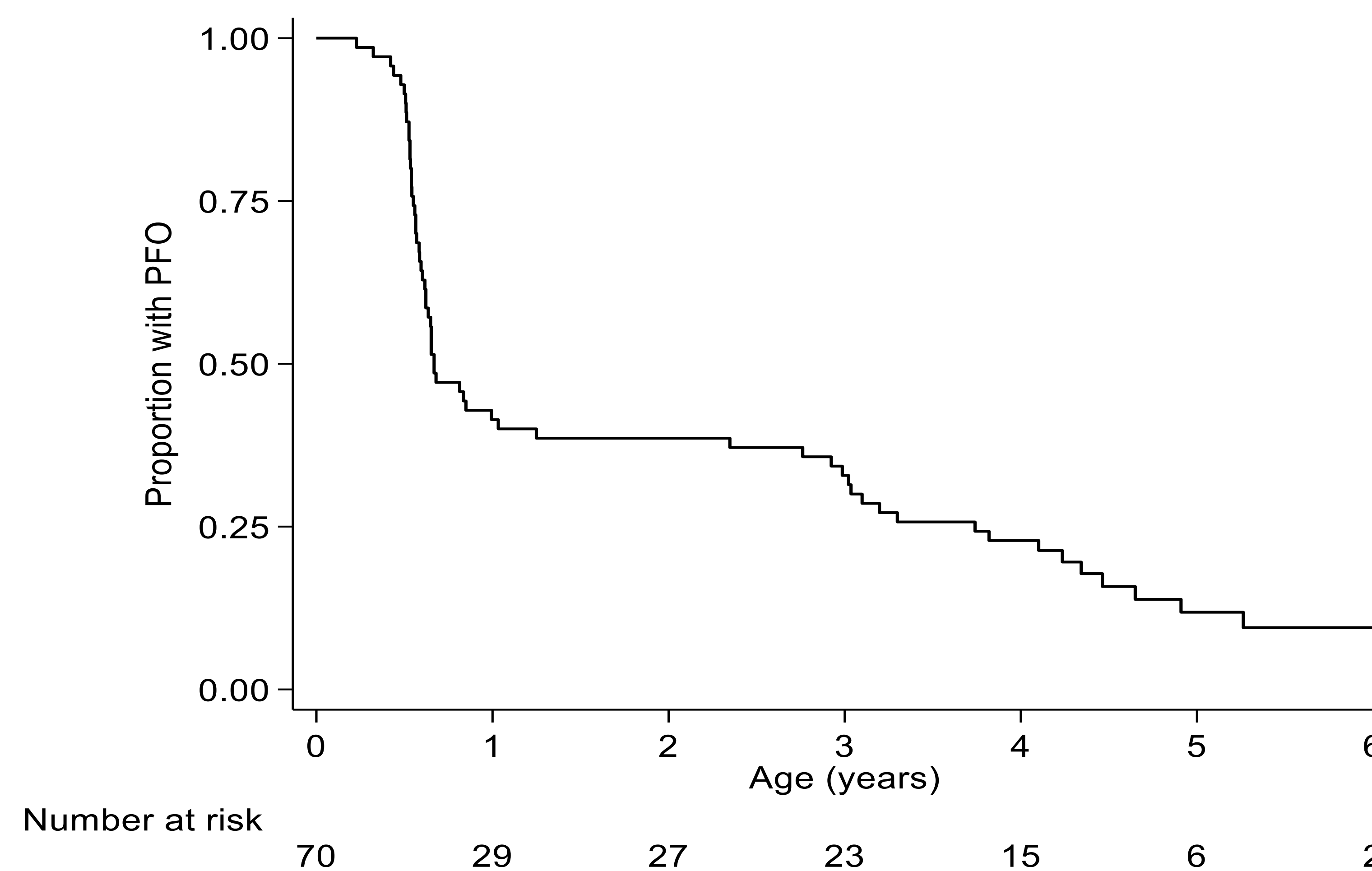


Figure 2. Kaplan- Meir plot of time to spontaneous closure of PFO. Spontaneous PFO closure occurred at a median age of 8 months.

DISCUSSION

- Current literature suggests a PFO spontaneous closure rate of 20-75% typically occurring around 6-7 months, however our study found a rate of 89% with a median closure time of 8 months.^{1, 4}
- Spontaneous closure may occur as late as 5-7 years of age.
- Foramen ovale size in relation to predicted size by GA, was not associated with likelihood of closure.
- No maternal or perinatal factors were associated with PFO closure.
- Limitations:
 - Unable to assess maternal drug or alcohol use during pregnancy
 - Limited data collection due to patients lost to follow up
 - Limited generalizability

CONCLUSION

- Spontaneous closure rates may be higher than documented in prior literature, at almost 90%.
- Spontaneous closure may occur up to 5-7 years of age.
- No maternal or fetal factors including size of the fossa ovalis were associated with spontaneous closure.

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