

Patency of neonatally identified interatrial communications in young children

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Introduction

Atrial septal defects (ASDs) of the secundum type are some of the most common cardiac abnormalities. However, in newborns, ASDs are challenging to distinguish from normal physiological interatrial communications (IACs) within the oval fossa, i.e. patency of the oval foramen (PFO). On this basis, an algorithm for classification of neonatal IACs identified using transthoracic echocardiography was recently developed (Figure 1). In the present study we investigated the patency of neonatally identified IACs categorized by the algorithm as ASDs or PFOs in young children.

Methods

Children, who had an IAC detected during the first month after birth through participation in the Copenhagen Baby Heart Study, were offered a follow-up echocardiogram at 4-5 years of age. Children with other cardiac abnormalities, born premature, with low birth weight, from a multiple pregnancy, or born to mothers with either pregestational or gestational diabetes or hypertensive disorders of pregnancy, were excluded from the study. The neonatally identified IACs were categorized as either PFO or ASD according to the algorithm. The follow-up examinations were performed between January 12th and August 19th, 2022. The follow-up echocardiograms were assessed for patency of an IAC by a single operator blinded to the neonatal IAC subtype.

Results

Currently, 103 children (median age 4.5 [interquartile range 4.4-4.7] years, 63% female) have been examined. Neonatally, the IACs were classified as ASDs in 45 newborns and PFOs in 58 newborns. The follow-up echocardiogram showed patency of the IAC in 17 of the children with an ASD (38%) and in 11 of the children with PFO (19%), ($p=0.033$). We aim to examine a total of 1,200 children.

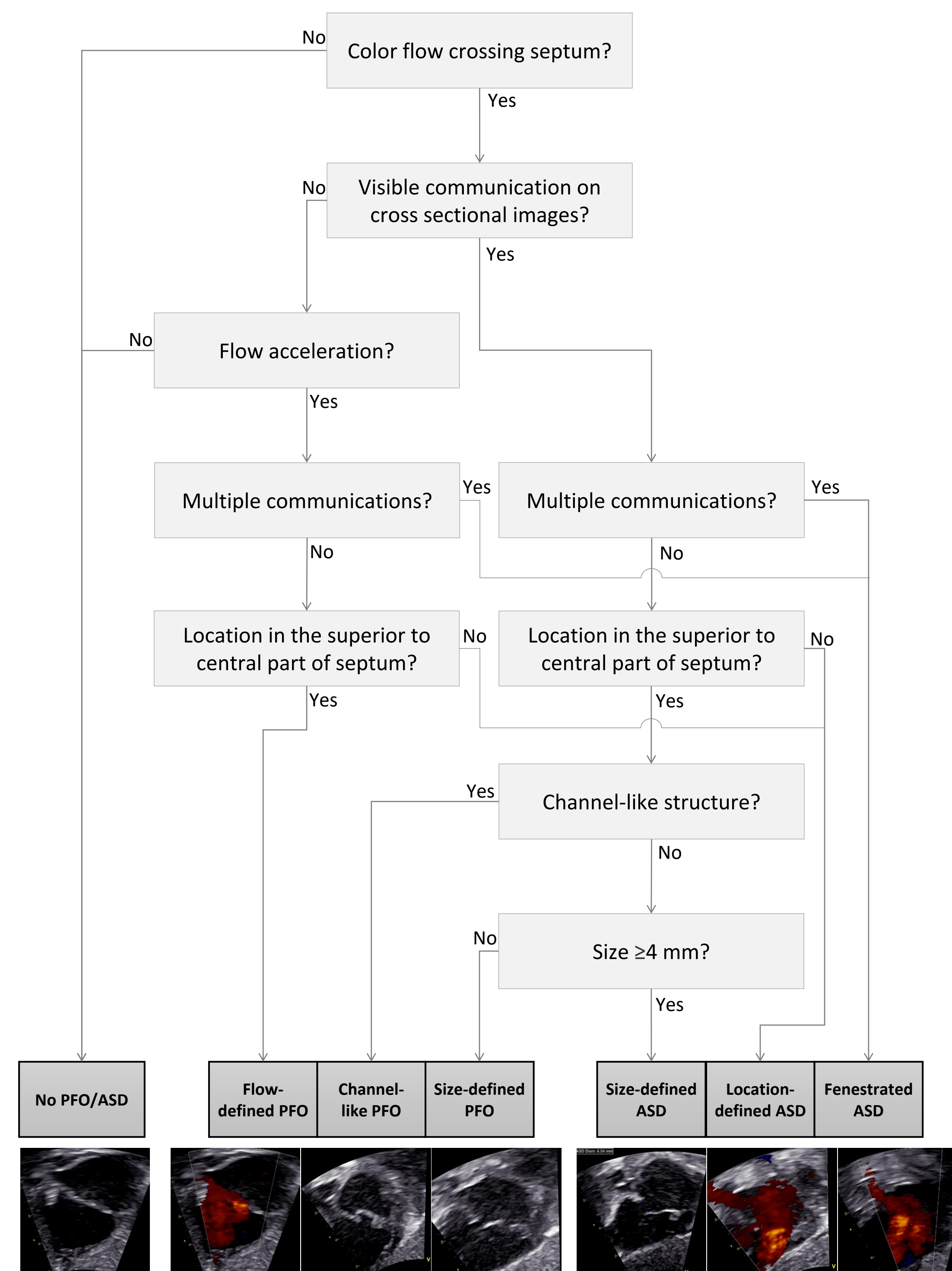


Figure 1: The new diagnostic algorithm for classification of interatrial communications in newborns. Here displayed with image examples.

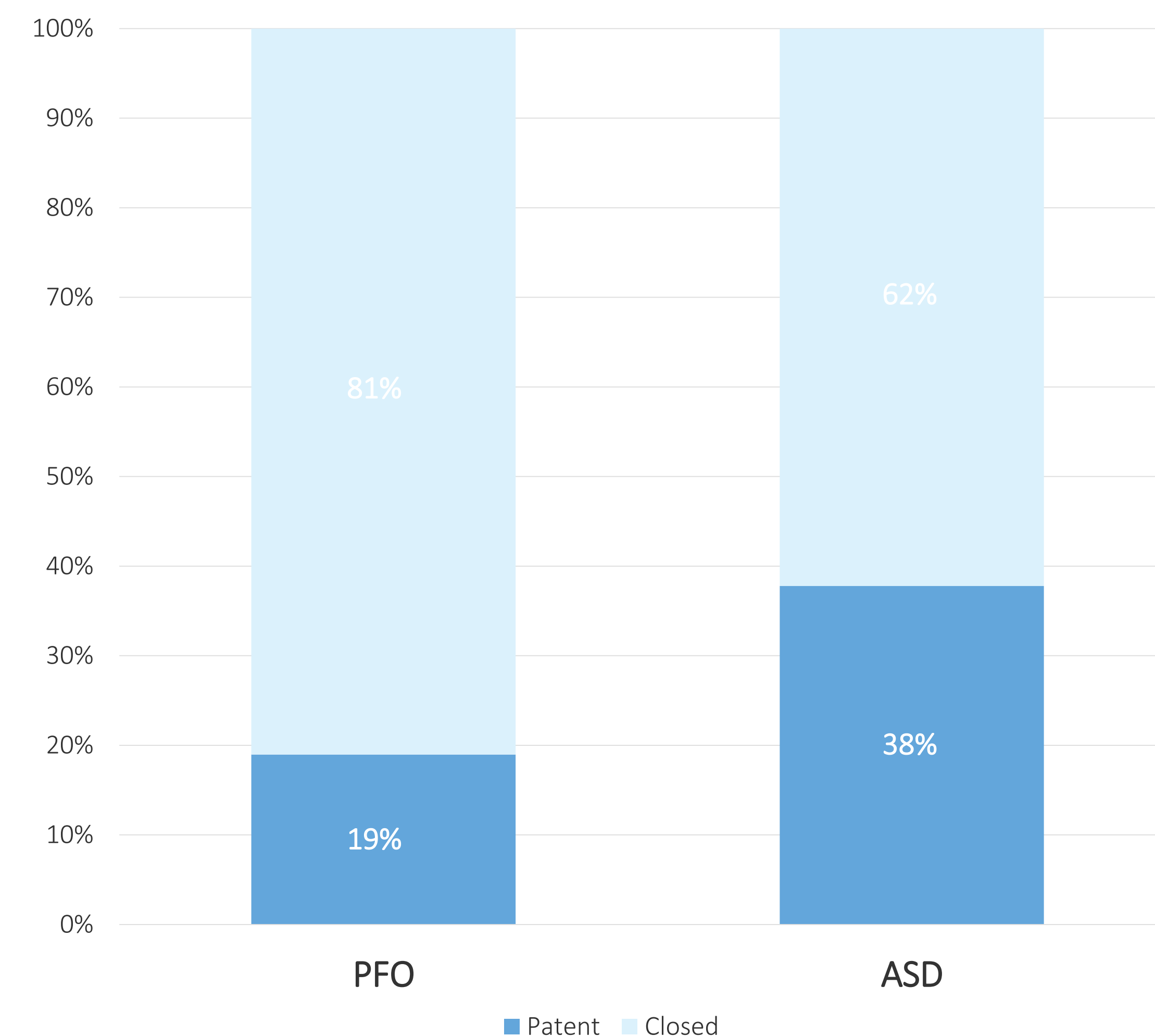


Figure 2: The prevalence of patency of neonatal PFOs and ASDs in young children.

Conclusion

These preliminary findings showed significantly higher patency of neonatal ASDs versus neonatal PFOs in children examined at 4-5 years of age. This finding supports the potential value of the novel diagnostic algorithm.

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