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SCAI: Transcatheter Occlusion of Patent Ductus Arteriosus in Premature Infants

The Society for Cardiovascular Angiography & Interventions (SCAI) has released a new position statement offering best-practice guidance on transcatheter occlusion of patent ductus arteriosus (tcPDA) in premature infants. Published in *JSCAI*, the document titled *"SCAI Position Statement on Transcatheter Occlusion of Patent Ductus Arteriosus in Premature Infants"* outlines a practical framework across four essential domains:

- **Patient Selection**: Criteria based on respiratory status, echocardiographic findings, and systemic perfusion indicators, with an emphasis on shared decision-making among neonatologists, paediatric cardiologists, and families.
- **Technical and Procedural Considerations**: Guidance on device selection, imaging strategies, anaesthesia, and complication mitigation tailored to the needs of fragile preterm infants.
- **Operator Training**: Suggested minimum procedural volumes and experience levels for both trainees and practicing interventional cardiologists.
- **Institutional Requirements**: Recommendations for infrastructure, including neonatal-specific ventilation and thermoregulation, advanced imaging, and access to paediatric cardiac surgical support.

As per Brent M. Gordon, MD, FSCAI, chair of the writing committee and Professor of Pediatrics at Rady Children's Hospital in San Diego, the position statement is a collaborative effort between neonatology, anaesthesia, and interventional cardiology to deliver adaptable, comprehensive guidance on tcPDA. While pharmacologic closure is successful in approximately two-thirds of premature infants, the remainder, and those needing urgent closure, require procedural intervention. The goal of this statement is to equip care teams to perform these procedures as safely and effectively as possible.

Although transcatheter PDA closure has long been a standard in congenital cardiology, extremely low birth weight infants were historically excluded due to access limitations and lack of appropriately sized devices. That changed in 2019 when the FDA approved the first PDA occlusion device for infants as small as 700 grams. Since then, tcPDA has gained widespread adoption and is now often preferred over surgical ligation in many centres, with promising early outcomes.

The position statement underscores that sustaining and expanding these outcomes will depend on rigorous, procedure-specific best practices. Detailed recommendations cover patient optimisation and pre-procedural planning, as well as risk mitigation strategies for complications such as tricuspid valve injury, cardiac perforation, and late-onset vascular obstruction. To improve early detection and management, the authors recommend echocardiographic follow-up at 24 hours, one week, one month, three months, and six months post-procedure.

Operator competency is another focal point, with proposed benchmarks for procedural experience to ensure physicians are well-prepared for the nuances of tcPDA. The statement also highlights the importance of regional referral systems and structured neonatal transport protocols, ensuring that infants receive care at centres with appropriate expertise and resources.

Technological innovation has revolutionised how premature infants with PDA are treated but technology alone isn't enough. These interventions demand detailed planning, expert knowledge of neonatal physiology, and seamless coordination across the care team. The recommendations focus not only on how to perform the procedure, but on preparing the patient, anticipating challenges, and ensuring appropriate follow-up to achieve the best possible long-term outcomes.

The writing committee calls for continued quality improvement efforts and further research to refine patient selection criteria, enhance procedural techniques, and inform future device innovation.

Source: Society for Cardiovascular Angiography & Interventions

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