The Coanda Effect and Preferential Right Atrial Streaming

To the Editor:

I read with interest the piece by Zanchetta et al (August 2005) regarding right-to-left shunting through a patent foramen ovale (PFO). Although the authors proposed a hypothesis for inferior caval-to-PFO streaming, they did not propose or address the mechanism for the well-described preferred superior vena caval (SVC) to right atrioventricular valve blood flow.

This dual preferential streaming within the right atrium was initially observed in the 1930s and is not only significant in right-to-left shunting but also performs a fundamental role in fetal circulation and development. Both streams are mutually important as disordered blood flow from one stream could interfere with the blood route of the other; for example, misdirected blood from the SVC arriving at the inferior vena cava (IVC) or the IVC-PFO tract would interfere and hinder the blood flow of the right-to-left shunt.

The blood stream from the SVC has been imaged by magnetic resonance velocity mapping and demonstrates that the stream flows anteriorly over the convex muscular internal surface of the anterior right atrial wall directed to the right atrioventricular valve. Such a stream of flow was first noted in 1910 by Romanian aerodynamics visionary Henri Marie Coanda (1886 to 1972), for whom the effect is eponymously named, stating that a fluid stream has a natural tendency to follow the shape of a body as it flows past it. Without the characteristic morphology of the right atrial muscular anterior wall therefore, IVC-to-PFO flow could be interrupted by an SVC blood stream, opposing the right-to-left shunt and resulting in disordered and suboptimal fetal oxygenation. The Coanda effect therefore contributes to the unique mechanism by which the right atrium keeps these two streams separate.

Impact of Positron Emission Tomography on Clinical Decision Making

To the Editor:

We read with interest the article by Sachs and Bilfinger (August 2005) on the impact of positron emission tomography (PET) on clinical decision making in an academic lung cancer center and wish to comment regarding the consistency of the data and also on the generalizability of the findings. In calculating the false-positive rate of PET for the primary site, the authors...