Catheterization and Cardiovascular Interventions 63:87–88 (2004)

Editorial Comment

What Will Be Left for the Surgeons?

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For many years, pediatric cardiologists, interventional radiologists, and others have dreamed of and developed methods of treating various forms of congenital heart disease in a nonsurgical manner [1,2]. The rapid evolution of technology in the field over the last 5–10 years has resulted in successful transcatheter treatment of a wide range of intracardiac shunts, with excellent initial and medium-term results and low complication rates [3–9]. Even unusual forms of congenital and/or acquired defects have proven to be amenable to transcatheter intervention [10,11].

Some 40 years ago, fistulous connections from the pulmonary artery to the left atrium were described [12]. Although symptoms can occur in infancy, requiring early intervention, this is not the typical presentation. In past years, the treatment of this lesion has been surgical and was associated with a high incidence of complications [13]. In 2000, Slack et al. [14] described the first transcatheter closure of a right pulmonary artery to left atrial fistula using a Gianturco coil placed into the fistulous connection via the pulmonary artery. In this issue, Francis et al. [15] describe a slightly different technique in which a right pulmonary artery to left atrial fistula was closed using an Amplatzer duct occluder delivered via the left atrium. In this patient, an associated atrial septal defect allowed easy access to the left atrium. The duct occluder could then be positioned such that the flange or retention disk would be left in the pulmonary artery. The differential pressure between the pulmonary artery and left atrium maintained the position of the occluder. In this case, then, the body of the occluder is left protruding into the left atrium.

This case differs from that described by Slack et al. [14] in that the present patient was older (12 years vs. infancy) and was less symptomatic. They are similar in that they both showed signs of respiratory compromise and systemic arterial desaturation. Echocardiography demonstrated the fistula in the newborn but failed to show the cause of the symptoms in the older child, possibly due to the difference in ability to visualize this area in older patients using echocardiography.

The ideas behind these catheter-based methods and the remarkable technological developments have opened an exciting new frontier for the nonsurgical treatment of patients with a wide array of congenital and acquired cardiac malformations. Although the short- and medium-term results have been nothing short of spectacular, a word of caution seems appropriate. Placement of some of these devices requires a foreign body to be exposed to the left heart circulation. Although we believe that endothelialization will minimize or eliminate the risk of a subsequent untoward event, it remains to be seen if this is the case. It is certainly encouraging that the patient reported herein has done well for a year following occlusion of the fistula. It is, however, incumbent on all of us who utilize these techniques to follow these patients for the foreseeable future and report any untoward events that might be related to treatment utilizing a device.

Undoubtedly, new techniques in the years to come will provide even more exciting treatment modalities for these patients. We have already eliminated surgery as the treatment of choice for some forms of cardiac malformations, such as patent ductus arteriosus and secundum atrial septal defect. Surgery for ventricular septal defects may not be far behind. As treatment evolves for even more complex lesions, the number of patients requiring surgical intervention will slowly decrease, and this will have an impact on surgical experience. As the years go by, one wonders what will be left for the surgeons?

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DOI 10.1002/ccd.20125
Published online in Wiley InterScience (www.interscience.wiley.com).

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