Percutaneous aortic valve replacement

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The concept of cardiologists implanting percutaneous aortic valves in an angiography suite evokes multiple reactions from cardiac surgeons. Rarely are these reactions particularly favorable. The opinions of cardiac surgeons regarding the development and the potential abuse of these percutaneous technologies sound familiar because similar opinions were expressed in response to the development of percutaneous coronary technologies a quarter of a century ago.

The concerns regarding percutaneous aortic valves include “we have a great operation now,” “few patients are inoperable,” “the percutaneous devices have problems,” “it will be dangerous because these devices will be misused,” and “patients will not get true informed consent.” All these arguments and concerns have some truth to them, but none will define the future of percutaneous aortic valve technologies, just as similar concerns have failed to define the anatomic treatment of coronary artery disease.

Percutaneous aortic valve devices are here to stay. First, although conventional aortic valve replacement is a safe operation in experienced hands, it is not perfectly safe and there are patients with combinations of problems including multiple previous operations, radiation heart disease, liver failure, kidney failure, and diffuse atherosclerosis for whom the risk of conventional aortic valve replacement is more than trivial. Second, today’s percutaneous devices are primitive, but progress is likely to be rapid. Percutaneous coronary interventions have been, and still are, limited by fundamental biologic processes, including the cellular and tissue response to injury (restenosis) and the complexities of the coagulation system. The engineering aspects of percutaneous coronary interventions have been successful. So far no such fundamental problems appear to limit percutaneous aortic valve technologies any more than they limit conventional aortic valve technologies. Improving the percutaneous aortic valve devices appears to be pretty much a matter of engineering, making their deficiencies more amenable to solution than the problems of restenosis have been.

We should have learned from the coronary experience that many patients have a strong attraction to percutaneous rather than open surgical procedures, and unless the procedure-related risks of percutaneous procedures are substantially greater than the procedure-related risks of open procedures, many patients will select the less-invasive strategy even if the long-term outcomes are inferior and even if they receive accurate informed consent.

A further lesson we should have learned from the coronary experience is that expressing concern about technologies that we are not capable of using is relatively ineffective. For cardiac surgeons to have an impact on the use of percutaneous aortic valve technology and to be able to assure ourselves that patients have received informed consent and that these devices are not misused, we must be able to use these technologies ourselves. In this setting, cardiac surgeons will be able to render strong opinions with a diminished procedure-related bias.

Catheter-based valve procedures are surgery, just a different kind of surgery. For cardiac surgeons to gain expertise with multiple types of valve procedures will be a tortuous journey, but the journey must start today.

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