



Structural Heart Disease: *Sparing the Scalpel*

By Narendra Singh, MD

For the world of cardiology, September 16, 1977 is historic.

Dr. Andreas Gruentzig performed the first human balloon angioplasty in Zurich, Switzerland. In 1980, Dr. Gruentzig was recruited to Emory University and trained a generation of cardiologists from around the world known as “interventionalists”. Sadly, in October of 1985, Dr. Gruentzig and his wife died in a plane he was piloting when it crashed in Monroe County. His pioneering legacy, however, is phenomenal. Millions of patients around the world have had successful balloon and stenting procedures, saving them the need for open heart bypass surgery. With the addition of lasers, rotobladers, atherectomy tools as well as great advancements in catheter delivery systems and drug therapy, there are very few blockages that require a cardiovascular surgeon to get involved in. Patients who have left main disease or are diabetic with multiple blockages still do better with surgery. It is important to understand that neither surgery or PCI (percutaneous coronary intervention) are a cure. One uses grafts to go around tight blockages while the other pushes the plaque to the side. Only a combination of diet, exercise and evidence-based medications will actually reverse the disease process.

In the past, individuals born with a hole

in the heart required open heart surgery to close the gap. Today, a clam shell-like device (Amplatzer) can be delivered through catheters in the groin and close the hole without the need to cut open the chest.

The mitral valve can get damaged overtime. For mitral valves that become tight a balloon procedure can open up the valve (valvuloplasty). If the mitral valve starts to leak (backflow into the upper chamber), we can deliver a clip (MITRA clip) that tightens up the valve and reduces the amount of leakage. Other crimping devices are also being tested to simplify this procedure.

One of the most serious cardiac conditions is called aortic stenosis. This is calcification or scarring of the aortic valve that connects the main pumping chamber of the heart to the ascending aorta. It often occurs in elderly patients who are frail and normally could not undergo a full operation. It has been in many ways a death sentence.

Today, a procedure called TAVI (transcatheter aortic valve implantation), can deliver a new tissue valve through the groin. Patients can sometimes even return home the next day! The procedure does require a detailed assessment by the “heart team” (that includes surgeons, interventionalists and noninvasive cardiologists). The whole heart is first imaged with a catheter,

CT scan and 3D echocardiograms. The patient is assessed for frailty, social support, general health and psychological testing. Valve technology is steadily improving and now even younger patients are being considered for this procedure. We are fortunate in Atlanta to have multiple high volume centers capable of doing TAVI.

Currently, leaky aortic valves and bicuspid aortic valves still require surgery, but we hope this may change in the future. Many congenital heart diseases in children are now being treated by non-surgical means. Devices such as lung sensors for heart failure patients and leadless pacemakers can now be delivered through a catheter in the groin or arm.

Cardiovascular medicine is a rapidly evolving field and we are grateful for the next generation of pioneering physicians like Dr. Gruentzig who will keep us ever further from needing the scalpel to repair our hearts. ■

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