

The Catholic Doctor Is In: Transcatheter Aortic Valve Replacement

In 2002 a team of physicians in France performed the first Transcatheter Aortic Valve Replacement (TAVR) in a human. When I heard about it I didn't know any of the details but I do remember what I was thinking: "How in the world did they do that? And, there is no way this will ever become mainstream!" I was wrong. In 2005 the first TAVR was performed here in the USA under an investigational protocol. In 2008 there were 19,578 done, and by 2013 there were over 33,000 done. The numbers continue to rise.

A group of my partners have formed a multidisciplinary team that now has successfully done over 40 at my hospital. I am pleased and amazed. So, why am I so excited about the procedure? Most of these procedures are offered to elderly patients with severe aortic valve stenosis who have less than 1-2 years to live. These people are either too old, too sick, or too high risk to operate on. That has all changed with the evolution of TAVR.

The aortic valve opens as the left ventricle pumps blood out of the heart to the aorta and then through multiple arteries to the rest of the body. As some people age the aortic valve leaflets slowly get thick and then calcify until they become so stiff that the valve can't open properly anymore. Eventually the valve becomes narrowed or stenotic. When it approaches severe stenosis typical symptoms are shortness of breath or chest discomfort (tightness or pressure) with exertion. As the valve worsens to a more critical stenosis, congestive heart failure or syncope (passing out spells) may ensue usually signaling less than one year to live. Just a few years ago we would have to tell an 86 year old with significant comorbidities (multiple medical problems) that there was nothing we could do because we believed they would not recover from standard open heart surgery. Now we can offer them a TAVR.

The procedure needs a team approach that usually includes several cardiologists, a thoracic surgeon, anesthesiologist, and ancillary personnel. A small incision is made over the femoral artery (leg artery near groin) which is used to insert a sheath (a large straw like tube) and through the sheath the new valve in collapsed form, is advanced up the aorta to the severely narrowed aortic valve. Then it is carefully positioned in the native valve and opened (usually by balloon) crushing the old calcified valve and replacing it with a new valve that now can open widely with each heartbeat. Usually one or two nights in the hospital is all that is needed.

There are potential complications. The most dreaded one is stroke at a rate of 2%-5%. Other complications include damage to the leg artery, heart block requiring a pacemaker, and occasionally leakage around the valve. The operative mortality for a TAVR is about 1-3%, but by replacing the valve with standard open chest surgery in these high risk

patients the death rate would be around 20-50% or even higher in the sickest patients. The complication rates should continue to fall as the operative team gains more experience and medical device companies make better valves with easier deployment. We are currently being restricted by the FDA to do TAVR's only in patients who are turned down for standard open heart surgery, but I predict within a few years younger and healthier patients will be given this option and it may become the procedure of choice.

My favorite patient story involving a TAVR in an 89 year old veteran that I had taken care of for a few years with aortic valve stenosis. He began to have concerning symptoms and testing confirmed his aortic valve stenosis had reached a critical level. He subsequently had a TAVR done without any complications and actually lobbied to go home the same day. We made him stay overnight pretty much on principle. He promptly returned to his active lifestyle. About one year later he came in for a routine checkup and tells me he celebrated his 90th birthday by jumping out of a plane and parachuting safely to earth. Now there's a man that is living life!

Life is such a precious gift from God. I believe that God wants us to continue to be as active and engaged as our minds and bodies will let us as we get older. To those that are elderly but still capable, retirement should not mean withdrawal from life. God wants us to continue to contribute to his Kingdom. Do you have unfinished business here on earth? Do you have a family that is still depending on you for strength and guidance? Do you have a grandson or granddaughter that needs mentoring? Do you have a spiritual leadership role at your church? Maybe you are needed on this earth to be a prayer warrior!

God has blessed our medical community with special talent and technology to help prolong life in certain people. If you develop severe aortic valve stenosis and believe that God is still calling you to continue to "fight the good fight" here on earth, then maybe a lifesaving procedure like a TAVR is an option for you so you can "finish the race" (2Timothy 7).

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