What Happens during the Transcatheter Aortic Valve Replacement Procedure

The TAVR procedure is performed in the hospital, under general anesthesia (you will be in a deep sleep). A team of doctors works closely together to perform it. They will use fluoroscopy (type of x-ray) and echo-cardiography (type of ultrasound) to see your aortic valve. The average time required to perform the procedure is 4 to 5 hours.

1. You will be placed under general anesthesia (you will be in a deep sleep).

2. A cut will be made in your leg, where your doctor will put in a sheath (a short hollow tube) that is slightly larger than the width of a pencil.

3. Your doctor will take a small balloon and put it through the sheath into your blood vessel to reach your aortic valve. The balloon will be inflated with fluid to open your narrowed valve, deflated, and then removed.

Sheath is placed in femoral artery (large artery in your upper leg)
The TAVR procedure is performed by a team of doctors and health technicians with expertise in different medical areas and different kinds of high-tech equipment. In the operating room, this team is led by your heart surgeon working closely with the “interventional” cardiologist who is a specialist in procedures performed in the cardiovascular (heart, veins, and arteries) system—procedures that are called “minimally invasive” because they do not require an instrument to enter the body or large incisions.

4. The Edwards SAPIEN transcatheter heart valve will be placed on the delivery system (long tube with a small balloon on the end), and compressed on the balloon (using a crimper) to make it small enough to fit through the sheath. It will be about the width of a pencil.

5. The delivery system carrying the valve will be placed through the sheath and pushed up to your aortic valve, guided by a type of X-ray.

6. The balloon of the delivery system carrying the valve will be inflated with fluid, expanding this new valve within your diseased valve. The new valve will push the leaflets of your diseased valve aside. The frame of the new valve is very strong and it will use the leaflets of your diseased valve to anchor securely in place. Next, the balloon will be deflated.

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The recovery time averages from one to two weeks. As of February 2012, more than 25,000 patients have been treated with the TAVR procedure. This procedure heralds a new era in heart surgery, where valve surgery can be performed without the surgery. The Edwards SAPIEN valve represents a breathtaking advance in the treatment aortic stenosis (narrowing of the aortic valve opening). It is the first artificial aortic heart valve placed without open-heart surgery.

7. Your doctor will make sure that your new valve is working properly before removing the delivery system and closing the cut in your leg. If your new valve is not working properly, your doctor may need to do something else which may include open-heart surgery or other additional surgery.

[Illustrations Courtesy of Edwards Lifesciences]

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