仁安醫院
UNION HOSPITAL

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Procedure Information

Transcatheter Aortic Valve Implantation (TAVI)

Introduction

Aortic stenosis (AS) is a common heart valve problem associated with heart failure and death. Surgical valve repair or replacement is recommended if patients with AS begin to develop symptoms especially shortness of breath. Generally, open heart surgery is the clinically proven treatment option to relieve symptoms and prolong life. When the risk of undergoing open heart surgery is too high due to medical or anatomical reasons and considered inoperable, another treatment option will be the Transcatheter Aortic Valve Implantation (TAVI). This is a new, minimally invasive procedure, in which a bioprosthetic valve is inserted through a catheter and implanted within the diseased native aortic valve. Compared with open heart surgery, the complications and mortality rate of TAVI is relatively low and is even suitable for elderly patients. TAVI could be a potential alternative to medical therapy for patients with severe AS who are not candidates for open heart surgery.

Preparation before the procedure

The doctor will review the medical record, history and current medications to confirm patient is suitable for TAVI.

- Echocardiogram (TTE) will be performed to assess and confirm the anatomy and functional significance of the aortic stenosis, to check for feasibility of TAVI.
- Before the procedure, electrocardiogram, chest X-ray, blood tests, CT scan or coronary angiography will be arranged, to confirm the suitability to undergo the procedure
- Doctor will prescribe two anti-platelet medications to prevent blood clot formation. On the date of procedure, antibiotic will be given to decrease chance of infection.
- Anti-coagulant or Metformin (for diabetes) may have to be stopped several days before the procedure. Drugs such as steroid may be prescribed as prophylaxis for allergy.
- Fasting of 4-6 hours is required prior to the procedure. An intravenous drip may be set up. Shaving may be required over the puncture sites.
- For female patient, please provide the last menstrual period (LMP) and avoid pregnancy before the procedure as this procedure involves exposure to radiation.

Procedures

Placement of the bioprosthetic valve will be performed by cardiologists (and in some occasions, together with cardiothoracic surgeons) experienced in intervention for structural heart diseases. This TAVI will be performed in a well-equipped cardiac catheterization laboratory or hybrid operation theatre guided by fluoroscopy with or without transesophageal echocardiography (TEE).

- This procedure is performed under sterile conditions with general anaesthesia or controlled Propofol sedation monitored by an anaesthetist.
- Heart rate and rhythm, blood oxygen level and blood pressure will be monitored throughout procedure.
- The delivery catheter is introduced into the femoral artery and threaded up through the vessels into the heart. Vessels in both left and right femoral sites will be used. In some occasions,

when femoral access is deemed unsuitable for this procedure, alternative approaches involving mini-thoracotomy or surgical cut-down would be adopted.

- TEE may be performed during the procedure if necessary. This test uses sound waves to take a closer look at the inside structures of the heart. To perform the test, a thin flexible tube with a special tip needs to be swallowed. This tube sits in the esophagus (the tube that connects the mouth to the stomach). The special tip of the tube sends out sound waves (ultrasound) that echo within the chest wall. The esophagus is located behind the heart so these echoes are picked up and create a picture of the heart that is displayed on a video monitor. The pictures will allow the doctor to take a closer look at the valve.
- After a good look at the valve, a balloon valvuloplasty will be performed. Balloon valvuloplasty is a procedure used to widen a stiff or narrowed heart valve. A wire and catheter (a thin tube) are guided by x-rays through the heart and positioned through the diseased heart valve. A balloon is placed over the wire and inflated, enlarging the opening through the diseased valve allowing the bioprosthetic valve to be placed.
- The femoral arterial access site would be closed by designed vascular closure devices after the procedure.
- After device implantation, patients would be prescribed with double anti-platelets (Aspirin and Clopidogrel) for initial 3-months and then Aspirin alone indefinitely. Echocardiography would be performed at 3-6 months after the procedure to assess the severity of aortic valve narrowing.
- A temporary pacing wire would be inserted through neck or groin veins during the procedure to support the operation. Permanent pacemaker may be required if patient develop severe bradycardia after the procedure.

Potential benefits

The possible benefits are the bioprosthetic valve may reduce the severity of AS and improve symptoms and longevity.

Possible risks or complications

There is a small risk about 0.5-1% of respiratory depression, low blood pressure or heart rate associated with general anaesthesia or propofol use. The sedative process will be closed monitored by an anaesthetist to ensure safety. There is a small risk regarding TEE (less than 0.5% esophageal rupture or aspiration) but the test would be necessary in most patients to have clear look of aortic valve, to guide the operation and to monitor development of severe complications. The procedure is associated with considerable morbidities (about 15% vascular complications or bradycardia and 5% major stroke) and mortality (about 10% death rate at 30-day follow up). The procedure may still be worthwhile because more than half of the symptomatic patients with severe AS will die within two years if no treatment is given.

After the Procedure

- After the procedure, catheters will be removed. The wound site will be compressed to stop bleeding. You will be transferred to ICU immediately after the procedure for close monitoring.
- Bed rest may be necessary for 4 hours. In particular, do not move or bend the affected limb. Apply pressure on the wound with hand while coughing or sneezing.
- Inform the nurse if having any discomfort in particularly chest discomfort or blood oozing from the wound site.
- Once diet is resumed, please take more fluid to help eliminate contrast by passing urine.
- Please follow instruction for the use of medications.

Follow Up

- Usually can be discharged 5-7 days after the procedure.
- The wound will be inspected and covered with light dressing. Please keep the wound site clean and change dressing if wet. In general, showers are allowed after 2 days.
- Please avoid vigorous activities (household or exercise) in the first 3 days after the procedure. Bruising around the wound site is common and usually subsides 2-3 weeks later. Any signs of infection are noted, such as increase in swelling or pain over the wound, please come back to the hospital or visit a nearby Accident and Emergency Department immediately.
- Usually the doctor has explained the results of the procedure before discharge. For further questions, please discuss with the doctor during subsequent follow-up.
- Please take appropriate endocarditis prophylaxis for six months following device implantation.

Should there be any enquiries or concerns, please consult the attending doctor.

Under the professional care of the doctor, you will gradually recover. We wish you all the best during your treatment and recovery.

If you have any questions after reading the entire leaflet, please write them down in the spaces provided in order for the doctor to further follow-up.

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Compiled by Union Hospital Operating Theatre (OT) Governance Committee

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