

HEALTHY HEART

VOLUME-15 | ISSUE-181 | DECEMBER 05, 2024

Price : ₹ 5/-





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Transcatheter Aortic Valve Implantation (TAVI)

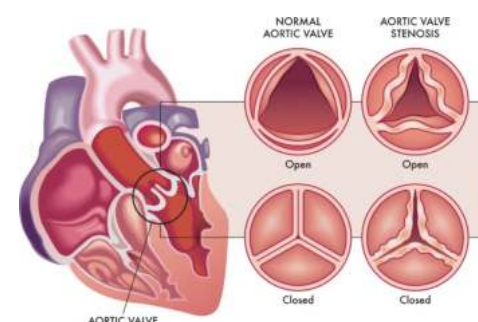
Introduction

Human heart is made of muscles and is about the size of our fist. The primary function of the Heart is to pump blood into the body (pure blood) and into lungs (Impure blood). It has four valves which are synchronized to open and close according to heart's rhythm. Heart valves play a very important role in ensuring blood flows in the correct direction within the heart and out of it so that eventually human body is assured proper blood supply. Aortic Valve is situated between Left ventricle and aorta or in other words, it's a gate between heart and body and ensures adequate blood goes into the body and must not regurgitate back. Narrowing of this valve

is very common diseases particularly, it increases with advanced age. Aortic stenosis usually leads to an abnormal heart sound (murmur). Sonography of

the heart (Echocardiography) confirms it. Additional investigations like CT scan, ECG helps to facilitate diagnosis. Once confirmed the further management of Aortic valve stenosis will depend on its severity and associated symptoms.

While surgery-aortic valve replacement remains the gold standard therapy either conventional or minimally access, transcatheter aortic valve implantation (TAVI) has been emerged as an alternative in elderly patients, inoperable or of higher surgical risk. In the recently published European



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guidelines on valvular heart disease, the variety of treatment options for aortic stenosis has now been acknowledged, and the multidisciplinary “Heart Team” placed in a central position to determine the most appropriate individualized therapy for patients. In this article we describe how these new guidelines can be implemented in daily practice.

Heart Team

Mostly, Aortic valve Replacement surgeries are performed through sternotomy. The patient is placed under general anesthesia and the breast bone is cut open. The heart is stopped and a heart lung machine takes over the function of the heart temporarily. The surgeon will then completely remove the diseased aortic valve and place a new valve. The heart is then restarted and the chest incision is closed.

TAVR procedure can be done without general anesthesia and does not require stopping the heart or opening the chest cavity. It is a minimally invasive, catheter based technique during which the doctor replaces the patient's diseased valve with a bioprosthetic valve. Once in place, the valve immediately begins functioning. Patient can be discharged from the hospital within a few days and will have a much shorter recovery period compared to open heart surgery. This novel, Interventional technique is somewhat similar to angioplasty and is done in the Cardiac Catheterization Lab or hybrid operation theatre.

If you have been diagnosed with severe aortic stenosis associated with high risks, TAVR may be a better alternative for you. However only a specialized

	Favours TAVI	Favours TAVI
Clinical Characteristics		
STS/EuroSCORE II <4% (logistic EuroSCORE I <10%)		+
STS/EuroSCORE II ≥4% (logistic EuroSCORE I ≥10%)	+	
Presence of severe comorbidity (not adequately reflected by scores)	+	
Age <75 years		+
Age ≤75 years	+	
Previous cardiac surgery		
Frailty	+	
Restricted mobility and conditions that may affect the rehabilitation process after the procedure	+	
Suspicion of endocarditis		+
Anatomical and technical aspects		
Favourable access for transfemoral TAVI	+	
Unfavourable access (any) for TAVI		+
Sequelae of chest radiation	+	
Porcelain aorta	+	
Presence of intact coronary bypass grafts at risk when sternotomy is performed	+	
Expected patient-prosthesis mismatch	+	
Severe chest deformation or scoliosis	+	
Short distance between coronary ostia and aortic valve annulus		+
Size of aortic valve annulus out of range for TAVI		+
Aortic root morphology unfavourable for TAVI		+
Valve morphology (bicuspid, degree of calcification, calcification pattern) unfavourable for TAVI		+
Presence of thrombi in aorta or LV		+
Cardiac Conditions in addition to aortic stenosis that require consideration for concomitant intervention		
Severe CAD requiring revascularization by CABG		+
Severe primary mitral valve disease, which could be treated surgically		+
Severe tricuspid valve disease		+
Aneurysm of the ascending aorta		+
Severe hypertrophy requiring myectomy		+



Management of severe AS

Symptoms

NO

YES

LVEF<50%

Absence of comorbidity or
general condition that make
benefit unlikely

NO

YES

NO

YES

Physically active

Medical therapy

NO

YES

Low risk and no other
characteristics that favour TAVI

Exercise Test

YES

NO

Symptoms or fall
in blood pressure
below baseline

Careful individual
evaluation of technical
suitability and
risk-benefit ratio of
intervention modes
by the Heart Team

NO

YES

Presence of risk
factor and low
individual surgical risk

NO

YES

Re-evaluate in
6 months or when
symptoms occur

SAVR

SAVR or TAVI



Heart Team can determine which treatment option is best for patients.

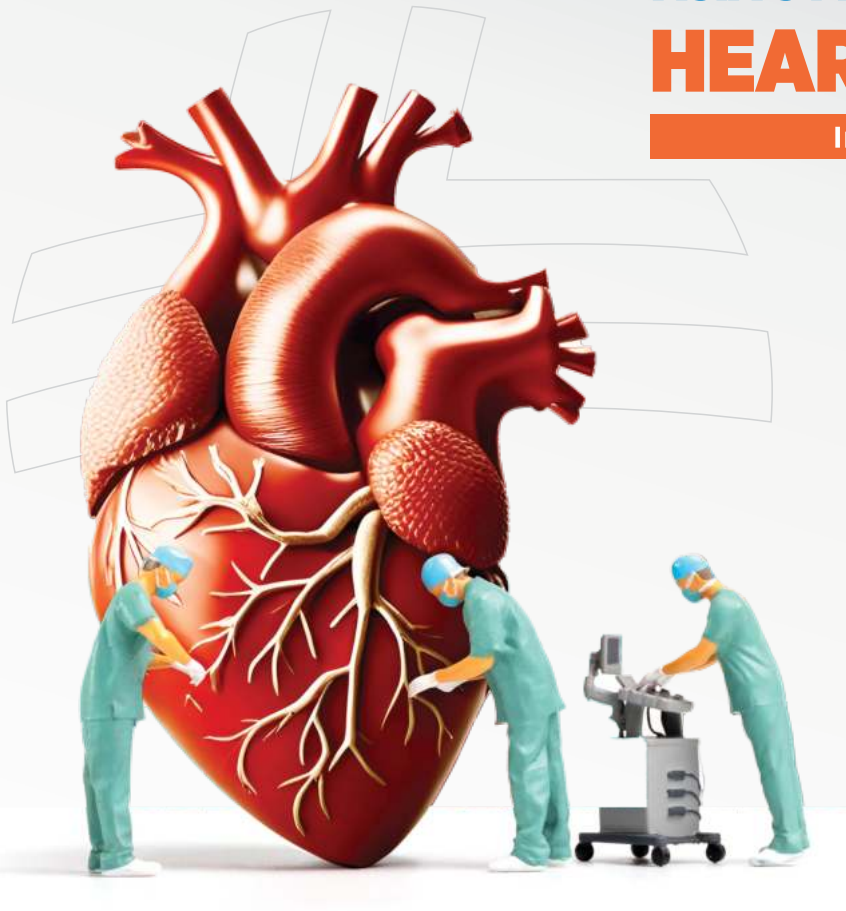
The recently published European guidelines on the treatment of valvular heart disease have placed the “Heart Team”, a multidisciplinary team of cardiologists, cardiac surgeons and anesthetists to enhance the decision process to select the most appropriate therapy for individual patients. While it is recognized that low-risk patients with AS (STS score <4%, logistic EuroSCORE I <10%) should be directly considered for surgical AVR and TAVI is reserved for high risk patients. Below mentioned table fairly gives idea to select the modality either to go for TAVI or Surgical AVR. Various

clinical studies have shown TAVR procedure to have a lower incidence of death and stroke compared to open heart surgery. TAVR may shorten recovery time to allow patients to get back to everyday activities. Patients have reported quality of life improvements within 30 days including the ability to take care of themselves. In CIMS Hospital, we have performed 9 TAVI procedures; highest in Gujarat. All patients were old and had multiple co-morbidities hence, unfit for surgery. Last four cases were performed only under mild sedation without anesthesia. There was no mortality though all patients were very high risk for the procedure.

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**ONE LIFE
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**THE PIONEER AND LEADER IN LAUNCHING
THE TAVI PROGRAM IN GUJARAT SINCE 2015**

60



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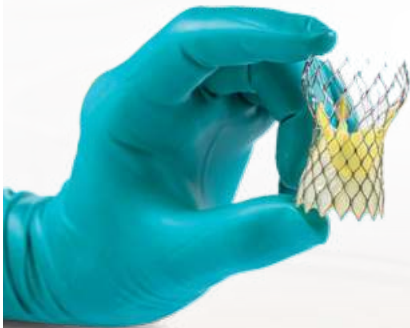
TAVI

Transcatheter Aortic
Valve Implantation
(TAVI)

7

TMVR

Transcatheter Mitral
Valve Replacement
(TMVR)



TAVI / TAVR / TMVR

An alternative to
surgery for
replacement of
diseased valves



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HEALTHY HEART

VOLUME-15 | ISSUE-181 | DECEMBER 05, 2024

Healthy Heart Registered under **RNI No. GUJENG/2008/28043**

Published on 5th of every month

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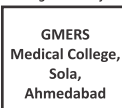
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Printed, Published and Edited by Dr. Keyur Parikh on behalf of the CIMS Hospital

Printed at Hari Om Printery, 15/1, Nagori Estate, Opp. E.S.I. Dispensary, Dudheshwar Road, Ahmedabad-380004.
Published from CIMS Hospital, Nr. Shukan Mall, Off Science City Road, Sola, Ahmedabad-380060.