



# Healthy Heart

Volume-7 | Issue-78 | May 5, 2016

Price : ₹ 5/-

**Honorary Editor :**  
Dr. Manan Desai



## From the Desk of Hon. Editor:

Repair and replacement are two main pillars of surgical treatment of valvular heart disease. As of today we do not have an "ideal" valve prosthesis. Mechanical valves are plagued with complications of anticoagulation while bioprosthetic valves do not last long enough in young patients. In a way valve replacement is like exchanging one disease with another. Mitral valve repair is an excellent option is patients with a "repairable" valve.

This article tries to convey the basics of valve repair and highlights its advantages and disadvantages. It is imperative for physicians/cardiologists to explain repair as a treatment option so that patients can participate in decision making.

- Dr. Manan Desai

## Mitral Valve Repair

*There are few things in cardiac surgery that require...*

*as much art,*

*as science;*

*as much patience,*

*as perfection...*

*as in valve repair.*

Mitral valve is a bileaflet valve between the left atrium and left ventricle. The two leaflets are called the anterior leaflet and the posterior leaflet. These two leaflets join at the anteriorlateral commissure and the posteromedial commissure. Other important parts of mitral valve are the chordae tendineae and papillary muscles. The ring of attachment of the leaflets to

the atrioventricular junction is called the annulus. For ease of analysis, the leaflets are divided into three segments each : A1, A2, A3 for the anterior leaflets and P1, P2, P3 for the posterior leaflet (Figure-1).

### Etiopathology

Mitral valve is affected by different diseases; most common in India being Rheumatic heart disease followed by connective tissue disease (Barlow's disease), infective endocarditis, SLE etc. (Table-1).

Table-1 : Etiology of Valvular Diseases

#### Primary Valve Diseases

- Congenital malformations
- Inflammatory diseases
- Degenerative diseases
- Bacterial endocarditis
- Calcification
- Trauma
- Tumors

#### Secondary Valve Diseases

- Myocardial infarction
- Dilated cardiomyopathies
- Hypertrophied cardiomyopathies
- Endomyocardial fibrosis

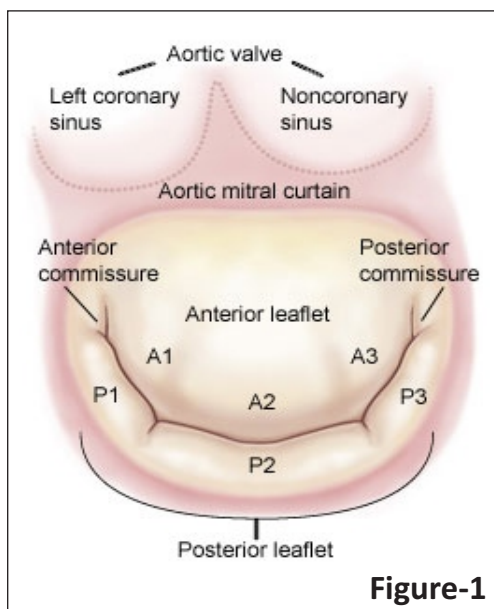


Figure-1

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I	II	III (Restricted leaflet motion)	
		A	B
Annular dilatation Normal leaflet motion	Excess leaflet motion (leaflet prolapse)	Restricted opening	Restricted closure

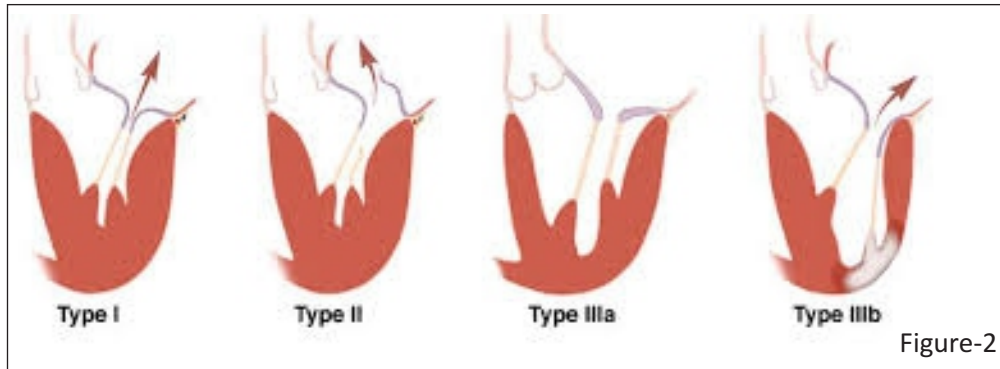


Figure-2

These could lead to mitral stenosis (most common), mitral regurgitation or both.

Prof. Alain Carpentier of France has classified mechanism of mitral valve disease into four groups (I, II, IIIa, IIIb) as shown in figure-2. This “functional” classification helps in better communication, planning and actual conduct of surgery.

Mitral repair is usually offered to patients with mitral regurgitation or stenosis with pliable leaflets and minimal subvalvular disease.

### Surgical Aspects

In the operation theater, mitral repair begins with detailed analysis of the valve with TEE (Transesophageal Echocardiogram) by our highly skilled cardiac anesthesiologists. Once on heart

lung machine, heart is arrested with cardioplegia solution, the left atrium is opened and valve analysis performed with valve hooks.

Then we use various tricks in armamentarium of a surgeon like leaflet thinning, chordal shortening or lengthening as required, chordal transfer, leaflet augmentation with pericardium neochordae placement etc to get the desired result. We check the valve with saline infusion to check competency of the valve (Video-1)\*. Finally the repair is stabilized with the help of an annuloplasty ring. A completed mitral valve repair look something like figure-3. After completing the surgery the repair is again checked with TEE (Video-2)\*.

### Ischemic MR

Mitral regurgitation in coronary artery disease is a different entity. The most common pathogenesis for mitral regurgitation in CAD is in posterior leaflet restriction due to papillary muscle displacement which in turn is due to left ventricular enlargement (Type-IIIb). It is generally treated with a restrictive annuloplasty using a ring.

### Pros and Cons

There are various advantages and disadvantages of mitral repair. Therefore careful patient selection is the key to good short term and long term outcomes.

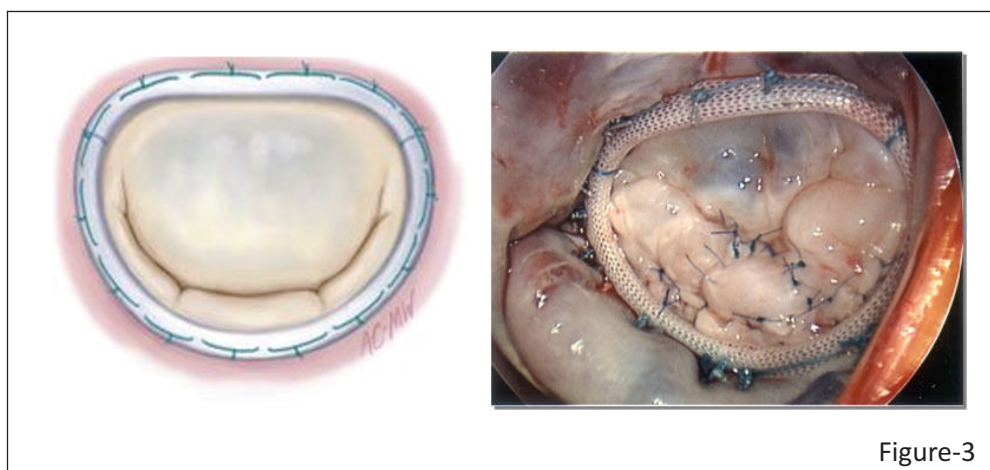


Figure-3

*\*see instructions at the end of article to see the video*

Advantages in the immediate post of the period is avoiding complications like paravalvular leak and LV rupture.

In the long term when compared to mechanical valve replacement, the patients are saved from complications of anticoagulation like anemia, (melena) menorrhagia and the most dreaded complication of intracranial bleed. There is also reduced incidence of stroke after repair as compared to replacement. When compared to bioprosthetic valve patient are protected from complications of structural valve degeneration. Mitral valve repair also substantially reduces the risk of infective endocarditis.

### Results

Mitral valve repair thus has good short term outcomes (mortality rate of 1 %) and good long term results (5 year survival of 85 - 95 %) as compared to replacement.

Some studies have also shown advantage of better improvement in Left Ventricular (LV) function at follow-up as compared to replacement. This is attributed to preservation of the subvalvular chordal apparatus. This also makes it the operation of choice in patients of mitral regurgitation with depressed LV function (EF < 30 %).

### Advantage in young females

Mitral valve repair is the treatment of choice in women in child bearing age having mitral valve disease. Patient can safely plan pregnancy after mitral valve repair without fear of teratogenicity and peripartum hemorrhage due to anticoagulation. Mitral valve replacement can then be done in case there is recurrence of mitral valve disease.

### Recurrence

Since rheumatic heart disease is an ongoing process it may affect the valve

even after a successful repair. This can lead to recurrence of stenosis / regurgitation. Recurrence is the Achilles heel of mitral valve repair. Freedom from reoperation ranges from 85-95 % at 10 years in different studies; with higher reoperation rates in rheumatic population.

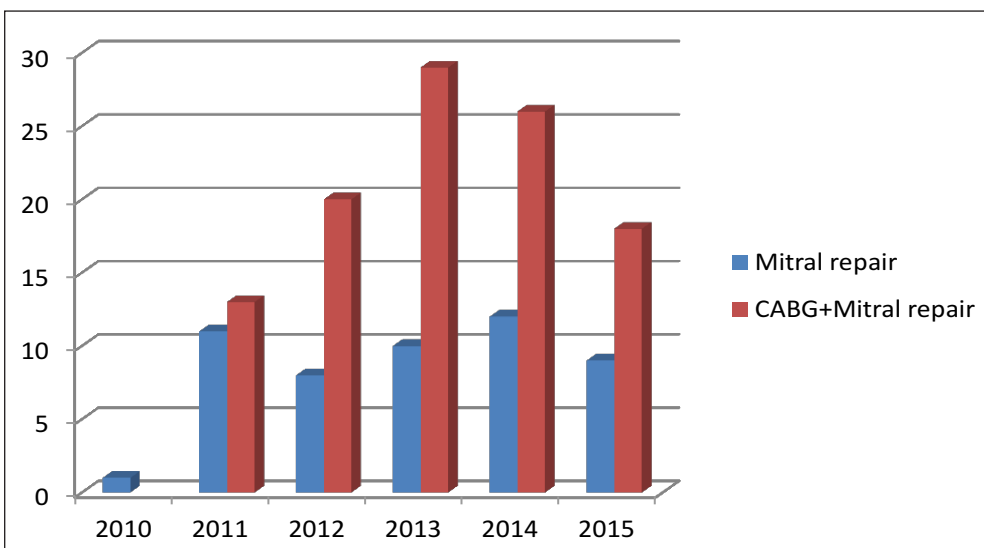
Thus as repair surgeons we perform repair only in those cases in whom we can have the '10 year advantage'; meaning at least 10 years freedom from morbidity of anticoagulation.

### Our experience

At CIMS we have done 140 mitral repairs out of which 112 were ischemic mitral repair while 28 patients were isolated mitral repairs. We haven't had a recurrence & all patients are NYHA I on follow up.

### Summary

To summarize, Mitral repair is the treatment option worth considering in patients of mitral valve disease especially regurgitant lesion mainly because of freedom from morbidity of anti coagulation. Careful selection of patients ensure that they have a "10 year advantage"



#### Instruction to see videos (requires internet connection)

1. Download QR Code scanner App in your mobile
2. Scan below QR code
3. Click on the link which appears after scanning QR code



Mitral Valve Repair (Saline Test)



Mitral Valve Repair (Pre Op and Post Op Echo)



## WHEN LIFE CLOSED ALL DOORS, A WINDOW WAS OPENED TO SEAL HIS LEAKING HEART.



3 #dildilkahani

**Name:** Mr. Harshad Dave

**Age:** 72 years

**Location:** Ahmedabad, India

Mr. Dave lived life whole-heartedly with his 'never give up' attitude. He had undergone a serious Mitral Valve Replacement Surgery 14 years back. A year ago, he complained of breathlessness & severe weight loss. He was diagnosed with a rare complication of Paravalvular Leak (Heart Valve Leak around his artificial valve), which led to heart failure. The second surgery was extremely risky and no surgeon was willing to take up the challenge.

Outstanding teamwork of interventional cardiologists & cardiac anaesthesiologists at CIMS, performed minimally invasive 'Transcatheter Device Closure' procedure. They commendably treated the Para-valvular leakage and permanently closed the defective opening in the heart.

Mr. Dave taught us that when all doors are closed, a window is always open for the one who wants to get more out of life.





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### DAY - 2 (JANUARY 7, SATURDAY 2017)

- ⇒ Main Session
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- ⇒ ECMO (Critical Care)
- ⇒ Oncology

### DAY - 3 (JANUARY 8, SUNDAY 2017)

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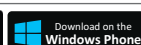
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Date: June 26, 2016 (Sunday)

**Course Directors** : Dr. Snehal Patel / Dr. Amit Chitaliya

### Program Overview :

This program aims to provide basic neurodevelopment assessment in Pediatrics, especially in high risk infants.

**Registration Fees** : ₹ 1,000/- (Registration fees refundable after attendance)

## Basic ECG Learning-Certification Course

Date: July 24, 2016 (Sunday)

**Course Directors** : Dr. Vineet Sankhla / Dr. Ajay Naik / Dr. Vipul Kapoor  
Dr. Tejas V. Patel

### Program Overview :

It is important to have a sound knowledge and correct interpretation of 12 lead ECG to help in diagnosis and management of medical patients. This necessitates that not only specialists, but also other healthcare professionals like General practitioners, Interns, Post graduate students, Nurses and Paramedical staff should have basic understanding of ECG for timely diagnosis.

**Registration Fees** : ₹ 1,000/- (Registration fees refundable after attendance)

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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.