



# HEALTHY HEART

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Honorary Editor :

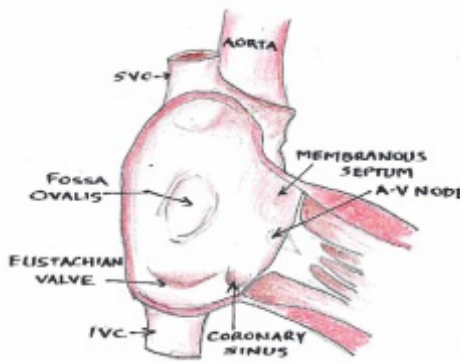
**Dr. Shaunak Shah**

Paediatric &  
Structural Cardiac Surgeon



Sinus Venous Atrial Septal Defect (SVASD) is often undetected and we see a number of these patients, even in adulthood. Proper evaluation & correct management leads to near normal life for most patients. In this issue, we discuss SVASD & Its management at all age groups. I thank Dr. Niren Bhavsar for Excellent illustrations.

## Sinus Venous Atrial Septal Defect (SVASD)



**Fig-1 Normal Heart Internal**

### NORMAL MITRAL ATRIAL SEPTUM

An atrial septal defect is a hole of variable size in the atrial septum.

Partial Anomalous Pulmonary Venous Connection (PAPVC) is a condition in which some, but not all pulmonary veins connect to the right atrium or its tributaries rather than to the left atrium.

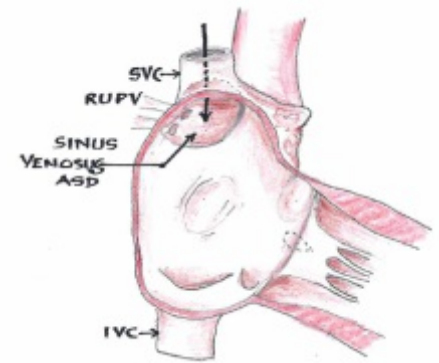
The most common type of PAPVC is the defect present in which PAPVC coexists with a superior caval ASD : "Sinus Venous ASD". The ASD in sinus venous syndrome is located immediately beneath the orifice

of SVC. This results in right superior pulmonary and sometimes the middle lobe veins opening in to SVC or SVC- Right Atrial junction. (Fig. 2)

The lower margin of the defect is sharply defined edge of atrial septum but upper margin is devoid of septum.

Rarely, three or four right pulmonary veins open into SVC, the uppermost entering SVC, near azygos vein entry.

The lowermost part of the SVC that receives the anomalous veins is normally wider . However, if well formed LSVC is there, it may be small.



**Fig-2 SVC Type Sinus Venous ASD**



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**Left to Right Shunts**

1. Partial Anomalous Pulmonary Veus Correction
2. Atrial Septal Defect
3. Atrioventricular Septal Defect (AVSD)
4. Ventricular Septal Defect
5. Patent Ductus Arteriosus
6. Systemic Arterial Venous Fistula

**Type of ASD**

1. Secundum ASD
2. Superior Sinus Venosus ASD
3. Inferior Sinus Venosus-ASD
4. Coronary Sinus ASD
5. Primum ASD

**Clinical Features & Investigation:**

Shunts at atrial level are low pressure. This will involve the passage of excess blood through the whole of right atrium & ventricle, This will be reflected on the EKG, CXR & Echocardiogram.

Significant pulmonary hypertension is un common but prolonged right atrial loading pre- disposes to atrial arrhythmia & may result in right ventricular failure.

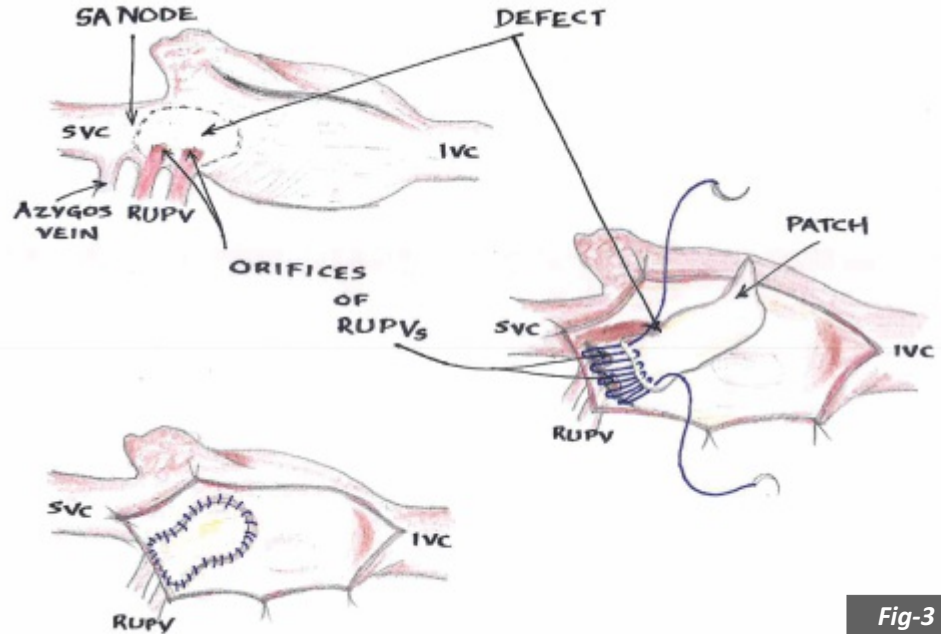
A CT Scan may sometimes be necessary to exactly delineate anomalous pulmonary veins opening in to superior vena cava, at higher than usual location.

This may aid in planning the surgery.

**Timing of Surgery:**

Surgery is the treatment of choice as these defect are not deviceable.

The ideal time for surgery is preschool age: around 2 to 4 years, however if the shunt is large, child develops pulmonary hypertension or has failure to thrive or recurrent respiratory tract infection, earlier surgery is indicated.



**Fig-3**

Often sinus venosus ASD remains asymptomatic and is detected in elderly on routine / unrelated investigation. We have operated on number of patients in their late 40s, & 50s, the eldest patient being a 61 year old woman.

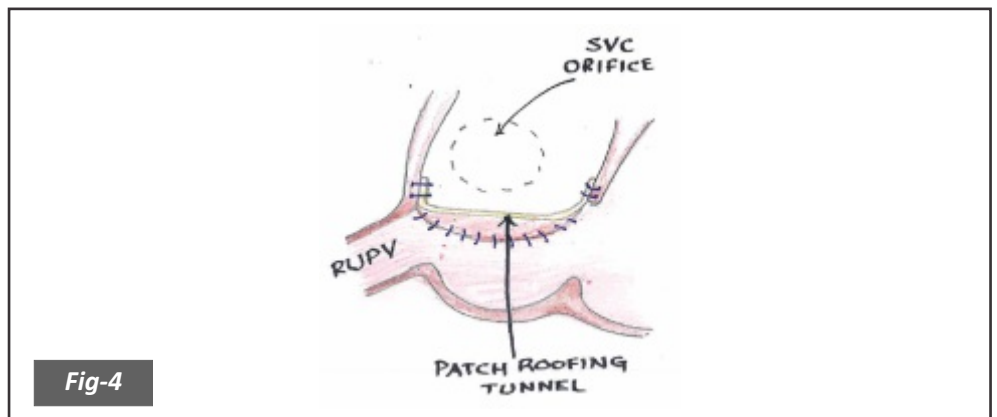
**Surgery For SV ASD**

The aims of corrective surgery in Sinus venosus ASD are:

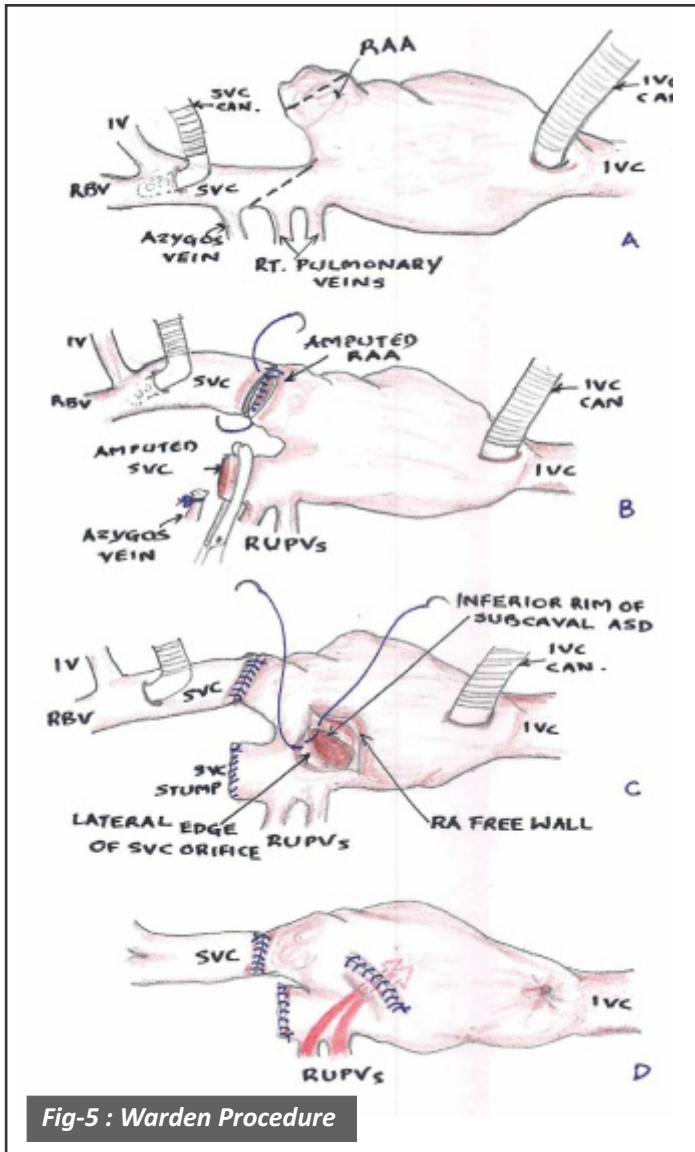
1. Elimination of L->R Shunt
2. Unobstructed SVC to RA flow
3. Unobstructed Pulmonary venous return to LA
4. Normal sinus rhythm.

Through a midline sternotomy, & under cardiopulmonary bypass, the sinus venosus ASD is closed using autologous pericardial patch. The SVC-RA junction is enlarged with another similar patch so that these is no obstruction to SVC- RA flow. (Fig. 3 & 4)

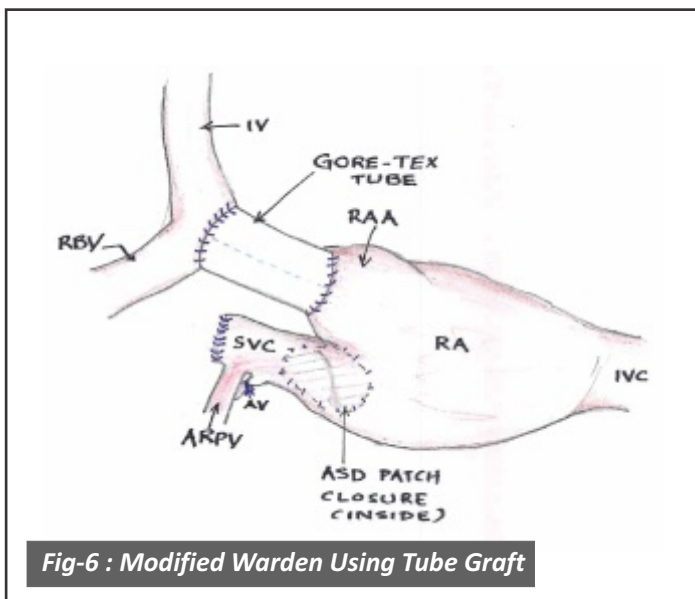
In patients is whom the highest pulmonary vein opens 2 cm above SVC-RA junction, a Warden's procedure or a modification of Warden procedure using e-PTFE tube is used. (Fig. 5 & 6)



**Fig-4**



**Fig-5 : Warden Procedure**



**Fig-6 : Modified Warden Using Tube Graft**

**Result:**

At CIMS Hospital, 306

ASDs have been operated. Sinus Venous ASD was present in 66 Out of this, 42 patients underwent Warden’s / modified Warden’s procedure using a Gore tex tube.

There was no hospital mortality. All patient’s underwent intra op trans esophageal Echo/ Epicardial Echo. A gradient of more than 4 mm between SVC & RA was not accepted & it was addressed on the table.

All patients had pre-discharge echoes, Patients with modified Warden’s procedure were given oral anticoagulants for the first 3 months & later aspirin lifelong. Children with Warden’s did not require aspirin after 6 weeks.

**Summary:**

Sinus Venous ASD is not an uncommon variety of atrial septal defect. Timely diagnosis, proper analysis & good surgery with smooth pulmonary & systemic flow & sinus rhythm ensure quick & lifelong recovery. Patients with Warden’s procedure or a modification may need oral antiplatelet or anticoagulation for sometime, A regular follow-up helps in patients resuming normal activity without any hindrances.

**Glossary :**

- ASD: Atrial Septal Defect
- PAPVC: Partial Anomalous Pulmonary Venus Correction
- SVC: Superior Vena Cava
- PAH: Pulmonary Arterial Hypertension
- IVC: Inferior Vena Cava
- RA: Right Atrium
- LA: Left Atrium
- NSR: Normal Sinus Rhythm
- EKG: Electro Cardiogram
- CXR: Chest X-Ray
- CT: Computed Tomography
- SVASD: Sinus Venous ASD
- LSVC : Left Superior Vena Cava

**All Illustrations by :**

**Dr. Niren Bhavsar (Cardiac Anesthesiologist)**



# CIMS HOSPITAL



## AIRLIFTED FROM UTTARAKHAND, MUMBAI MAN BEATS COVID AFTER 55 DAYS IN CIMS

Chandrakant Patel and his family were on a holiday in Nainital when he suddenly fell ill and was tested positive for COVID-19.



## MONOCLONAL ANTIBODIES COCKTAIL THERAPY IN AHMEDABAD.

Monoclonal Antibodies Cocktail Therapy for COVID-19 treatment was launched in India. CIMS Hospital becomes one of the first hospital in the city to commence this treatment.

## POST COVID COMPLICATIONS

*As India has been through a second wave of COVID, many patients have been facing post COVID complications.*

### NON-INFECTIOUS COMPLICATIONS

#### Long COVID Syndrome:

Experienced by many patients even with minimal lung involvement. The symptoms are long term long grade fever, fatigability and weakness. This syndrome can last up to three months wherein the patients suffer from the symptoms for a long time and feel they have they have not recovered completely

#### Post COVID Lung Fibrosis:

Usually seen in patients with significant lung involvement. The symptoms are need of long term ventilator or oxygen support wherein the patient's needs longer period of hospitalization for the supportive treatment.

### INFECTIOUS COMPLICATIONS

- Lung Infection
- Rhinocerebral mucormycosis
- Infections related to other system like abdominal or urinary symptoms

#### Incidence of infections in post COVID patients is very high.

Reasons are use of Steroids, immunomodulatory drugs and immune systems dysregulation due to COVID. The incidence of fungal infections like Mucormycosis is very high and now everybody knows about Mucormycosis. Apart from Mucormycosis, lot of other fungal and bacterial infections are common like Aspergillus fungal infection.

**Timely diagnosis and treatment is most important for the patient.**



# CIMS PULMONOLOGY

## EBUS (Endobronchial Ultrasound)

- Enables real time guidance for TBNA (Trans Bronchial Needle Aspiration) of structures located near the lung airway
- A highly accurate and reliable way to diagnose conditions such as **Lung Cancer, Tuberculosis, Sarcoidosis, Lymphoma**



### Indication for EBUS :

#### 1. DIAGNOSIS:

- Enlarged mediastinal or hilar lymphadenopathy
- Centrally located lung tumors / masses

#### 2. STAGING:

- Lung cancer staging before surgery
- Lung cancer staging after neo-adjuvant chemotherapy
- Diagnosis of abnormal imaging findings (FDA avid lesions discovered on PET Scan)

### Advantages of EBUS :

- Minimally invasive
- Real time image guidance
- Rapid onsite evaluation gives diagnosis during procedures (ROSE)
- High yields (specificity > 95 % in various disease)

## CIMS PULMONOLOGY TEAM



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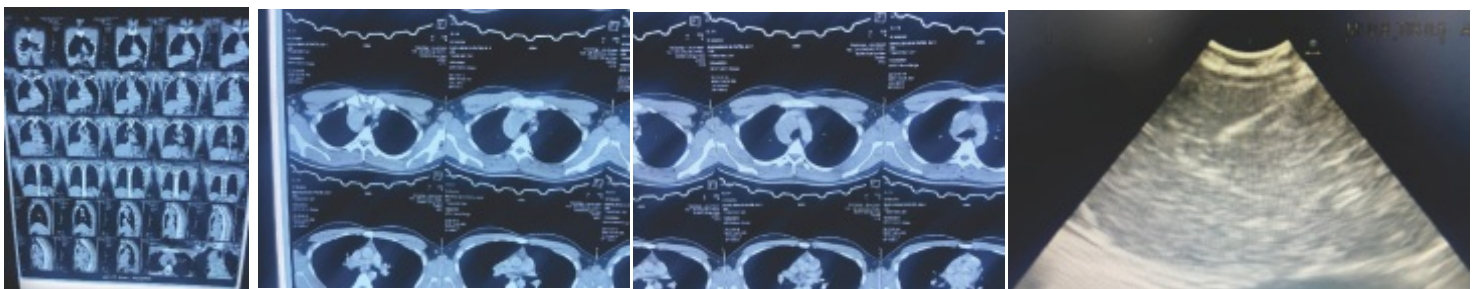


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## EBUS (ENDOBROCHIAL ULTRASOUND) : AN INTERESTING CASE



**A** male patient aged 22 years found to have mediastinal lymphadenopathy on health check up for immigration on student visa to USA. He was totally asymptomatic but very much apprehensive for the possibility of malignancy. So we did his EBUS and took real time TBANA and sent for Histopathology and microbial work up. Rapid on site evaluation showed well defined

granulomas without necrosis. So Differential diagnosis narrowed down to TB vs Sarcoidosis. His Genexpert and LPA was suggestive Rifampicin sensitive TB. Take home message is Common Differential diagnosis in mediastinal lymphadenopathy is Tuberculosis, Sarcoidosis and Lymphoma. TB is very common in our country and can have presentation as asymptomatic mediastinal lymphadenopathy.



# DO YOU WANT TO GET BYPASS SURGERY (CABG) ?

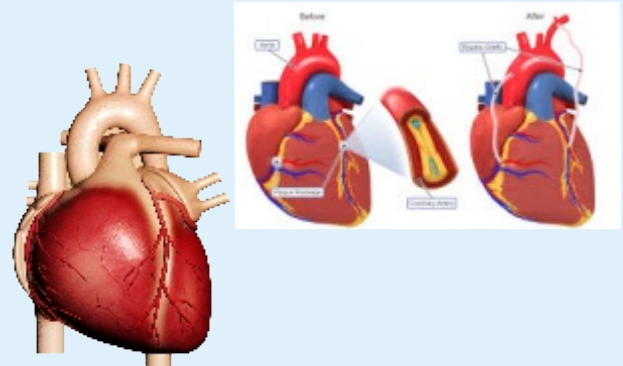
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We offer personalised heart surgery solutions after a detailed examination and diagnosis.

**HEART ATTACK IS THE LEADING CAUSE OF DEATH IN THE WORLD**

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- ⌚— Off Pump (Beating Heart) Surgery & On Pump Surgery
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- ⌚— Minimally Invasive Surgery (MICS) - CABG
- ⌚— Hybrid - CABG
- ⌚— LV Aneurysm Surgery
- ⌚— CABG & MV Repair
- ⌚— Redo CABG
- ⌚— CABG in Heart Failure



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**IF IT IS HEART, IT IS CIMS**



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