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Atrial Septal Defect: A Case Report

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ABSTRACT

ASD (Atrial Septal Defect) is one of the most common types of congenital heart defect that may remain asymptomatic for many years, but as patient aged, complications such as dyspnea on exertion,fatigue,and chest pain may arise. A 56 yrs old admitted at IGMC Hospital, Shimla during the month of Feb' 2025 with the chief complaints of pain in left chest and breathlessness. After the general physical examination, routine blood profile and other Lab investigation, underwent echocardiography in which he was diagnosed with ASD with PAH under evaluation. Patient was underwent surgical intervention (ASD closure with Dacron patch). Prognosis is good and patient discharged post operatively after a short stay at hospital.

Key words: PAH-Pulmonary Arterial Hypertension, ASD (Atrial Septal Defect)

1. INTRODUCTION

Atrial septal defect (ASD) is one of the most common types of congenital heart defects, occurring in about 25% of children. An atrial septal defect occurs when there is a failure to close the communication between the right and left atria. It encompasses defects involving both the true septal membrane and other defects that allow for communication between both atria. There are five types of atrial septal defects ranging from most frequent to least:

Patent foramen ovale

Ostium secundum defect

Ostium primum defect

Sinus venosus defect

Coronary sinus defect.

Pulmonary hypertension (PH) is haemodynamic and pathophysiological condition defined as mean pulmonary artery pressure > 25 mmHg at rest by Right heart Catheterization (RHC).

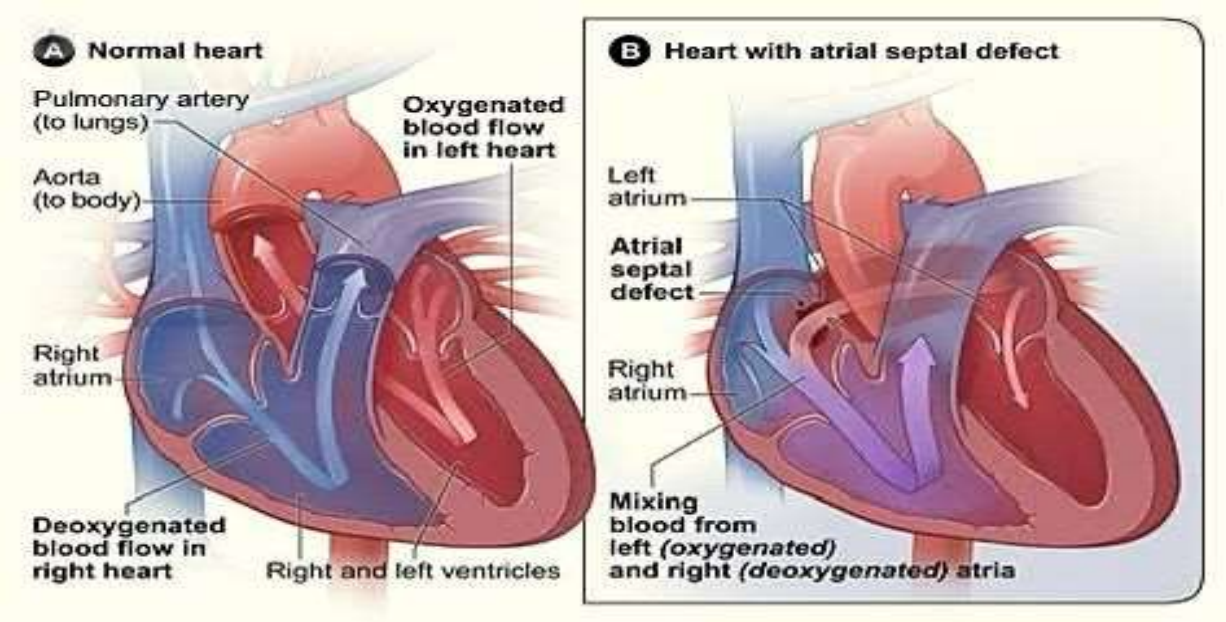


Fig-1: shows the normal heart and atrial septal defect

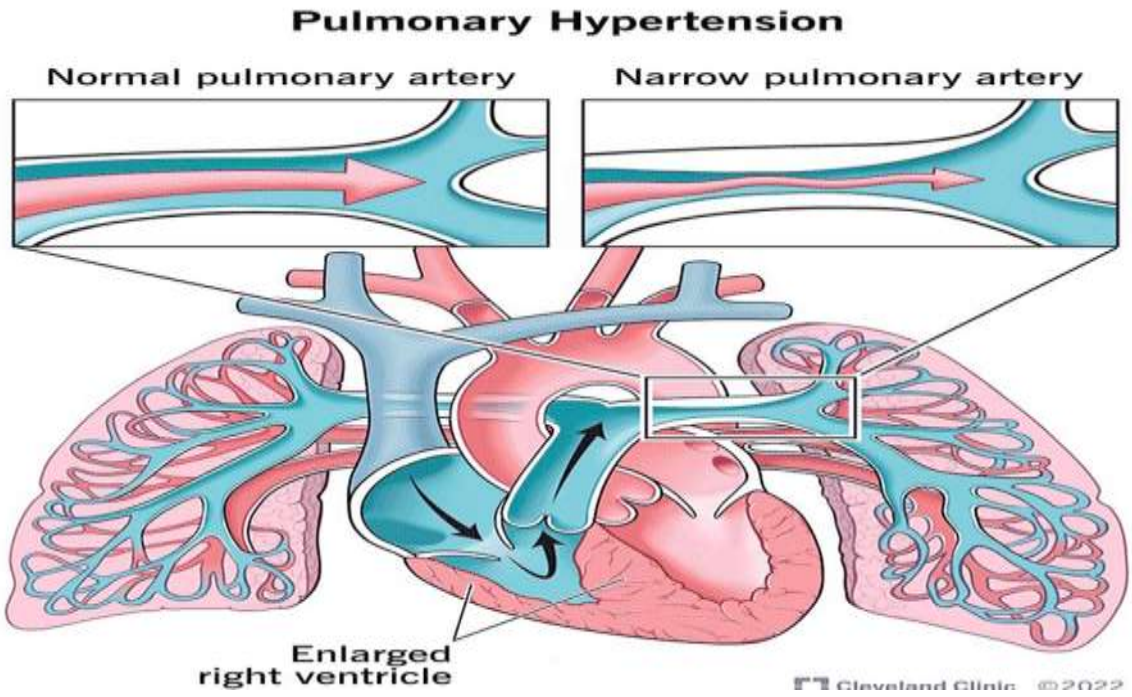


Fig-2: shows PAH (Pulmonary Arterial Hypertension)

2. CASE PRESENTATION

A 56 years old male presents with the chief complaints of pain in left chest from 1 year and breathlessness from 1 month at IGMC Hospital, Shimla during the month of Feb, 2025.After physical examination, routine blood profile and other Lab investigation, underwent echocardiography in which he was diagnosed with ASD with PAH. Additionally, he underwent medical and surgical (ASD closure with Dacron patch) management.

Present Medical History:

Patient was asymptomatic 1 year back after which he developed pain left side of the chest which was dull, non-progressive, mild intense and non-radiating, breathlessness from 1 month insidious in onset, gradually progressive, current dyspnoea. He went to the local hospital for consultation but no ASD was diagnosed then one month back he came to IGMC Shimla and underwent echocardiography and other test in which he was diagnosed with ASD with PAH under evaluation.

Chief complaints:

Breathlessness ×1month

Chest pain×1 year

Present Surgical History:

Patient underwent ASD closure with Dacron Patch.

HISTORY OF PAST ILLNESS:

Past medical history:

Patient had no significant past history of communicable and non-communicable diseases. No history of seizure, Cyanotic spells etc. Not allergic to any drug or food.

Past surgical history:

Patient had no any specific and significant past surgical history in the past years.

FAMILY HISTORY & FAMILY TREE

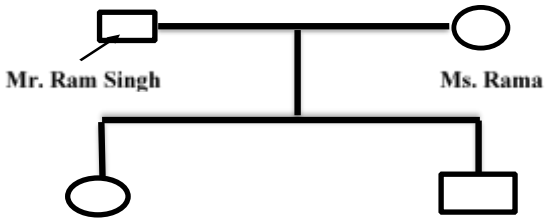
MEDICAL HISTORY-

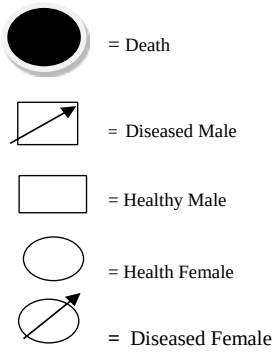
All the family members of patient are healthy and medically fit. No any history of genetic disorder and hereditary problems like Diabetes mellitus, hypertension etc.

SURGICAL HISTORY-

Patient's family members had no any specific and significant past or present surgical history as of appendectomy, hysterectomy, cholecystectomy or no history of genetic disorders etc. All the family members are healthy

FAMILY TREE





Family Composition:

Family Members	**Age**	**Sex**	**Relationship with the patient**	**Occupation**	**Education**	**Health status**
Mr. Ram Singh	56yrs	M	Patient	Farmer	10th pass	Unhealthy
Mrs. Rama	47 yrs	F	Wife	Housewife	Uneducated	Healthy
Ms. Anu	22 yrs	F	Daughter	Teacher	M.A.	Healthy
Mr. Arun	16yrs	M	Son	----	Studying	Healthy

PERSONAL HISTORY

- **Economic Status:** Patient belongs to a middle-class family. Annual income is approximately Rs.1, 10,000.
- **Dietary Pattern:** Dietary patter of patient is normal diet.
- **Addiction:** Patient is addicted to alcohol and smoking/tobacco chewing.
- **Elimination Pattern:** Patient's elimination pattern is normal. Indwelling catheter was inserted on the day of admission and after that fluid balance chart of patient is maintained by staff.

General examination

- Weight: 51 Kg
- GCS: 15/15
- Respiratory Rate: 22 breaths/ minute
- SpO_2: 94%
- Afebrile

Special Investigation:

Routine blood profile, Liver Function Test, Blood Urea Nitrogen, ECG, ECHO, Prothrombin time studies, CT Coronary angiography, CT Scan of thorax (plain and contrast), TEE(Transesophageal Echocardiogram).

Surgical Intervention: ASD closure with Dacron Patch.

Pre-operative Orders:

Patient was kept NPO and surgical site preparation done with betadine. Inj. Xylocaine sensitivity tested for anaesthesia.

After Written consent preoperative medications such as Inj.Cefuroxine 1.5 gm IV ATD.Send

patient with OT goods.

Surgical Notes:

- ✓ ASD closure with Dacron patch with T.V Ring annuloplasty via A/L thoracotomy under CPB with 28 mm metronic ring under moderate hypothermia under GA.
- ✓ Right femoral artery and vein exposed.
- ✓ Right A/L thoracotomy done.
- ✓ Cannulation done right femoral artery, vein,SVC
- ✓ RA exposed
- ✓ RA and RV enlarged
- ✓ LA normal in size and normal contraction,Mod.TR present
- ✓ Dacron patch closure of ASD done with TV annuloplasty via A/L thoracotomy under CPB with 28 mm metronic ring under moderate hypothermia under GA.
- ✓ Closure done in layers
- ✓ ASD apply

Post operative Orders:

Post operatively the patient is in sedation. No ASD seepage. Patient has prescribed with

Inj. Supacef 1.5 g I/V BD, Inj. Pantop 40mg OD, Inj. PCM 1gm I/V TDS, Inj. Emeset

1amp I/V SOS,Inj.Deriphyllin 1amp I/V TDS.

Care plans:

Nursing Problems such as Impaired gas exchange, acute pain, risk for infection, risk for impaired skin integrity, risk for deficient fluid volume related to hospitalization are identified and addressed by appropriate nursing interventions.

DISCUSSION:

An Atrial Septal Defect (ASD)is a congenital heart condition where there is an opening in the wall(septum)that divides the two upper chambers (atria)of the heart. This hole allows blood to flow between the left and right atria, which can cause increased blood flow to the lungs and lead to various health complications if felt untreated.

Key features:

Location of defect: The septal defect is typically found in the wall between the left and right atria of the heart.

Size of defect: The size can vary; small ASDs may have little impact, while larger defects can lead to significant circulatory problems.

Blood flow abnormalities: The abnormal blood flow across the septum increases blood flow to the lungs, potentially causing enlargement of the right side of the heart.

Symptoms:

- Shortness of breath
- Fatigue
- Palpitations or irregular heartbeats
- Frequent respiratory infections
- Swelling of legs, feet, or abdomen
- Cyanosis

Causes and Risk Factors:

- **Congenital:** Most ASDs are present at birth, resulting from improper formation of the septum between the atria during fetal development.
- **Genetic Factors:** Some genetic conditions, such as Down syndrome, can increase the risk of ASDs.
- **Maternal health factors:** Infections during pregnancy (e.g., rubella, diabetes) may increase the risk of congenital heart defects, including ASDs.
- **Environmental Factors:** Use of certain medications or exposure to harmful substances.
- **Family history:** If other family members have heart defects, the likelihood of having an ASD may increase.

Diagnosis:

- **Echocardiogram (Echo):** A primary diagnostic tool that uses ultrasound to visualize the heart's structure and blood flow.
- **Electrocardiogram (ECG):** Measures the electrical activity of the heart and can detect arrhythmias or abnormal heart patterns.
- **Chest X-ray:** Can show enlarged heart chambers, especially on the right side.
- **Cardiac MRI or CT scan:** May be used for a detailed view of the heart's anatomy and blood flow.

Treatment:

- **Monitoring:** Small, asymptomatic ASDs may require only regular monitoring and may close on their own over time.
- **Medications:** For those with heart failure or arrhythmias due to ASD, medications such as beta-blockers or blood thinners may be prescribed.
- **Surgical Repair:** If the ASD causes symptoms or complications, surgical closure may be required. The two common options are:
- **Catheter-based procedure:** A minimally invasive method where a closure device is inserted through a catheter to seal the hole.
- **Open-heart surgery:** In more complex cases, traditional surgery may be needed to repair the defect.

CONCLUSION

A 56 years old male presents with the chief complaints of pain in left chest from 1 year and breathlessness from 1 month at IGMC Hospital, Shimla during the month of Feb, 2025.After physical examination, routine blood profile and other Lab investigation, underwent echocardiography in which he was diagnosed with ASD with PAH. Additionally, he underwent medical and surgical management. Prognosis is good and patient discharged post operatively after a short stay at hospital.

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