



ATRIAL SEPTAL DEFECTS

PATHOPHYSIOLOGY &

CLINICAL FEATURES

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8th Sem

INTRODUCTION

ASD is the most common
acyanotic type of congenital heart
diseases with *L-R shunt*.

PATHOPHYSIOLOGY :

ASD

Leaking of oxygenated blood from left atrium to right atrium

SVC → RIGHT ATRIUM ← IVC

Rt atrium enlarges in size to accomodate extra volume of blood

Delayed DIASTOLIC MURMUR

RIGHT VENTRICLE

Rt ventricle enlarges in size to accomodate extra volume of blood



Large volume passes through normal pulmonary valve

Prolonged EJECTION
PHASE i.e
Increased Hang Out
interval

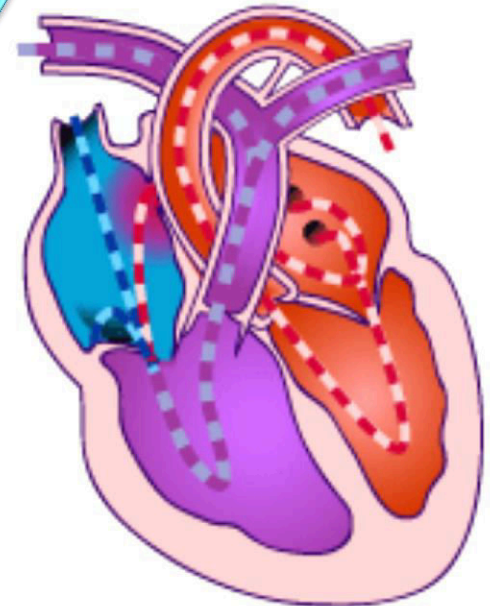
SYSTOLIC EJECTION MURMUR

Pulmonary
valve closes

P2 Delay

Wide fixed split
of S2

late
As RV is fully loaded,
further increase in its
volume during
inspiration cannot
occur





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graph TD; A[Pulmonary Artery & its branches enlarge to accommodate large volume] --> B[Pulmonary Congestion]; A --> C[Systemic Congestion]; B --> D{Recc LVTI}; D --> E[REDUCED LEFT VENTRICULAR COMPLIANCE]; E --> A;
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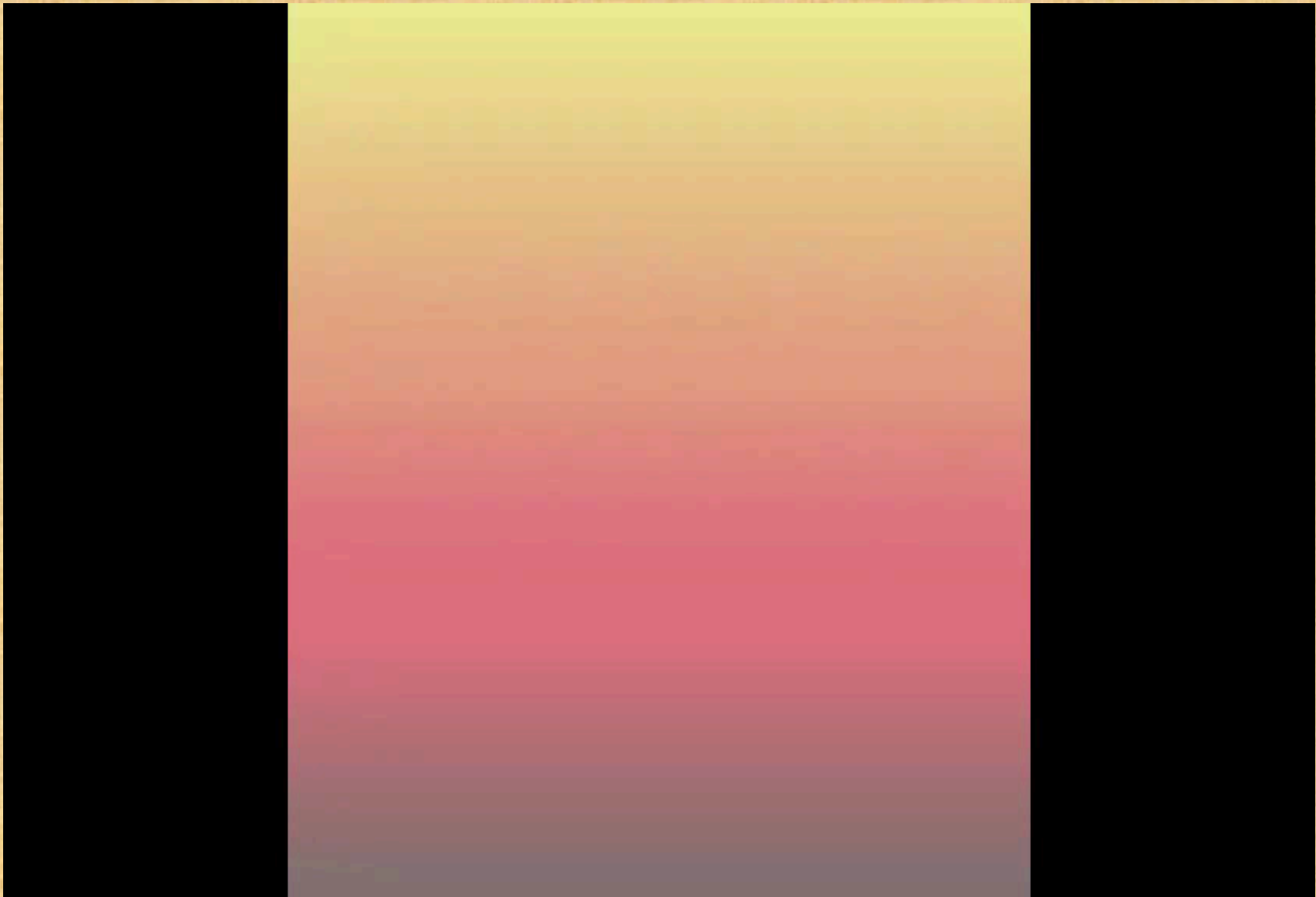
Pulmonary Artery & its branches enlarge to accommodate large volume

Pulmonary Congestion

Systemic Congestion

Recc
LVTI

**REDUCED LEFT
VENTRICULAR COMPLIANCE**



Any condition causing decreased LV compliance (Systemic HTN, Cardiomyopathy, MI)

Increased LA pressure (MS, MR)

Increased L-R shunt

If left untreated

RV Failure

Pulmonary HTN

Decreased RV compliance

R-L shunting

Eisenmenger's syndrome

CLINICAL FEATURES :

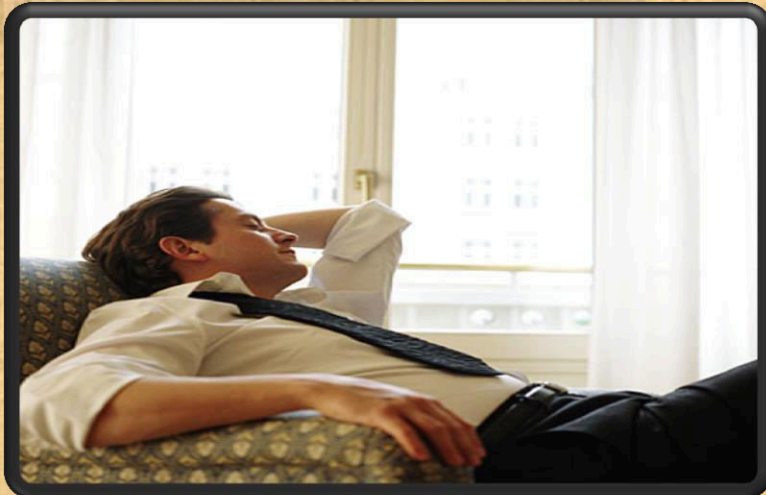
- Usually *asymptomatic* in the first and second decades of life.
- *Ostium secundum* is well tolerated, so patients *present late* in life.
- *Ostium primum* is least tolerated, these patients *present early* in childhood.

Common manifestations:

DYSPNOEA ON EXERTION :



FREQUENT CHEST
INFECTIONS :



FATIGUE

➤ Children with large ASD manifest with **CCF & Failure to thrive.**

An undetected ASD with a significant shunt

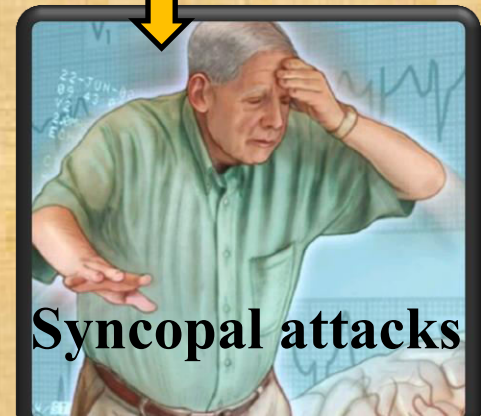
**Supra ventricular
Arrhythmias(Atrial
fibrillations & Atrial flutter)**

**Right
ventricular
Failure**

**Effort
dyspnea**

Palpitations

Syncopal attacks



CARDIO VASCULAR **SYSTEM EXAMINATION :**



CARDIAC EXAMINATION :

-Signs of **Right ventricular hypertrophy.**

✓ **Inspection** : Left atrialization of JVP (A wave = V wave)

Mild left precordial bulge.

✓ **Palpation** : - **Parasternal impulse** (hyperdynamic RV impulse at the end of systole)

- Dilated pulmonary artery trunk palpable in 2nd LICS.

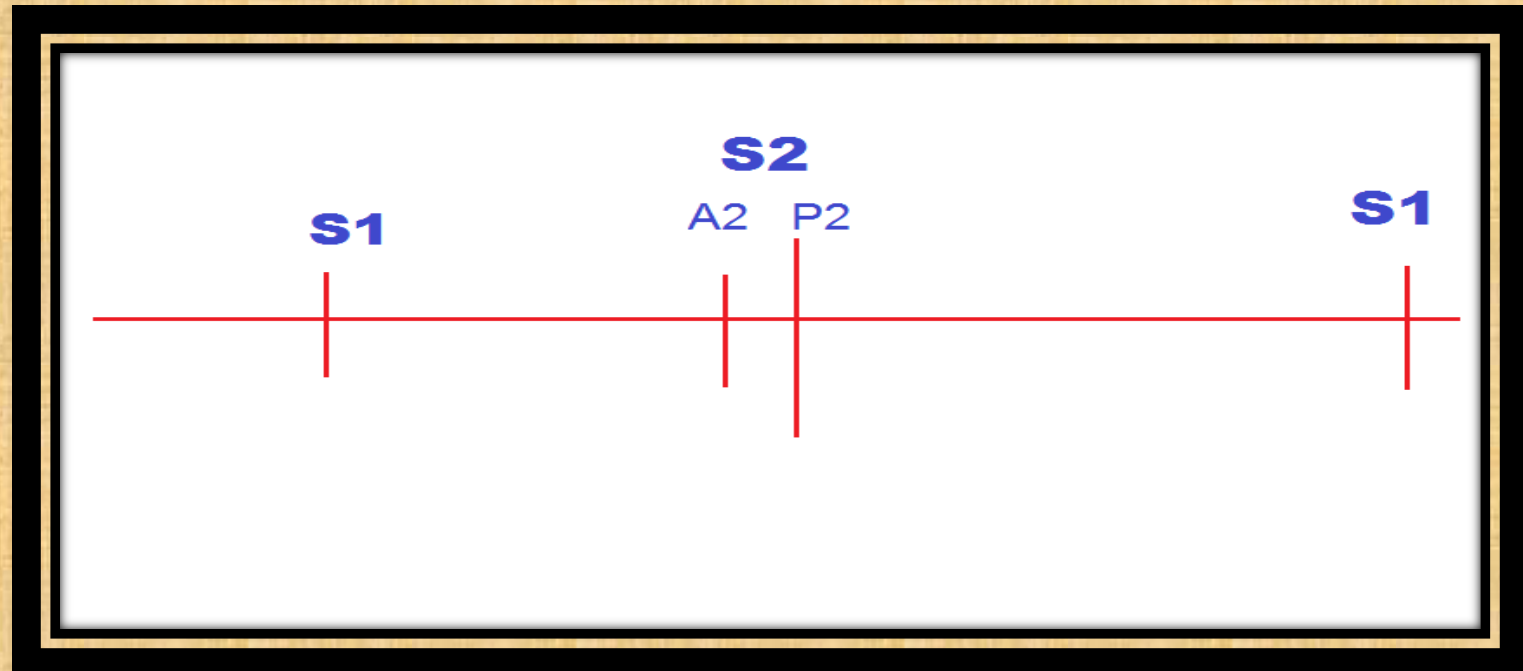
✓ Auscultation : *S₁ in all areas-Normal

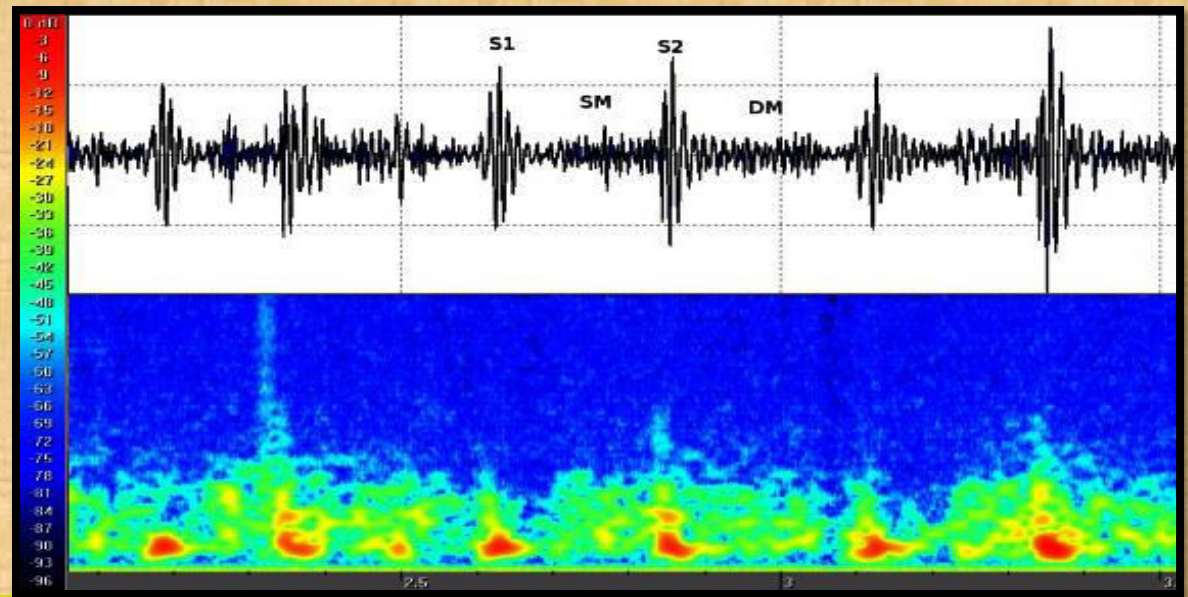
In Pulmonary area:

***S₂- Wide fixed split of S₂**

(Hallmark of ASD)

- P₂ delay and accentuated





* Delayed diastolic murmur

(lower left sternal border)

*Ejection systolic murmur

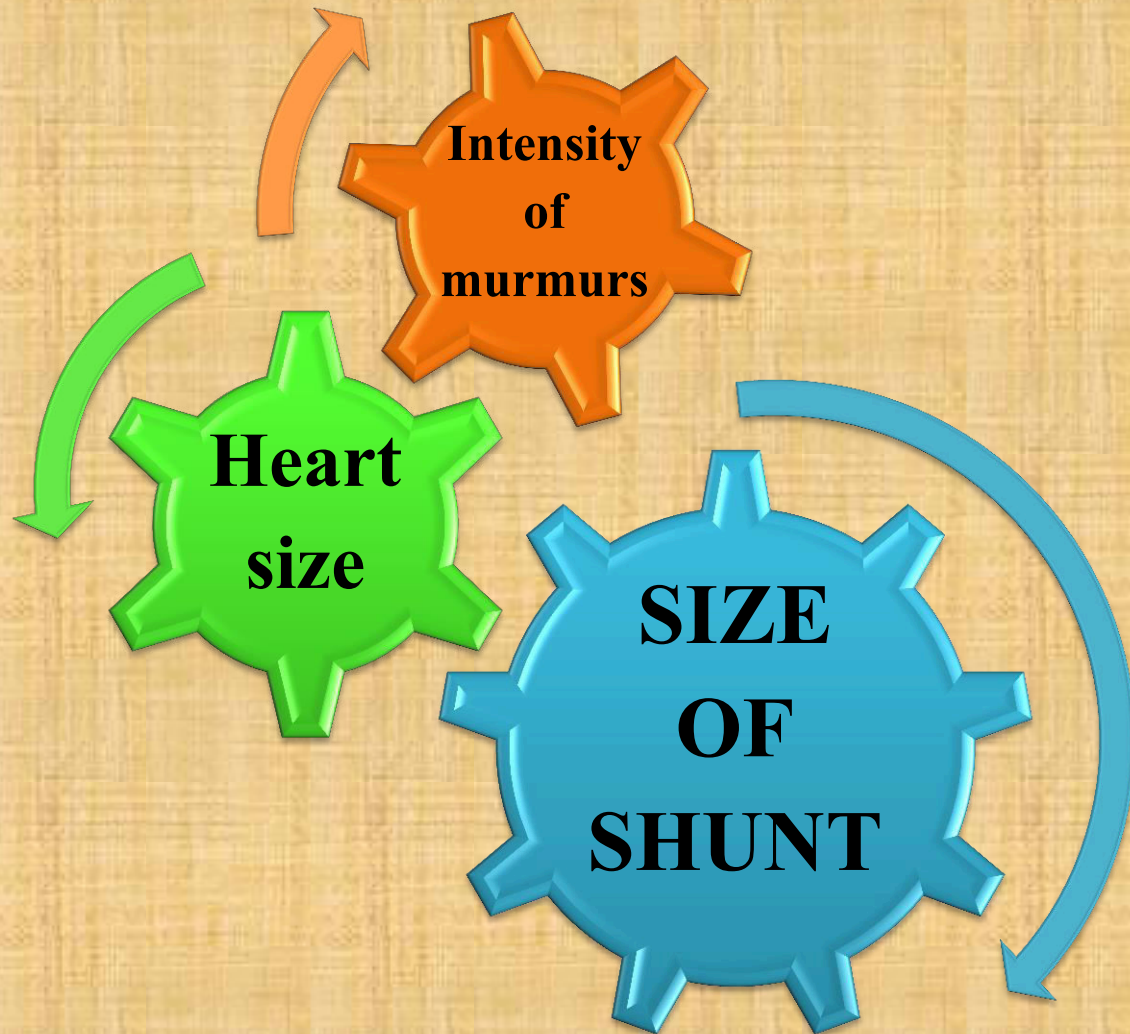
(2nd or 3rd LICS)

At times, there can be *Pansystolic murmur- 4 possibilities

Ostium primum, MR,

MV prolapse syndrome, RV failure

ASSESSMENT OF SEVERITY :



Summary

- ASD: left to right shunt
- Leading to enlargement of right atrium , right ventricle and pulmonary trunk
- Right ventricular failure
- Wide fixed split of S2 and delayed diastolic murmur are the significant clinical findings.

