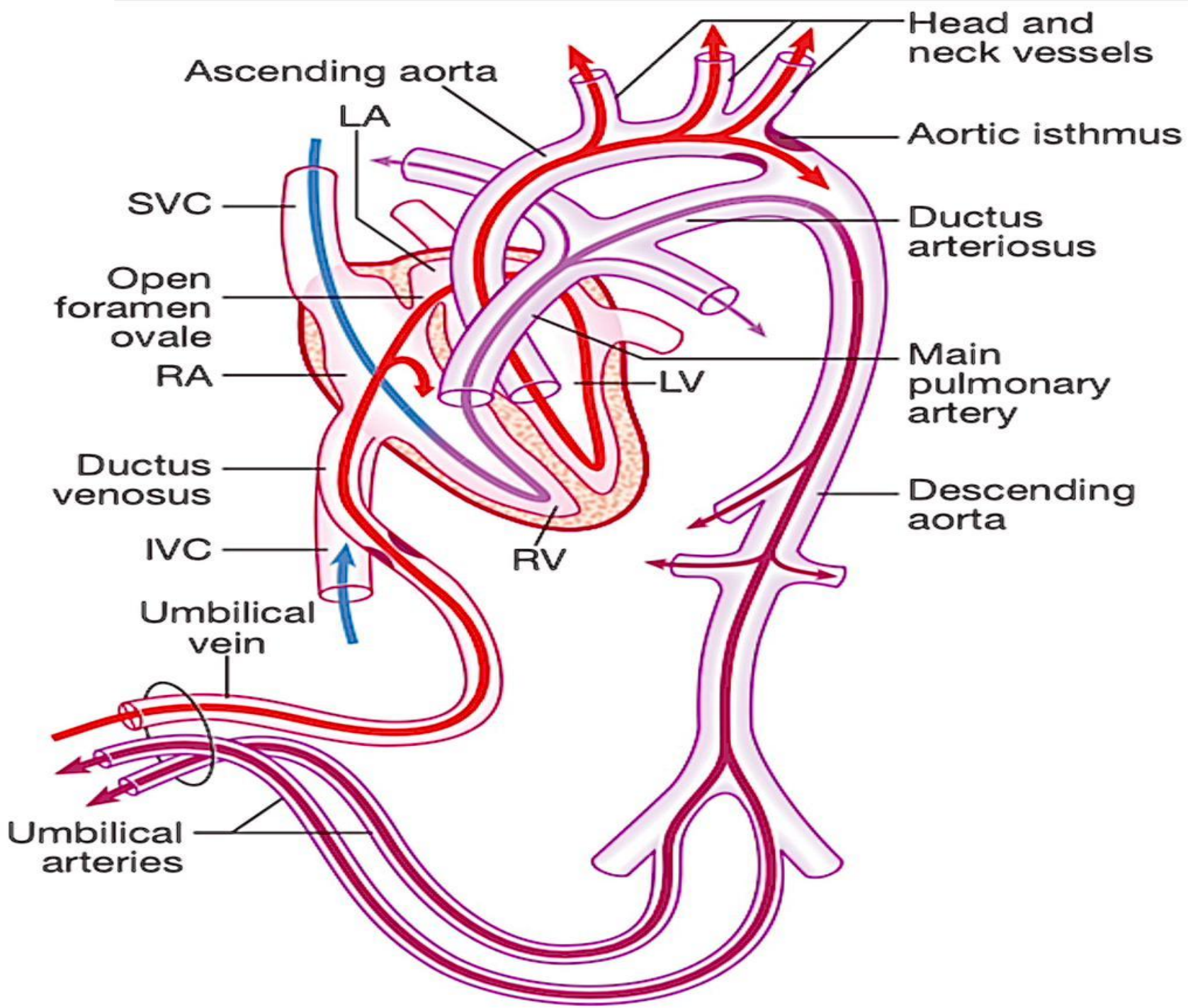
CONGENITAL HEART DISEASES

SEMEEHA SADIQ

CLASSIFICATION

ACYANOTIC	CYANOTIC
WITH SHUNTS • VSD • ASD • PDA	**WITH SHUNTS** • TOF • TOGV • TAPVC • EBSTEINS ANOMALY • TRICUSPID ATRESIA
WITHOUT SHUNTS • AORTIC STENOSIS • COARCTATION OF AORTA	**WITHOUT SHUNTS** • PULMONARY STENOSIS


Head and neck vessels
Ascending aorta
LA
Aortic isthmus
SVC
Ductus arteriosus
Open foramen ovale
RA
LV
Main pulmonary artery
Ductus venosus
Descending aorta
IVC
RV
Umbilical vein
Umbilical arteries

FETAL CIRCULATION

O2 BLOOD VIA UMBILICAL ARTERY

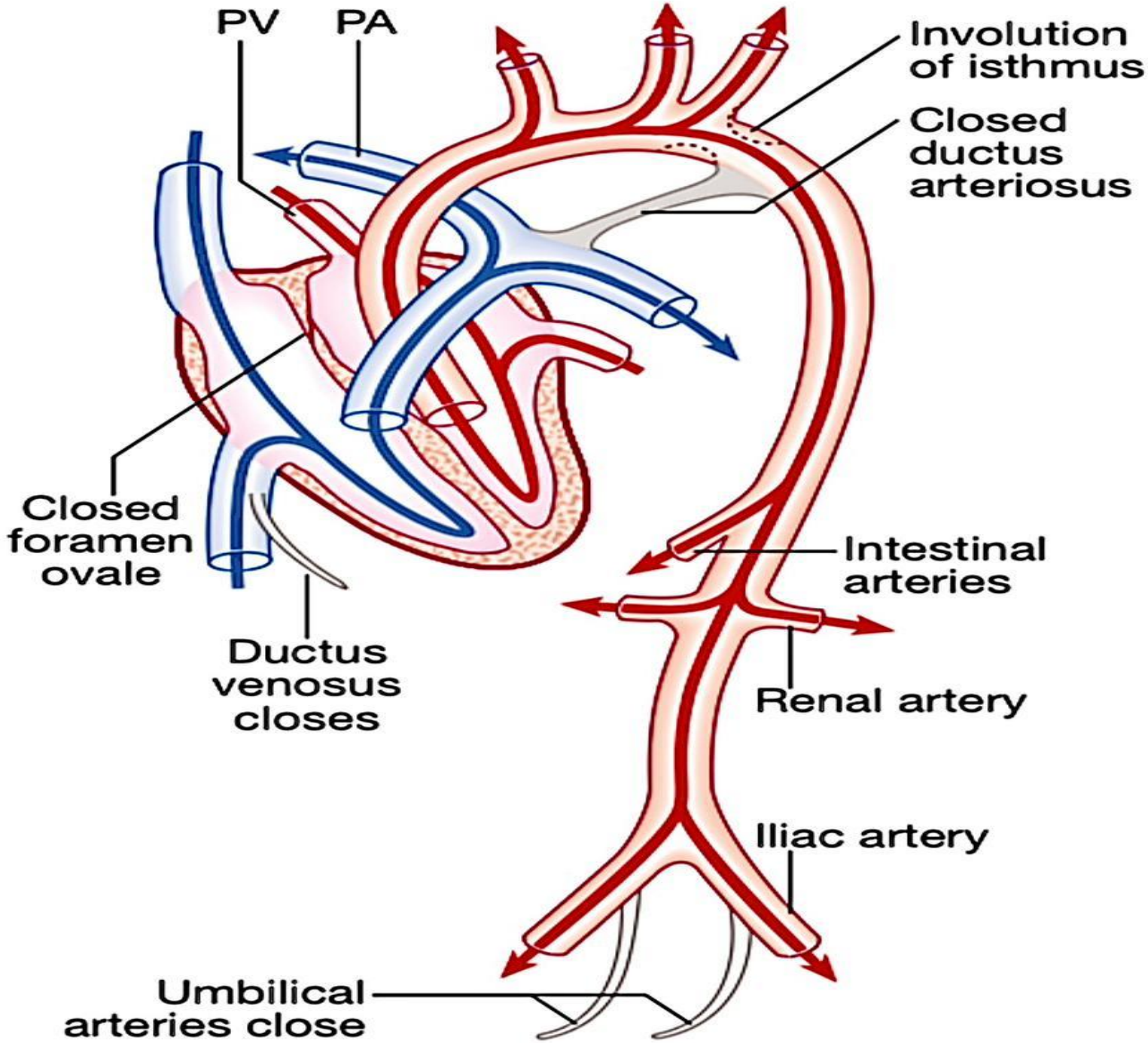
RIGHT ATRIUM

FORAMEN OVALE

LEFT ATRIUM

LEFT VENTRICLE

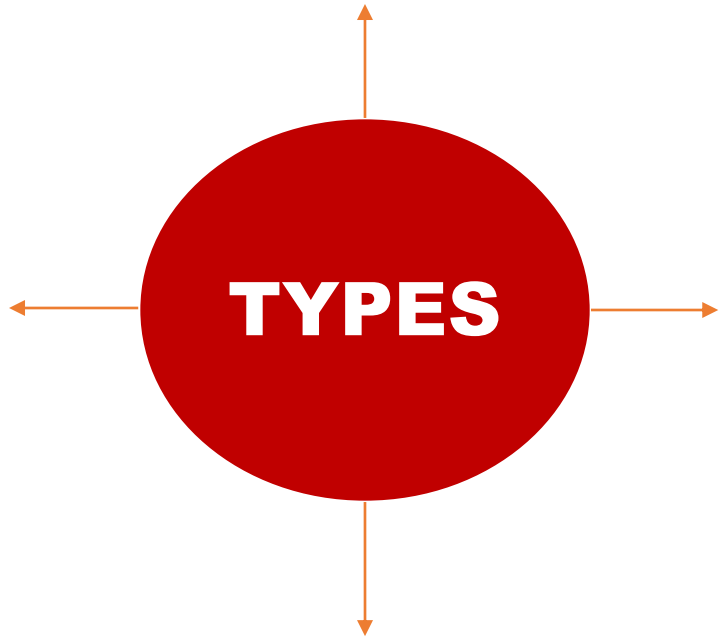
AORTA


PV
PA
Involution of isthmus
Closed ductus arteriosus
Closed foramen ovale
Intestinal arteries
Ductus venosus closes
Renal artery
Iliac artery
Umbilical arteries close

AT BIRTH

- BABY CRIES
- LUNG EXPANDS
- PULMONARY VASCULAR RESISTANCE
- BLOOD FLOW TO LEFT ATRIUM
- LEFT PRESSURE>RIGHT PRESSURE
- FLAP VALVE CLOSE

ASD



OSTIUM PRIMUM DEFECTS

location:LOWER PORTION OF ATRIAL SEPTUM

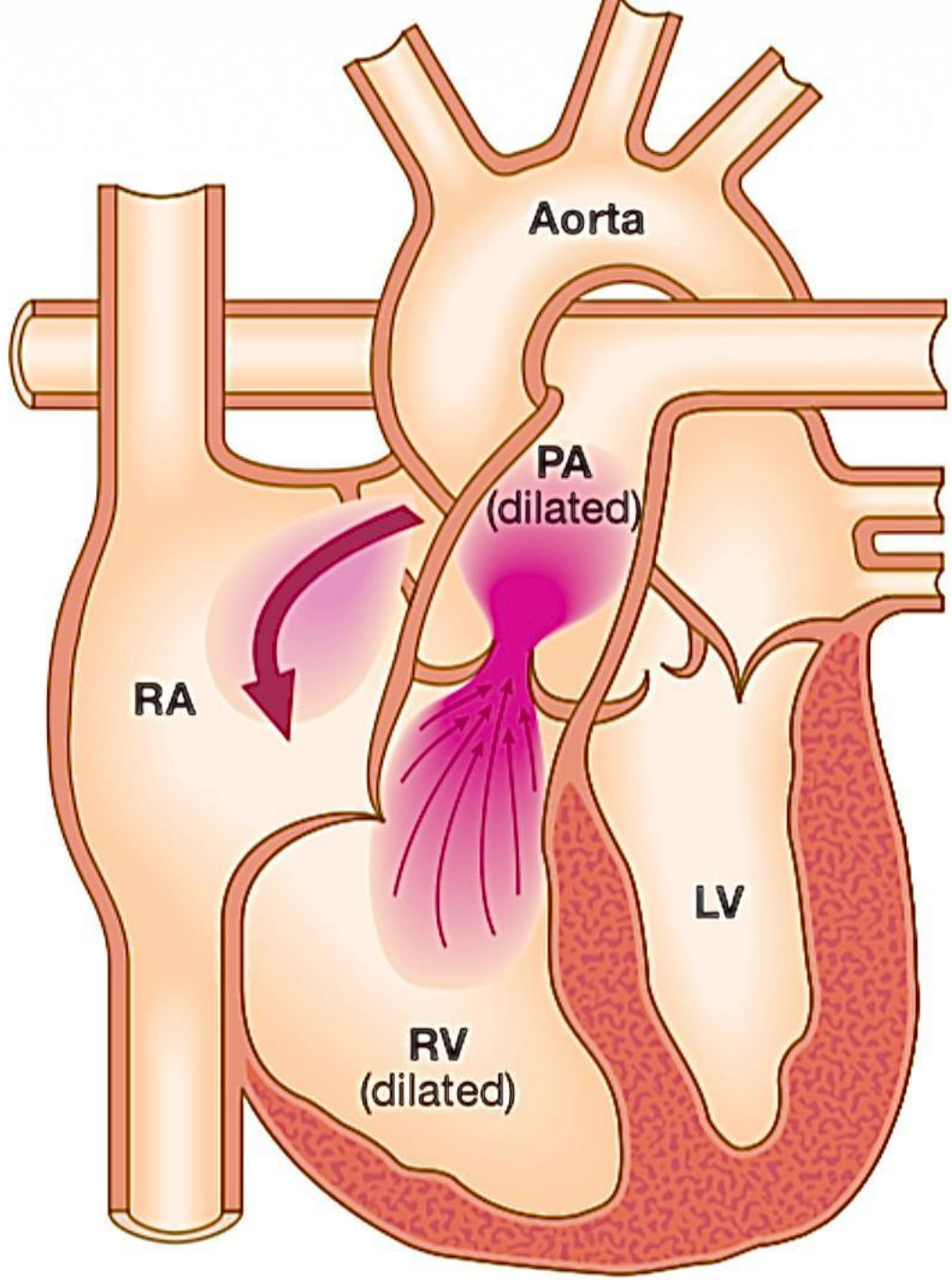
OSTIUM SECONDUM DEFECTS

Location:MIDSEPTUM

SINUS VENOSUS DEFECT

- SUPERIOR
- INFERIOR

CORONARY SINUS DEFECTS


Aorta
PA
(dilated)
RA
LV
RV
(dilated)

HEMODYNAMICS

DEFECT IN ATRIAL SEPTUM

LARGE VOL OF BLOOD SHUNTS FROM LA

RIGHT ATRIUM

RIGHT VENTRICLE O/P

INCREASED PULMONARY BLOOD FLOW

ENLARGEMENT OF RA RV PA

PULMONARY HT

SHUNT REVERSAL

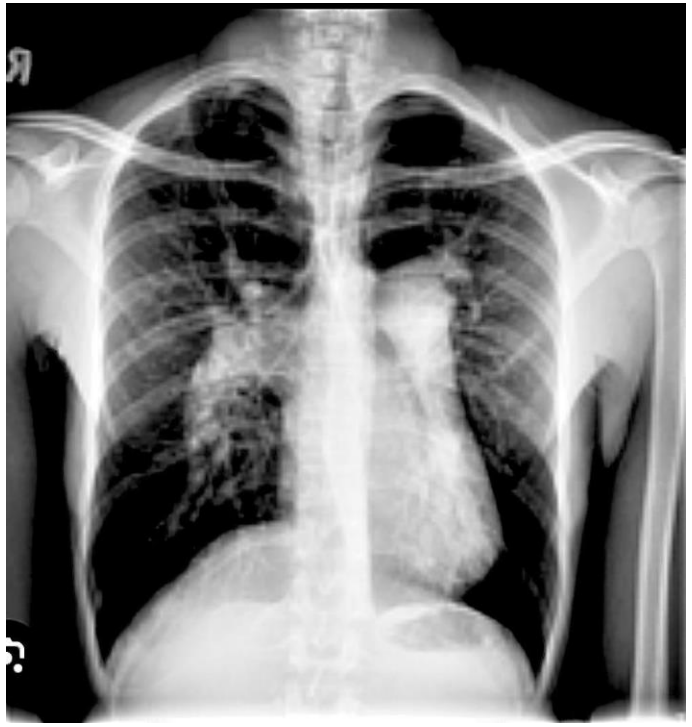
CLINICAL FEATURES

SYMPTOMS
OFTEN ASYMPTOMATIC TILL ADULTHOOD
EASY FATIGABILITY
RECURRENT CHEST INFECTIONS
EXERTIONAL DYSPNEA
PALPITATIONS
PLATYPNEA

SIGNS

- **PULSE**-no variation in rate or volume witj Valsalva
  irregularly irregular with AF
- **JVP**-a & v waves have equal height
  tall a wave if pulmonary ht or mitral stenosis
- **SYSTOLIC PULSATIONS**-in 2 &3 left ICS d/t dilated pulmonary artery
- **WIDE FIXED SPLITTING OF S2**
  increased RV ejection time
  increased pulmonary hangout interval
  asd equalizes lt and rt atrial pressures throughout respiratory cycle
- **SYSTOLIC FLOW MURMUR** over pulmonary valve
- DIASTOLIC FLOW MURMUR over tricuspid valve in children with large shunt
- VENTRICULAR HEAVE

INVESTIGATIONS



- **CHEST X RAY**
  - enlarged RA RV
  - prominent PA-JUG HANDLE appearance
  - pulmonary plethora
- **ECG**-incomplete RBBB & right axis deviation
- **ECHOCARDIOGRAPHY**-may show hypertrophy & dilation of right heart and pulmonary artery
- **CT** –assess anomalous pulmonary venous drainage
- **MRI**-size&location of defect

COMPLICATIONS

- CHF
- Paradoxical embolism
- AF
- Pulmonary hypertension
- Eisenmengers syndrome

MANAGEMENT

- Treat respiratory infections
- Surgical-

  median sternotomy with direct closure of small to moderate defects

  large defects closed with patches like dacron or PTFE
- Percutaneous transcatheter septal clamshell device closure

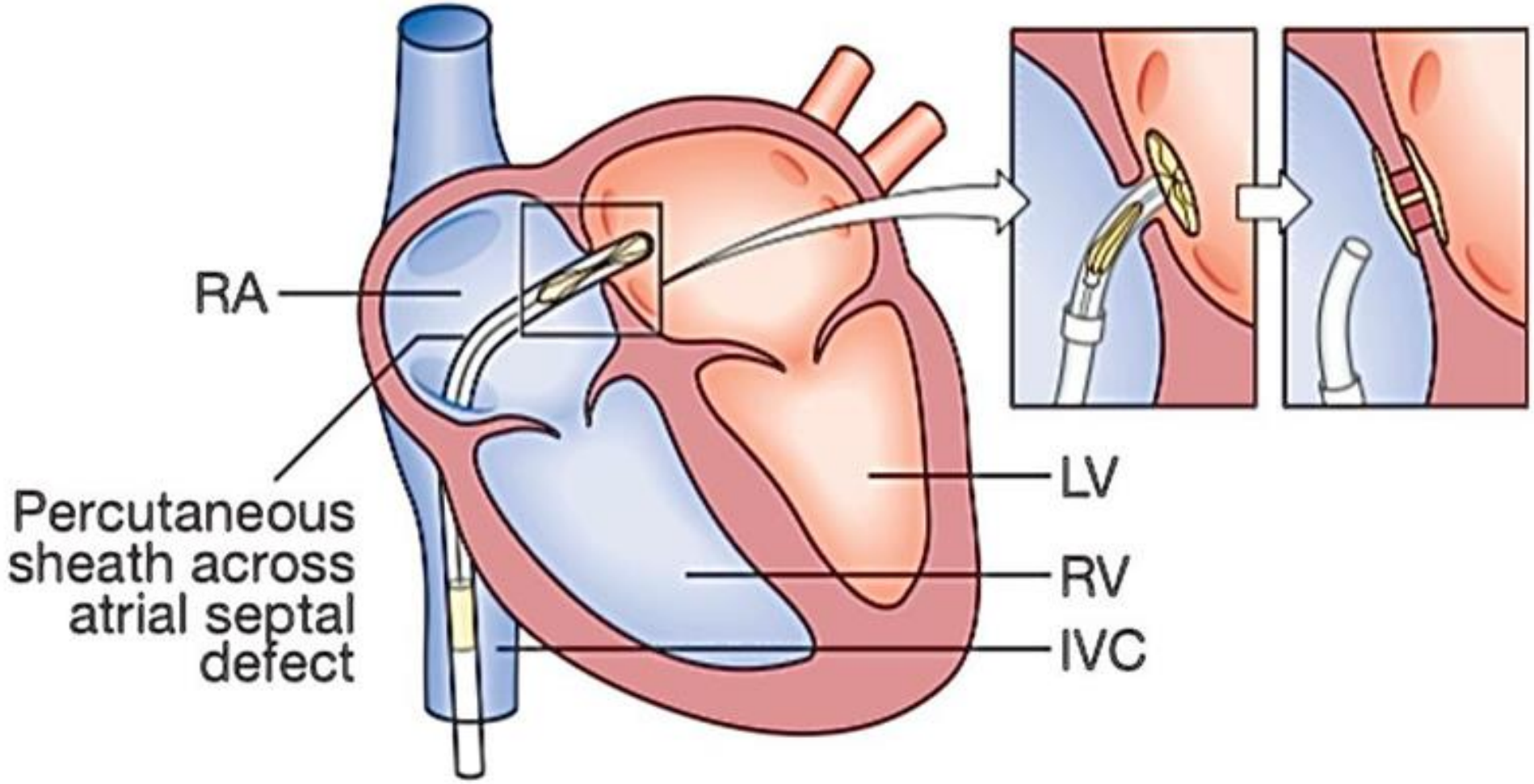


Fig. 16.96 Percutaneous closure of atrial septal defect. The closure device is delivered across the interatrial septum and a disc deployed on either side to seal the defect. (IVC = inferior vena cava; LV = left ventricle; PA = pulmonary artery; RA = right atrium; RV = right ventricle)

VSD

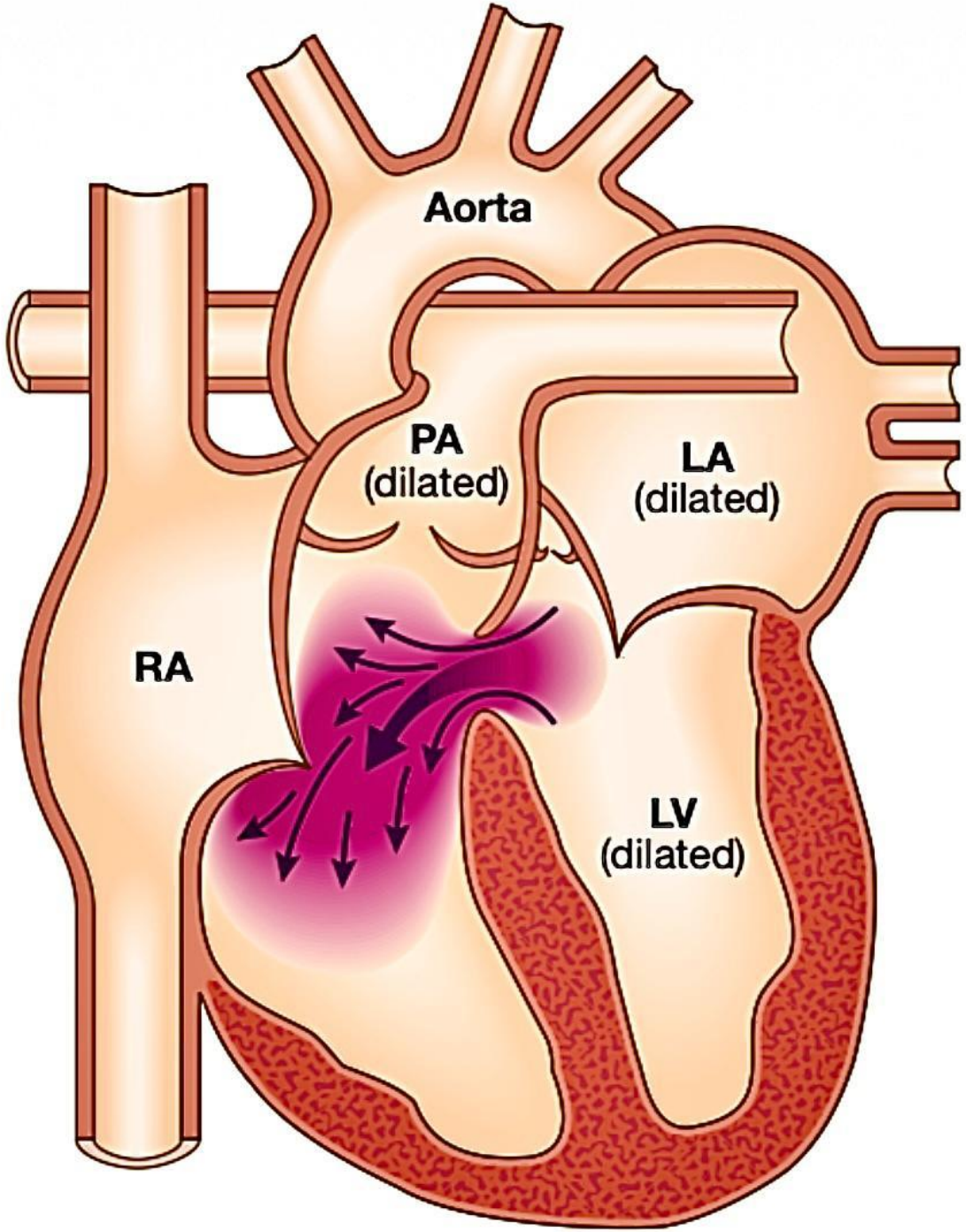
- PERIMEMBRANOUS VSD
- DOUBLY COMMITED SUBARTERIAL VSD
- MUSCULAR VSD

LV pressure> RV pressure

VOLUME OVERLOAD OF RIGHT VENTRICLE

INCREASED PULMONARY FLOW

IF LARGE DEFECT-PULMONARY HT,SHUNT REVERSAL



- SYMPTOMS-DEPEND ON SIZE OF DEFECT,SEVERITY OF SHUNT
- LARGE VSD-DYSPNEA,RECURRENT PULMONARY INFECTIONS,HEPATOSPLENOMEGALY,SWEATING,FAILURE TO THRIVE

- RELATIVELY WIDE PULSE PRESSURE
- PANSYSTOLIC MURMUR(s1 s2 masked, radiates over precordium
- SMALL DEFECT – LOUD MURMUR
- LARGE DEFECT-SOFTER MURMUR
- HYPERKINETIC PRECORDIUM WITH SYSTOLIC THRILL@ LSB
- PARASTERNAL PULSATION
- INDRAWING OF LOWER RIBS ON INSPIRATION

INVESTIGATIONS

- X RAY-Cardiomegaly prpnl to volume overload
- ECG-KATZ WACHTEL sign-large equiphasic QRS in v2-v4 suggestive of biventricular hypertrophy
- DOPPLER ECHOCARDIOGRAPHY

MANAGEMENT

- SMALL VSD-80% closes by 2yrs
- CARDIAC FAILURE IN INFANCY-initially managed with digoxin and diuretics,if failure persists-surgical repair
- MODERATE/LARGE-repair by intervention