SNS COLLEGE OF PHYSIOTHERAPY

AffiliatedToTheTamilNaduDr.MGRMedicalUniversity,Chennai
Coimbatore– 641035

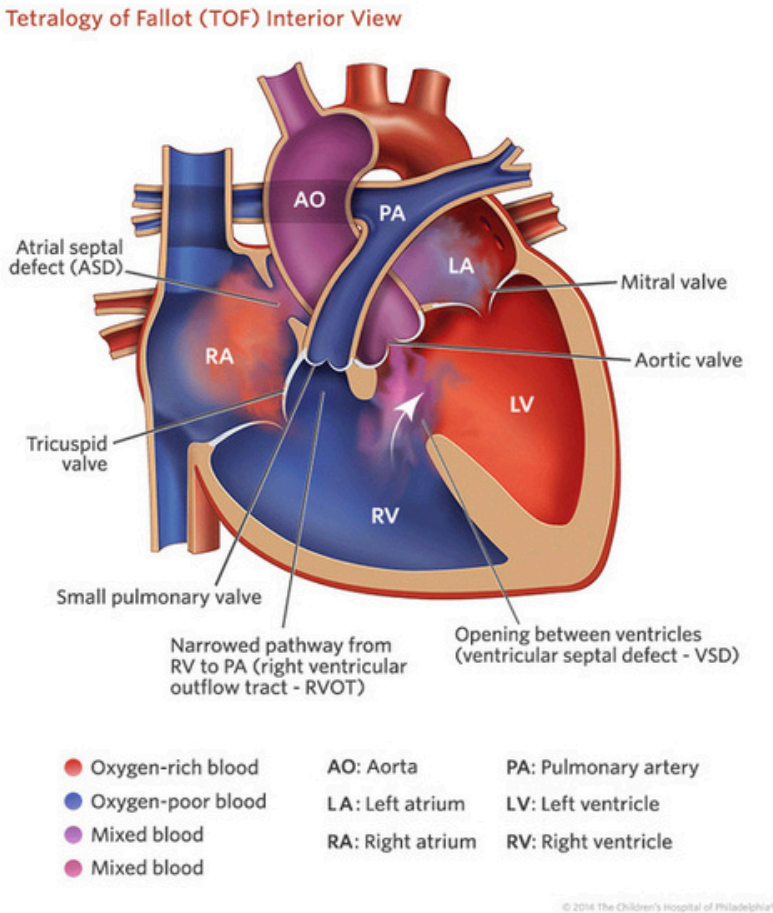
COURSE NAME :Clinical cardio respiratory

SUBJECT CODE : 6286

TOPIC : Tetralogy of Fallot (TOF)

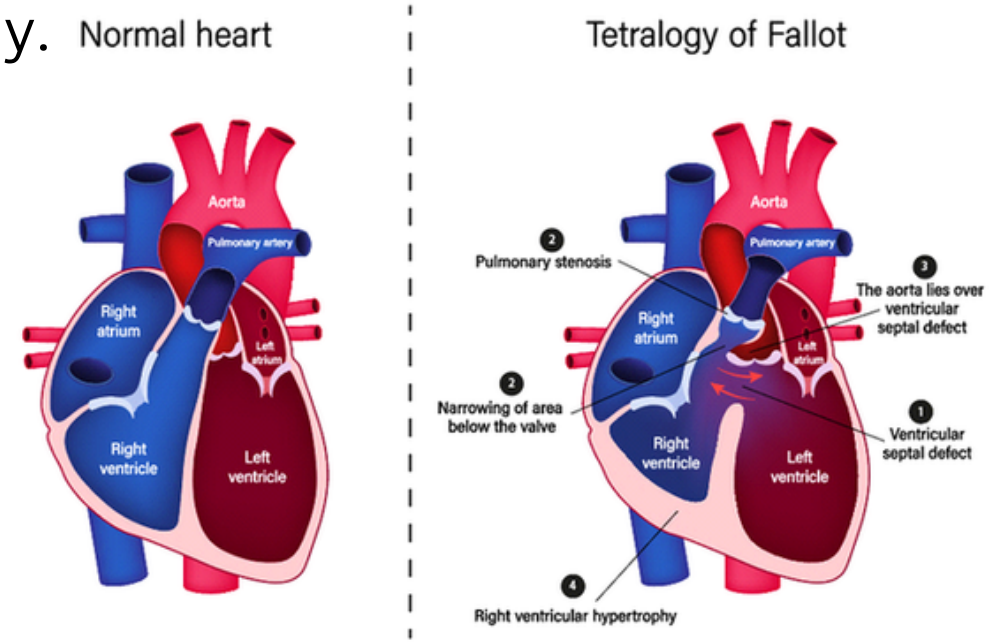
INTRODUCTION

- Tetralogy of Fallot (TOF) is a cyanotic congenital heart disease consisting of four anatomical defects that result in reduced pulmonary blood flow and mixing of oxygenated and deoxygenated blood.
- It is one of the most common causes of cyanosis in infants and children.



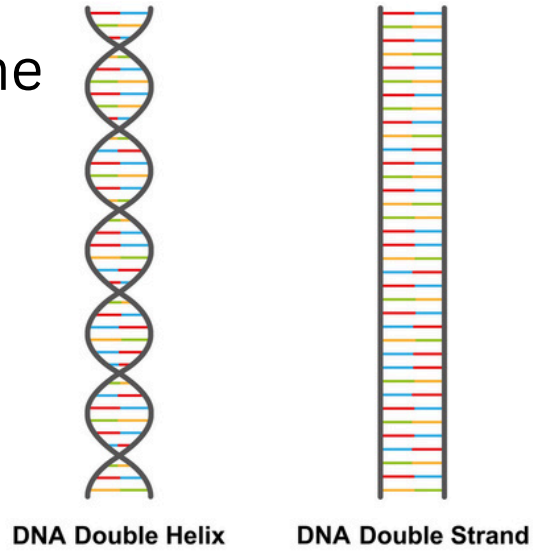
Definition

Tetralogy of Fallot (TOF) is a congenital cardiac defect characterized by the presence of four structural abnormalities: ventricular septal defect, pulmonary stenosis, overriding of the aorta, and right ventricular hypertrophy.



Causes

- Congenital maldevelopment of the heart during fetal life
- Genetic factors
- Maternal infections (rubella)
- Maternal diabetes
- Alcohol or drug exposure during pregnancy
- Chromosomal abnormalities (e.g., DiGeorge syndrome)



Pathophysiology

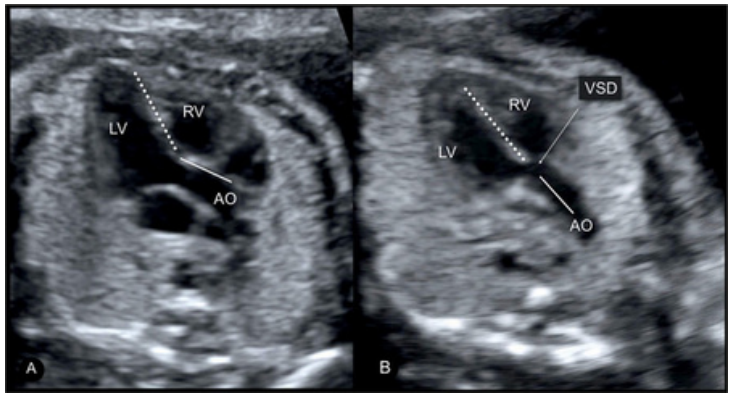
- Reduced pulmonary blood flow
- Right-to-left shunt across VSD
- Deoxygenated blood enters systemic circulation
- Leads to cyanosis and hypoxemia

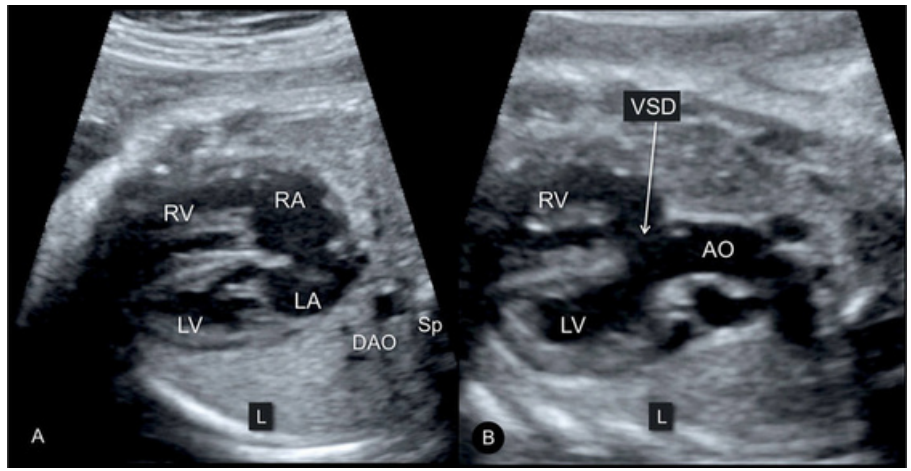
CLINICAL FEATURES

1. Infants and Children
   - Cyanosis (especially during crying or feeding)
   - Dyspnea
   - Failure to thrive
   - Squatting posture to relieve dyspnea
   - Recurrent hypoxic (cyanotic) spells
2. Older Children
   - Clubbing of fingers
   - Exercise intolerance
   - Fatigue

Diagnosis

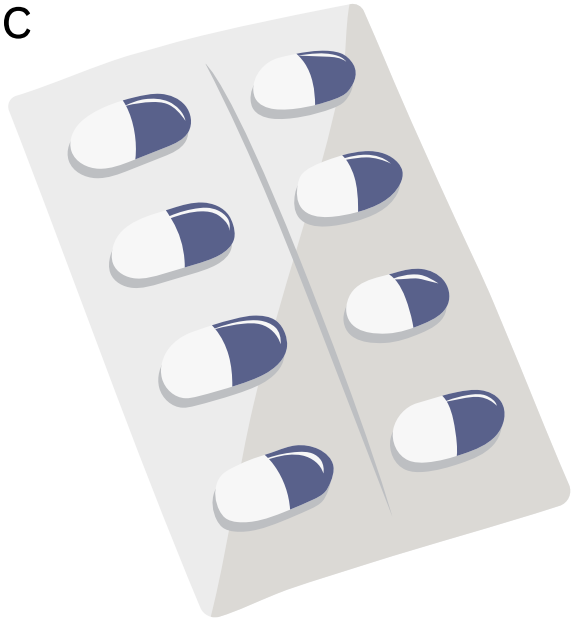
- Clinical examination: Cyanosis, systolic murmur
- Chest X-ray: Boot-shaped heart
- ECG: Right ventricular hypertrophy
- Echocardiography: Gold standard
- Cardiac catheterization: For surgical planning if required





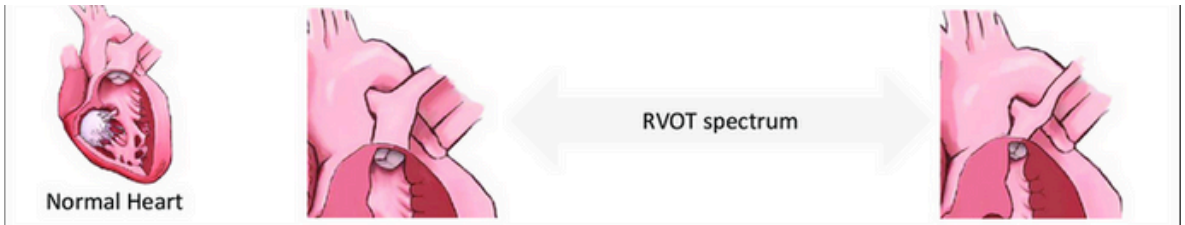
Medical management

- Oxygen therapy during cyanotic spells
- Beta blockers (e.g., propranolol)
- Iron supplementation
- Management of dehydration
- Knee-chest position during hypoxic spells



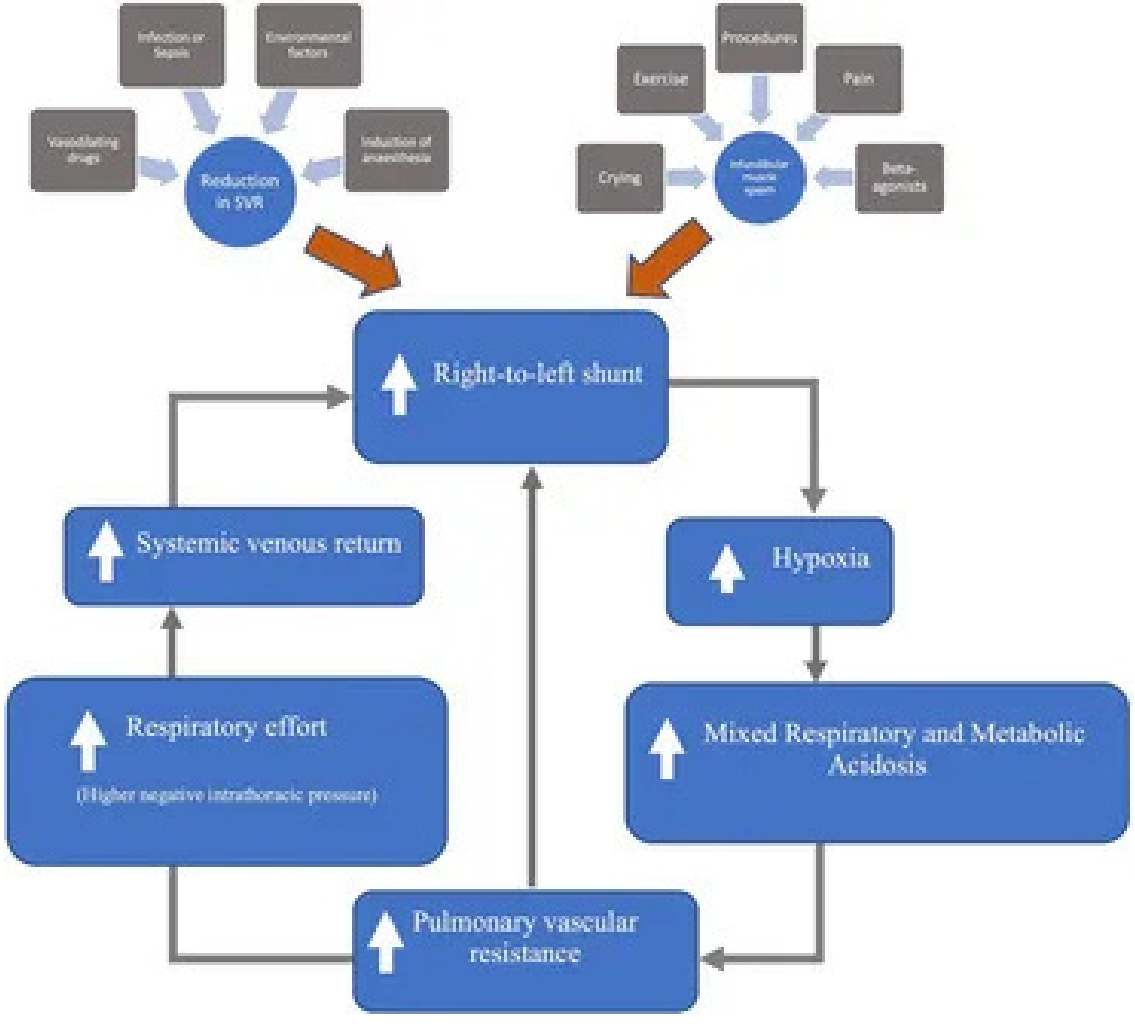
SURGICAL management

1. Definitive corrective surgery (closure of VSD and relief of pulmonary stenosis)
2. Palliative surgery (Blalock-Taussig shunt) if definitive surgery is delayed
3. Surgery is usually done in infancy or early childhood



TOF Spectrum	TOF with mild PS	TOF with moderate PS	TOF with severe multilevel RVOTO
Anatomical features	VSD, RVMB and valvular stenosis Annular z score ≤ -1	VSD, RVMB, Valvular +/- Supravavular stenosis Annular z score -1 to -3	VSD, severe multilevel RVOTO Annular z score ≤ -3
Typical Surgical approach	Transatrial, transpulmonary	Transatrial, transpulmonary ± ventriculotomy	Transannular, ventriculotomy
Typical Surgical repair	VSR	VSR ± infundibular patch	TAP ± monocusp

Flow Chart


Infection or Sepsis
Environmental factors
Vasodilating drugs
Reduction in SVR
Induction of anaesthesia
Procedures
Exercise
Pain
Crying
Beta-agonists
Right-to-left shunt
Systemic venous return
Hypoxia
Respiratory effort
(Higher negative intrathoracic pressure)
Mixed Respiratory and Metabolic Acidosis
Pulmonary vascular resistance

In class assessment

1. Define Tetralogy of Fallot.
2. Is TOF a cyanotic or acyanotic heart disease?
3. Name the four components of TOF.
4. What causes cyanosis in TOF?
5. What posture relieves dyspnea in TOF?
6. What is the characteristic chest X-ray finding in TOF?
7. Name the gold standard investigation for TOF.
8. What is the definitive treatment for TOF?
9. Mention one cyanotic spell management technique.
10. State one role of physiotherapy in TOF.

Thank you