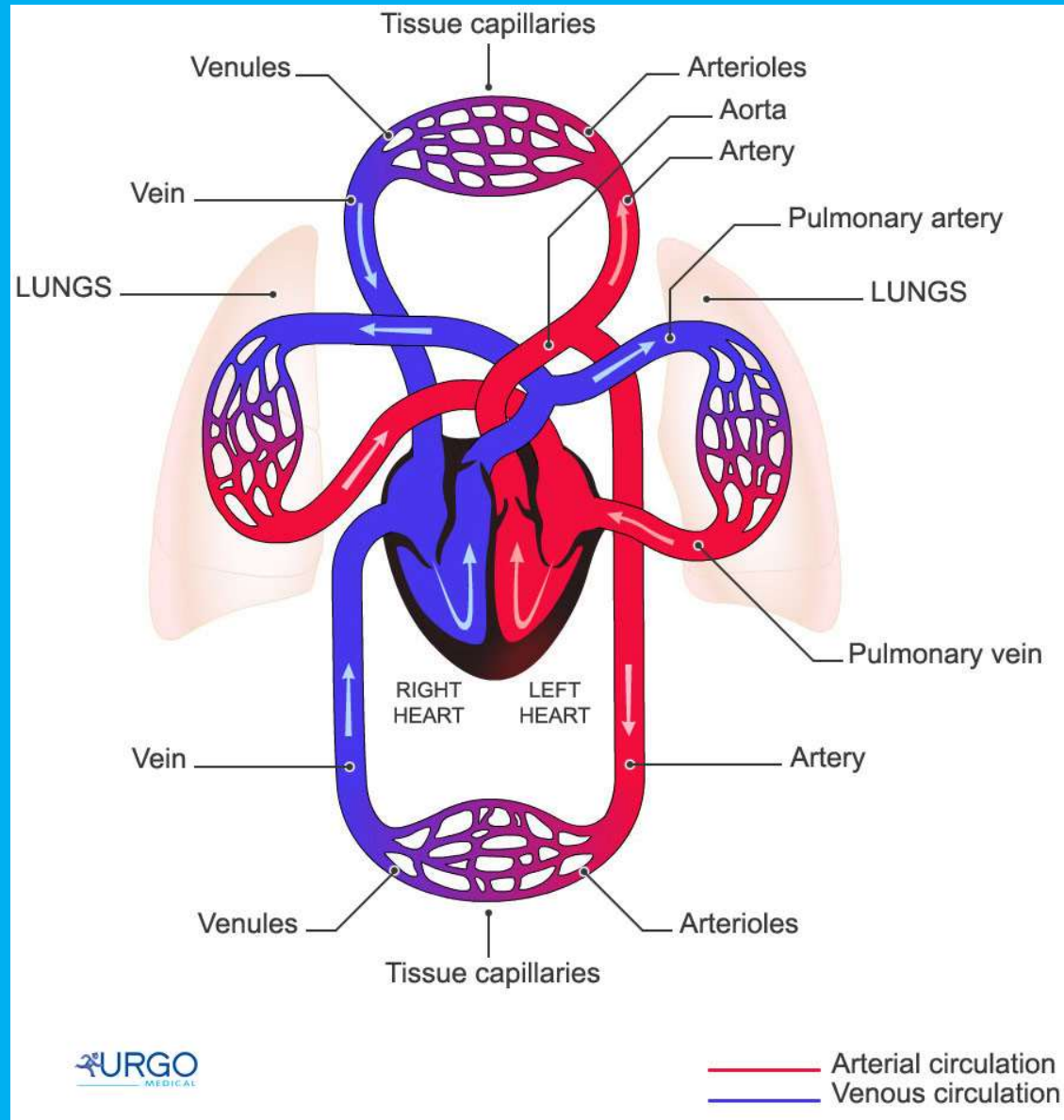




# Cyanotic Congenital Heart Disease

**Ghaderian.M. MD**

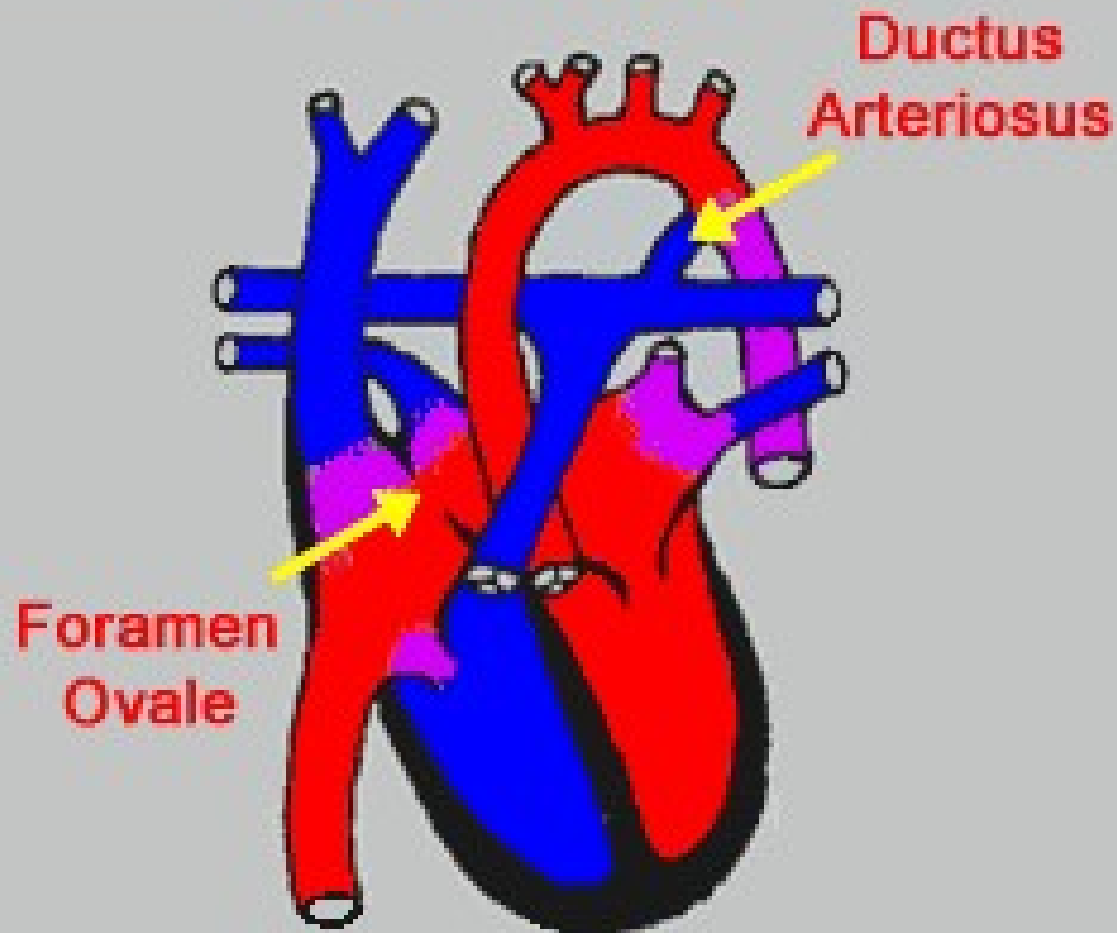
**Associate Professor of Pediatric Cardiology  
Interventional Cardiologist  
Emam Hosein Children Hospital  
Esfahan University of Medical science**





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# Fetal Heart



# Cyanotic Congenital Heart Disease

**بیماری های سیانوتیک مادرزادی قلبی:**

در واقع یک عبور خون وریدهای سیستمیک به بدن بدون عبور از ریه ها است ( شنت راست به چپ) است. ظهور علائم به میزان هموگلوبین خون بیمار بستگی دارد.

# Cyanotic Congenital Heart Disease

- *Tetralogy of Fallot*
- *Transposition of the great arteries*
- *Tricuspid atresia*
- *Truncus arteriosus*
- *Total anomalous pulmonary venous return*

# **Tetralogy of Fallot**

## **Etiology and Epidemiology**

**Most common cyanotic congenital heart defect (10%)**

**Ventricular septal defect (VSD)**

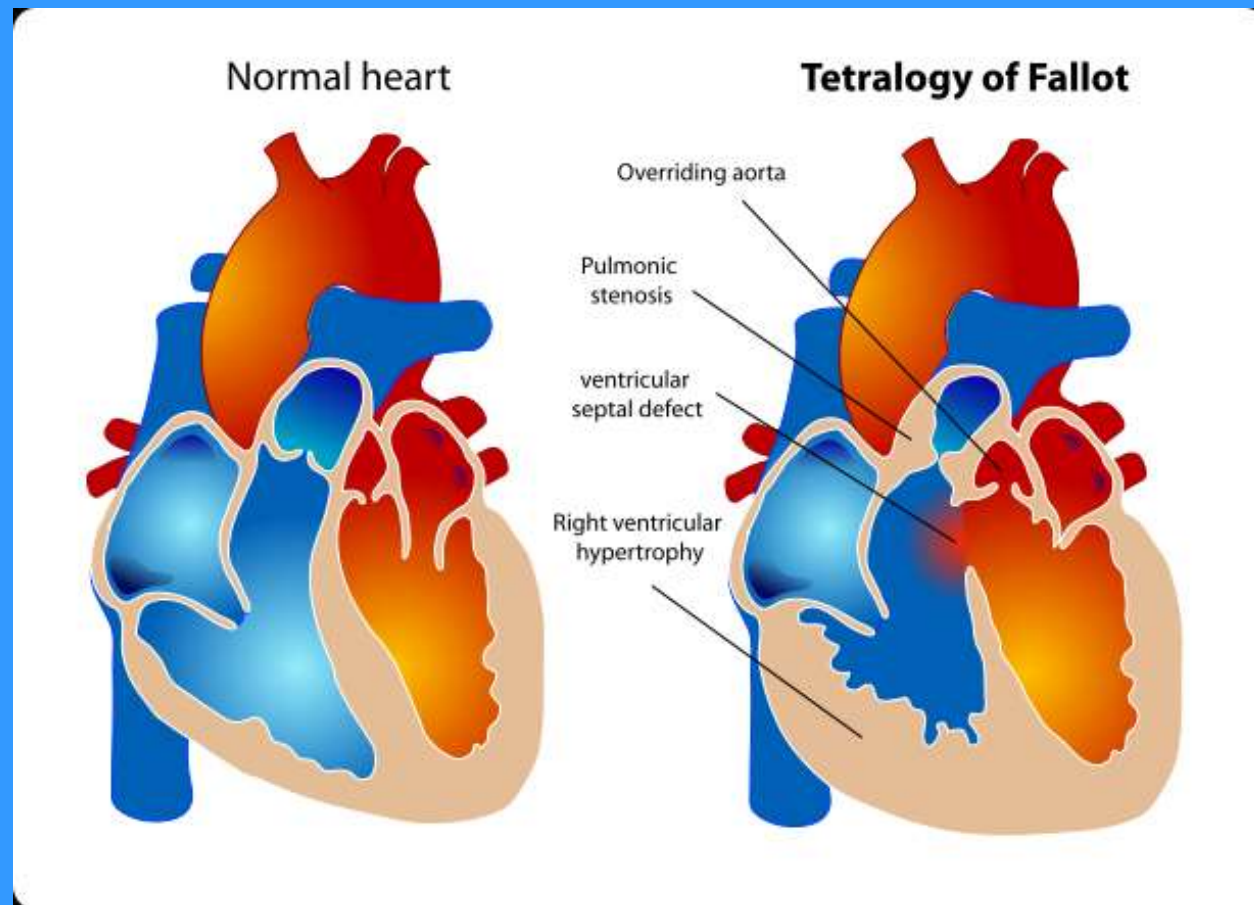
**Pulmonary stenosis**

**Overriding aorta**

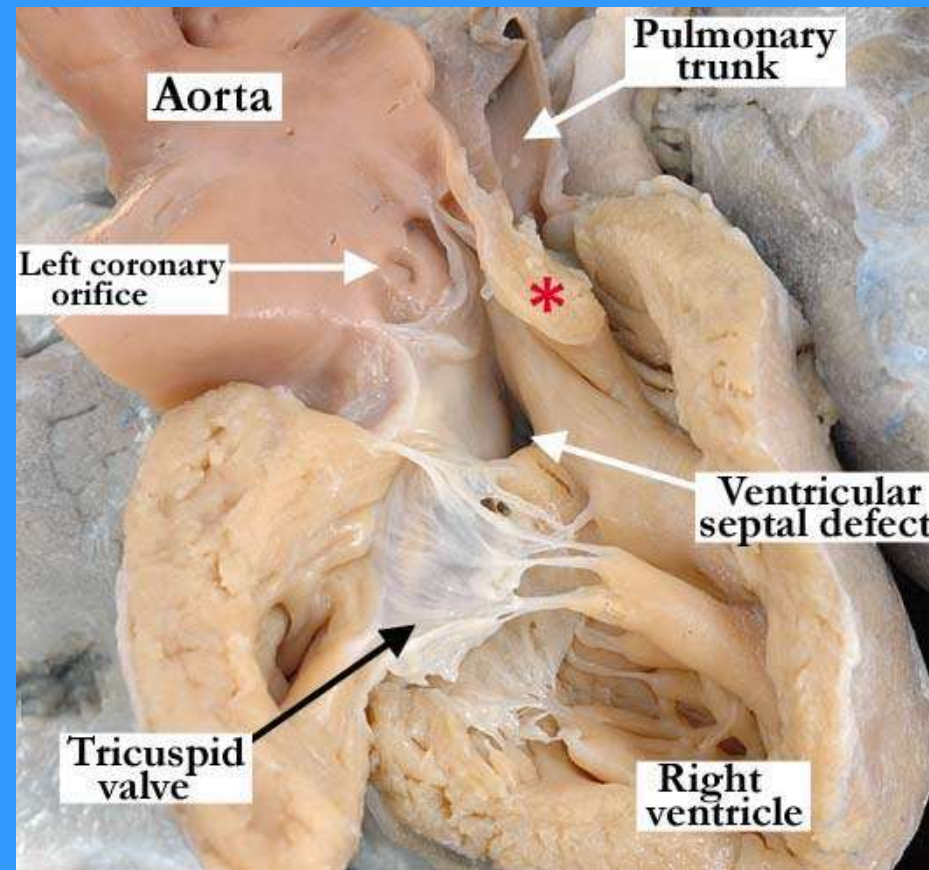
**Right ventricular hypertrophy**



# Tetralogy of Fallot



# Tetralogy of Fallot



# Tetralogy of Fallot

Children with Tetralogy of Fallot exhibit bluish skin during episodes of crying or feeding.



"Tet spell"

 ADAM

# Tetralogy of Fallot



# Tetralogy of Fallot



# Tetralogy of Fallot



# **Tetralogy of Fallot**

## **Clinical Manifestations**

**Depends on the amount of pulmonary stenosis.**

**Blue or gray skin color.**

**Shortness of breath and rapid breathing, especially during feeding or exercise.**

**Trouble gaining weight.**

**Getting tired easily during play or exercise.**

**Irritability.**

**Crying for long periods of time.**

**Fainting.**

**Seizures.**

# Tetralogy of Fallot

## Clinical Manifestations

Depends on the amount of pulmonary stenosis.

Pulmonary stenosis murmur

Single S<sub>2</sub>

Right ventricular impulse

Hypoxic (Tet) spells (restless and agitated and may cry inconsolably)



# Tetralogy of Fallot

**Hypoxic (Tet) spells** (restless and agitated and may cry inconsolably)

Some babies with tetralogy of Fallot suddenly develop deep blue or gray skin, nails, and lips.

This usually happens when the baby cries, eats or is upset. These episodes are called **tet spells**.

- Tet spells are caused by a rapid drop in the amount of oxygen in the blood. They are most common in young infants, around 3 to 6 months old. Tet spells may be less noticeable in toddlers and older children. That's because they typically squat when they're short of breath. Squatting sends more blood to the lungs.

# Tetralogy of Fallot

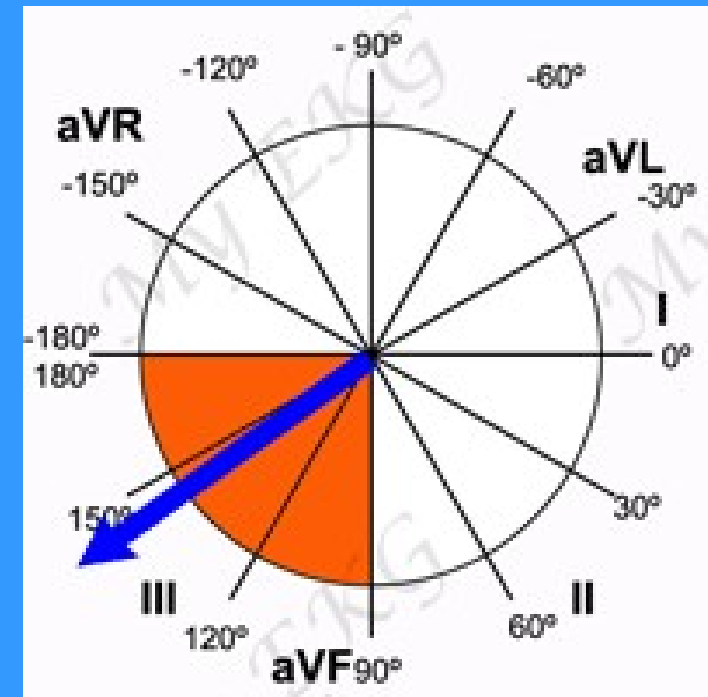
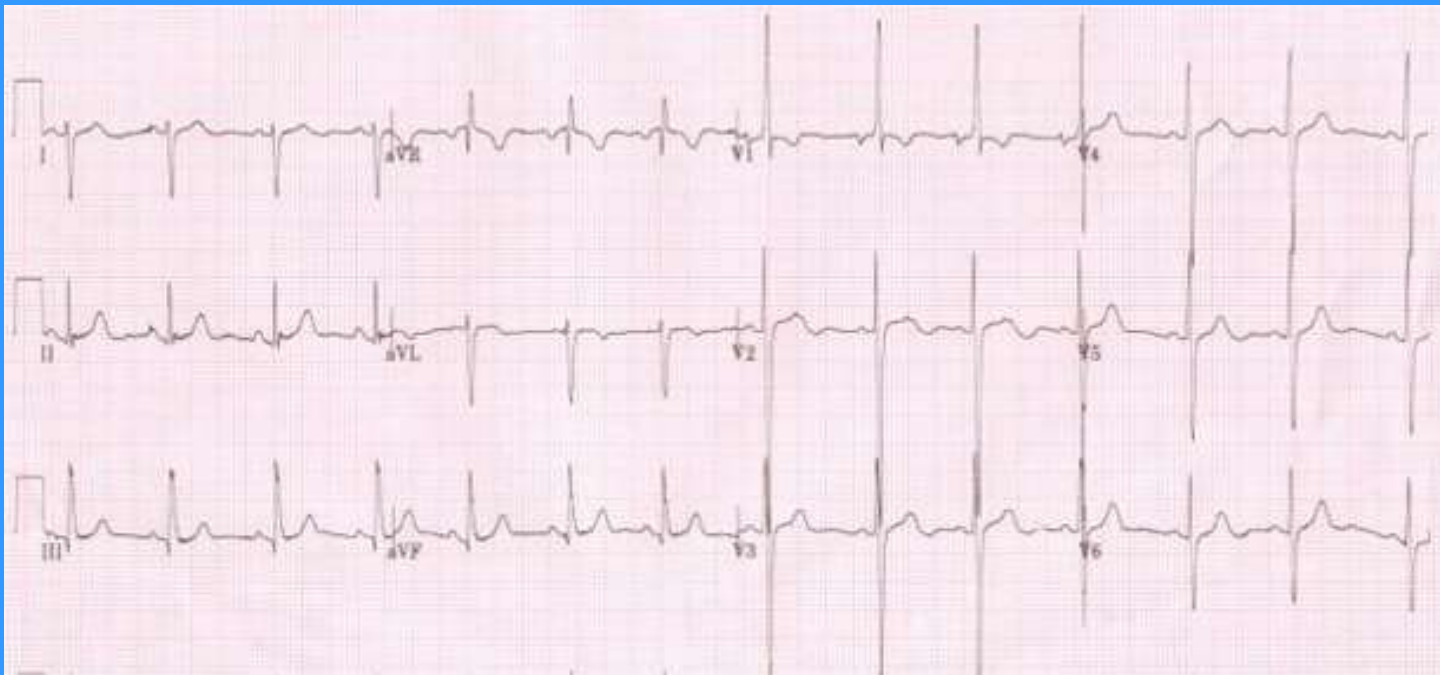
## Risk factors

- Family history.
- Having a virus during pregnancy. This includes rubella.
- Drinking alcohol during pregnancy.
- Eating poorly during pregnancy.
- Smoking during pregnancy.
- Mother's age older than 35.
- Down syndrome or DiGeorge syndrome in the baby.

# Tetralogy of Fallot

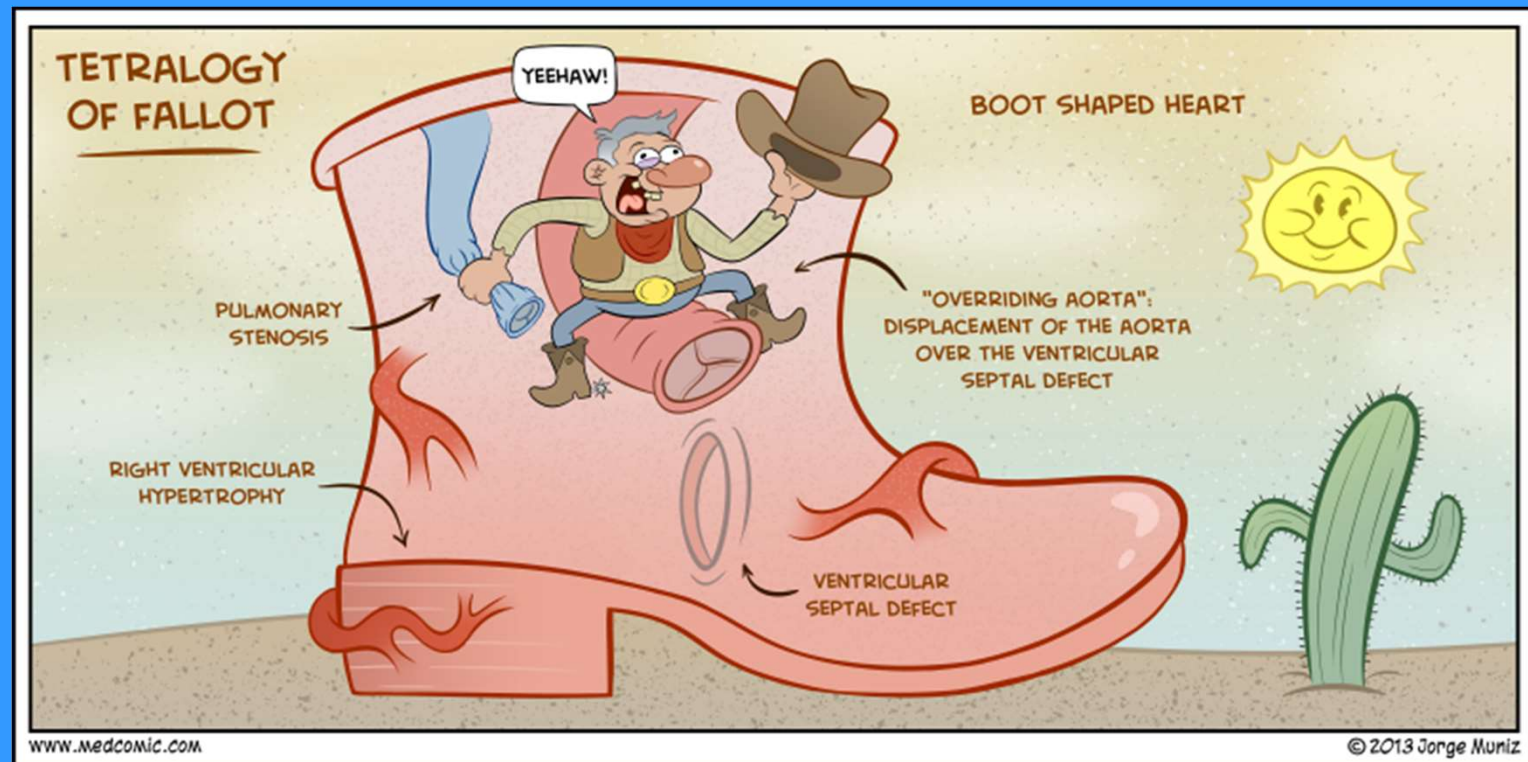
## Imaging Studies

**(ECG) :** Right axis deviation and right ventricular hypertrophy

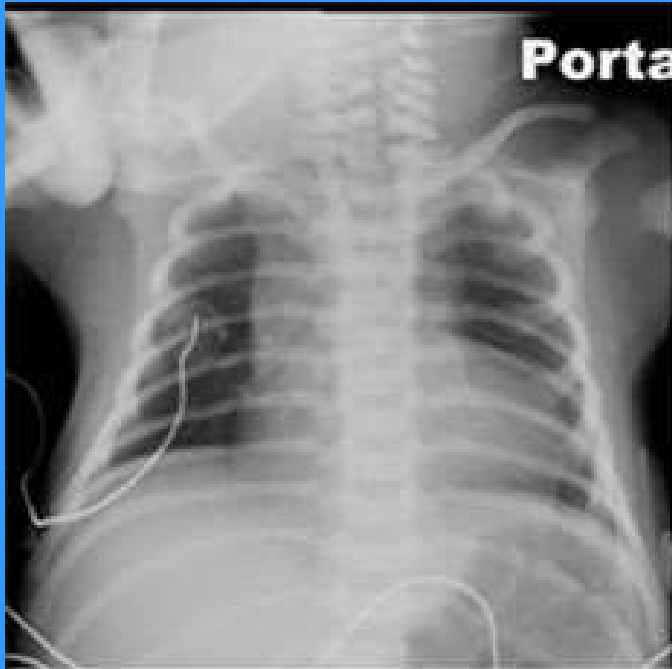


# Tetralogy of Fallot

CXR:



# Tetralogy of Fallot



one-day of age



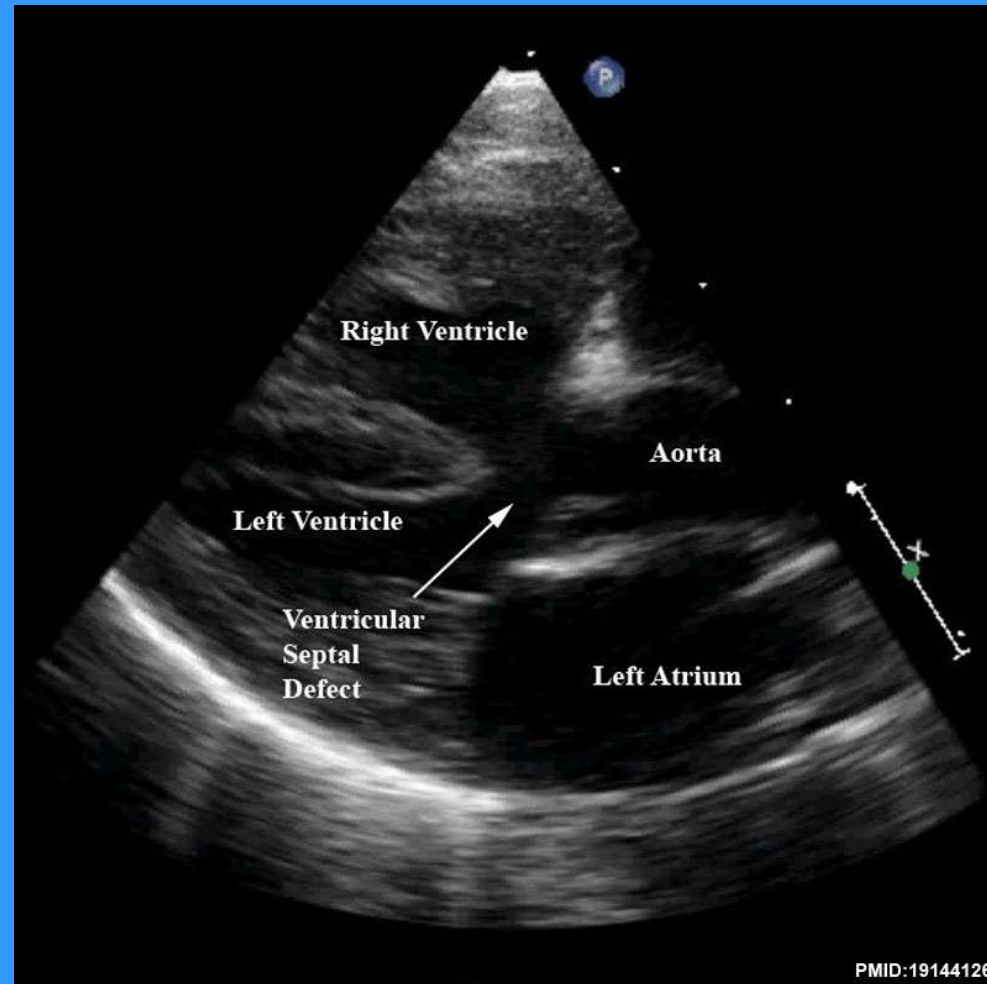
3.5 months of age



Children's Hospital Boston

# Tetralogy of Fallot

## Echocardiography



# Tetralogy of Fallot

*Coronary anomalies*

present in 5% of patients with TOF

# Tetralogy of Fallot

## Treatment

### Hypoxic spells:

- Oxygen administration (minimal benefit)
- Knee-chest position
- Morphine sulfate
- Phenylephrine

Complete surgical repair

Palliative shunt surgery, stenting of RVOT, balloon of RVOT

Subacute bacterial endocarditis prophylaxis (until 6 months after complete repair unless there is a residual VSD)





# Tetralogy of Fallot

## Treatment

### Medical

**Beta-blocker** (to improve blood flow)

Extra oxygen

Iron

### Surgical approach

Total correct

BT shunt

PVR

### Interventional approach

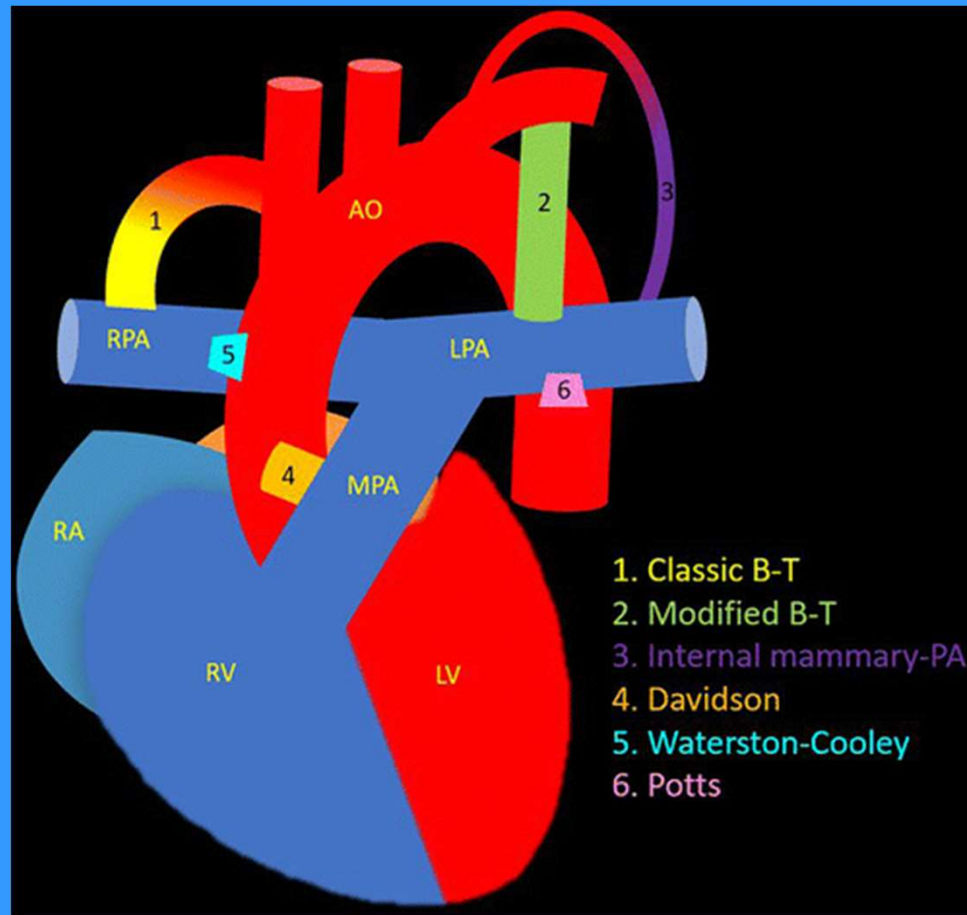
PDA stenting

RVOT stenting

PVR

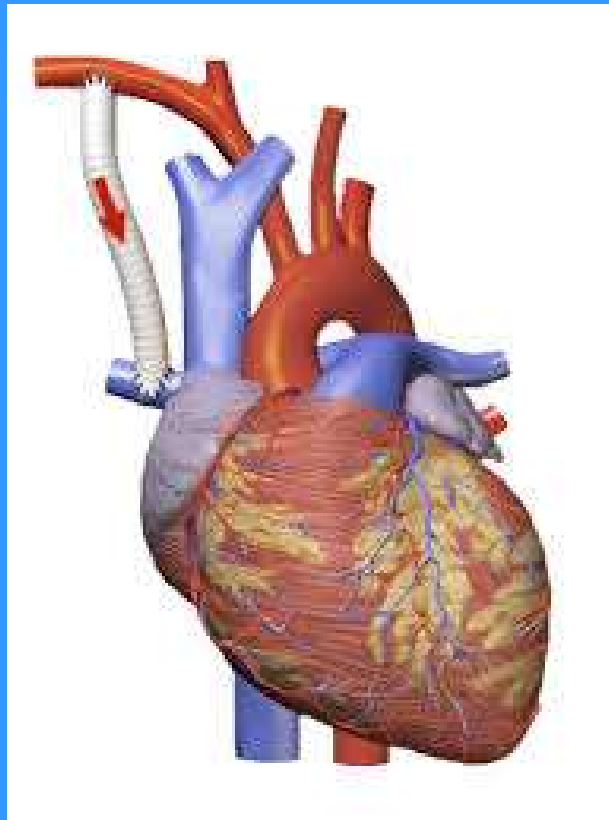
# Tetralogy of Fallot

## Treatment



# Tetralogy of Fallot

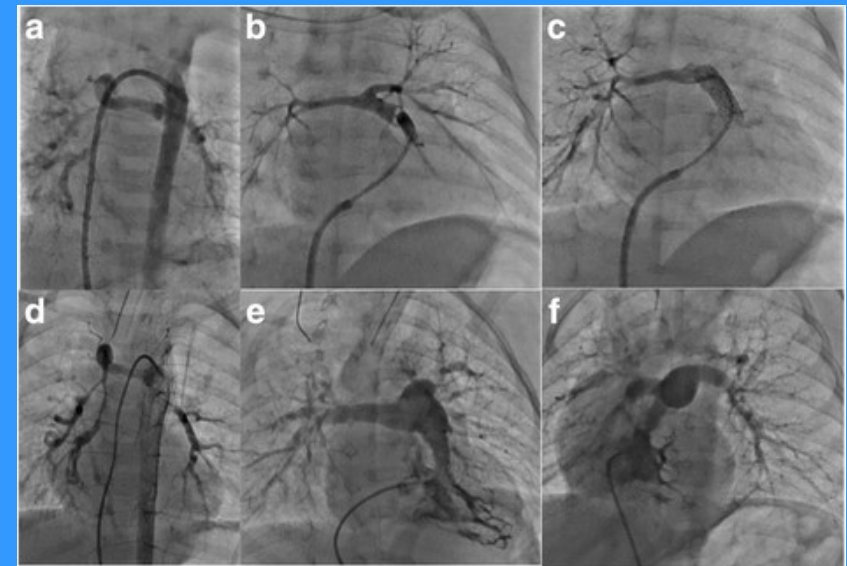
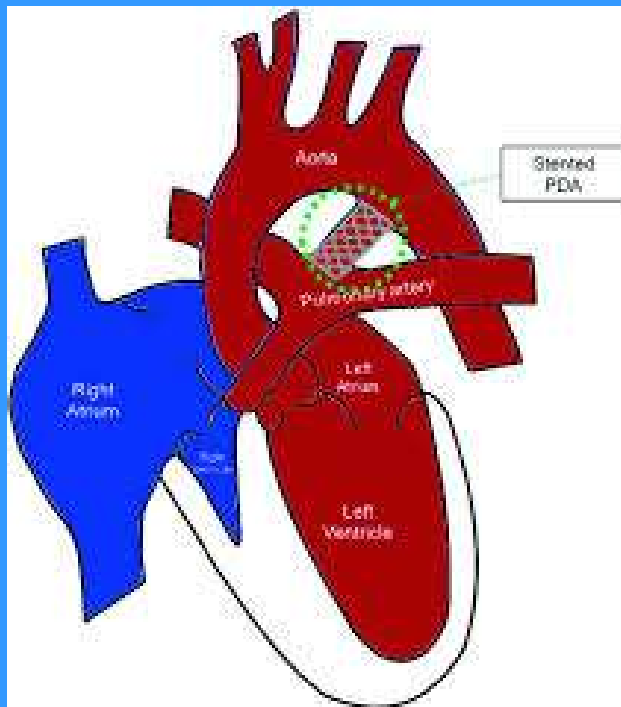
## Treatment



# Tetralogy of Fallot

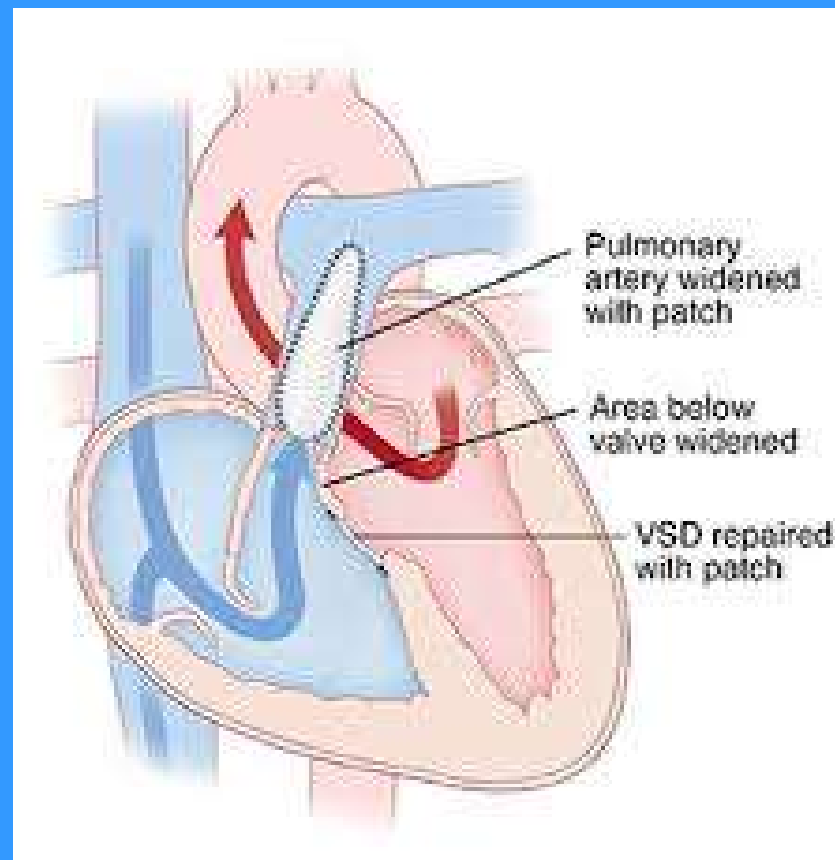
## Treatment

Interventional approach



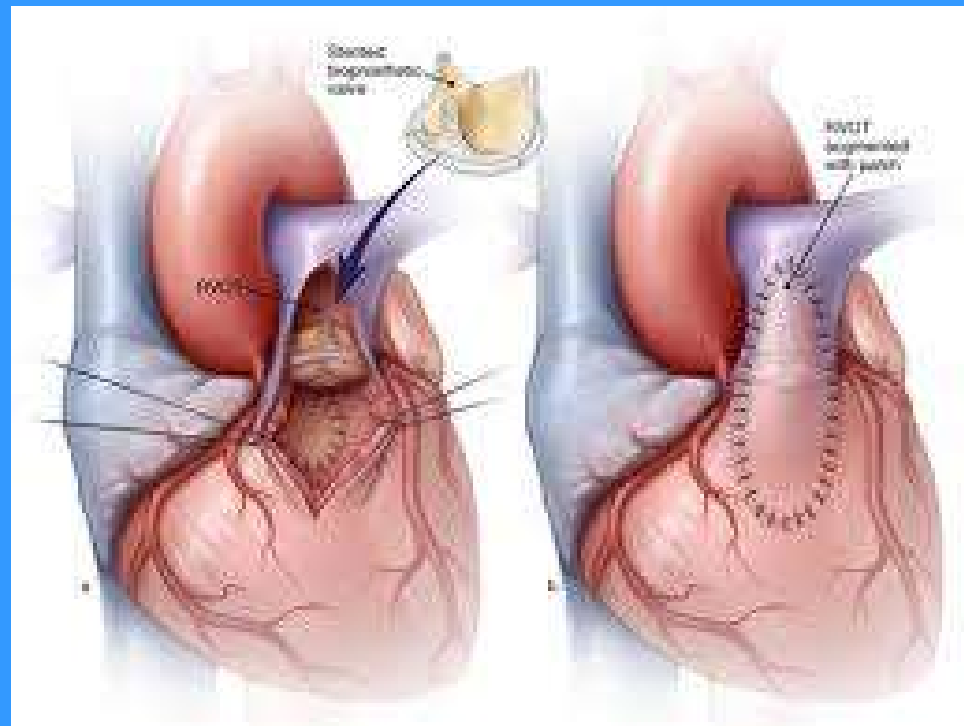
# Tetralogy of Fallot

## Treatment



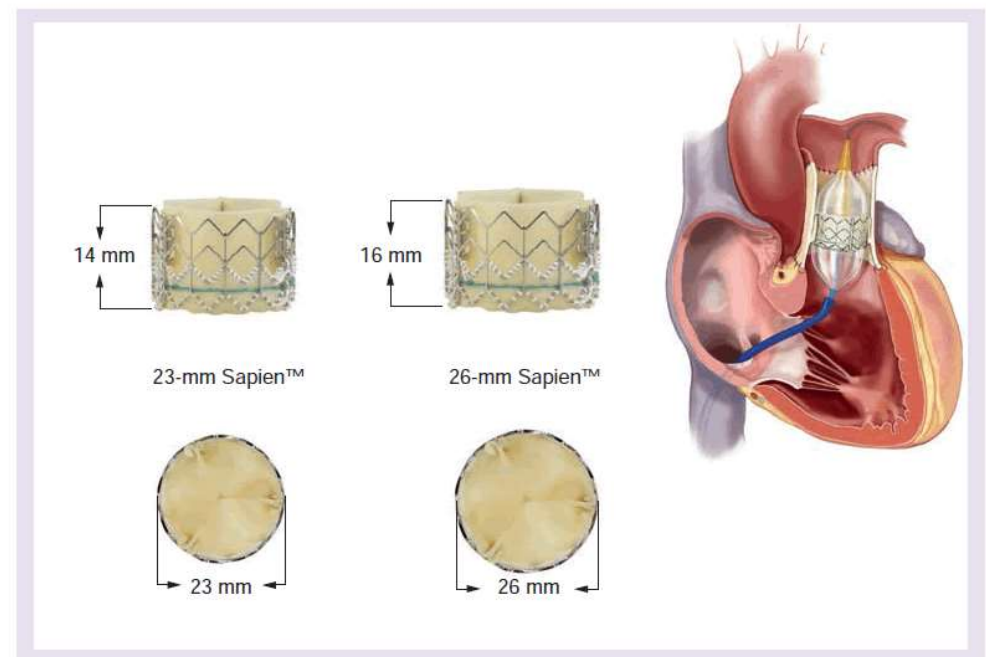
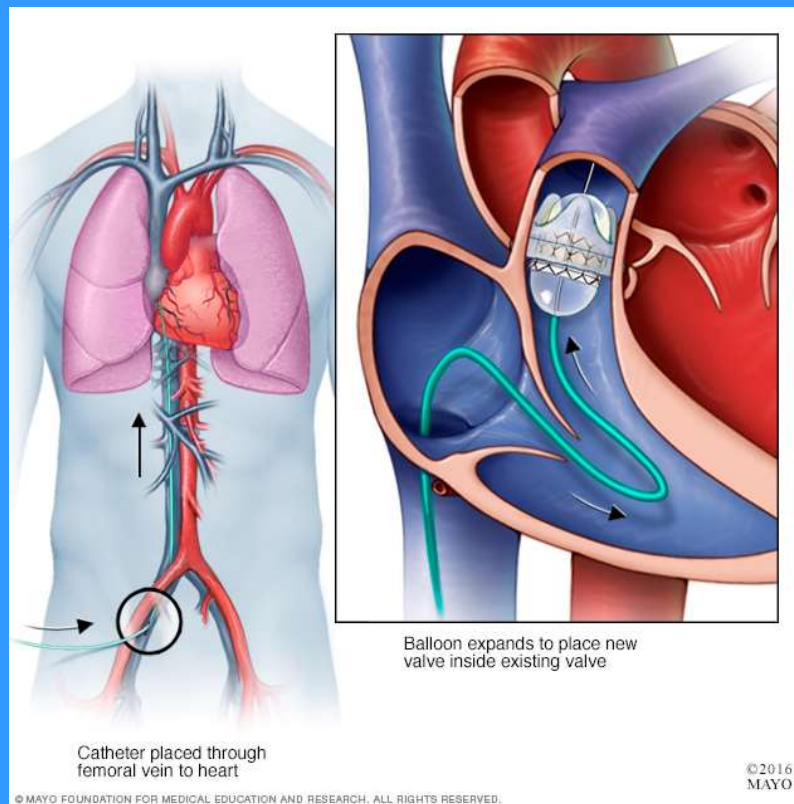
# Tetralogy of Fallot

## Treatment



# Tetralogy of Fallot

## Treatment



**Figure 8. Sapien™ valve.**  
Reproduced with permission from Edwards Lifesciences.

# **Tetralogy of Fallot**

## **Complications of ToF surgery**

**Electrical disturbances**

**Residual ventricular septal defect**

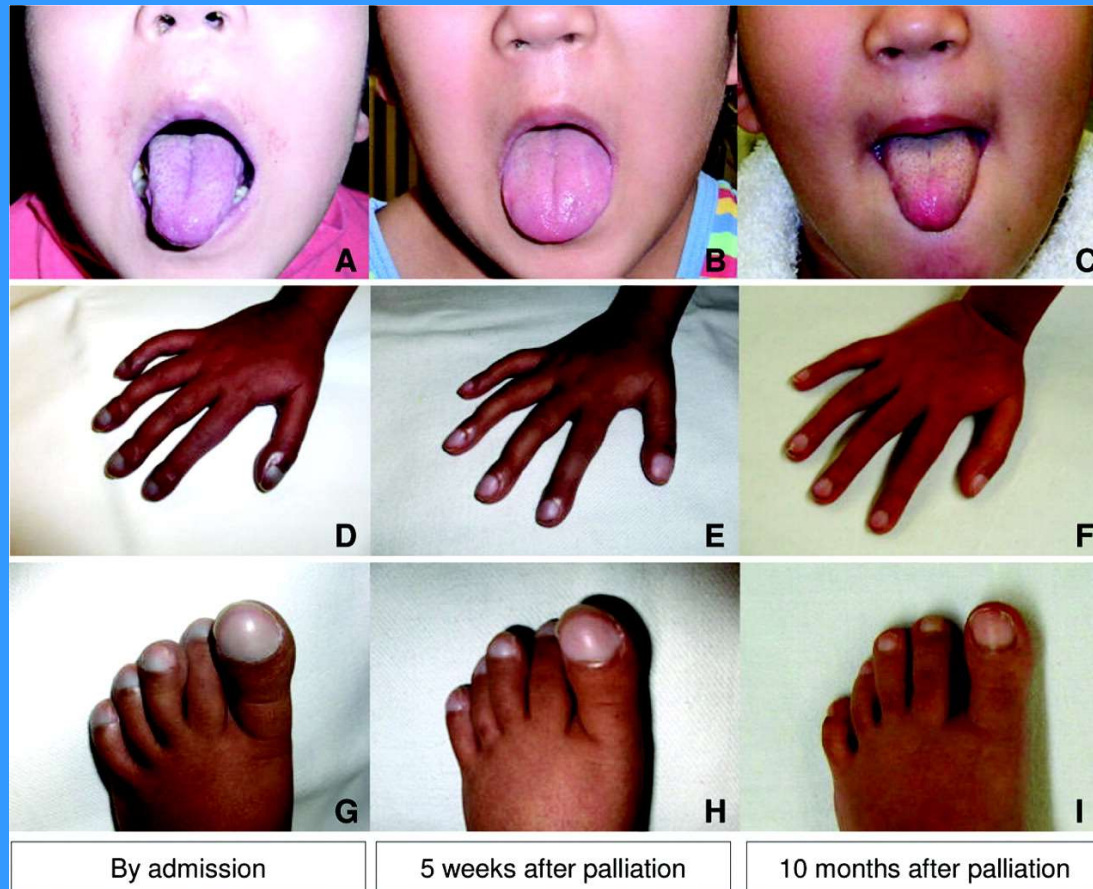
**Aneurysm**

**Shunt issues**

**Valves regurgitation**



# Tetralogy of Fallot



# Tetralogy of Fallot

- **Prevention**
- Get proper prenatal care
- Take a multivitamin with folic acid.
- Don't drink or smoke.
- Get a rubella (German measles) vaccine
- Control blood sugar.
- Manage chronic health conditions.
- Avoid harmful substances.
- Check with your healthcare team before taking any medications.

# Tetralogy of Fallot

## Prognosis

Heart infection risk

Slow development

Pregnancy risks

Medication restrictions

# به کجا می رویم؟

