



Haemodynamics of some common congenital heart defects

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Purpose

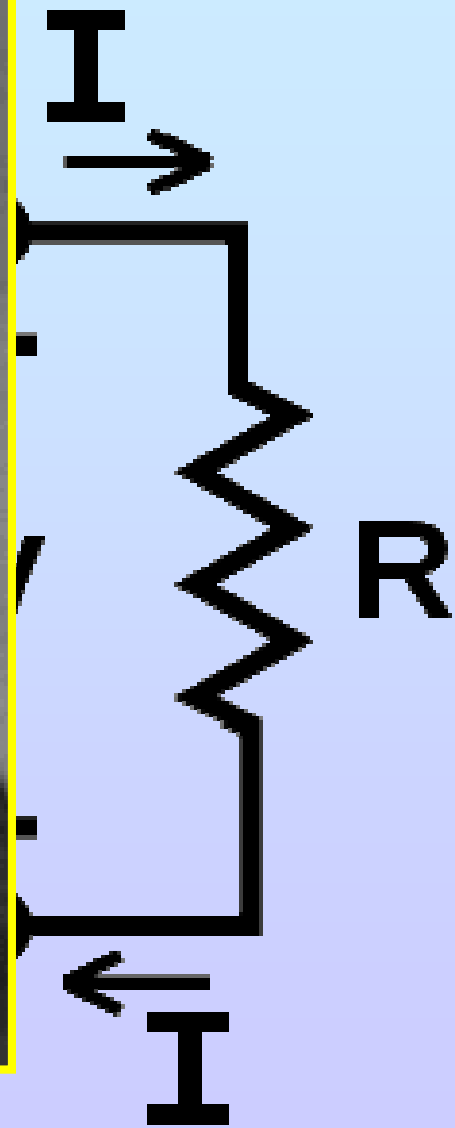
An understanding of the haemodynamics of congenital heart disease allows one to:

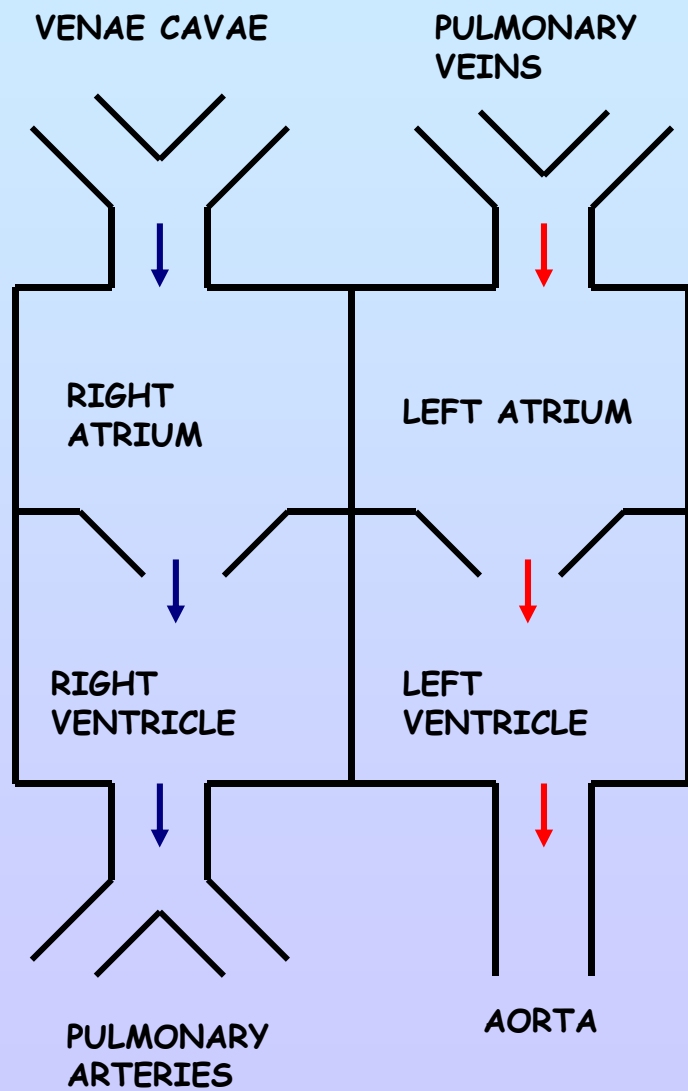
- understand their clinical signs
- make informed clinical assessments of what is happening when signs have changed
- assess responses to resuscitation
- understand changes post-op

Ohm's

$$V =$$

$$I = V$$





NORMAL HEART

↓ ONE UNIT OF CARDIAC OUTPUT

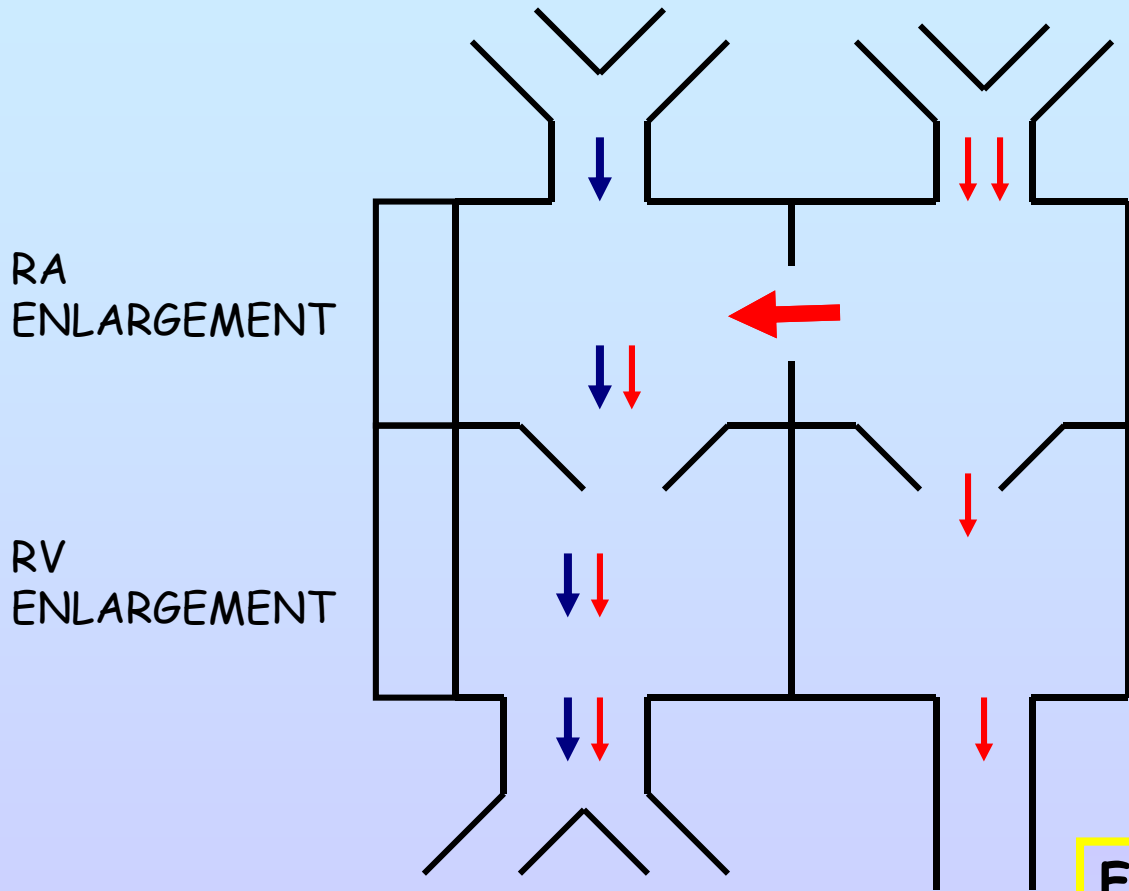
**TWO separate pumps
In series**

From: Park, MK (2008) *Pediatric Cardiology for Practitioners (5th edition)*

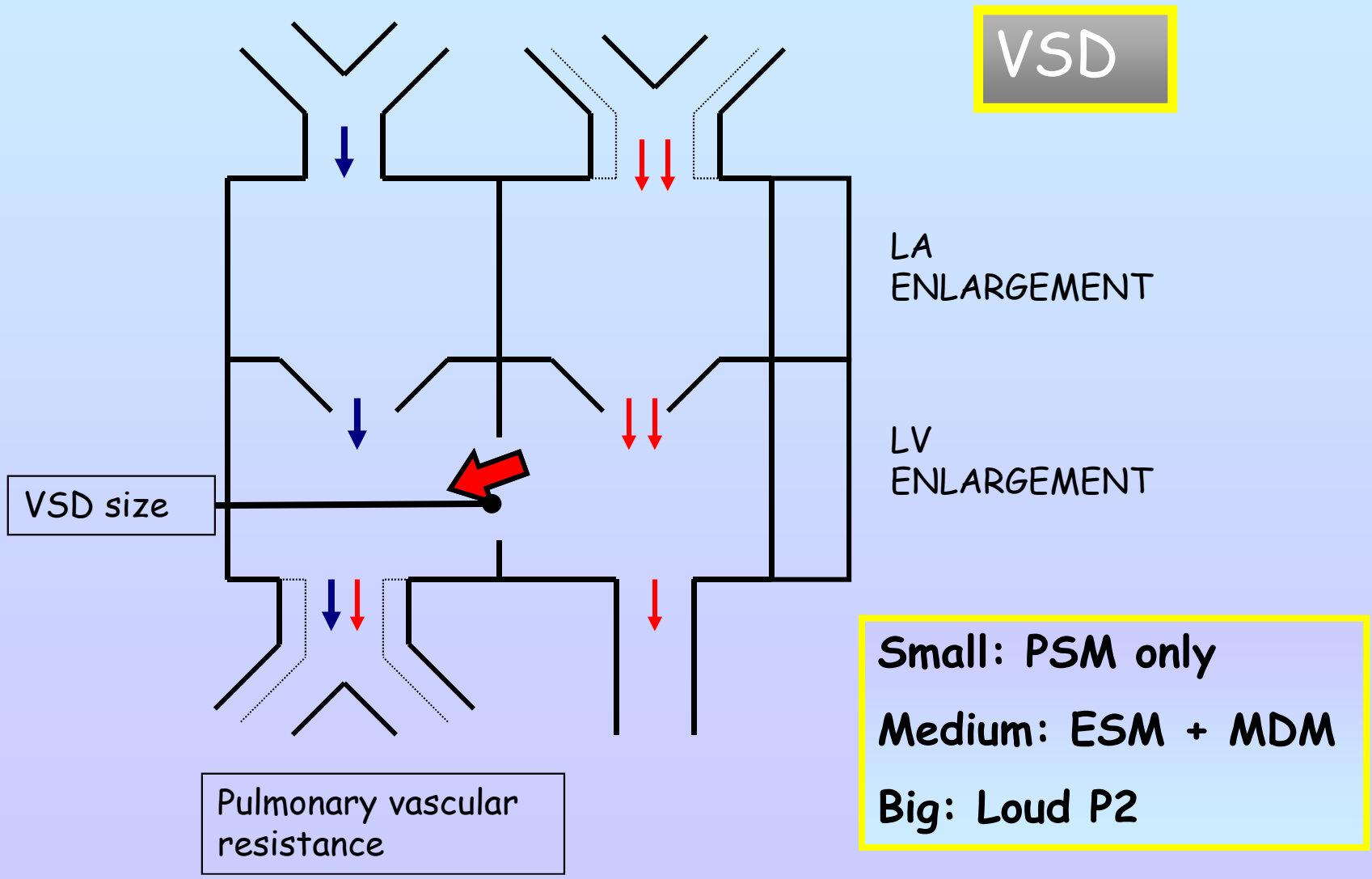
Acyanotic heart defects

Left to Right shunts

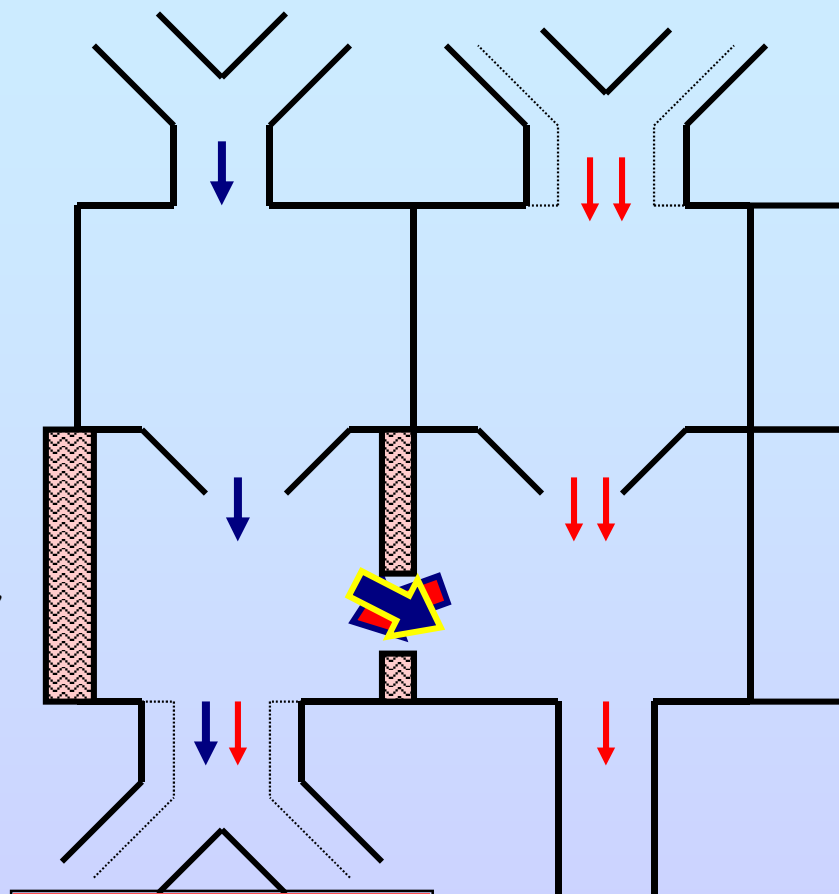
ASD



- Fixed split second sound
- PS murmur
- TS murmur



RV
HYPERTROPHY



LATE
VSD

LA
ENLARGEMENT

LV
ENLARGEMENT

↑↑ PULMONARY
VASCULAR
RESISTANCE

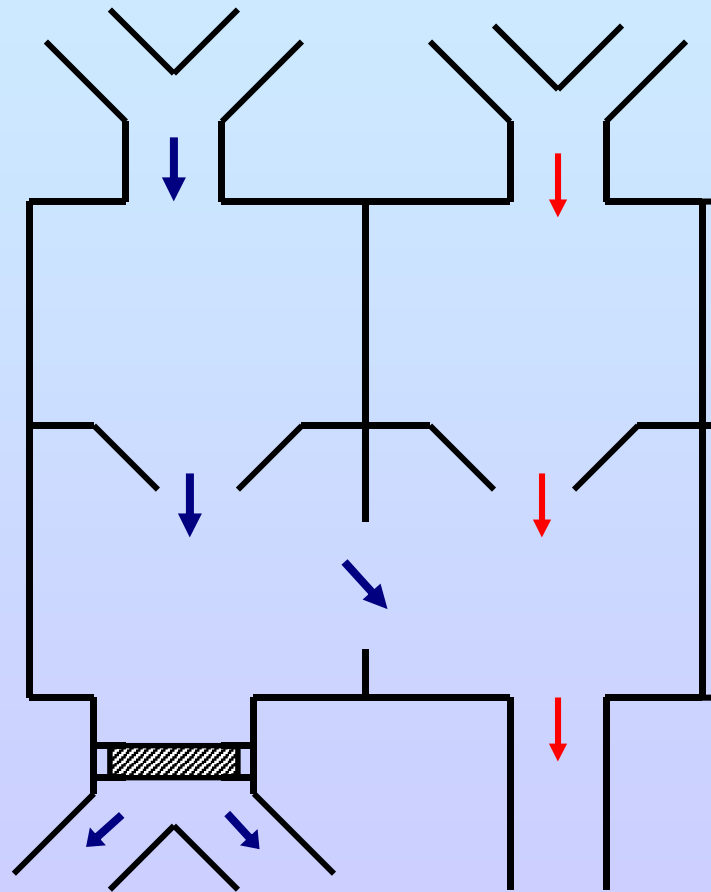
CYANOSIS

Very loud P2

RV Heave

Irreversible PHT

Eisenmenger
syndrome

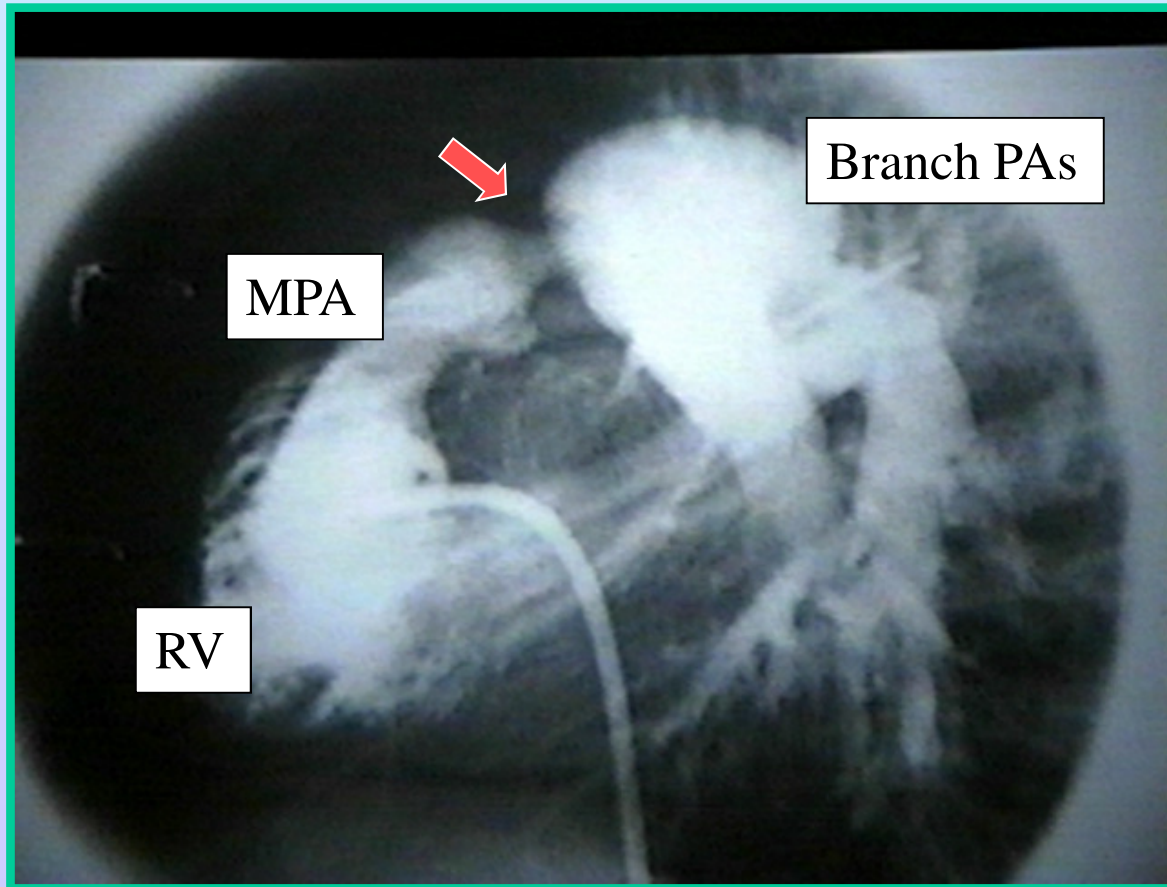


VSD

PAB

ESM
Mild cyanosis
No CCF

Pulmonary artery band



Cyanotic heart defects

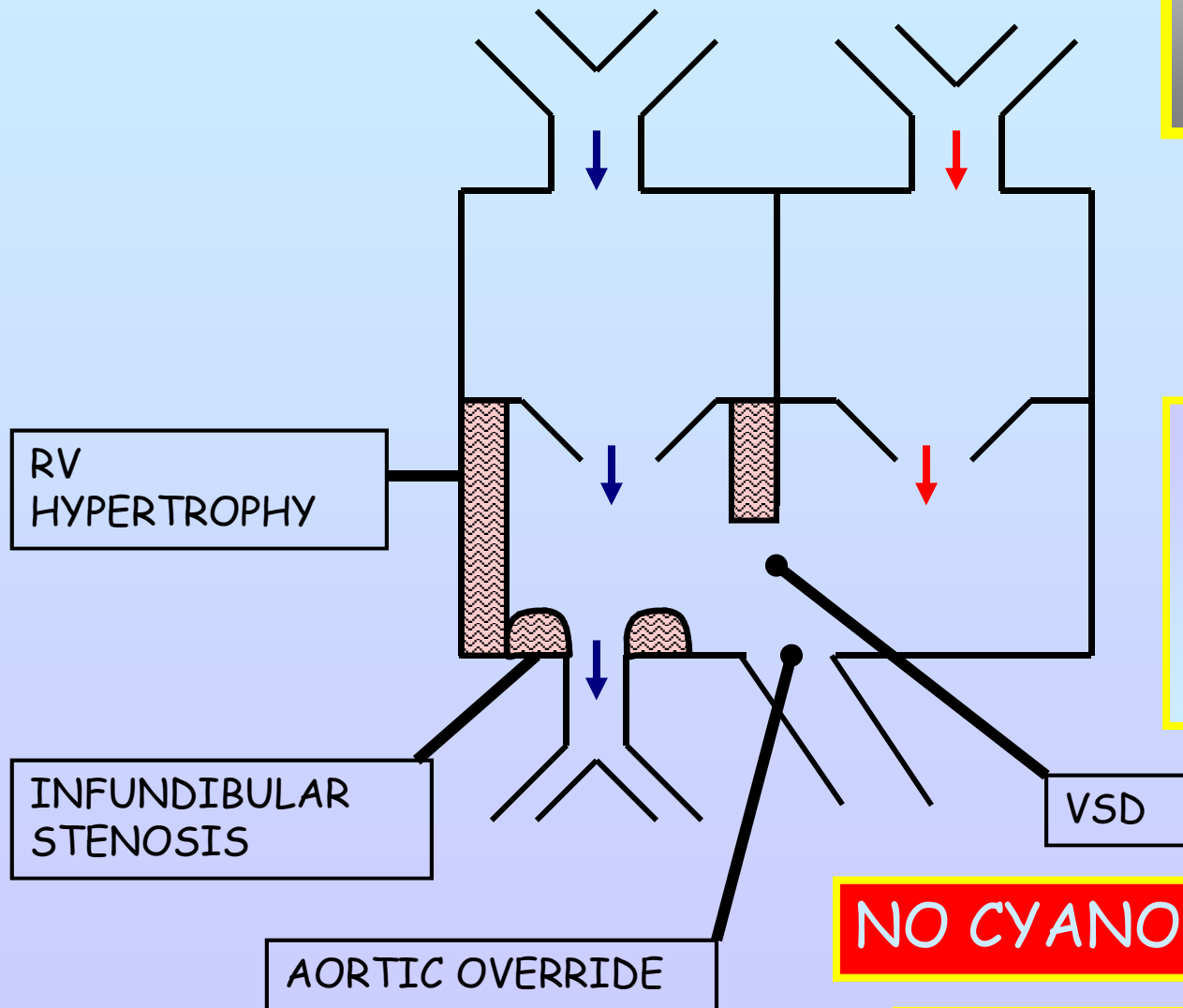
Right to Left shunts

Classification of cyanotic heart disease

4 types

- RV outflow obstruction
- Mixing disorders
- Mixing disorders with RV outflow obstruction
- Parallel circulation

TETRALOGY OF FALLOT



RV
HYPERTROPHY

INFUNDIBULAR
STENOSIS

AORTIC OVERRIDE

VSD

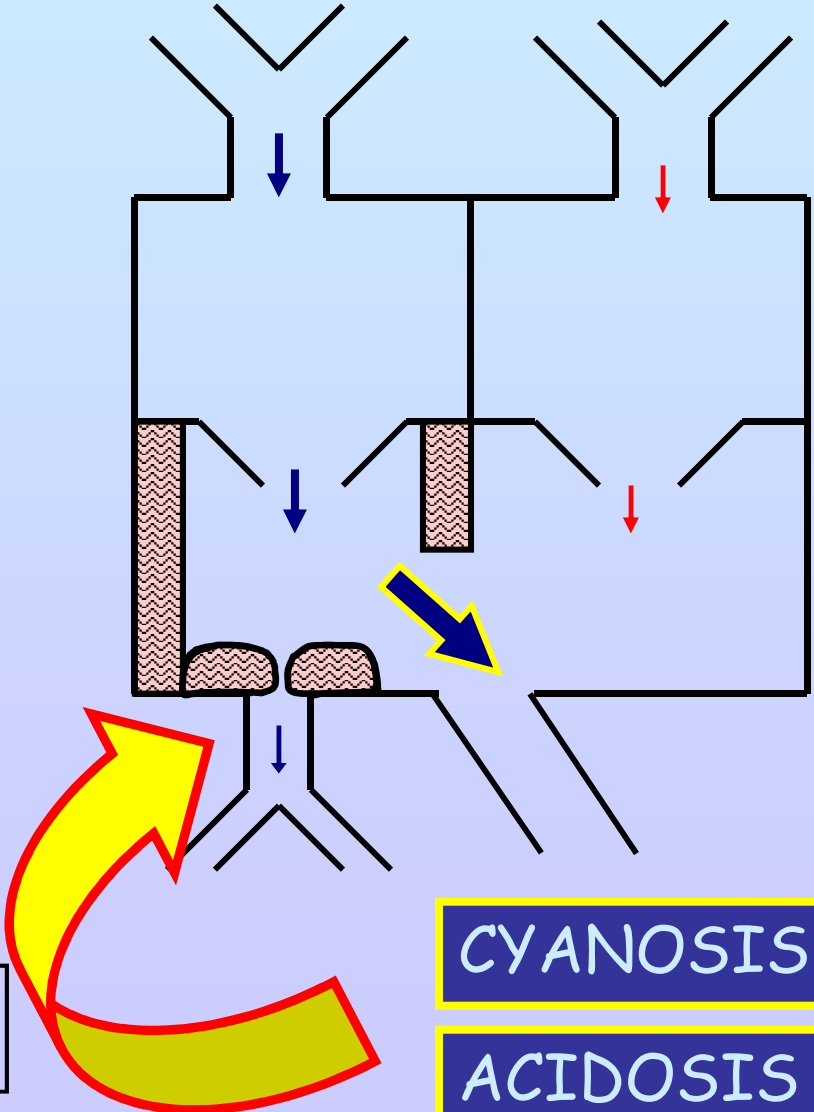
Ejection systolic
murmur
Single S2
NO RV heave

NO CYANOSIS

MILD CYANOSIS

TETRALOGY OF FALLOT

SPELLING



POSITIVE
FEEDBACK

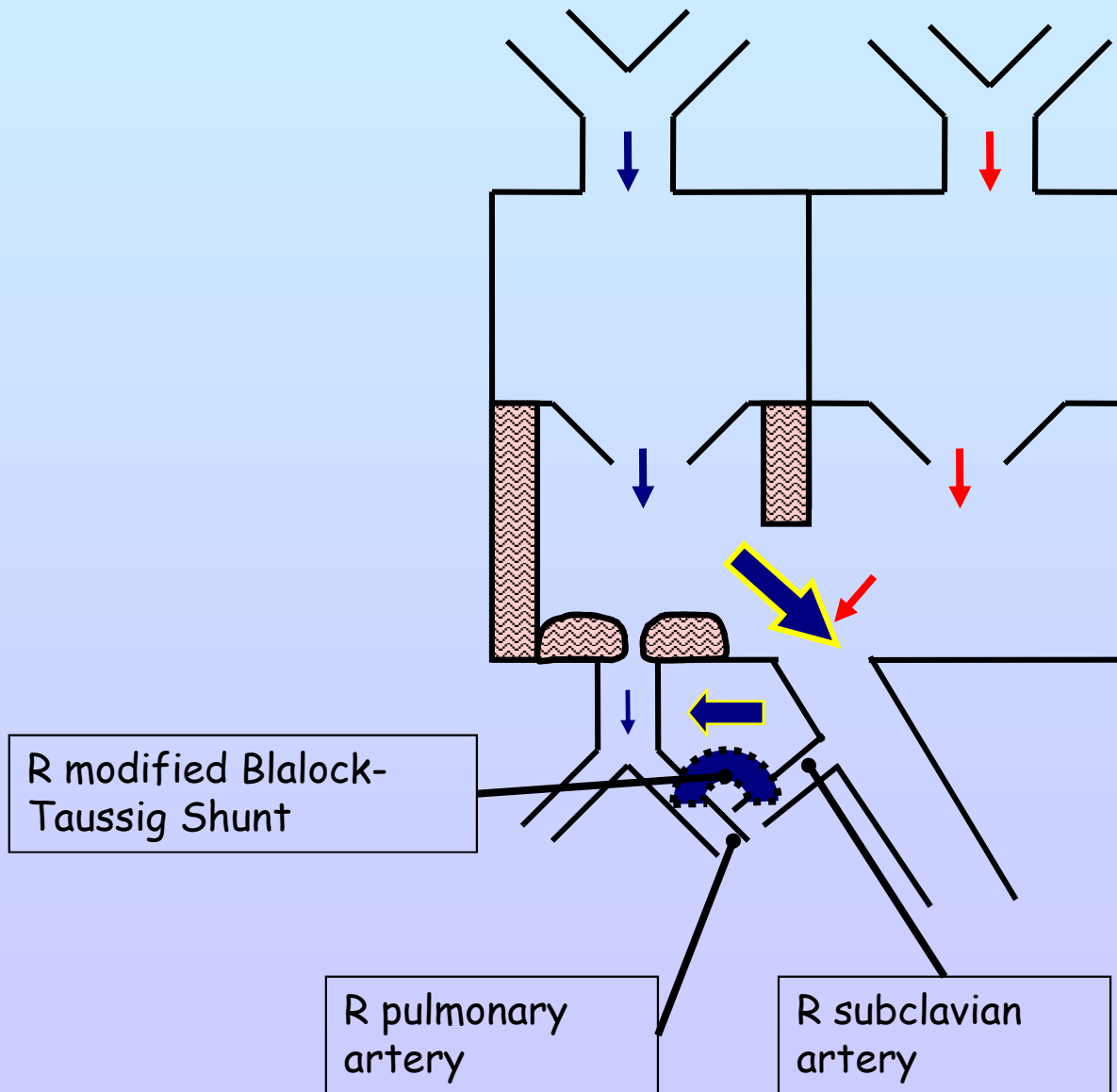
CYANOSIS

ACIDOSIS

Tachypnoea
NO ejection
systolic murmur
Death

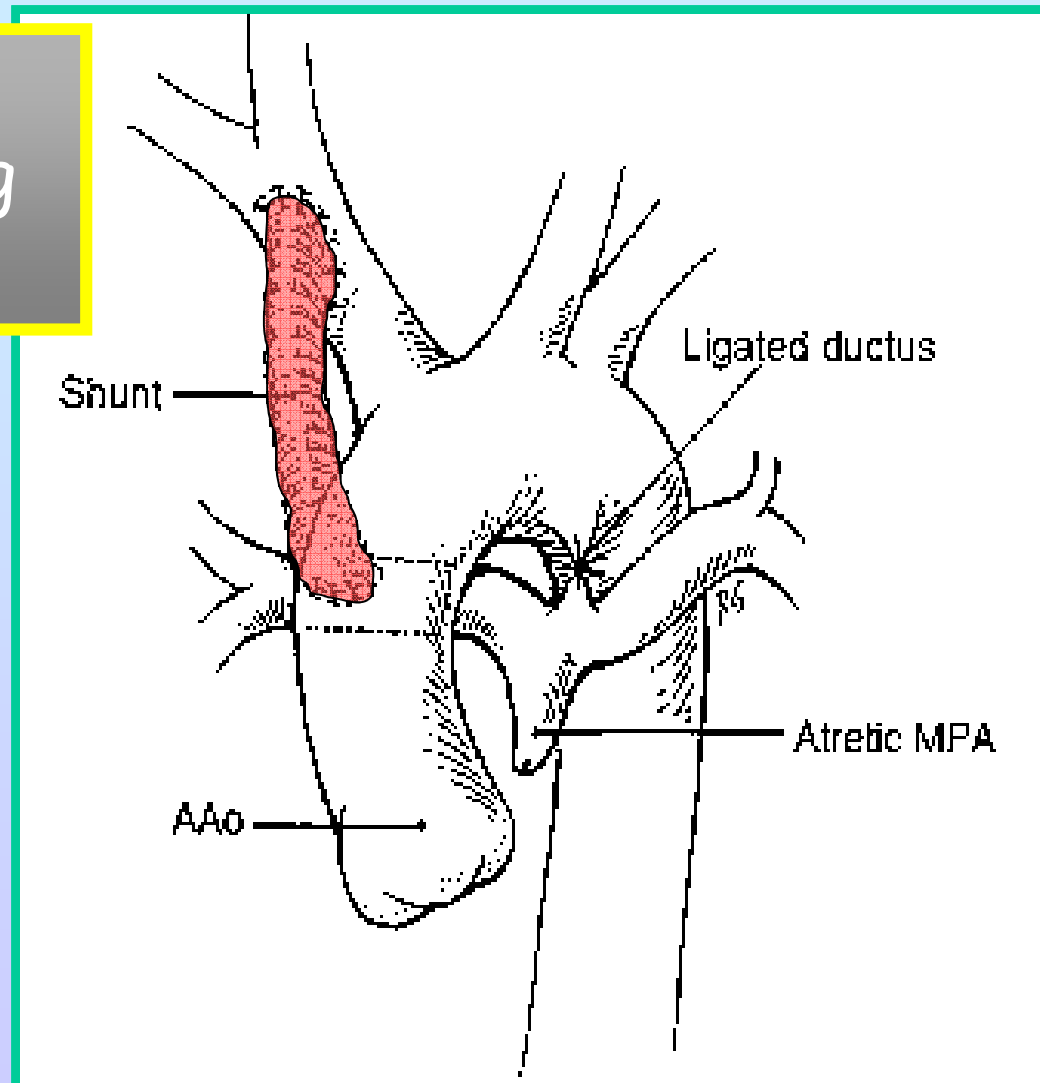
TETRALOGY OF FALLOT

SHUNT

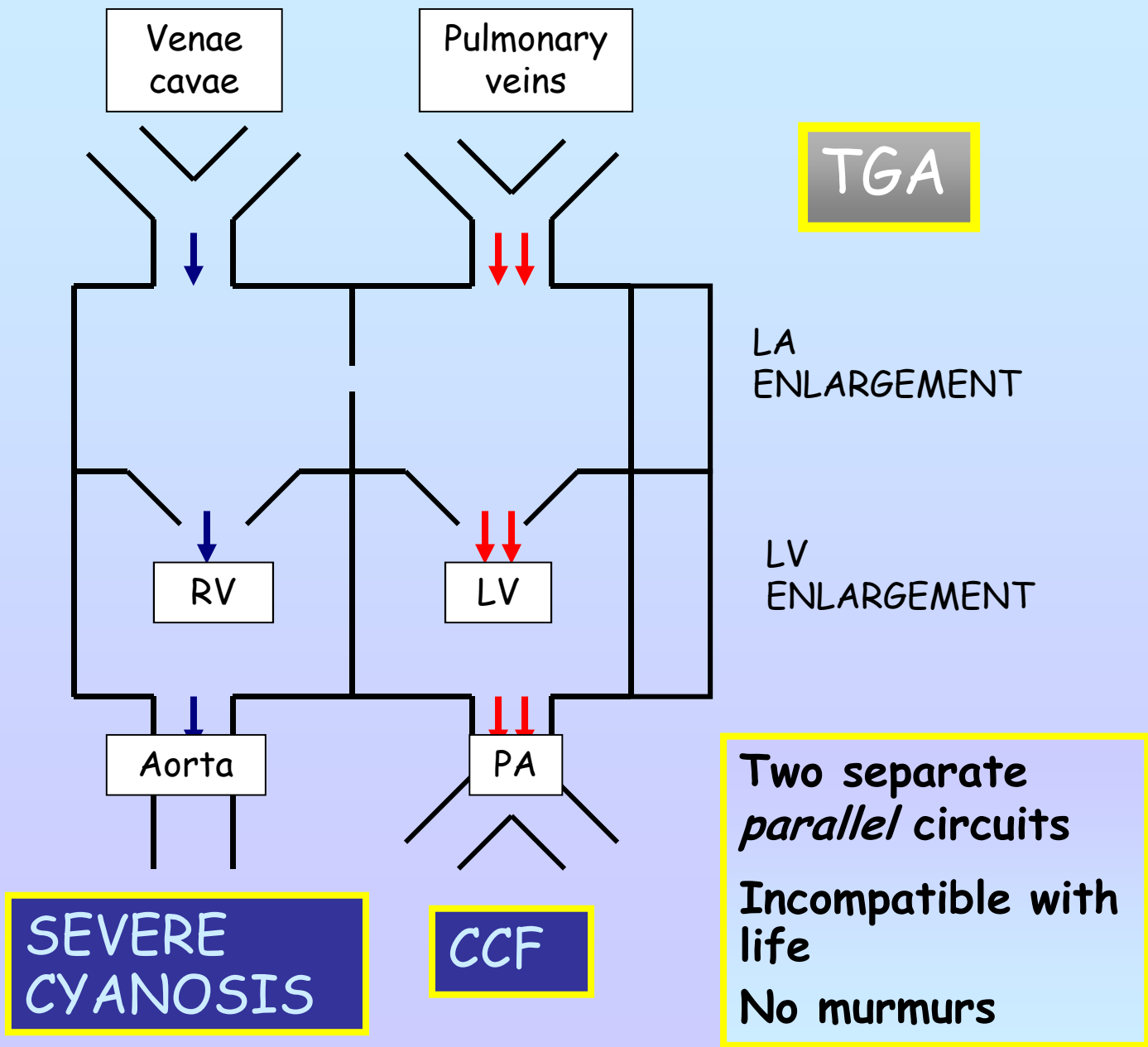


- Mild cyanosis
- Lateral thoracotomy scar
- Shunt murmur

Modified Blalock-Taussig shunt



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TGA

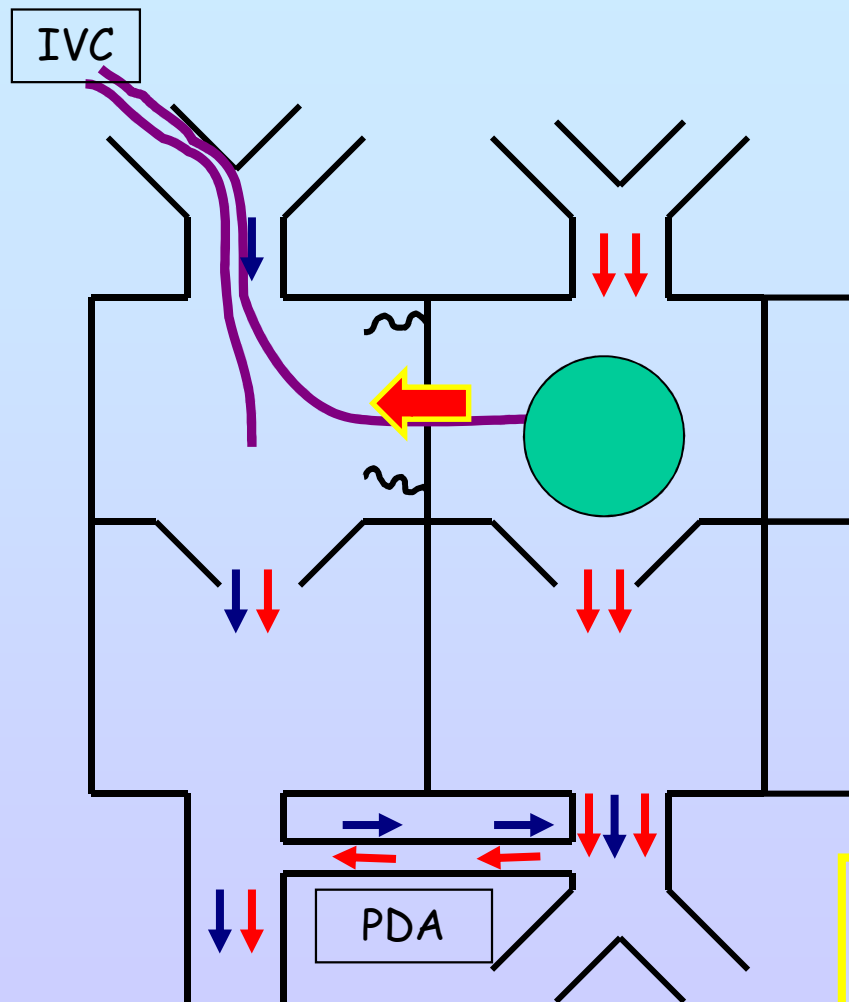
LA ENLARGEMENT

LV ENLARGEMENT

SEVERE CYANOSIS

CCF

Two separate parallel circuits
Incompatible with life
No murmurs



TGA

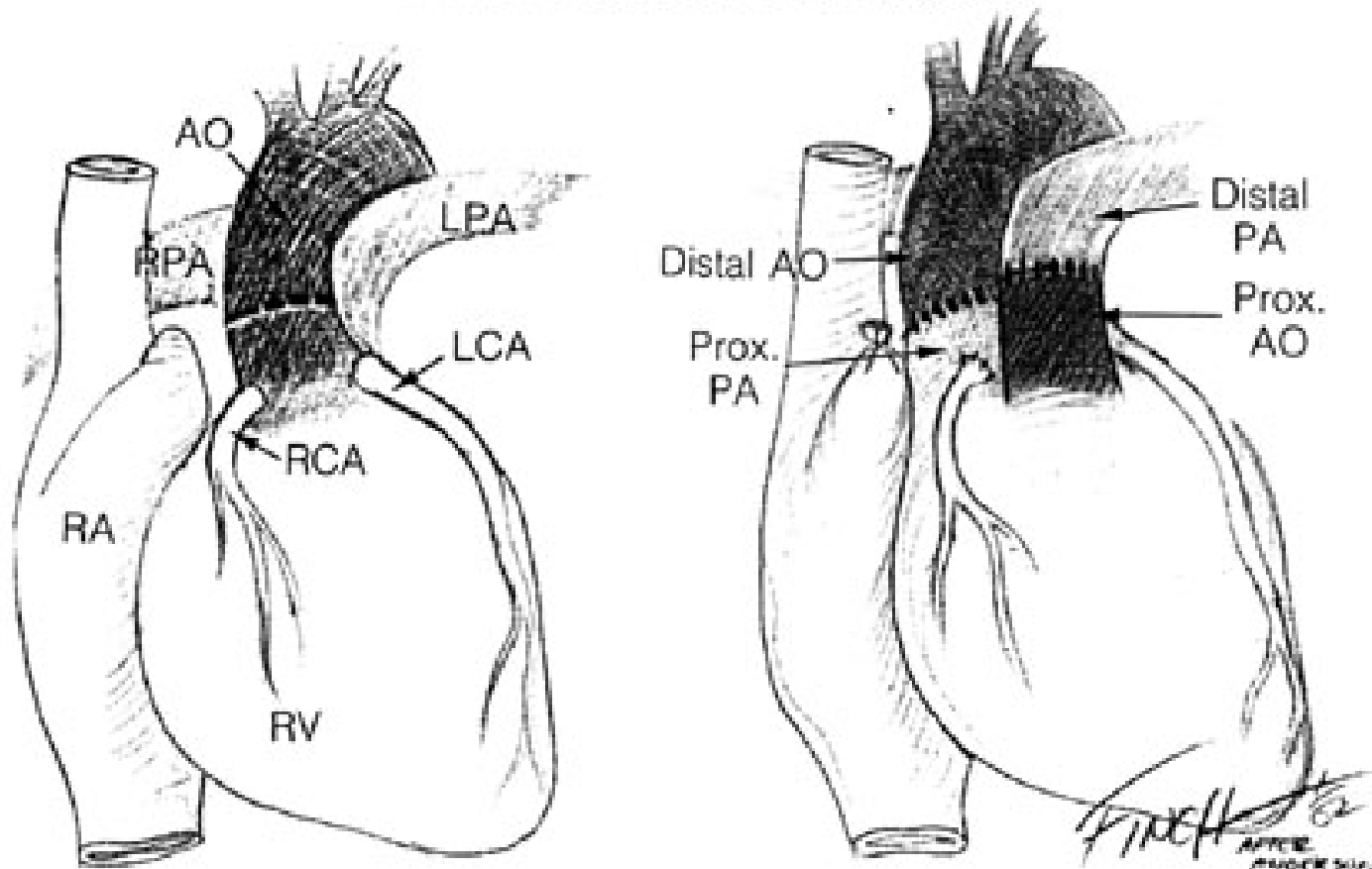
Rashkind
atrial
septostomy

Raises peripheral
SaO₂ by increasing
pulmonary to
systemic shunting

Followed by:
Arterial switch OR
Mustard operation

Arterial switch

ARTERIAL SWITCH OPERATION



In summary

An understanding of the haemodynamics of congenital heart disease allows one to:

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The End