



# Atrioventricular septal defects

## Parisian decision making in balanced AVSD

**Damien Bonnet**

UMC de Cardiologie Congénitale et Pédiatrique  
Hôpital Universitaire Necker Enfants malades – APHP

Université de Paris Cité

INSERM-U781 - Institut Hospitalo-Universitaire IMAGINE

*Centre de Référence Maladies Rares*

**Complex congenital heart diseases-M3C**

*Centre de Référence Maladies Rares*

**Inherited and rare myocardial diseases- CARDIOGEN**

*Centre de Référence Maladies Rares*

**Pediatric pulmonary hypertension- PULMOTENSION**



**European Reference Network**  
for rare or low prevalence complex diseases

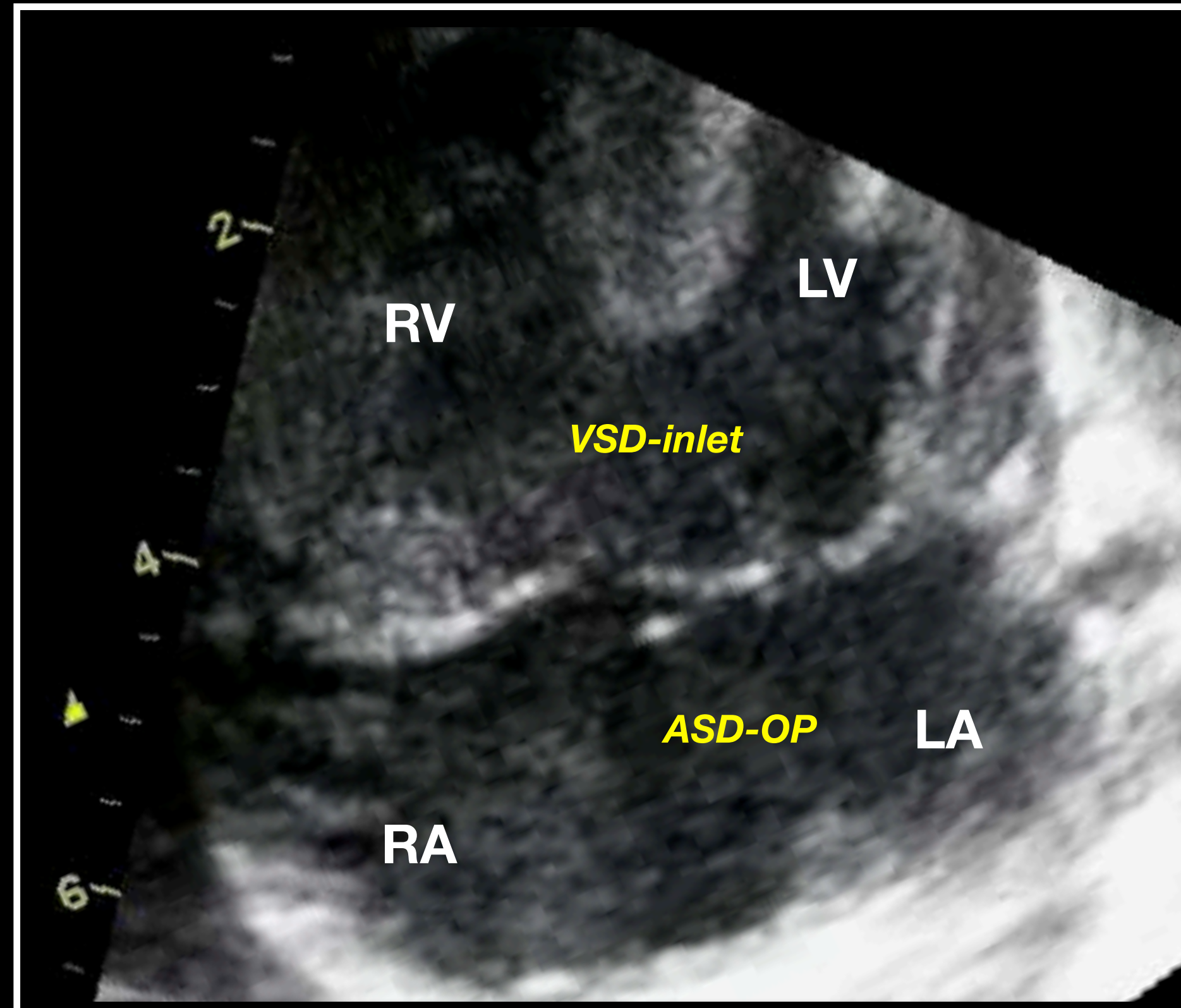
**Network**  
Respiratory Diseases (ERN-LUNG)



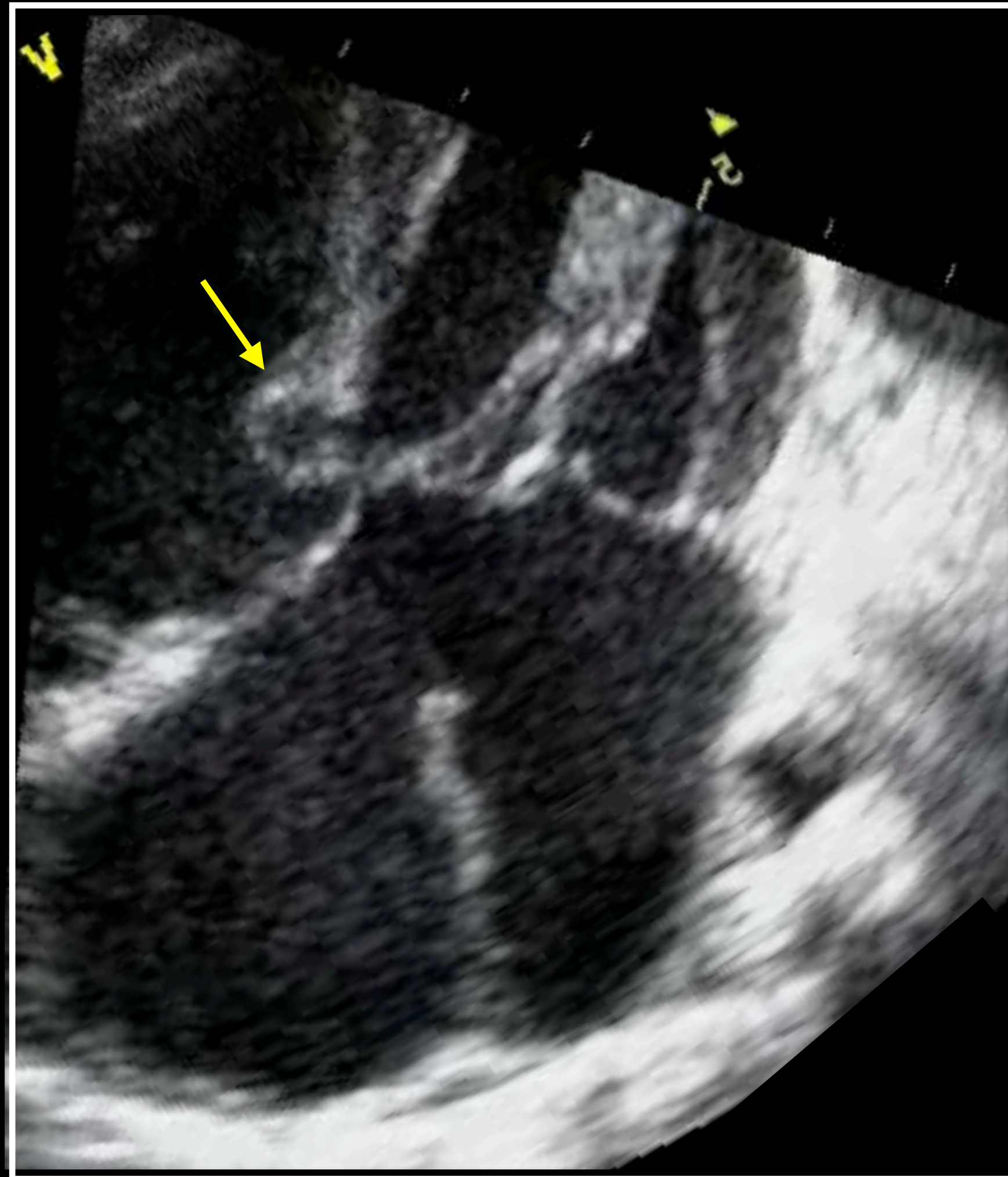
**European Reference Network**  
for rare or low prevalence complex diseases

**Network**  
Heart Diseases (ERN GUARD-HEART)

# « Complete » *balanced* AVSD



# Complete AVSD with restrictive VSD



# Patients, Strategies & Techniques



# Patients characteristics

## *Different categories*



### **Non modifiable**

- underlying genetic conditions

### **Time-dependent**

- age and weight
- symptoms



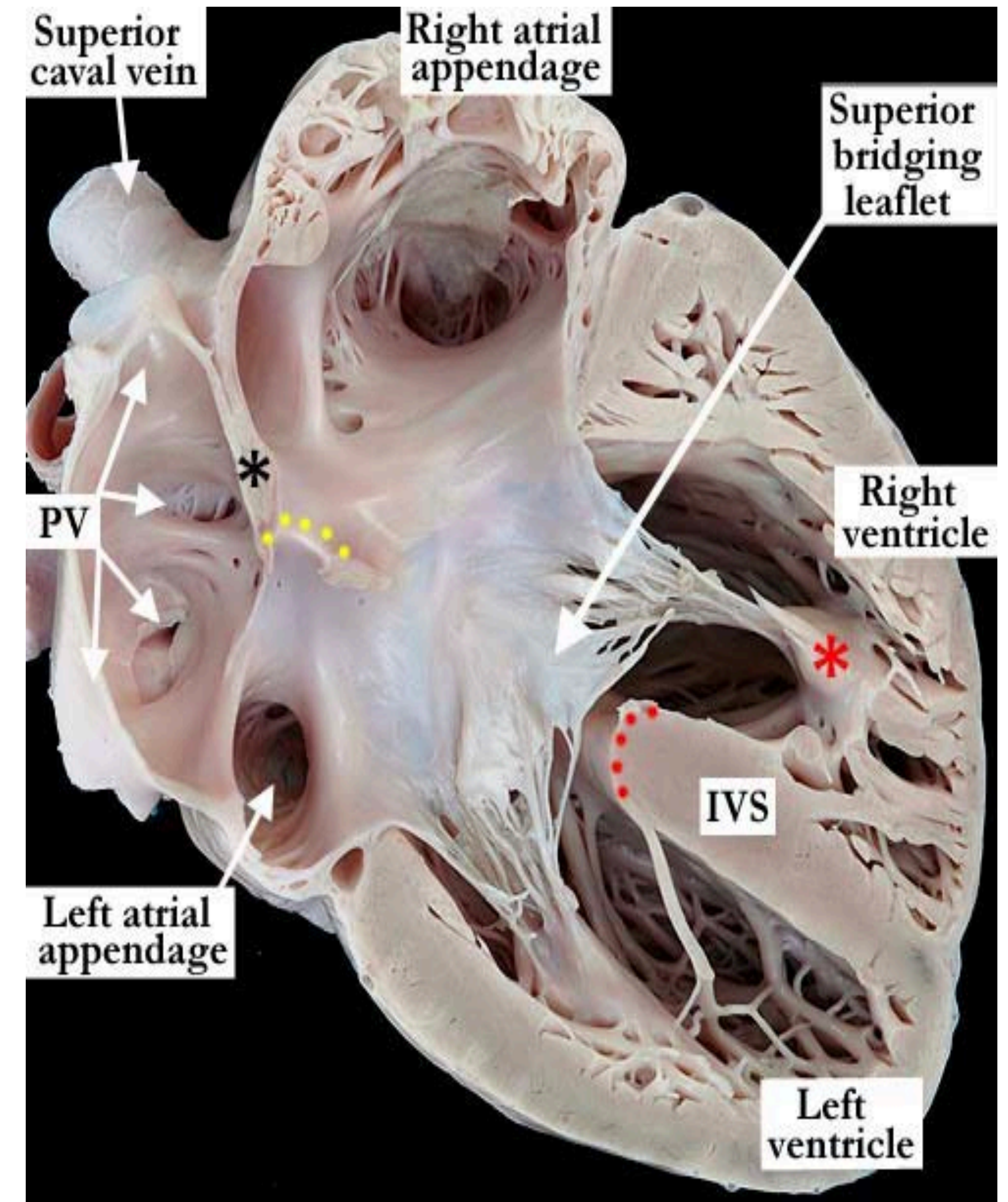
### **Anatomical characteristics**

#### ***Non modifiable***

- Atrioventricular valve anatomy
- Balanced/unbalanced ventricles*

#### ***Time-dependent/modifiable***

- VSD physiology
- Pulmonary vascular resistances
- Atrioventricular valve physiology



# Strategy

**Goal:** closed shunts, well repaired atrioventricular valve, no AV block, no subaortic obstruction

**Make plan :** elective repair or patient's dependent repair (staged (pulmonary artery banding) or one step)

**Get to work:** when ? and how ?

**Reach goal:**

- did we stick to initial strategy?
- did we anticipate mid/long-term outcomes?



# Alternative techniques

## **Palliate:**

Pulmonary artery banding

## **Repair:**

Single patch

Double patch

Apposition zone closure or not

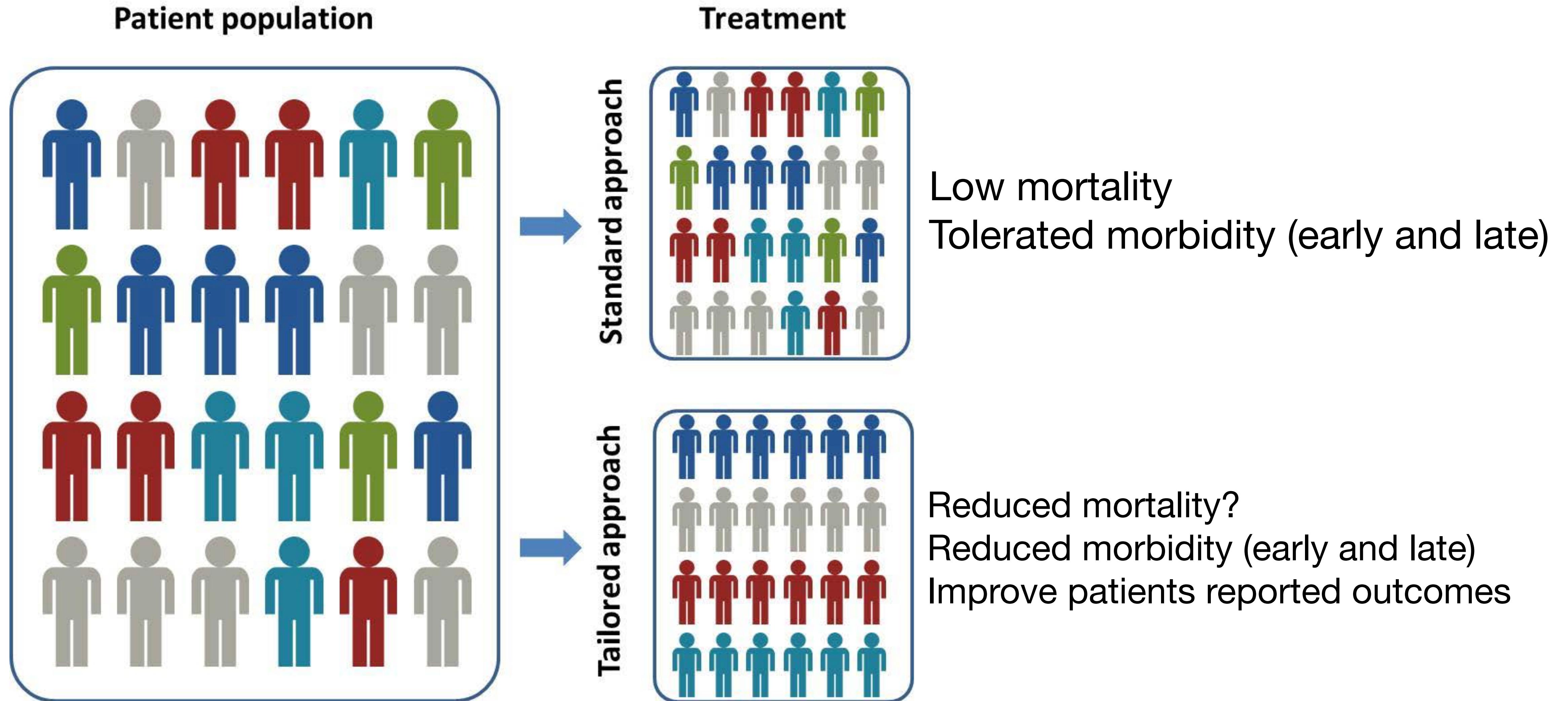
Commisuroplasty

Annuloplasty

Prevention of sub aortic obstruction



# Balanced AVSD or « one AVSD/one patient »



# Informations for the surgeon

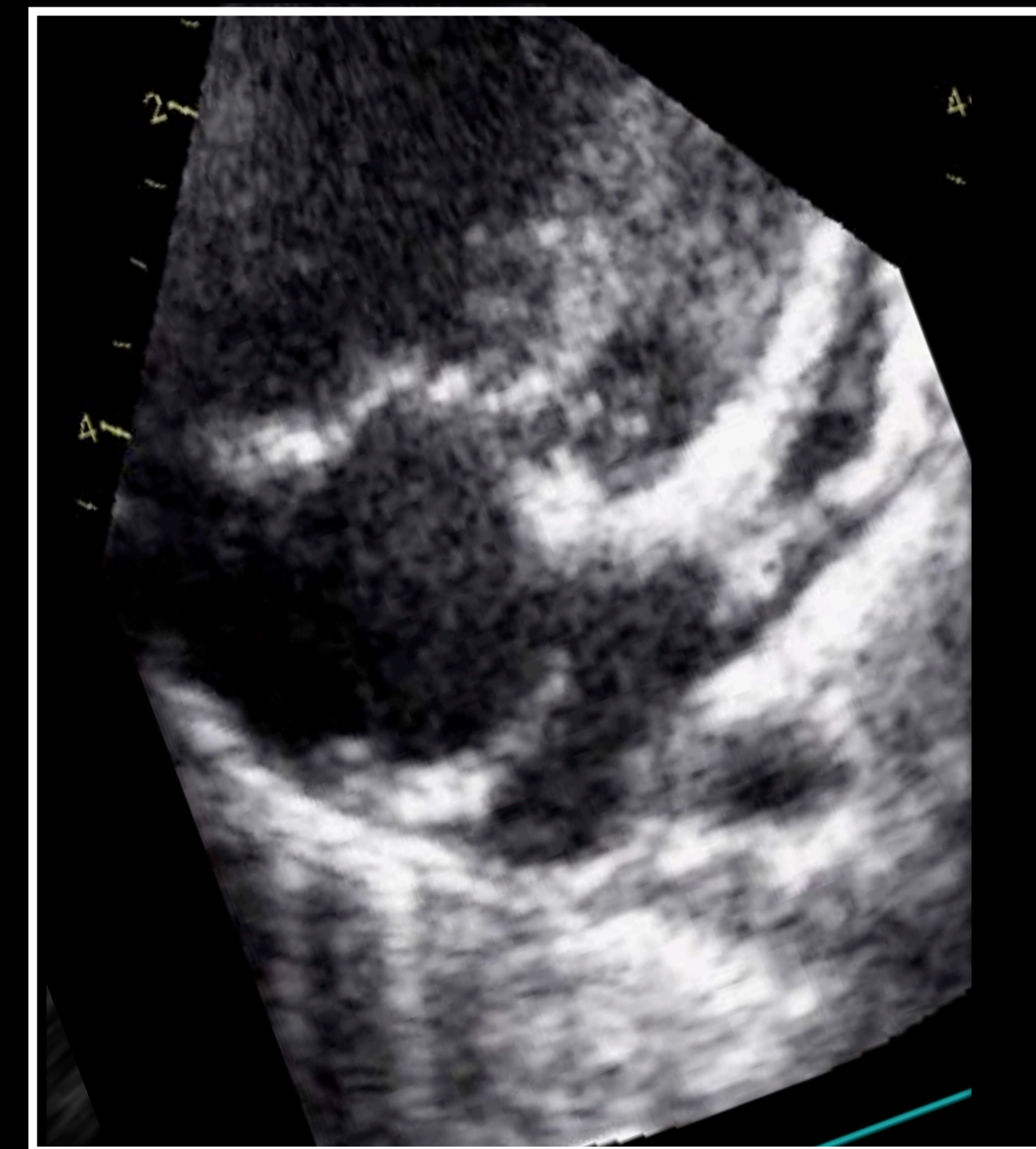
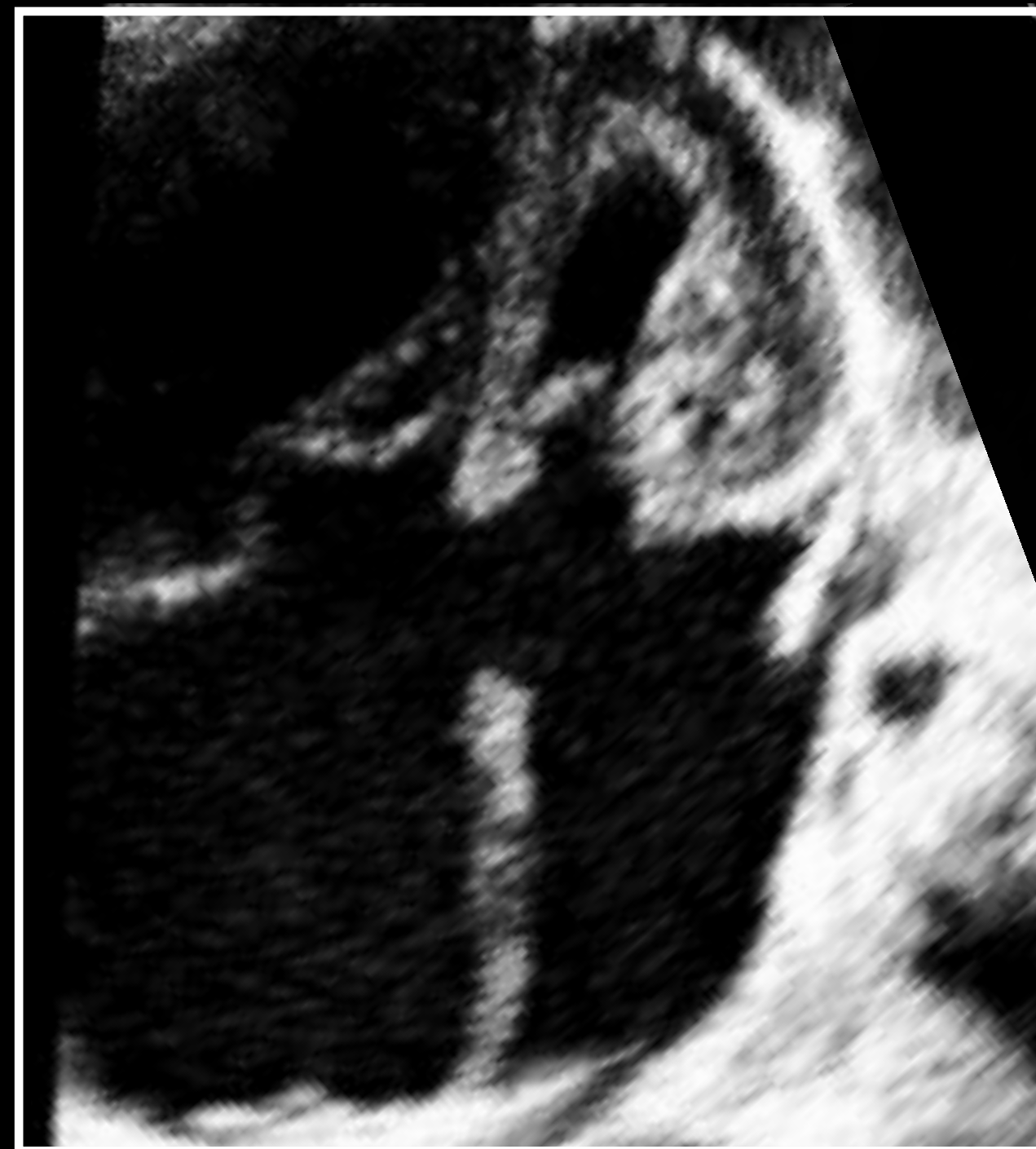
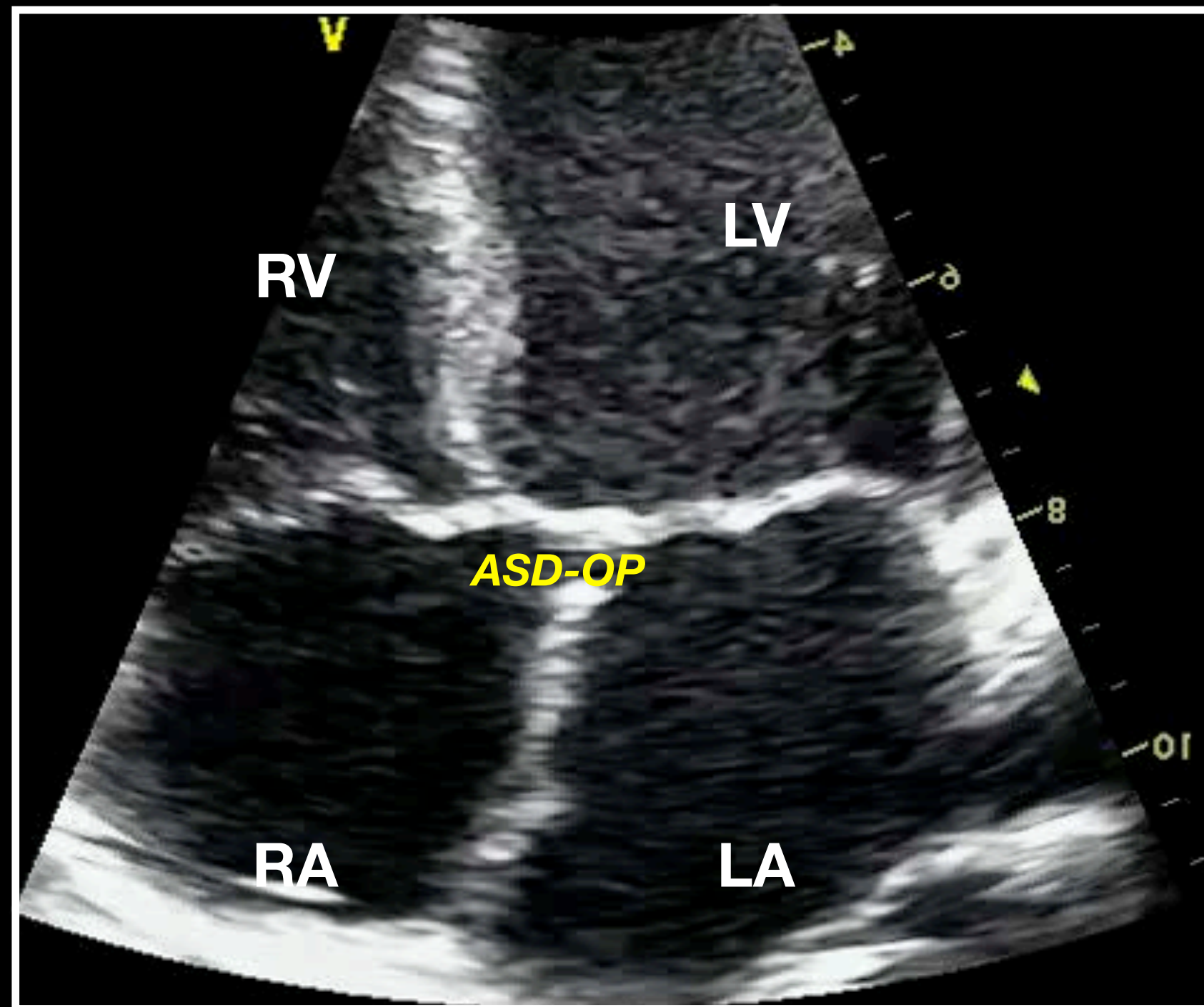
## « Balanced » AVSD without associated anomalies

1-ASD (s)

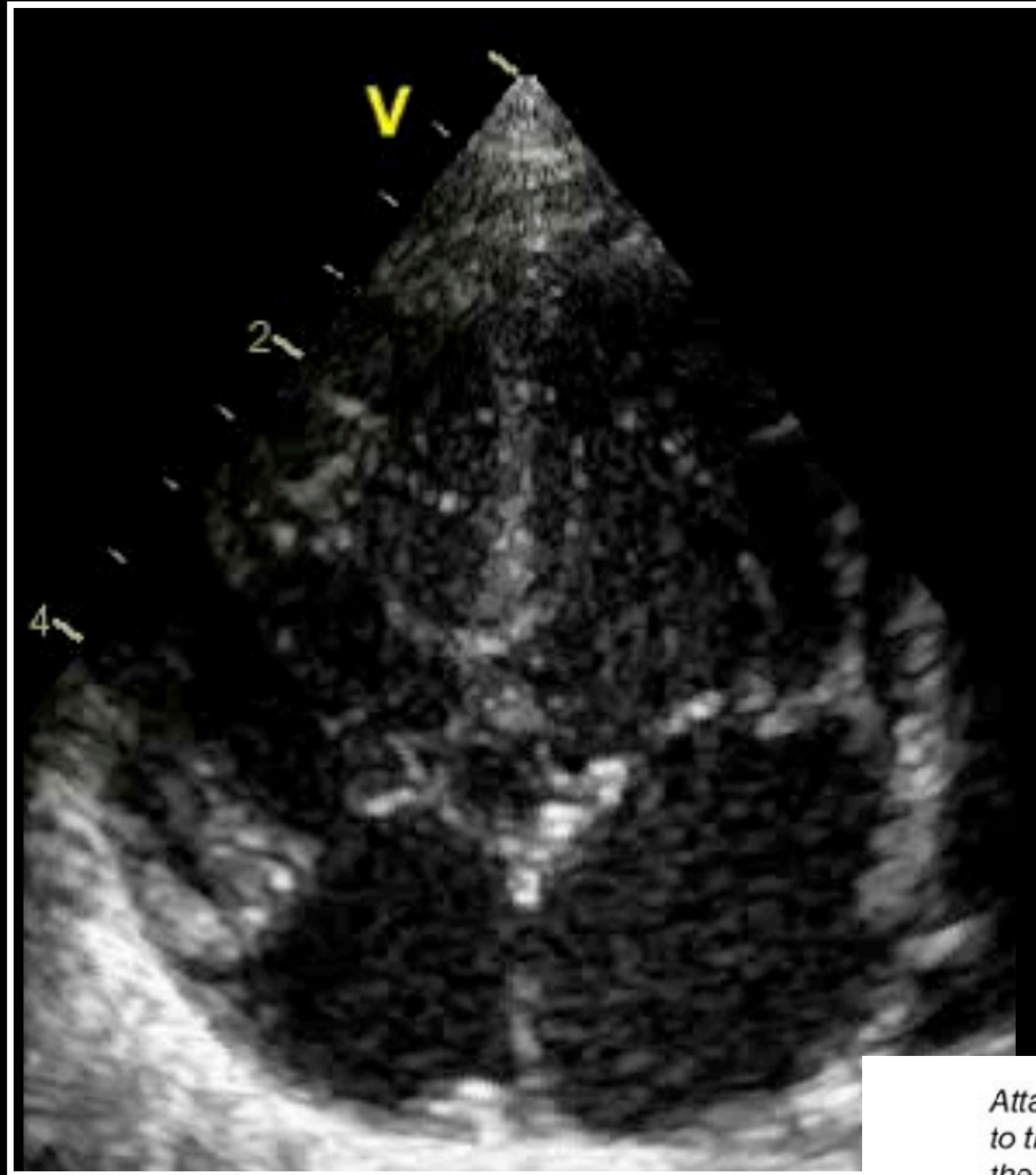
2-VSD (s)

3-Anatomy of atrioventricular valve

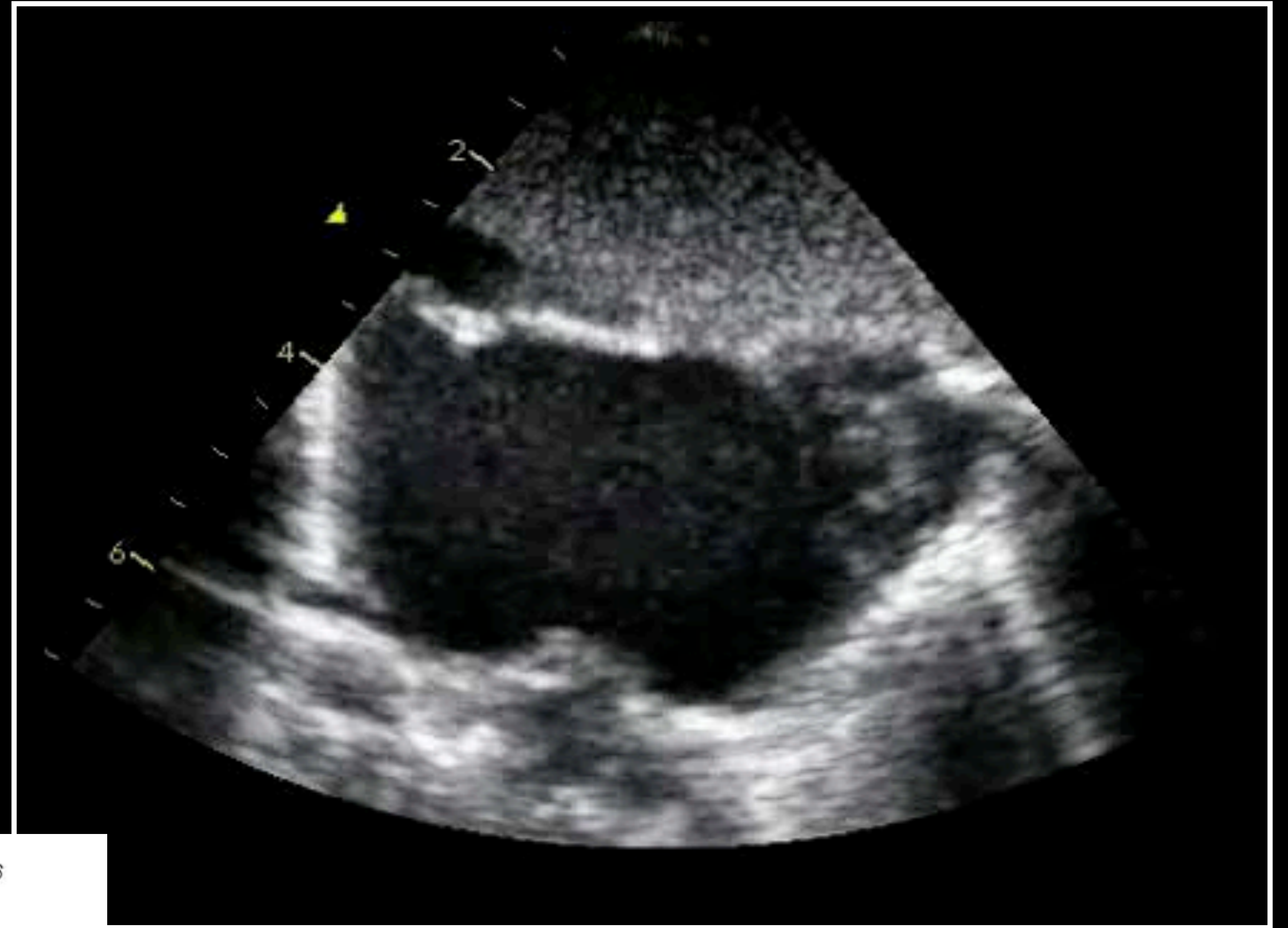
# ASD - Ostium primum



# ASD - Ostium primum

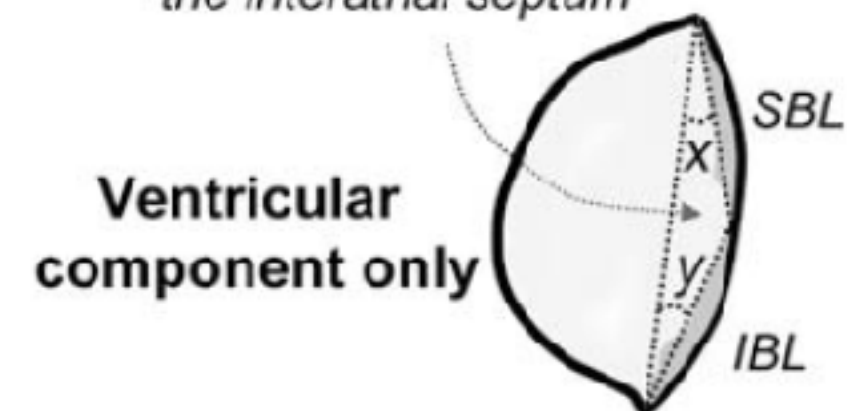


Technical

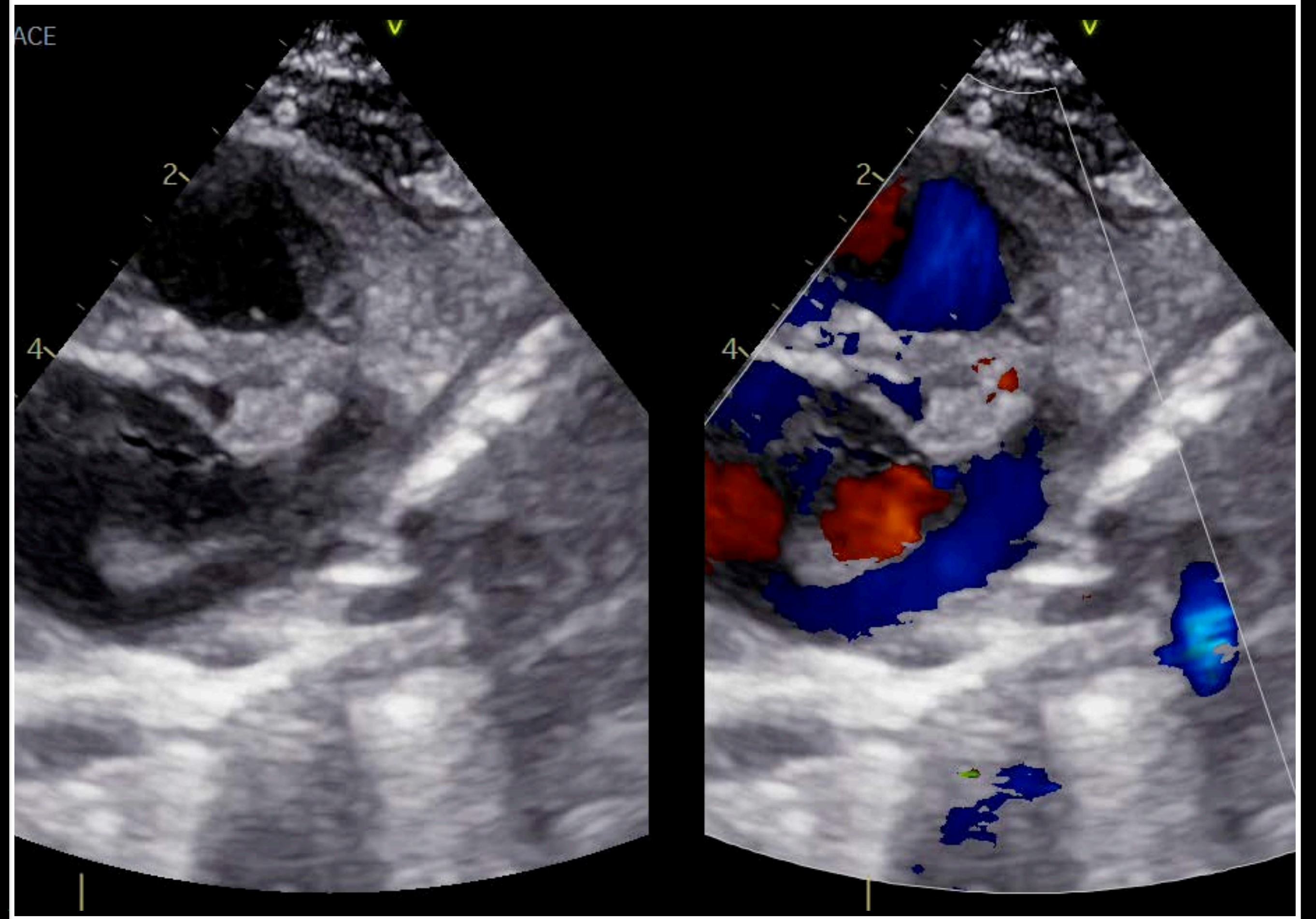


Timing

Attachment of the leaflets to the underside of the interatrial septum

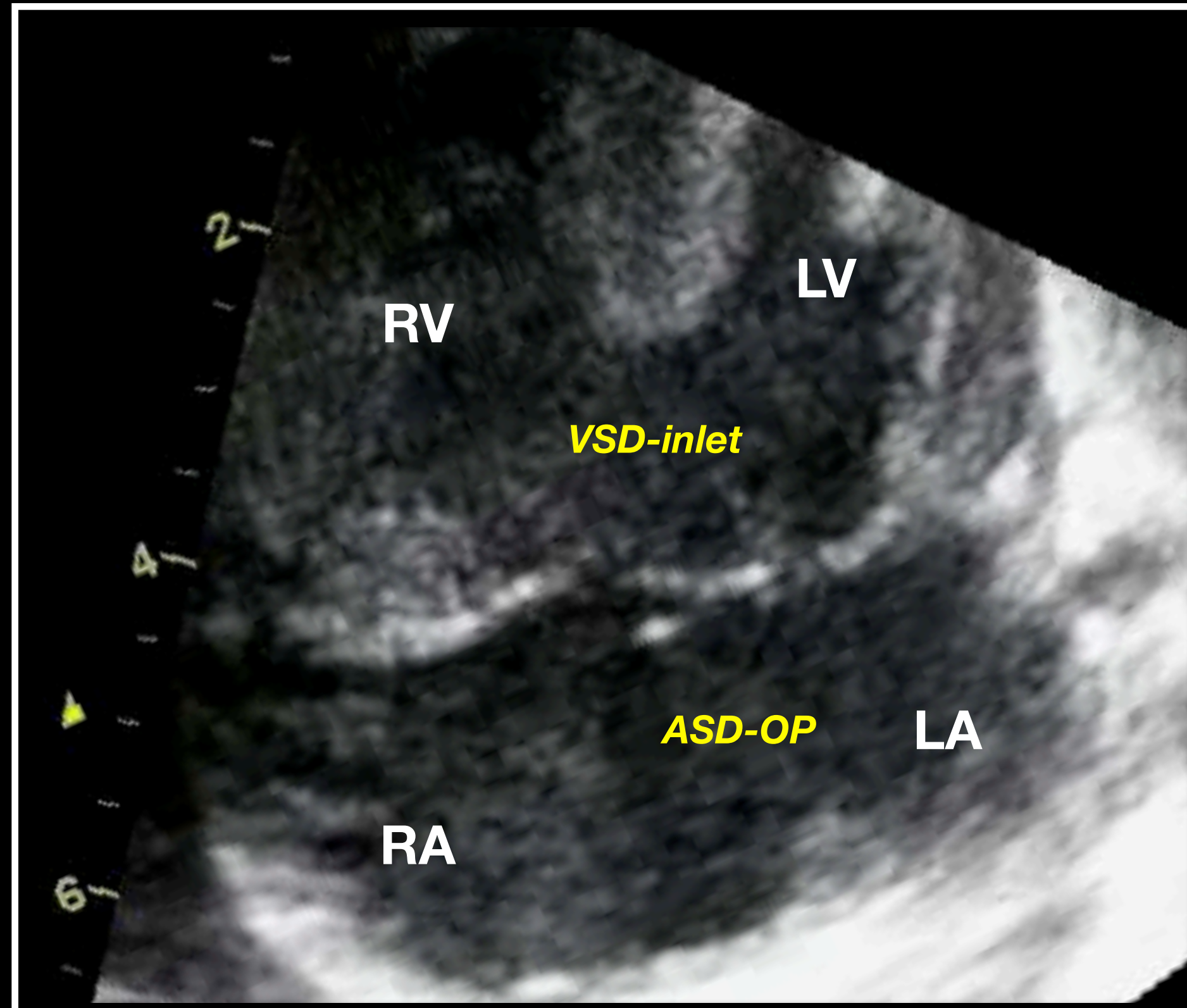
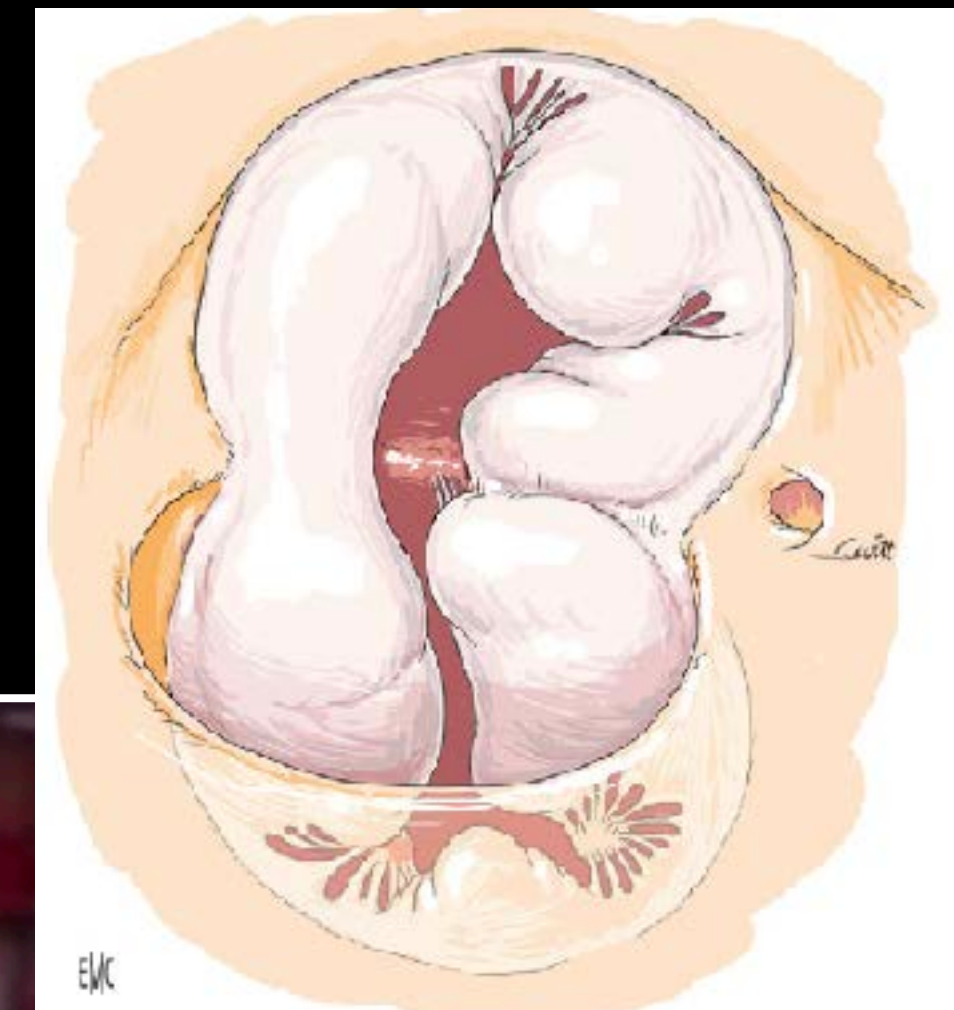


# AVSD - Veins



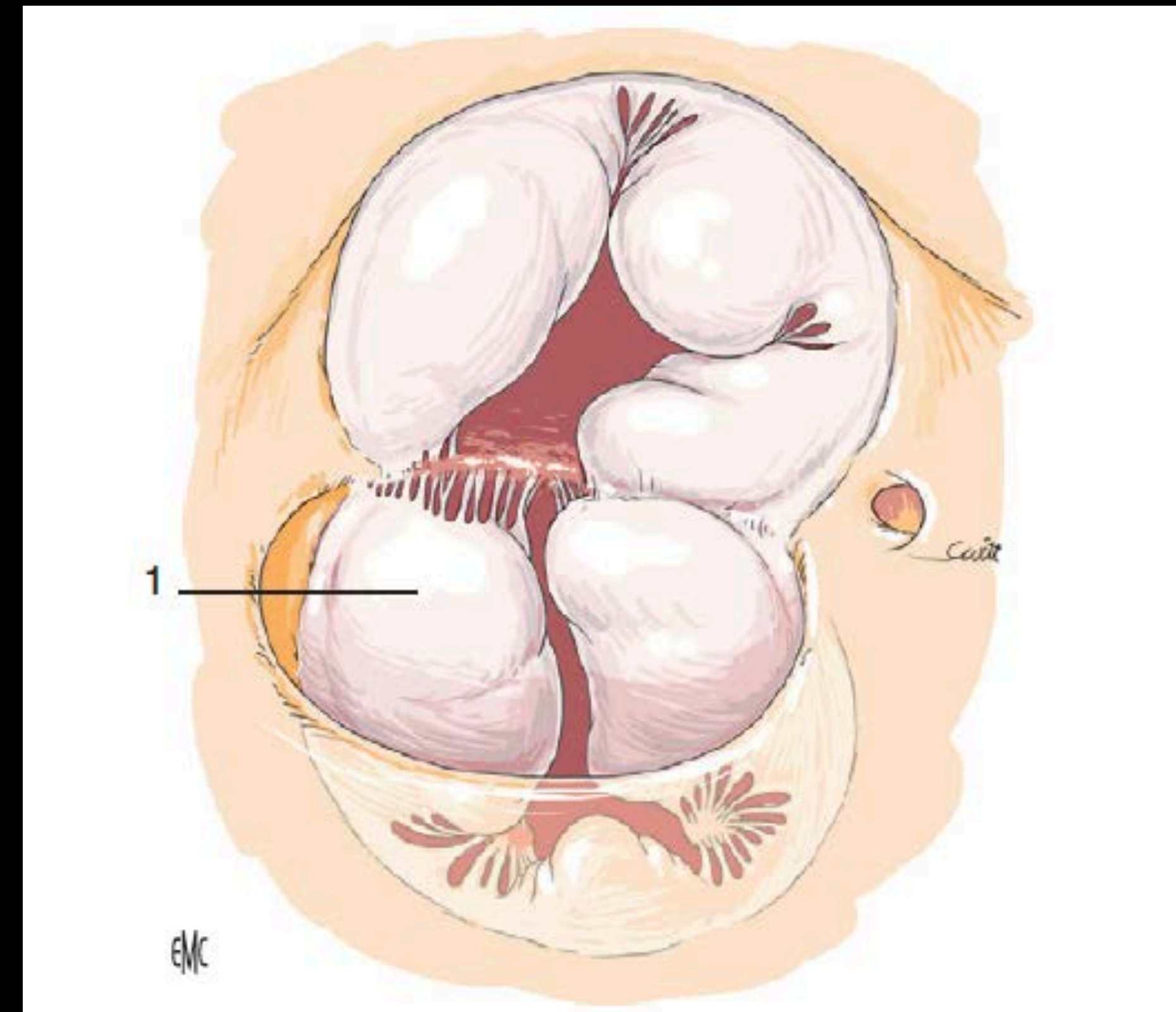
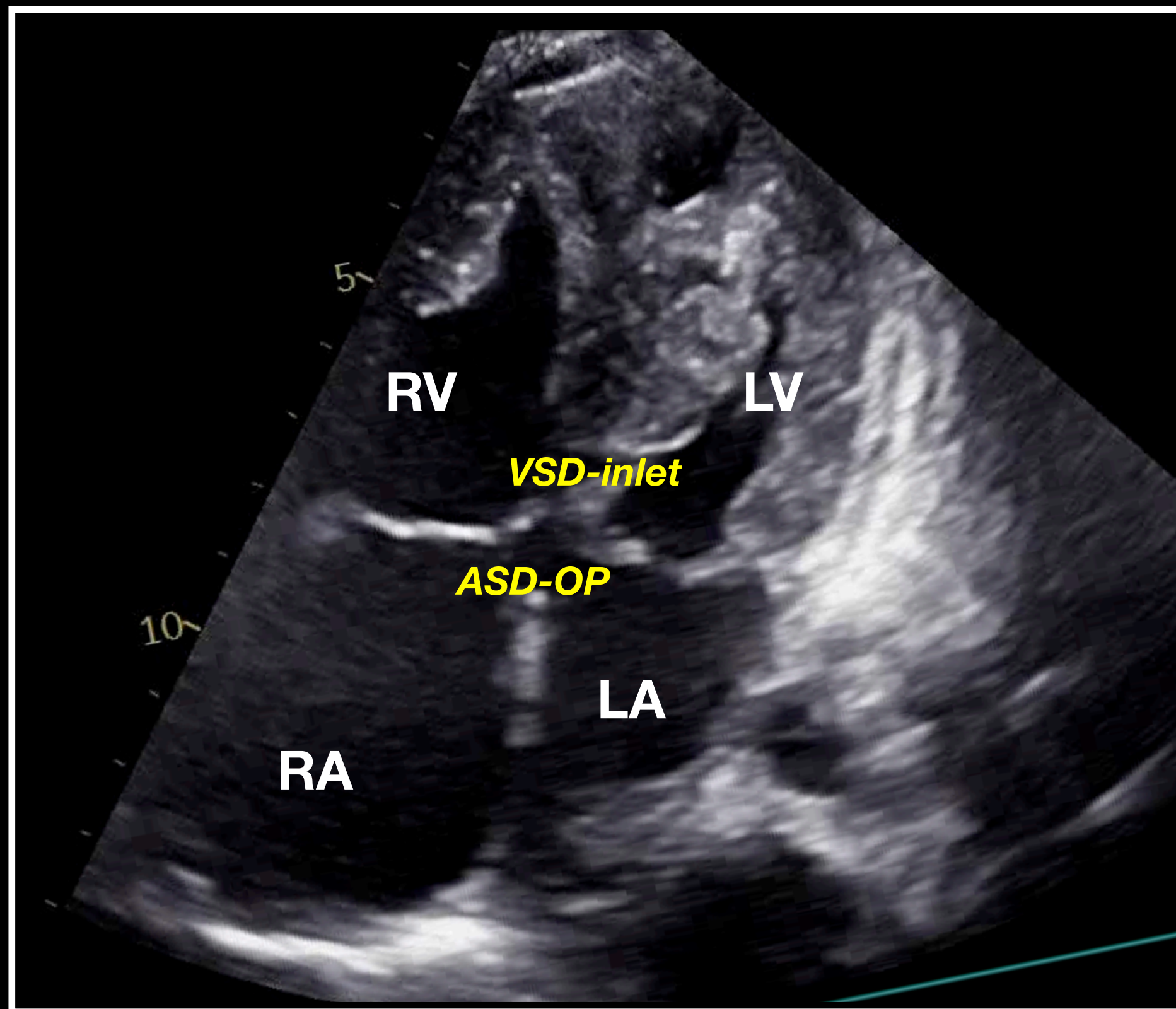
# « Complete » balanced AVSD

*Bridging leaflet not attached to IV septum*

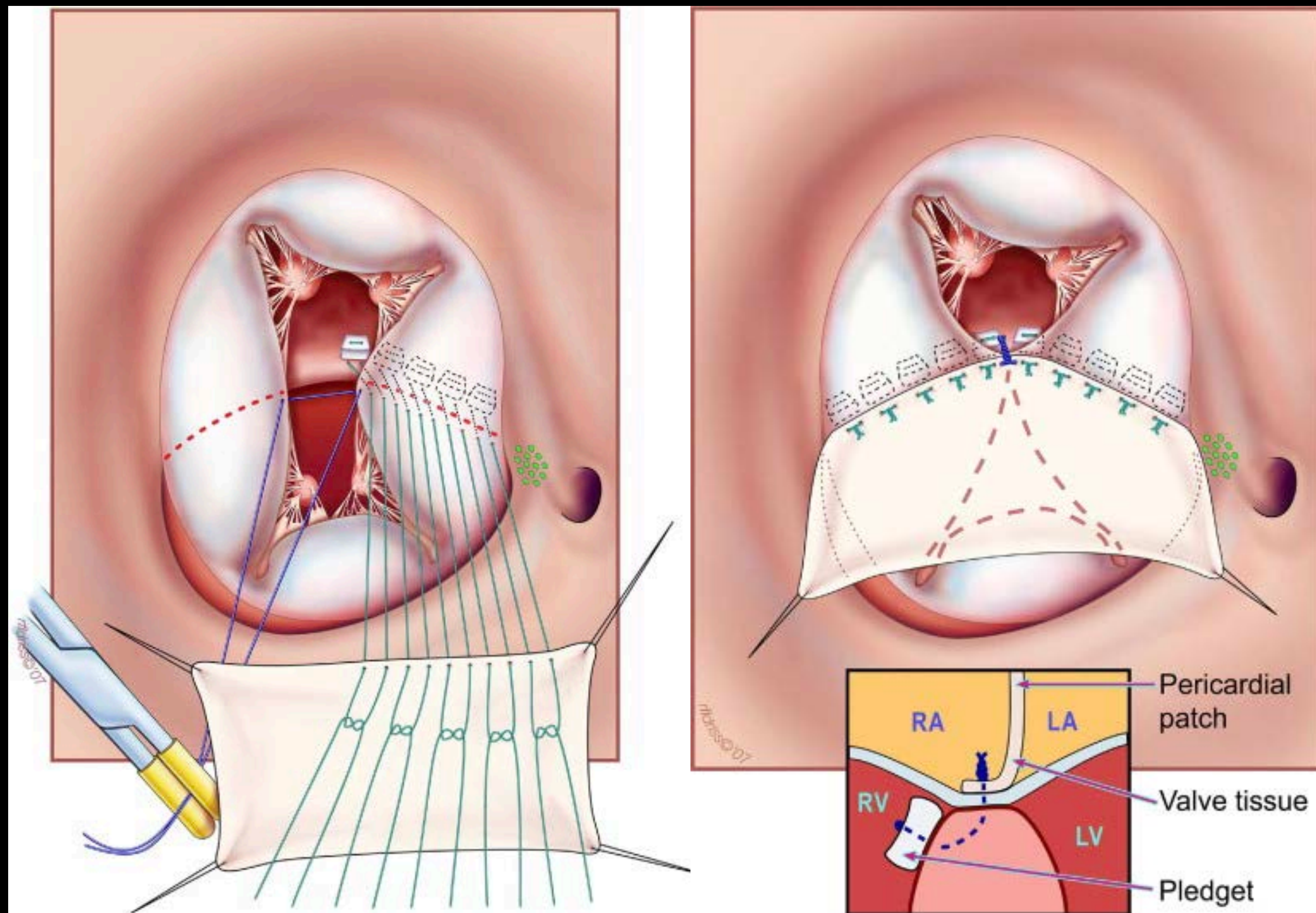
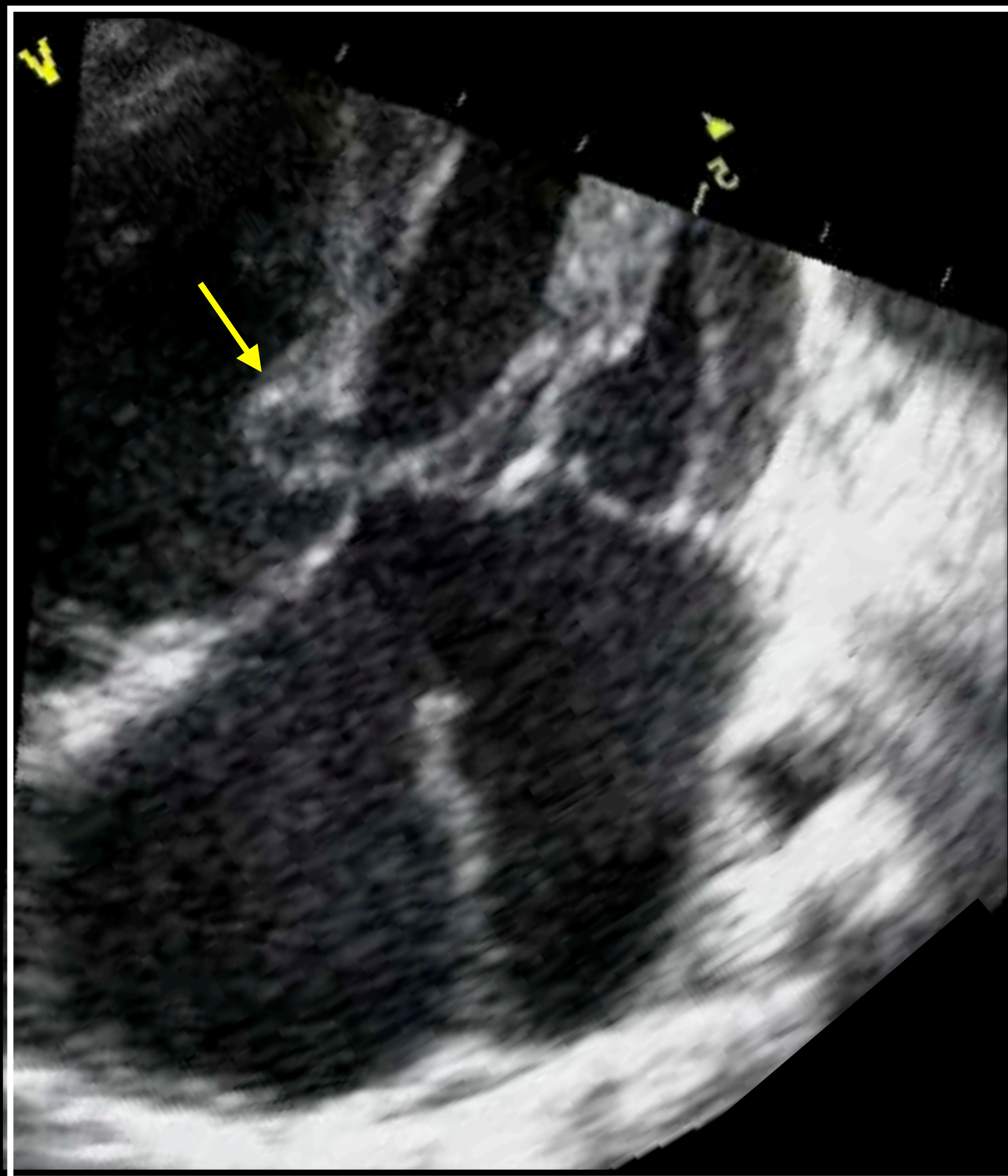


# « Complete » balanced AVSD

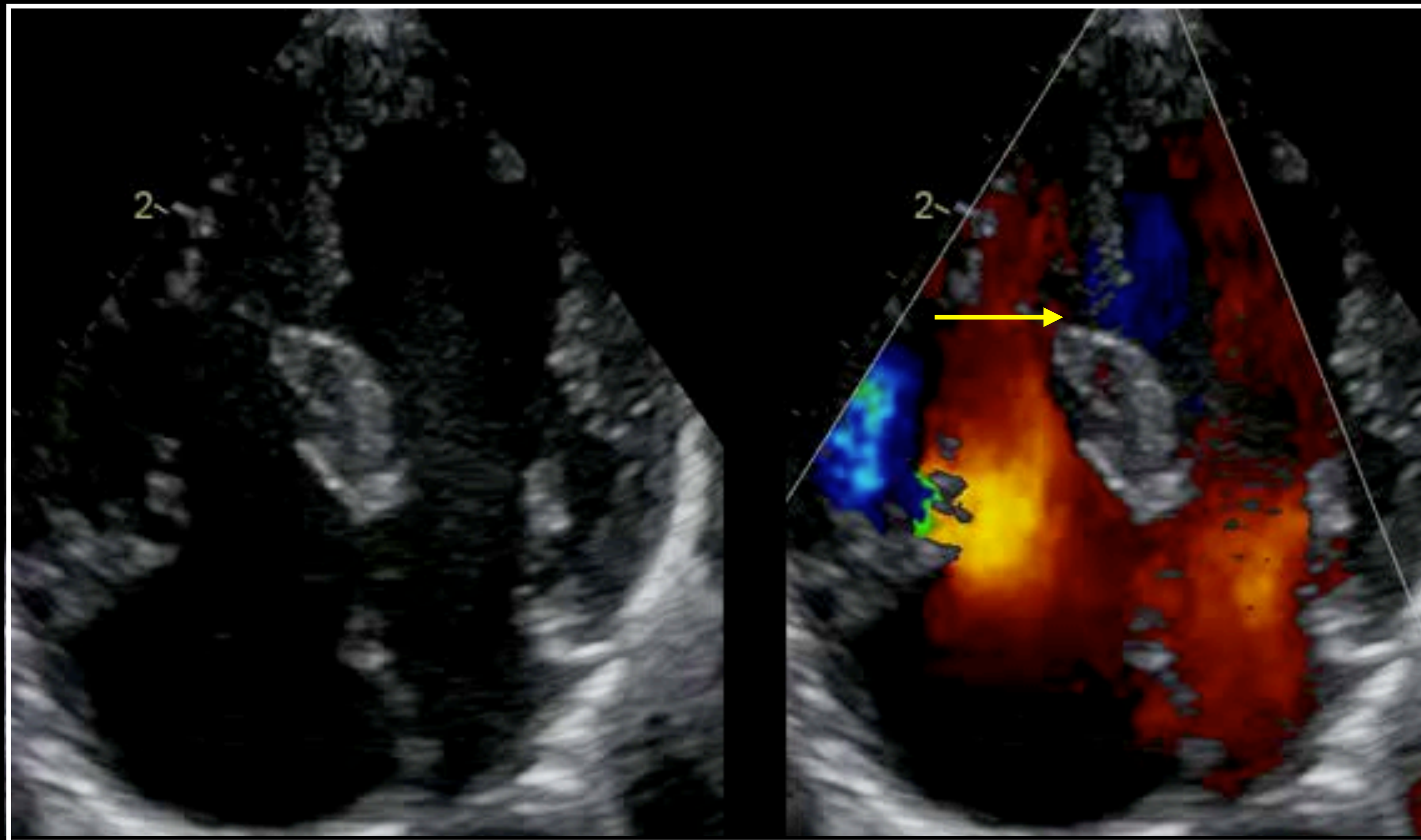
*Bridging leaflet attached on the IV septum*



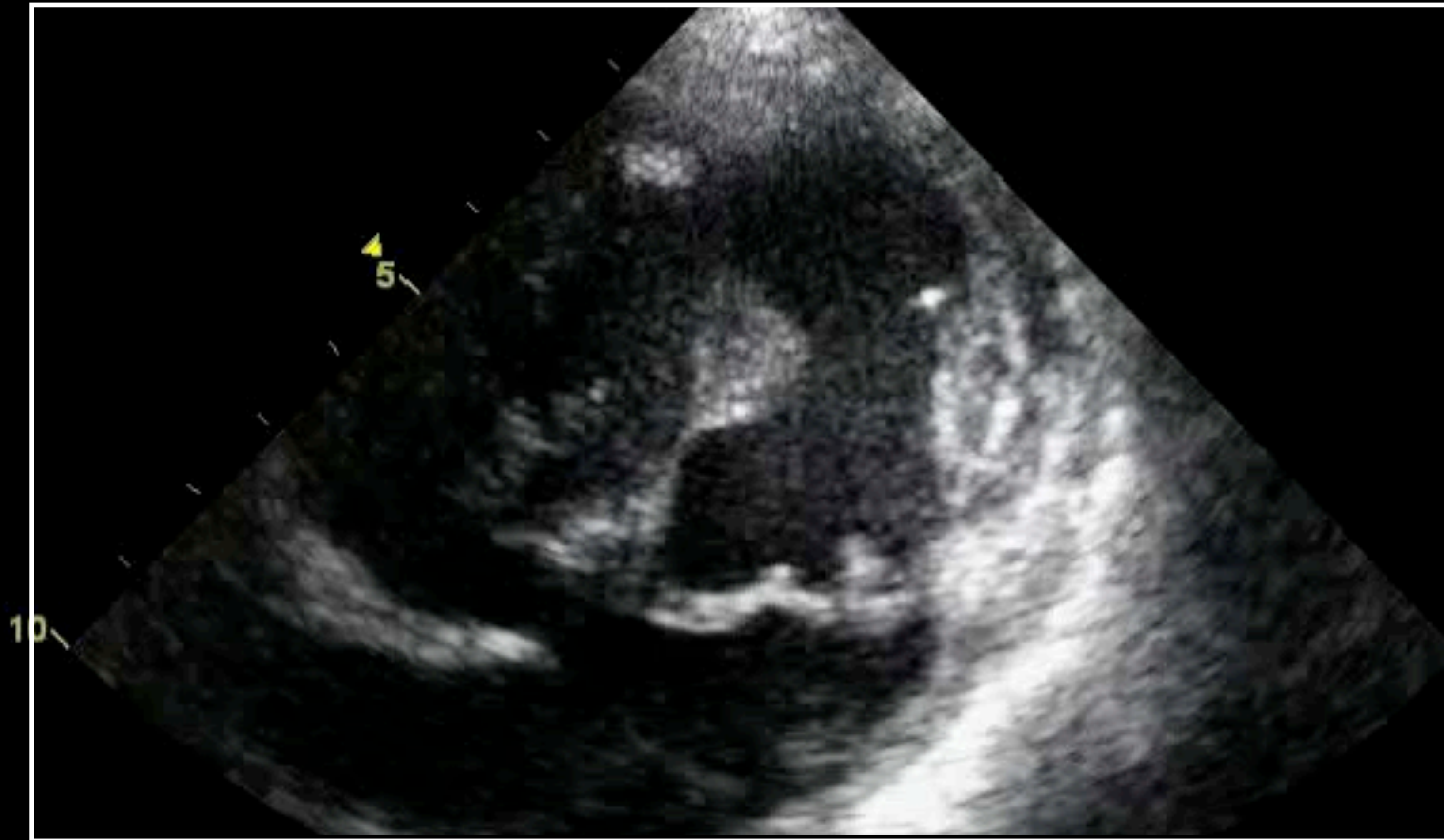
# Complete AVSD with restrictive VSD



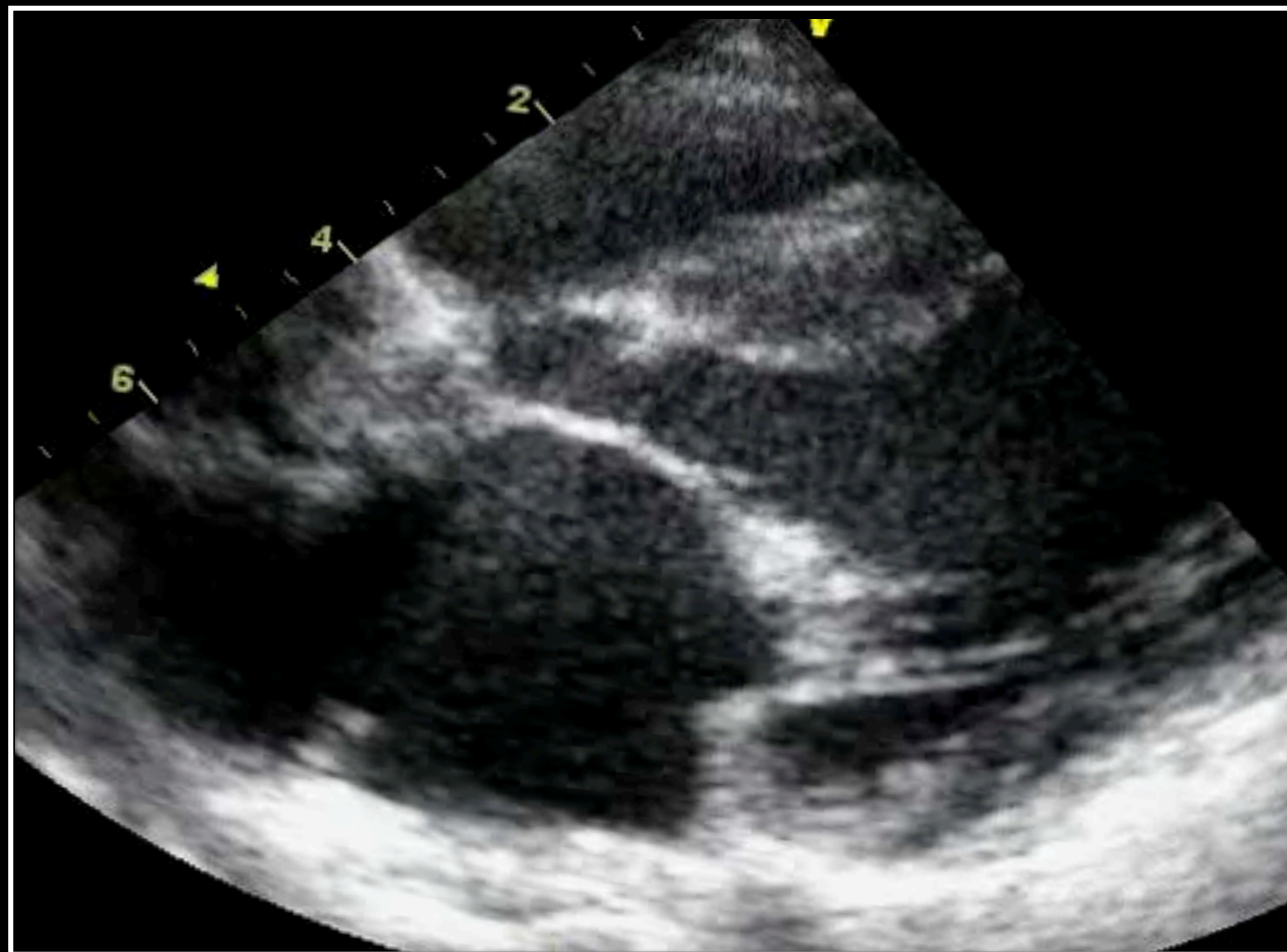
# Muscular VSD in AVSD

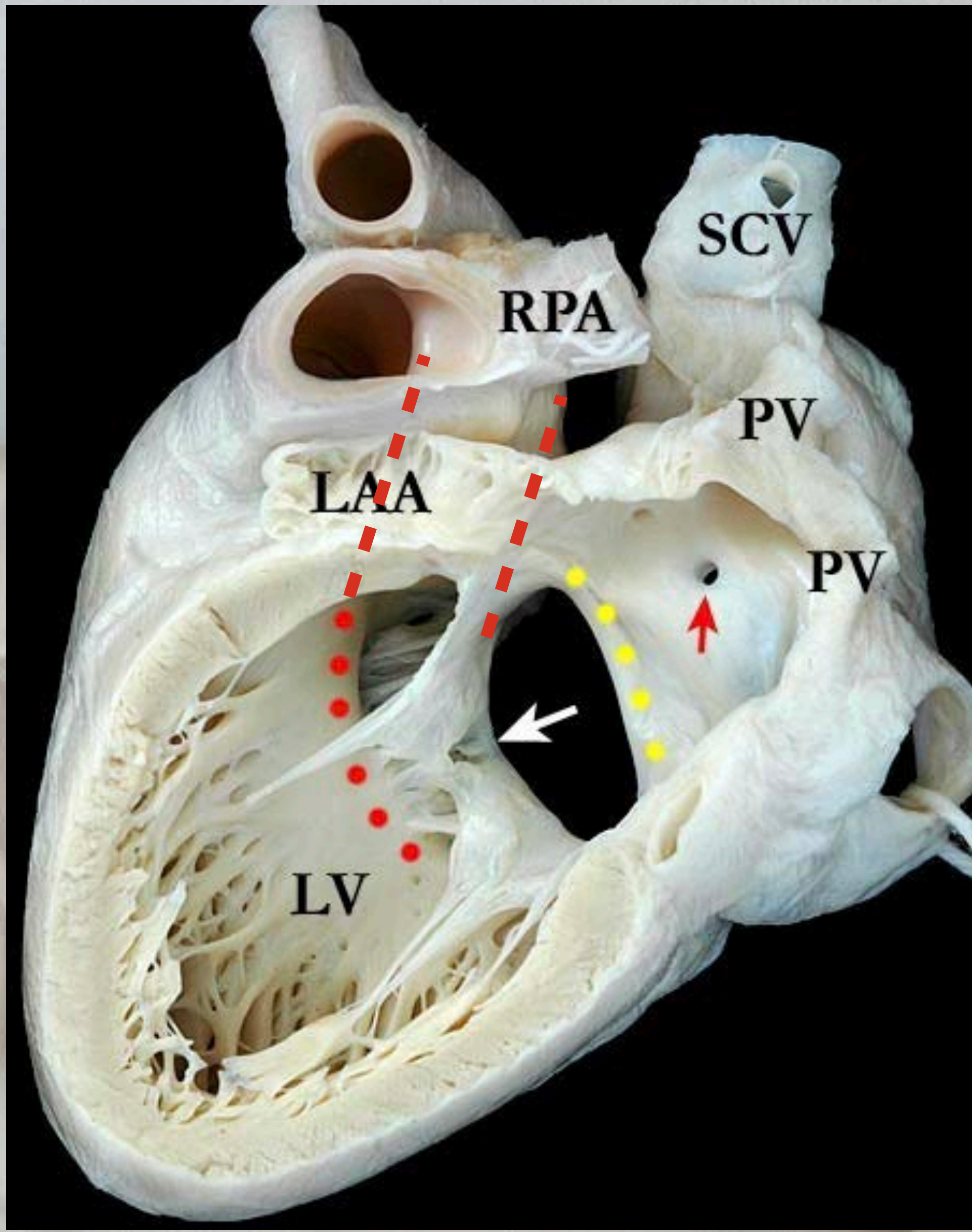


# Muscular VSD in AVSD

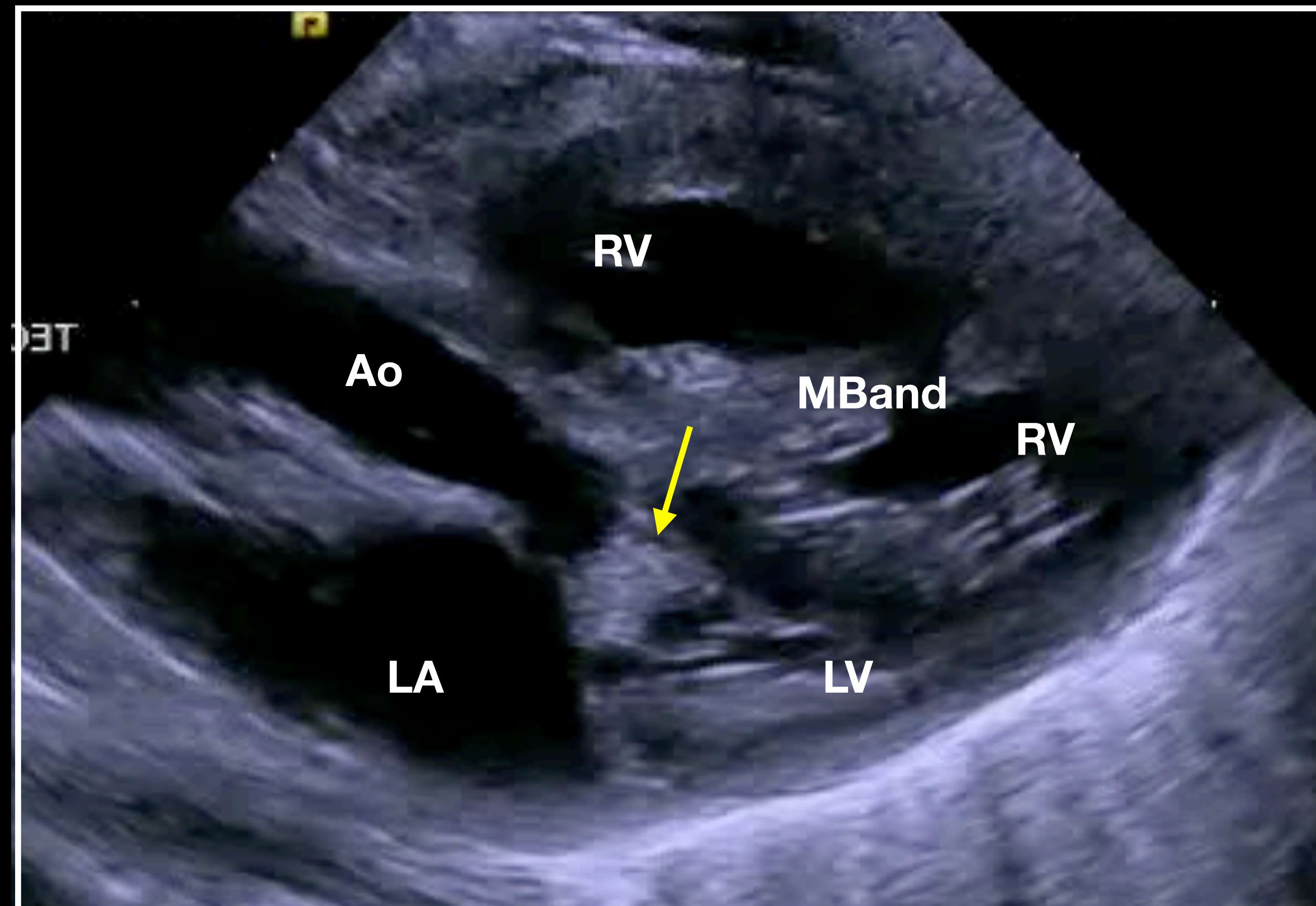


# Goose Neck in AVSD

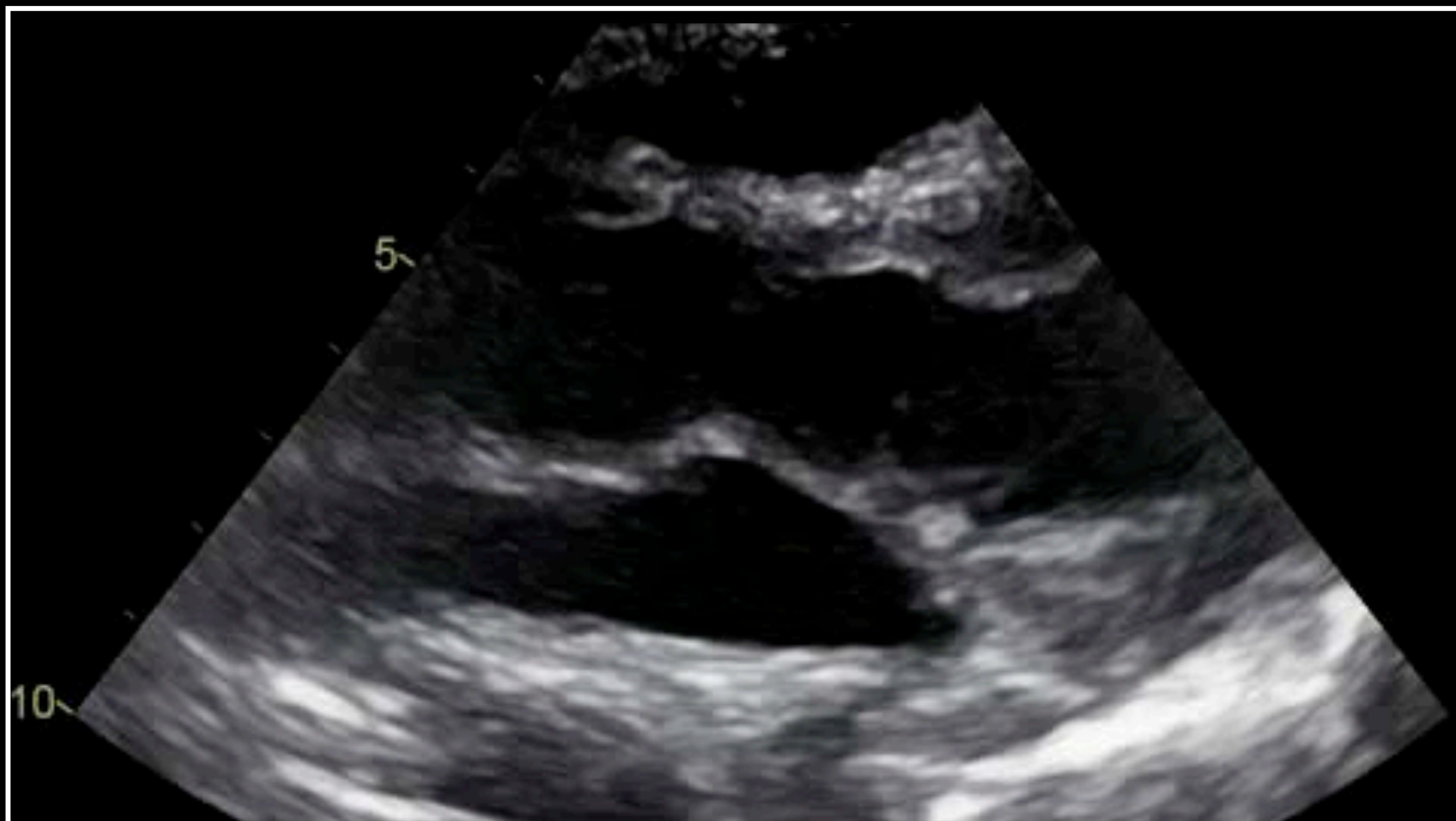


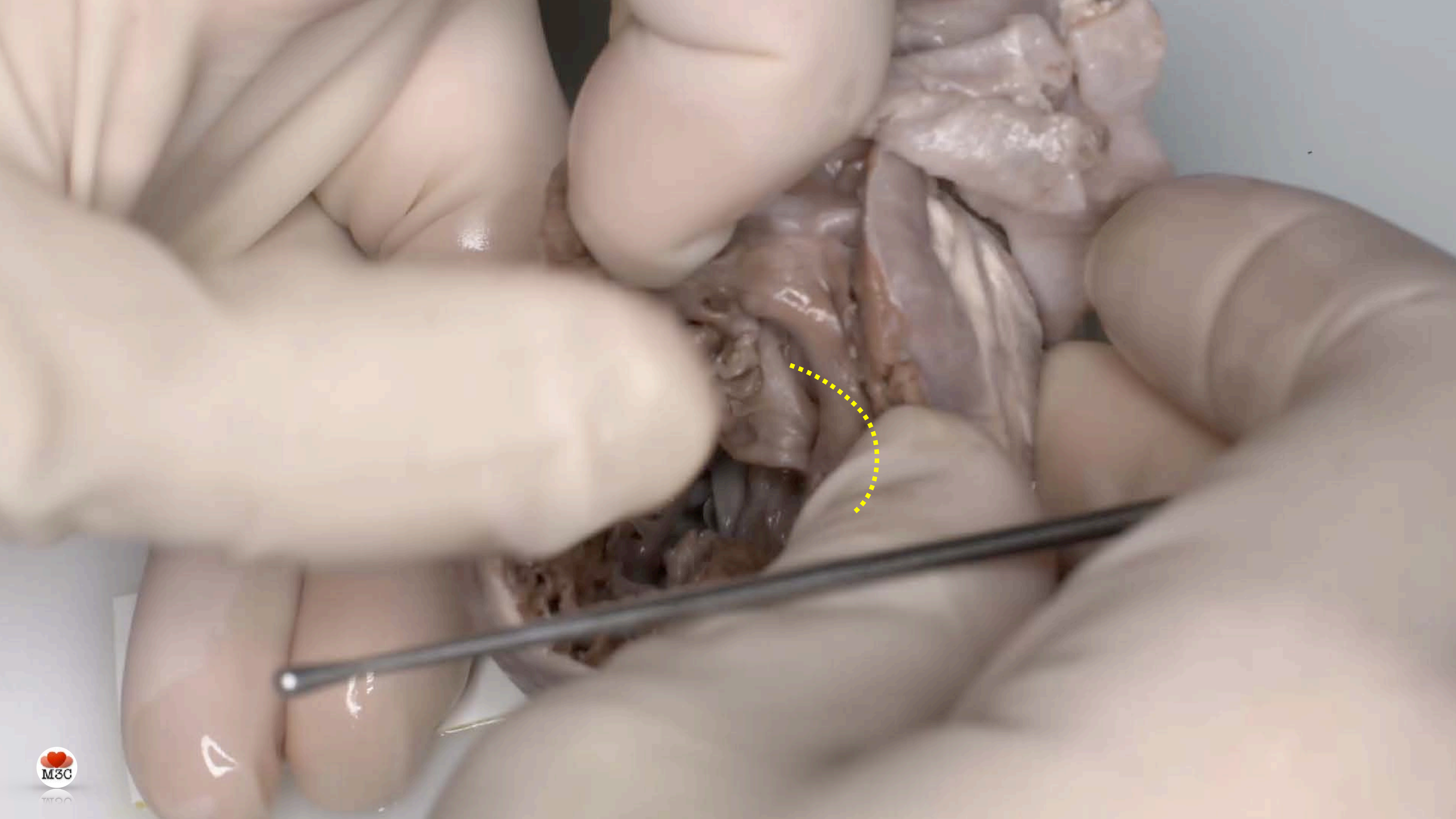


# Left outflow tract in AVSD



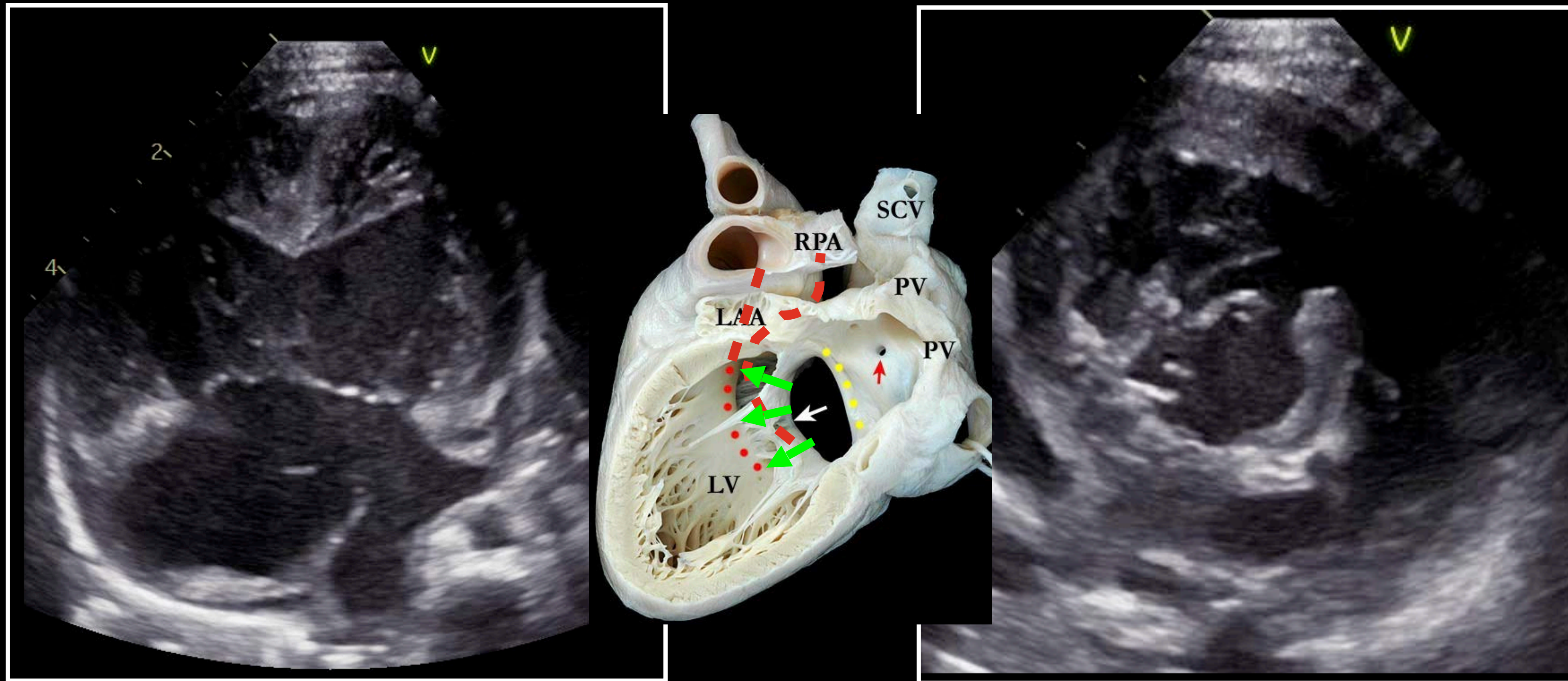
# Left outflow tract in AVSD



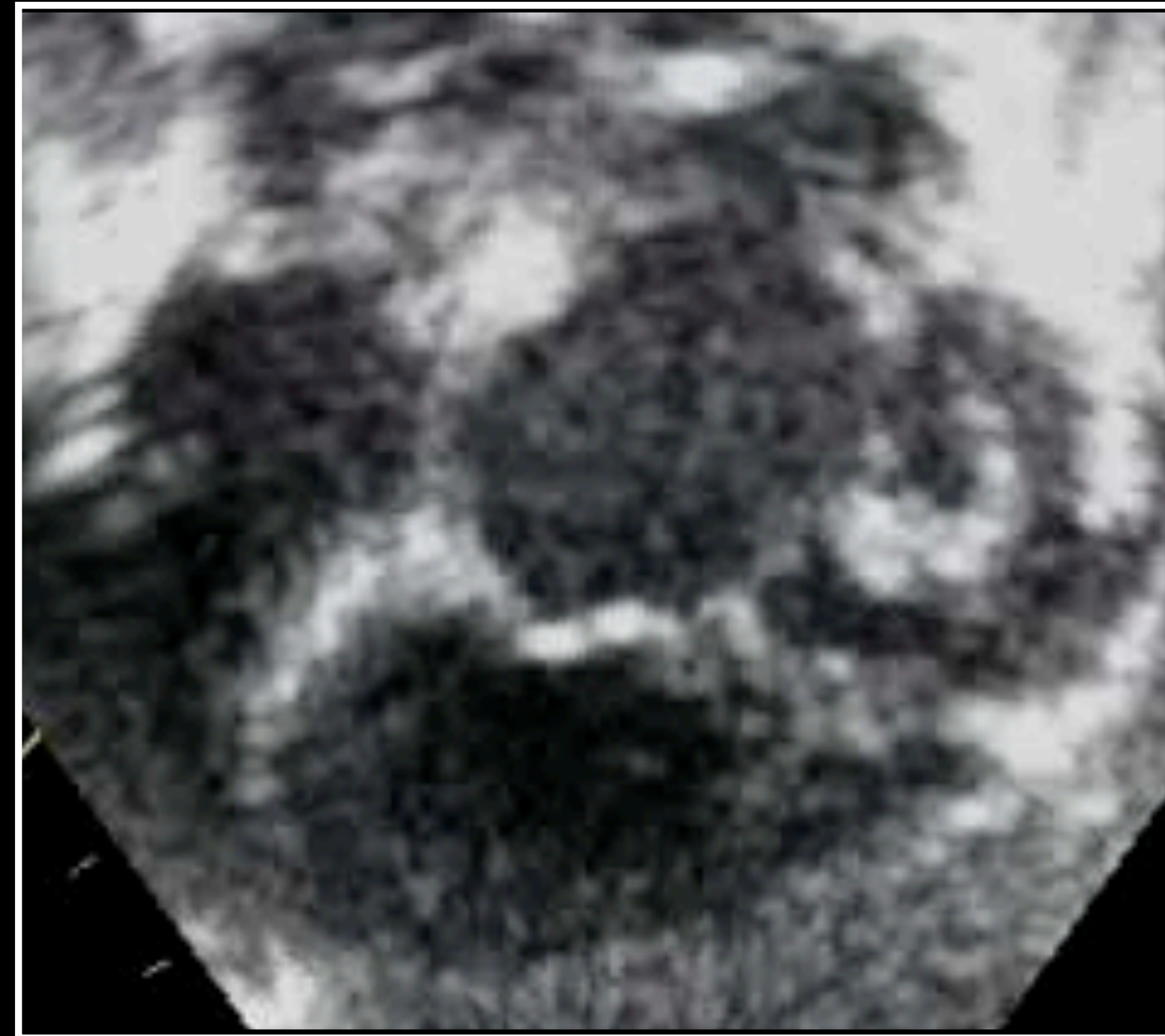


# Extension of the VSD in the outlet (mainly Down syndrome)

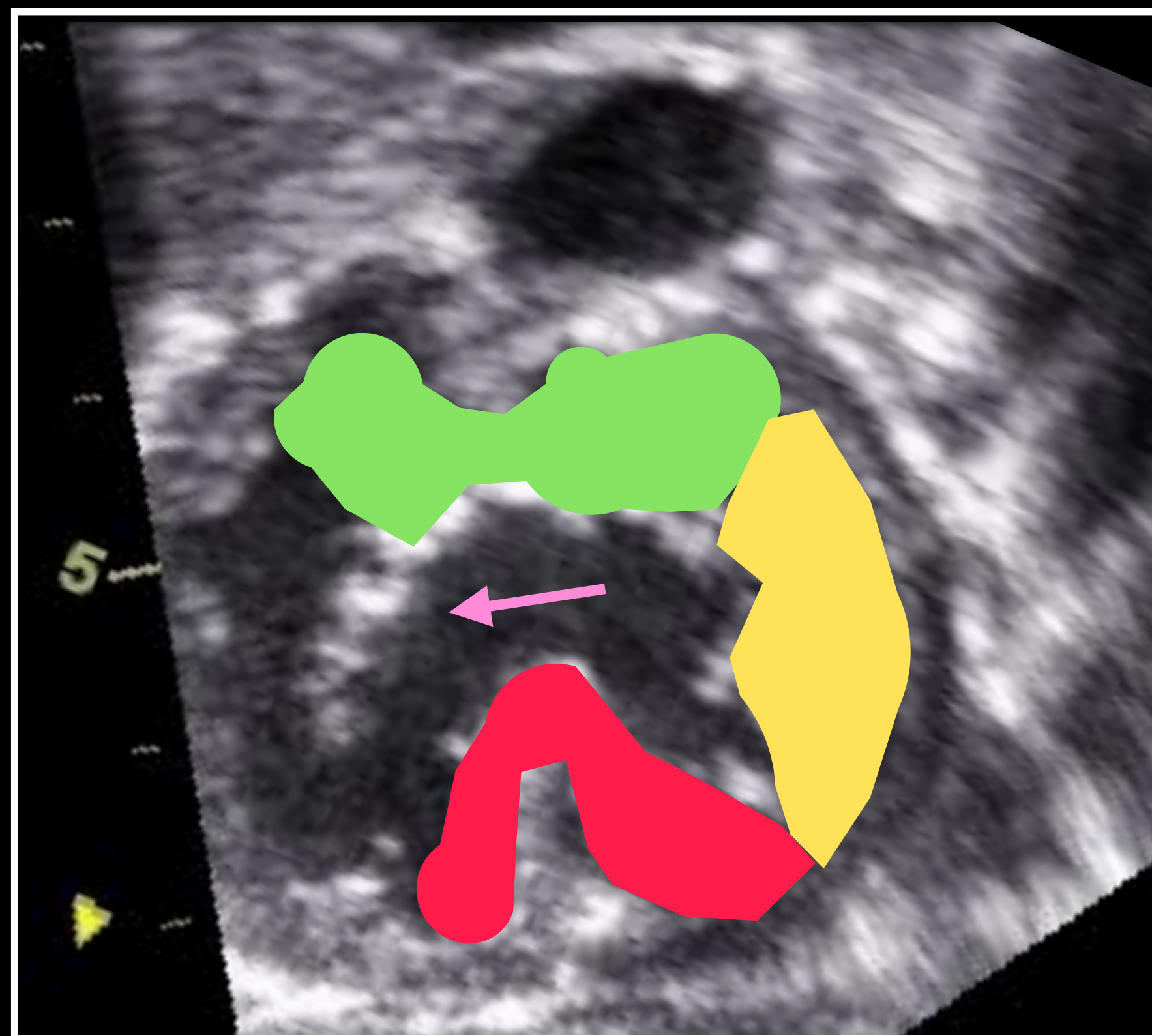
Risk of deformation of the right part of the AV valve when suturing the anterior bridging leaflet by displacement of coaptation zone + subaortic obstruction



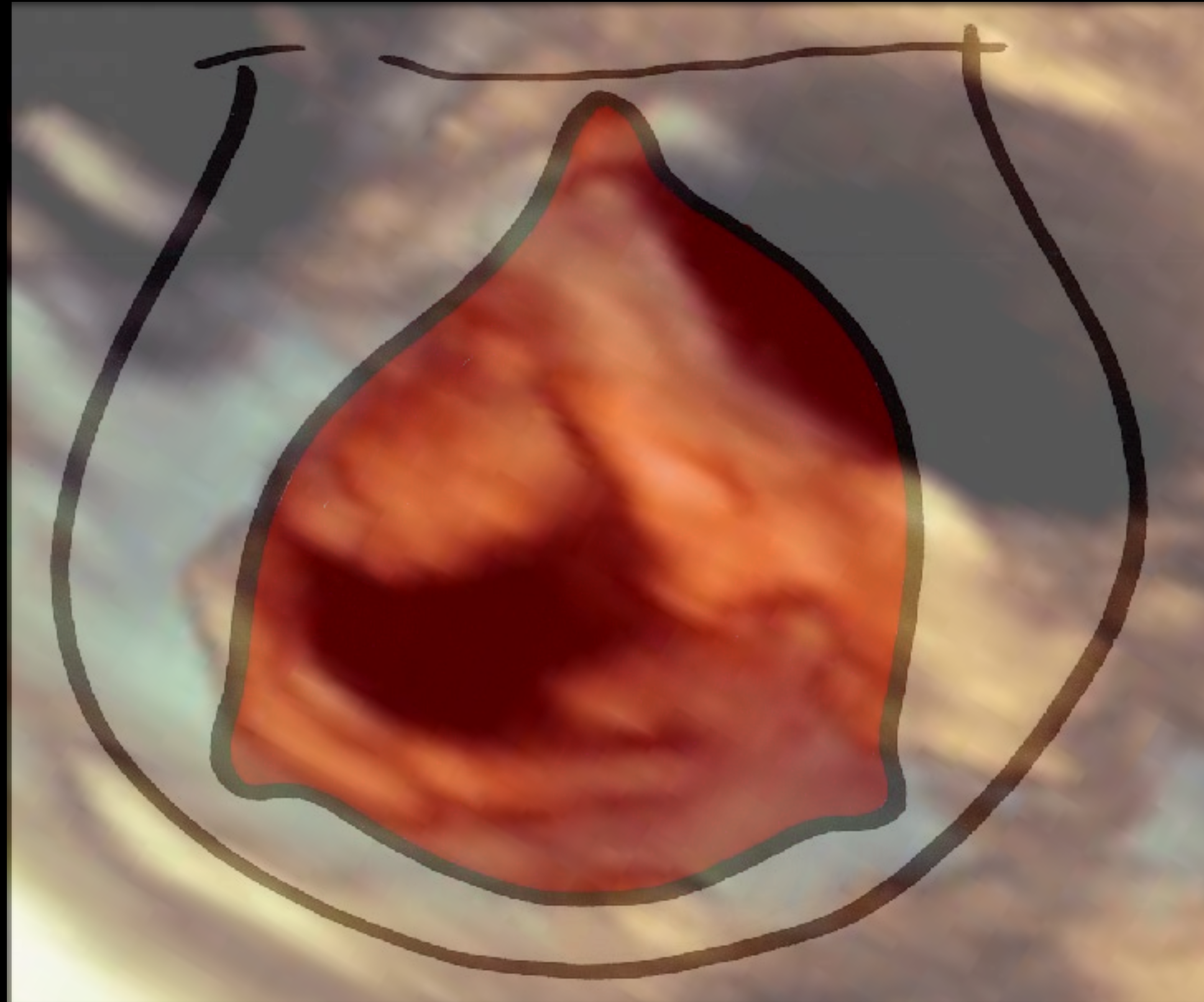
# Atrioventricular valves in AVSD



# Atrioventricular valves in AVSD



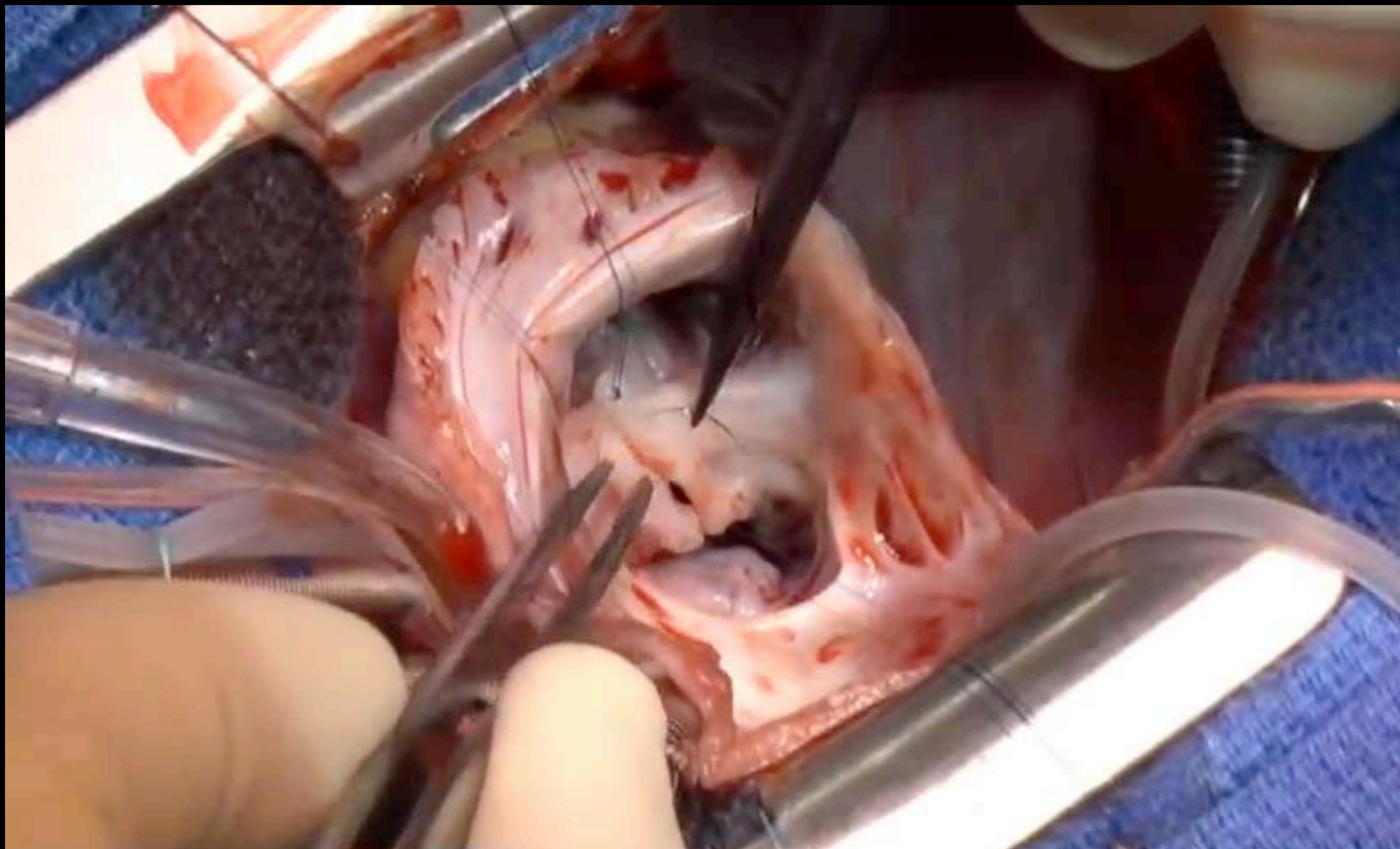
# Atrioventricular valves in AVSD



# Atrioventricular valves in AVSD

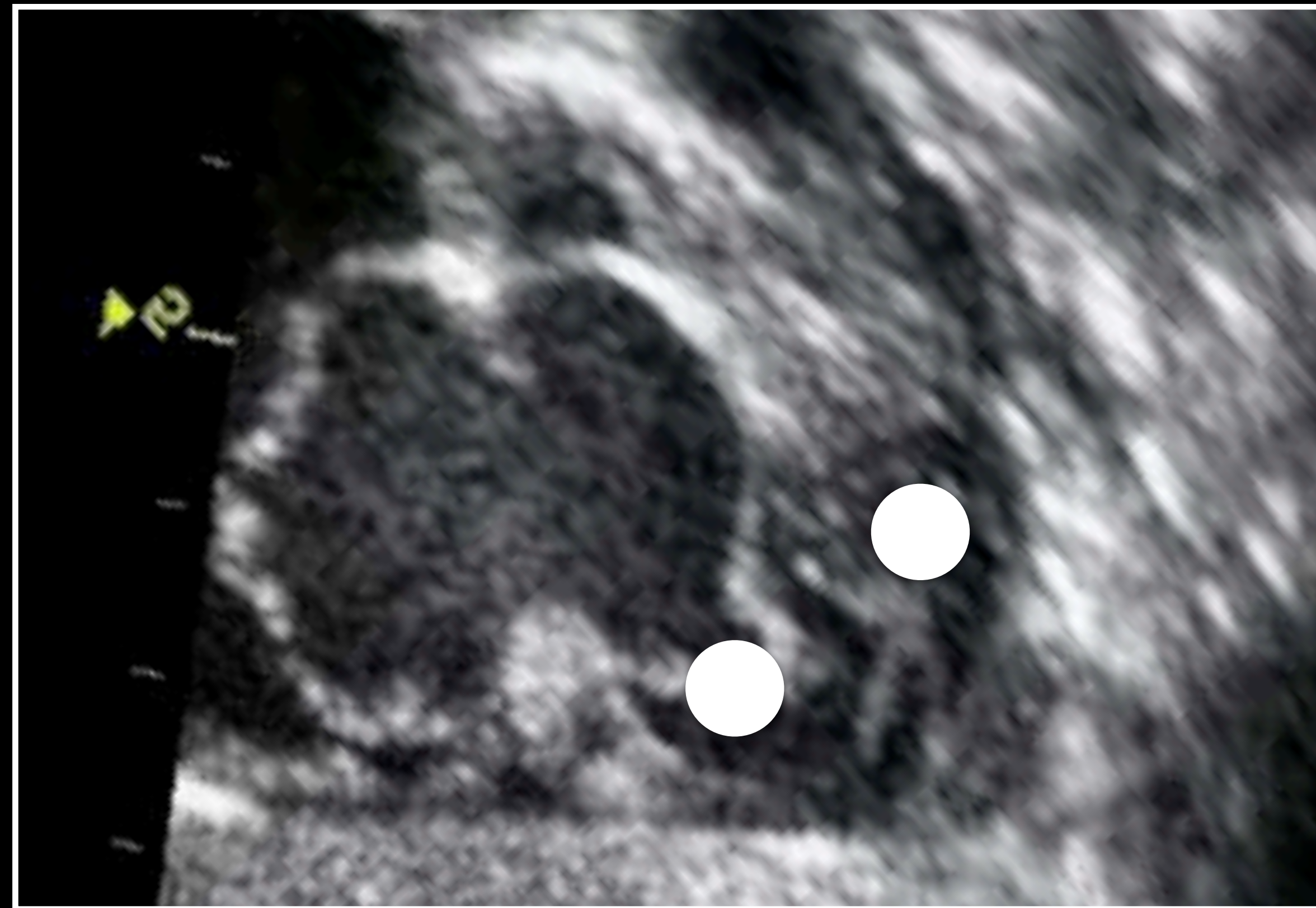


# Atrioventricular valves in AVSD



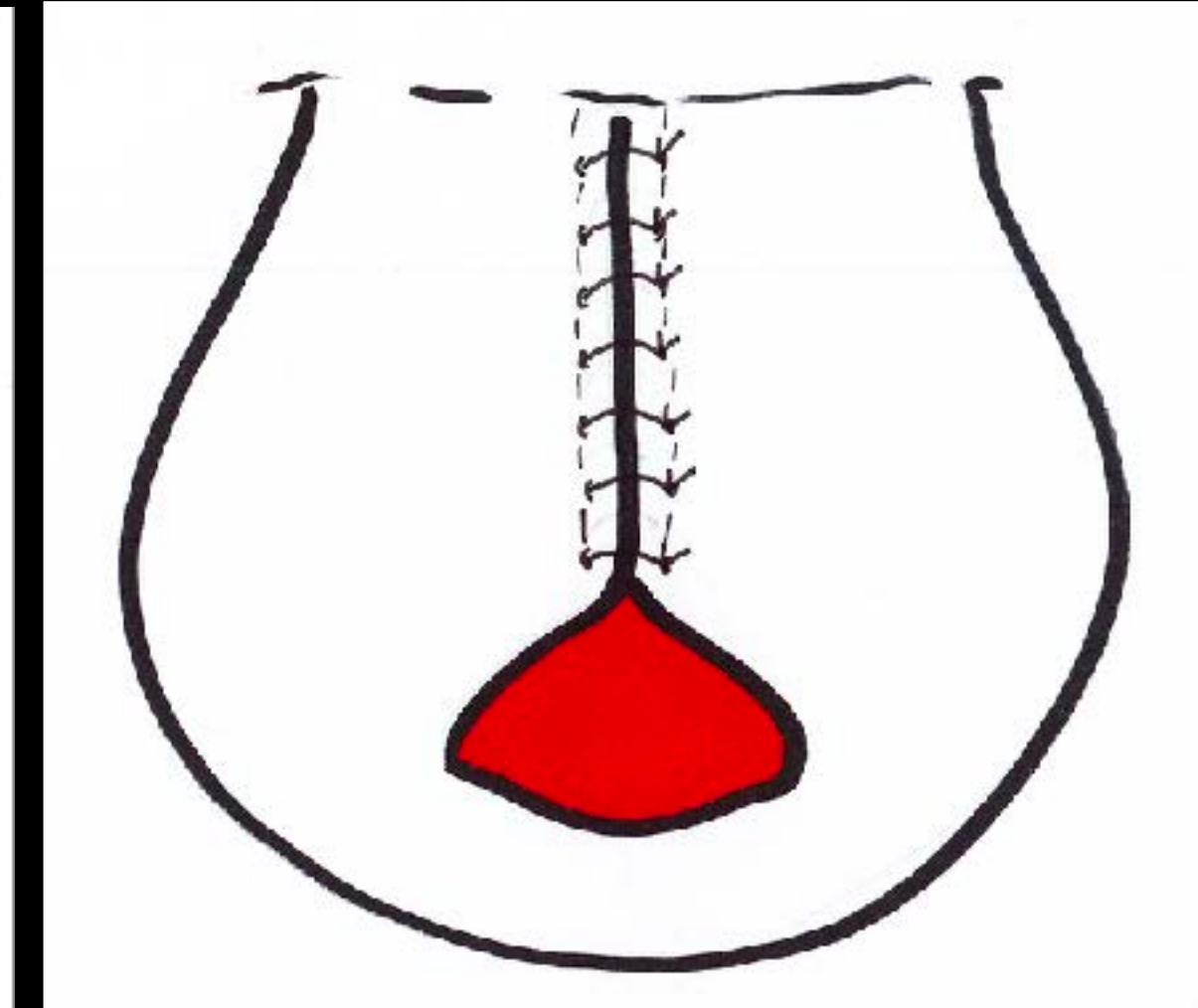
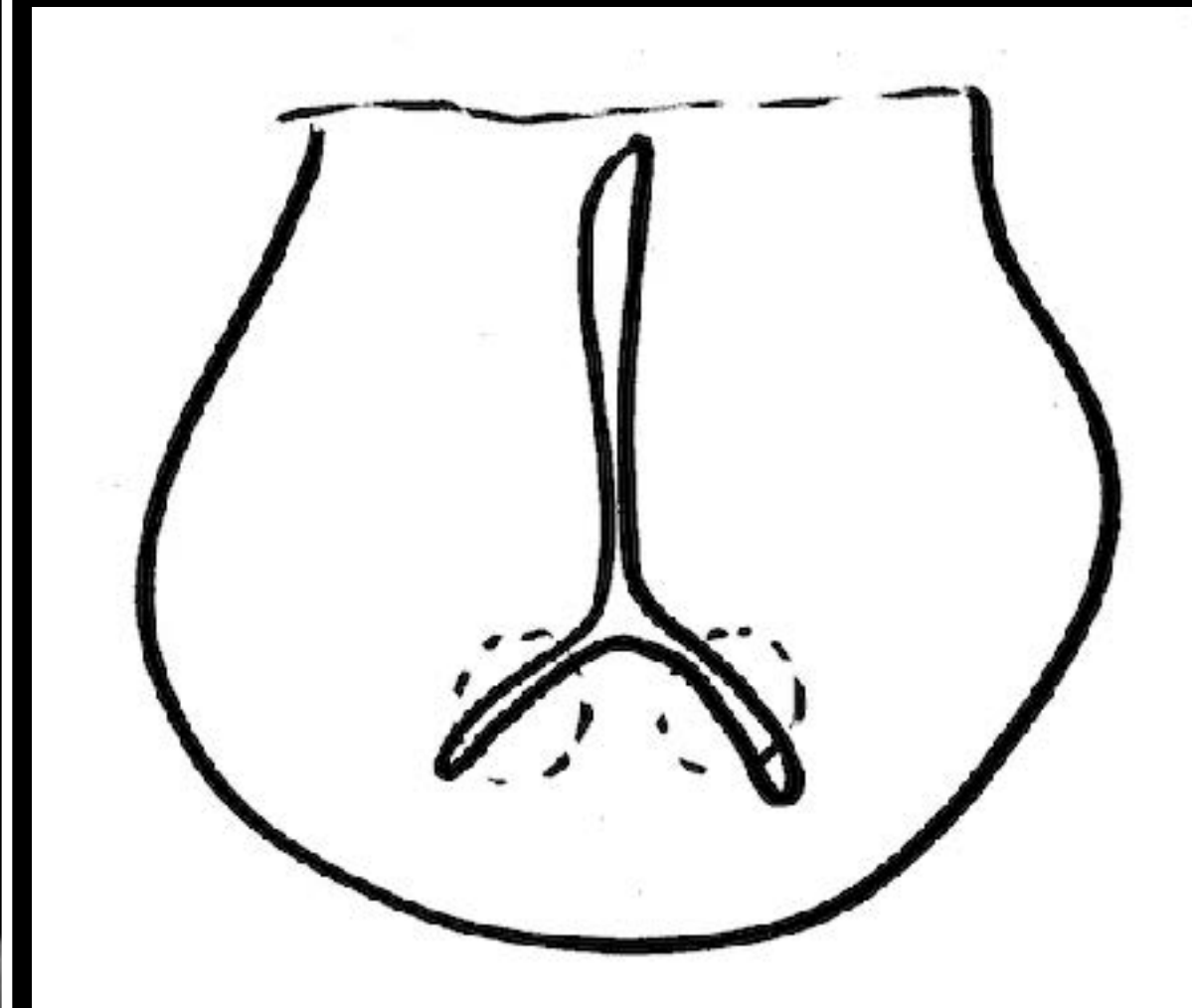
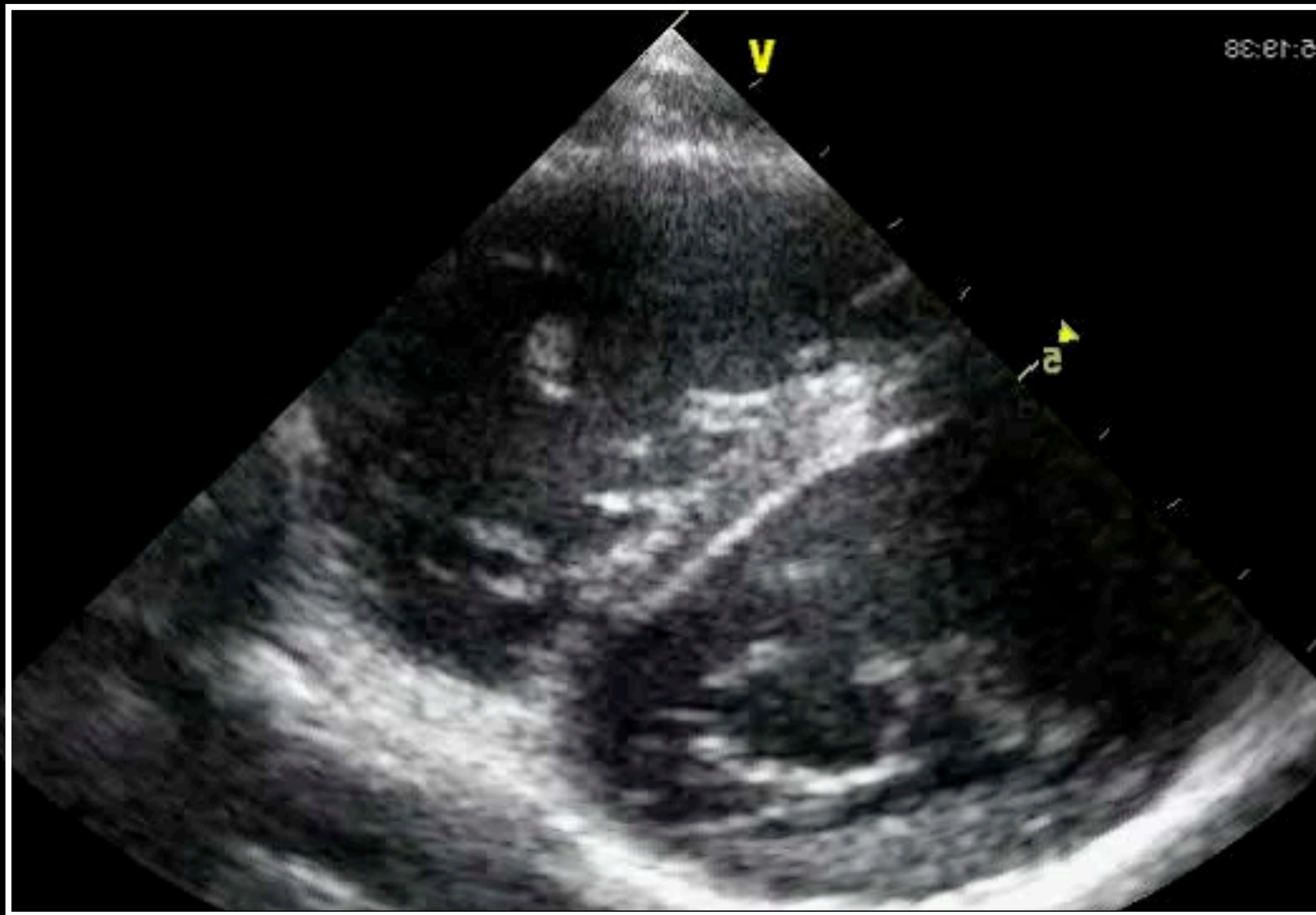
# Atrioventricular valves in AVSD

## Malpositions of the papillary muscles



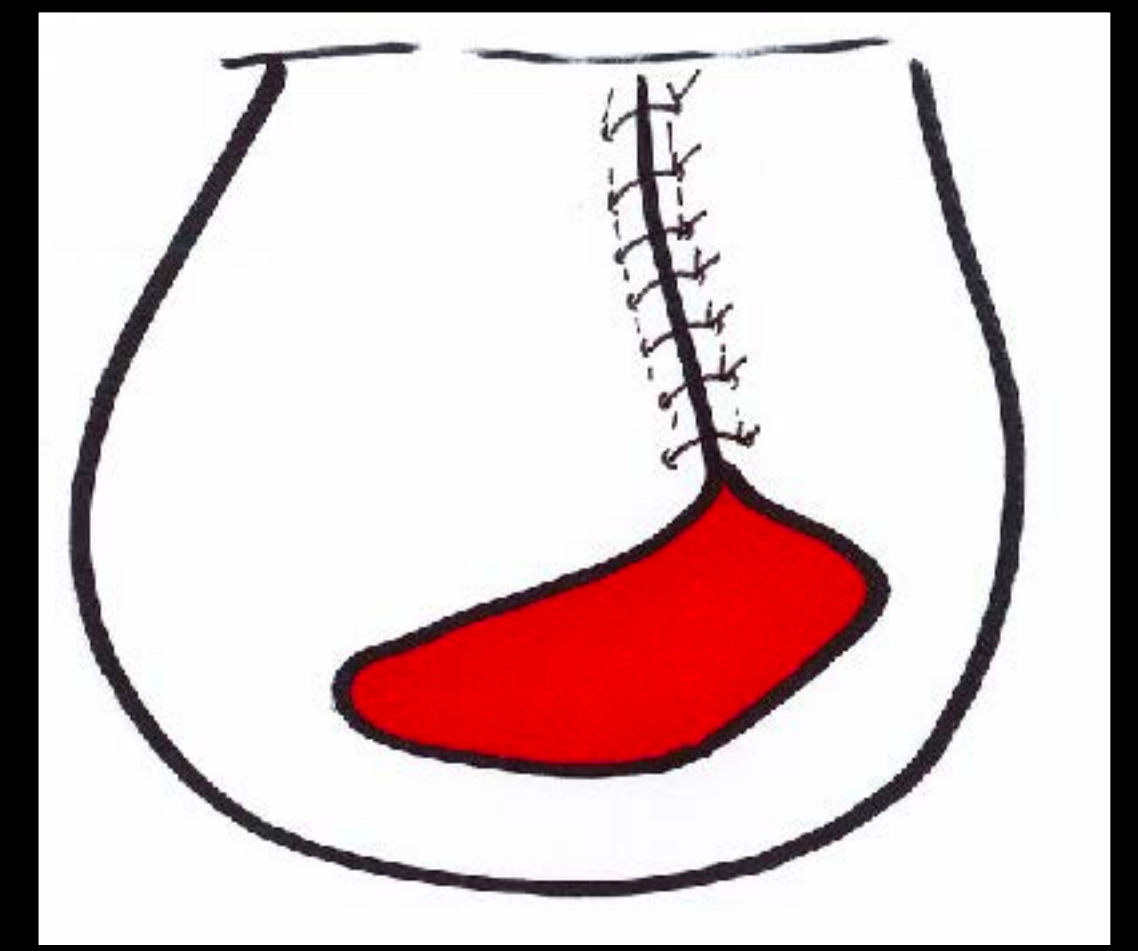
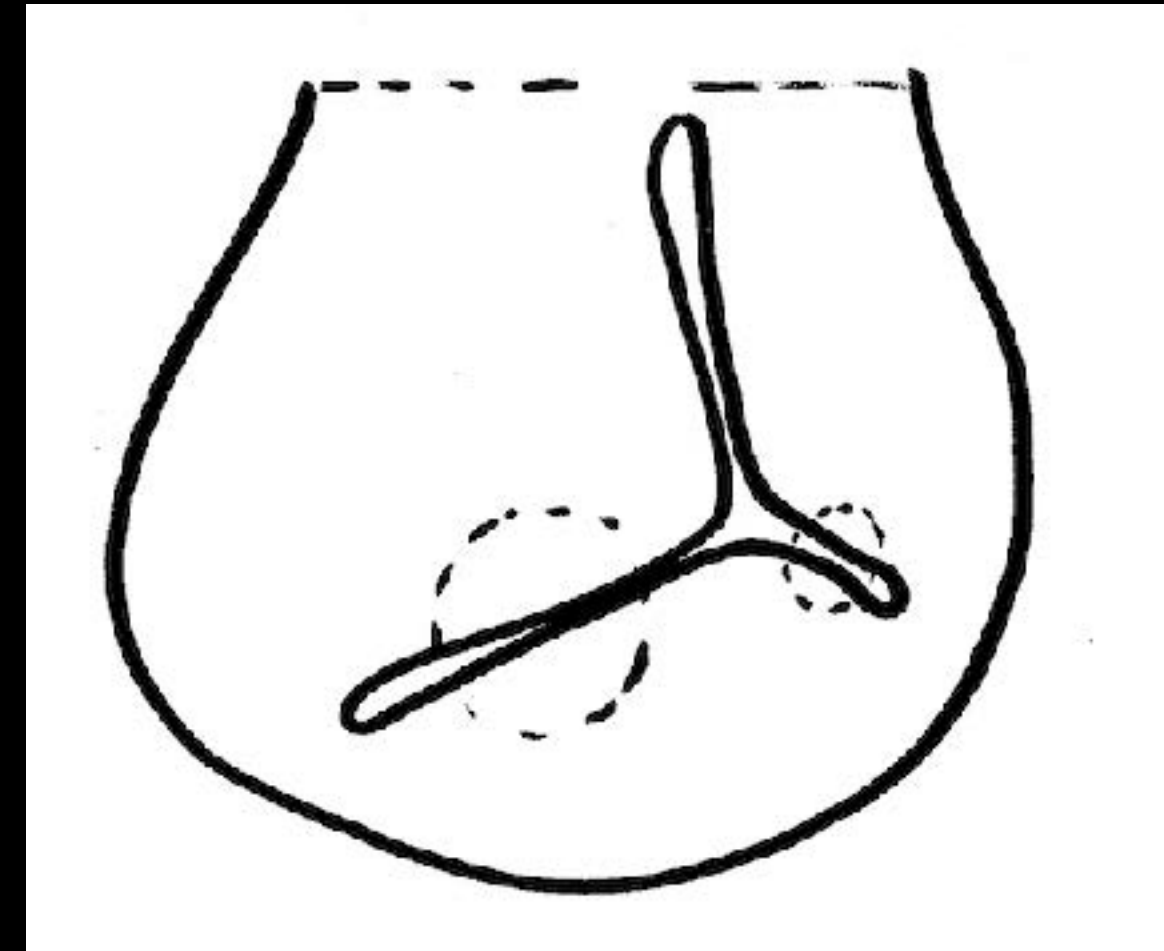
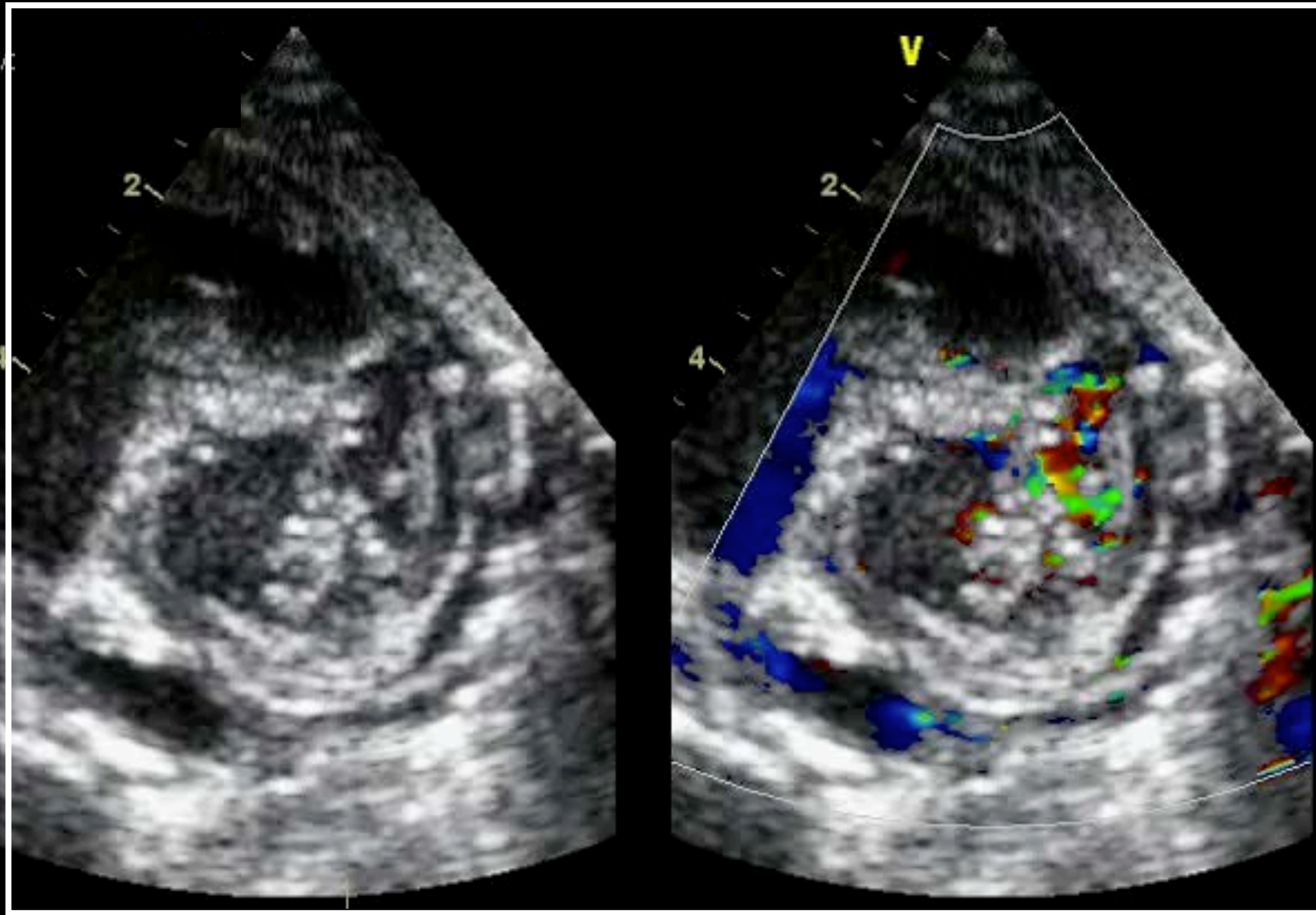
# Atrioventricular valves in AVSD

## Anomalies of the papillary muscles

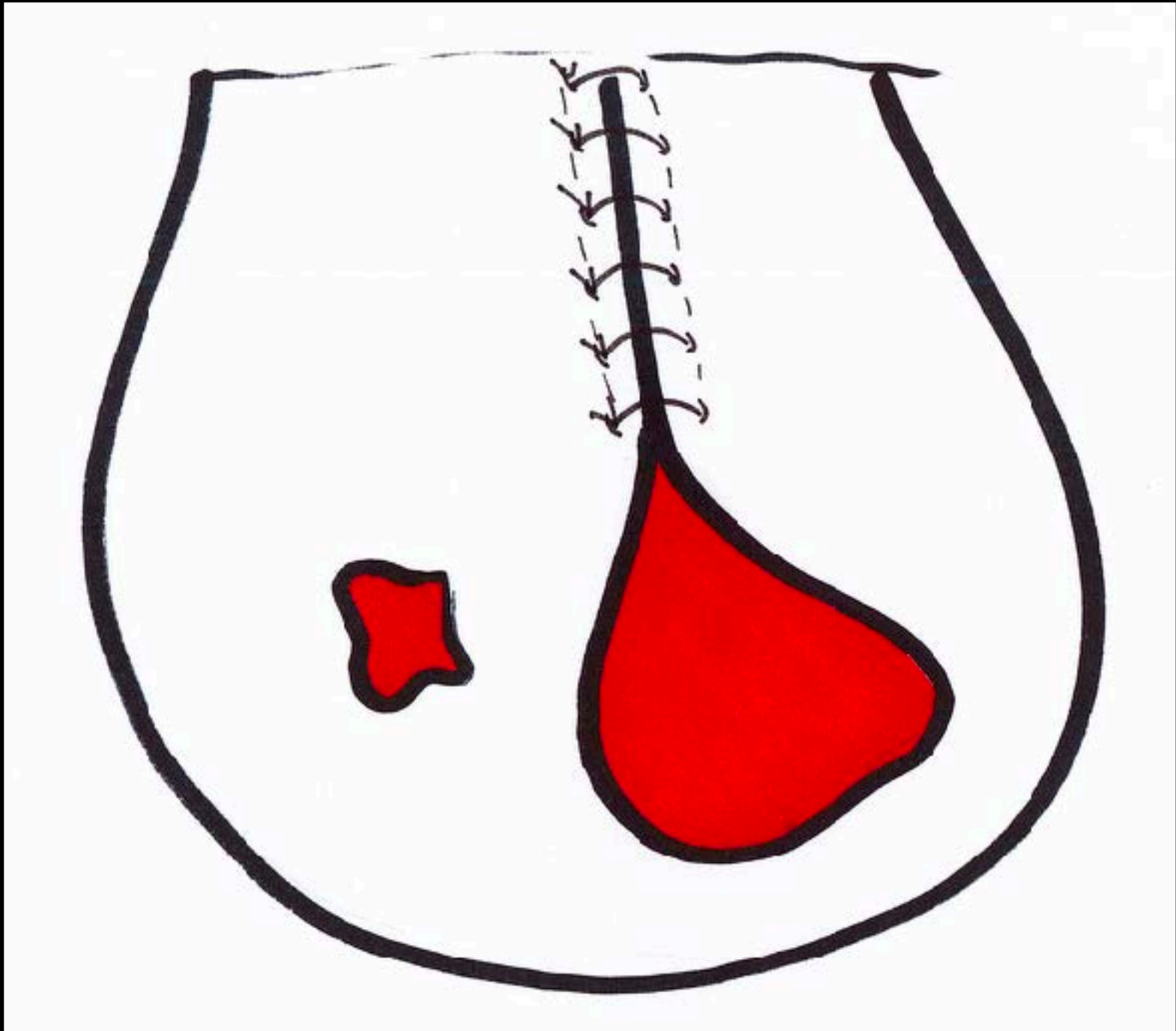
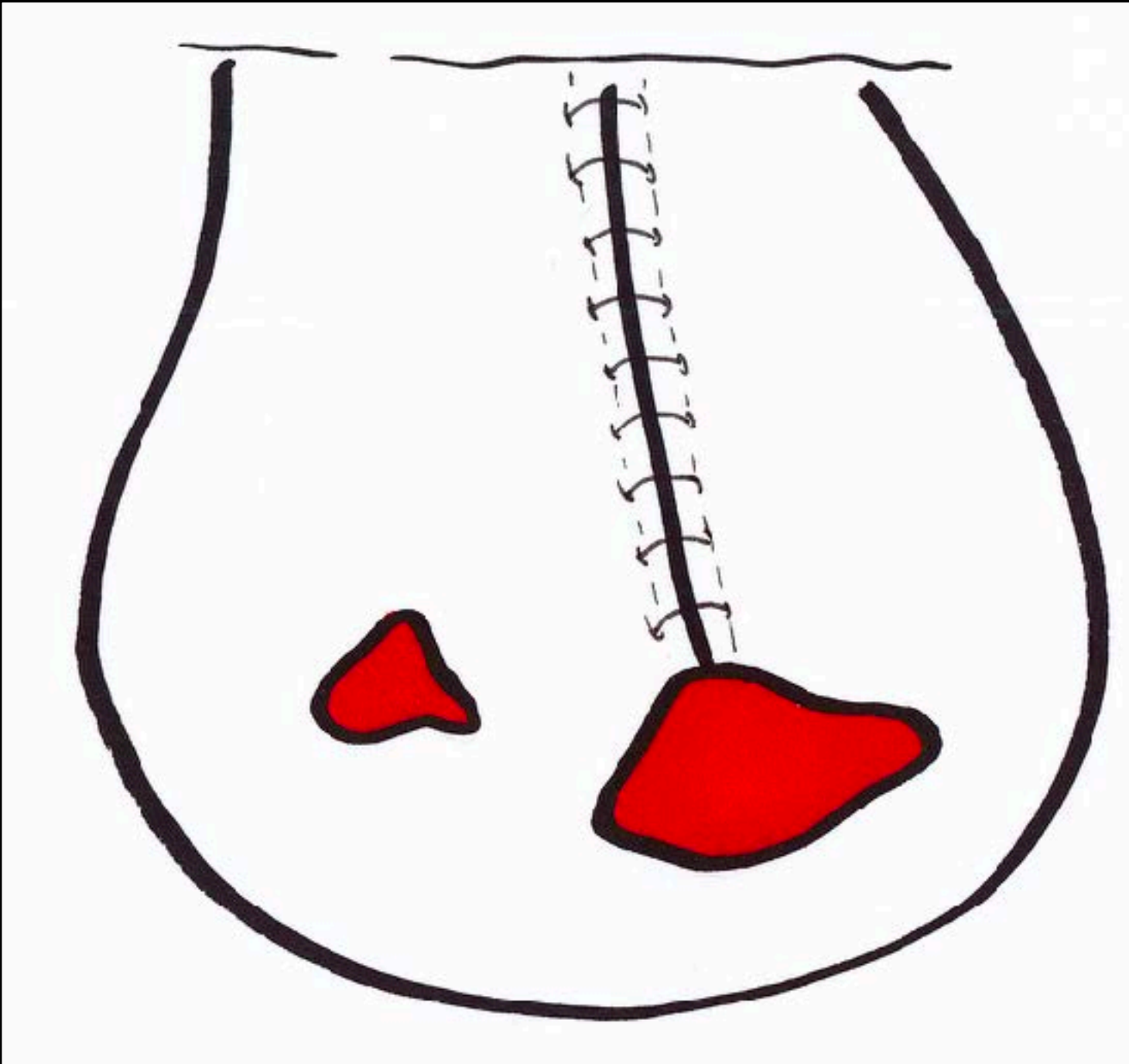
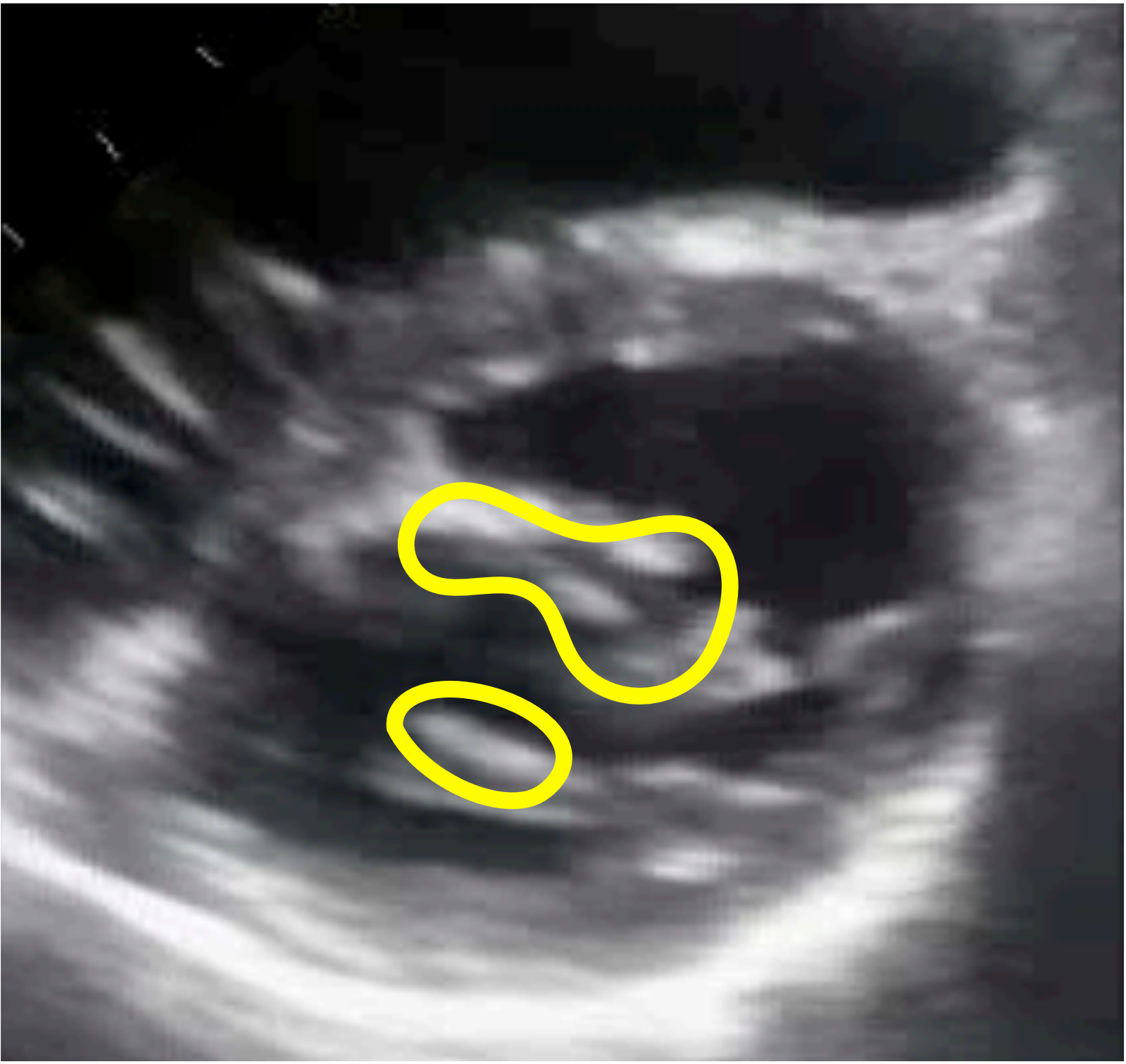


# Atrioventricular valves in AVSD

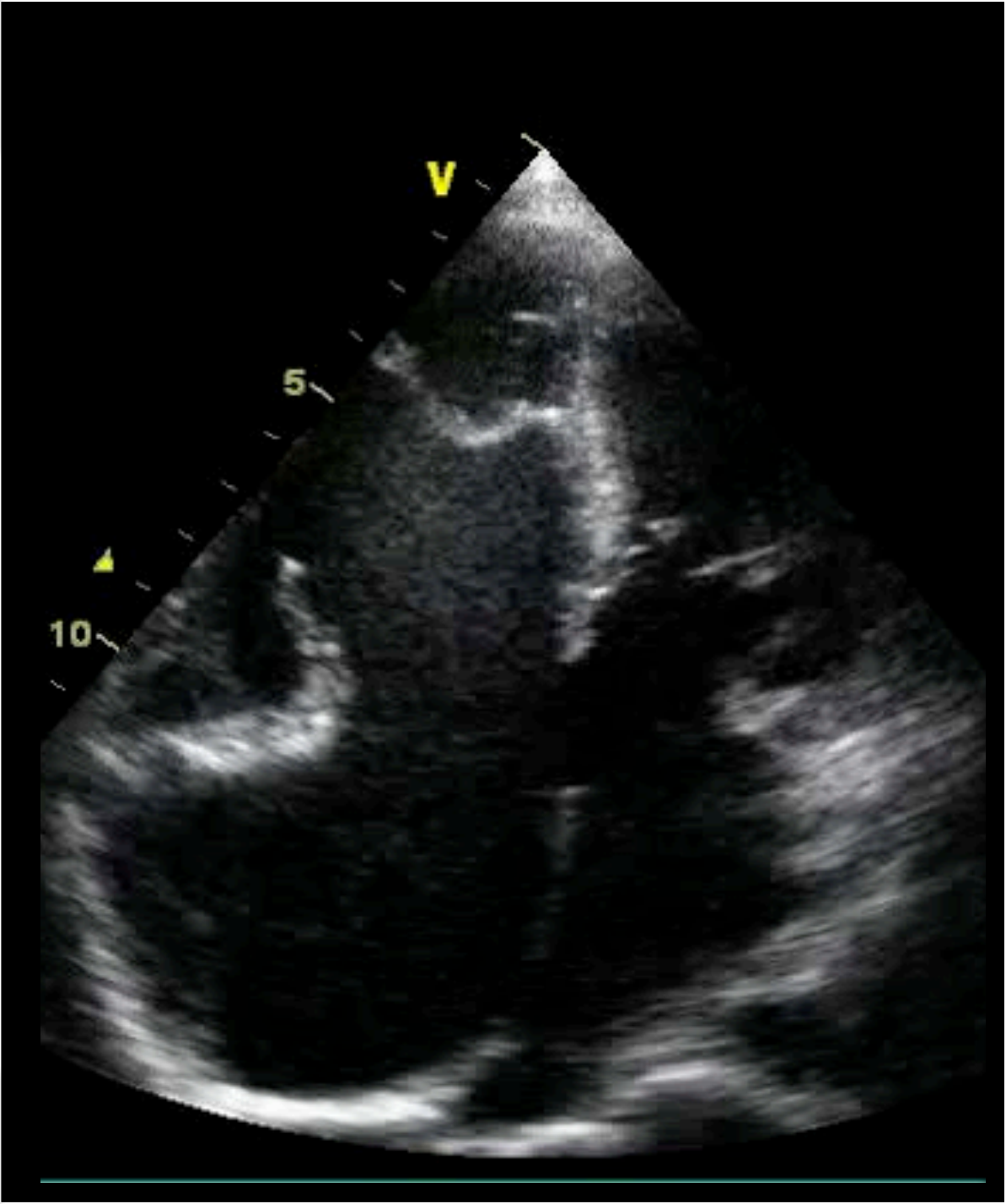
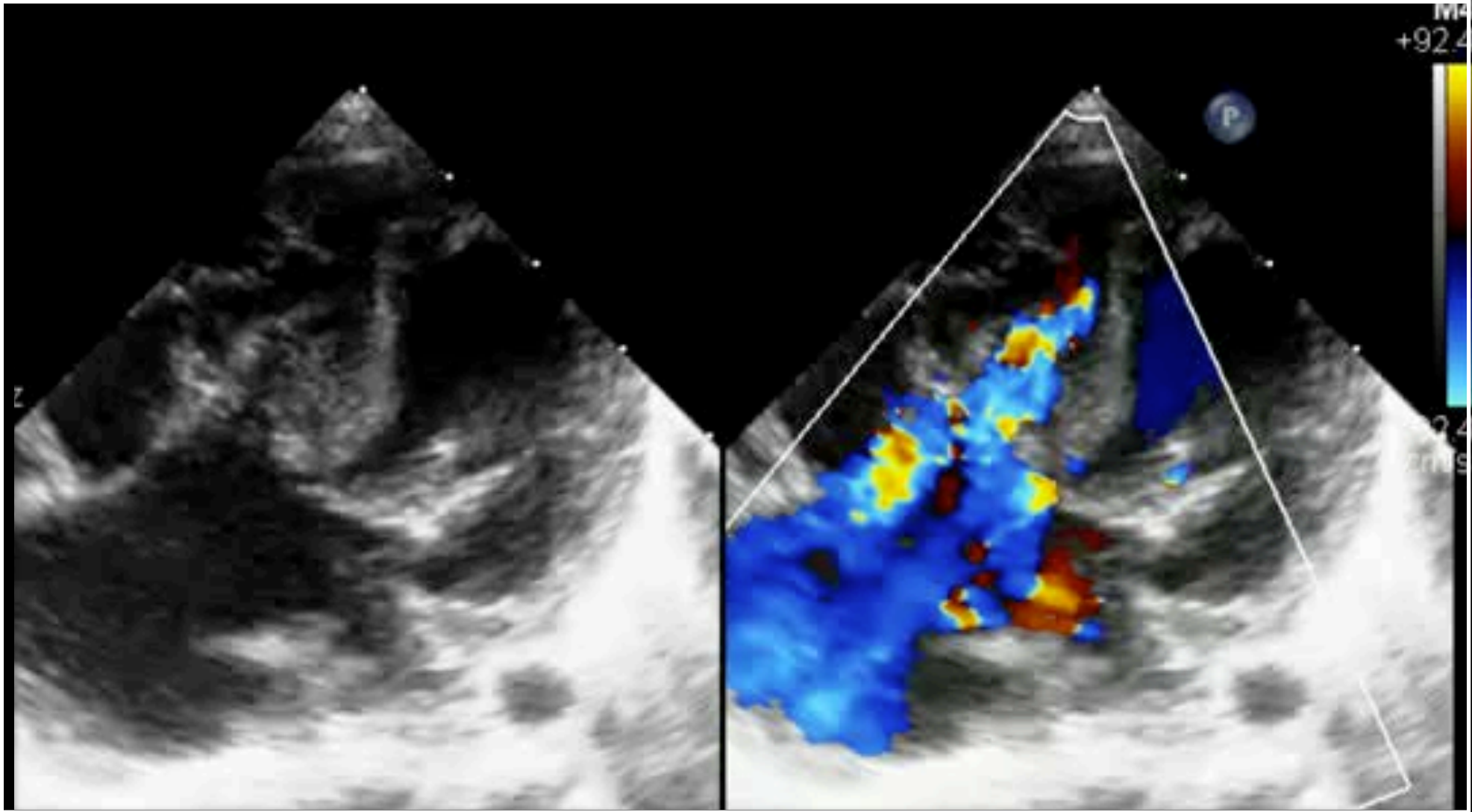
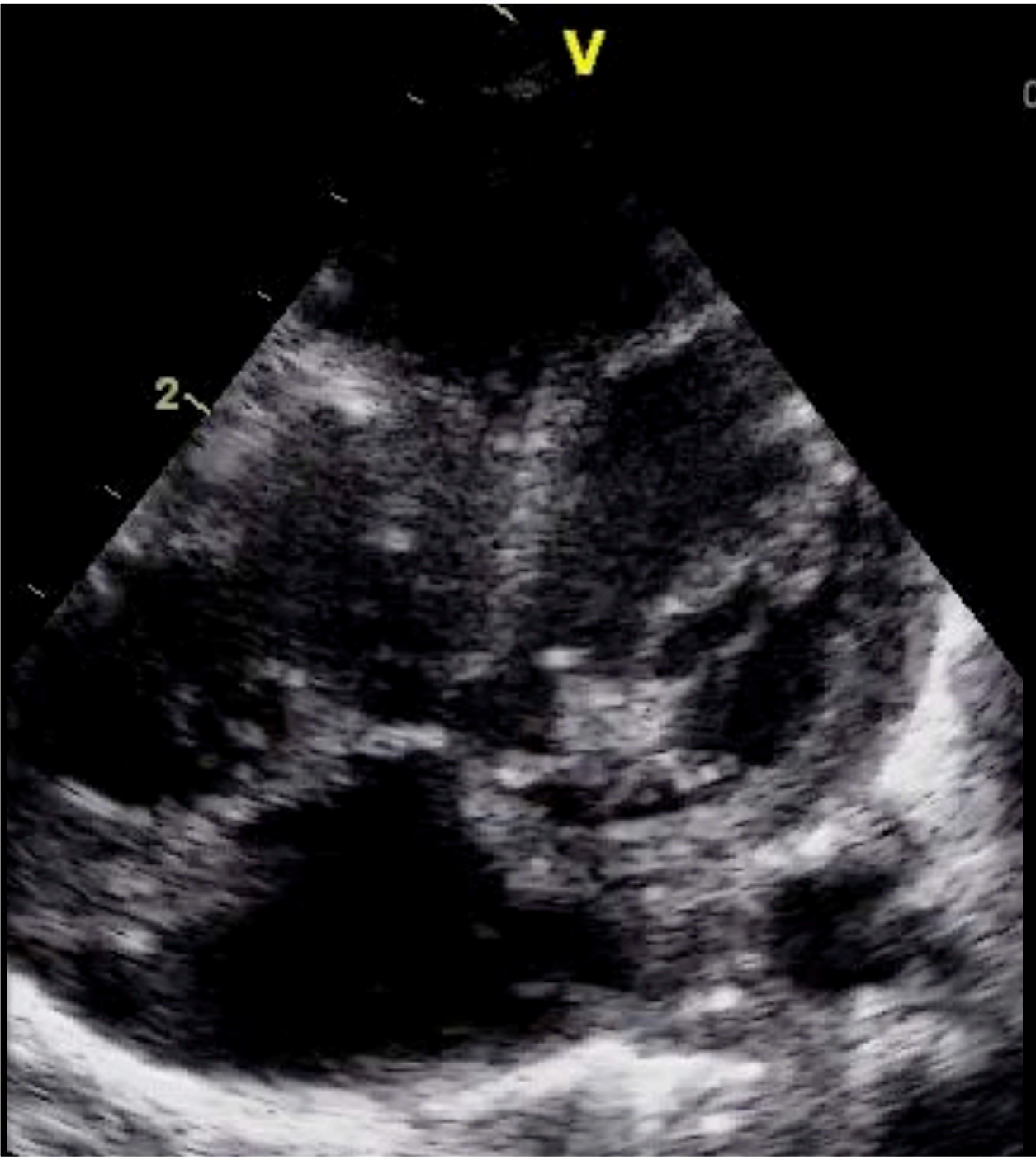
## Anomalies of the papillary muscles



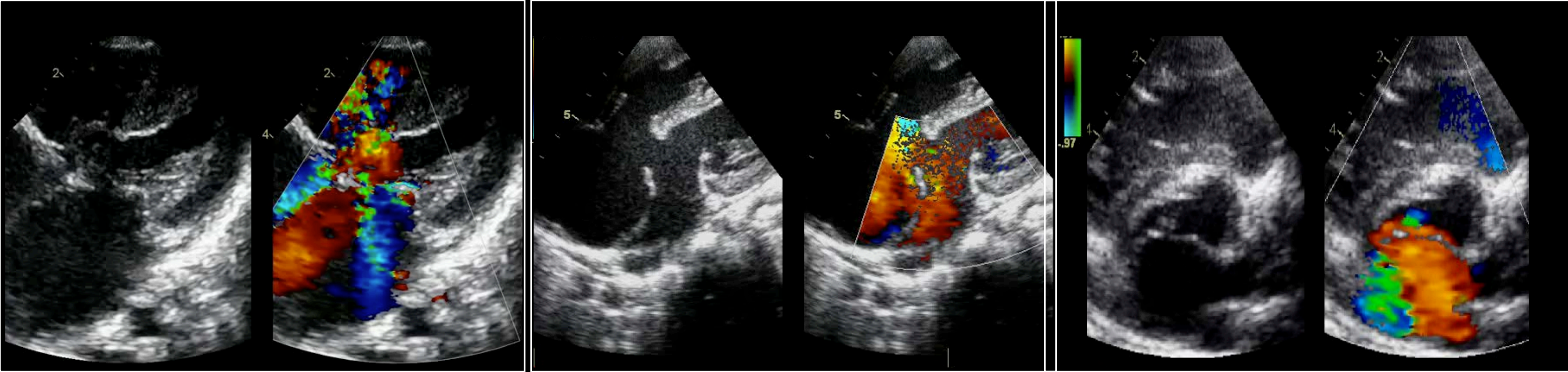
# Double orifice - Cleft of the anterior orifice



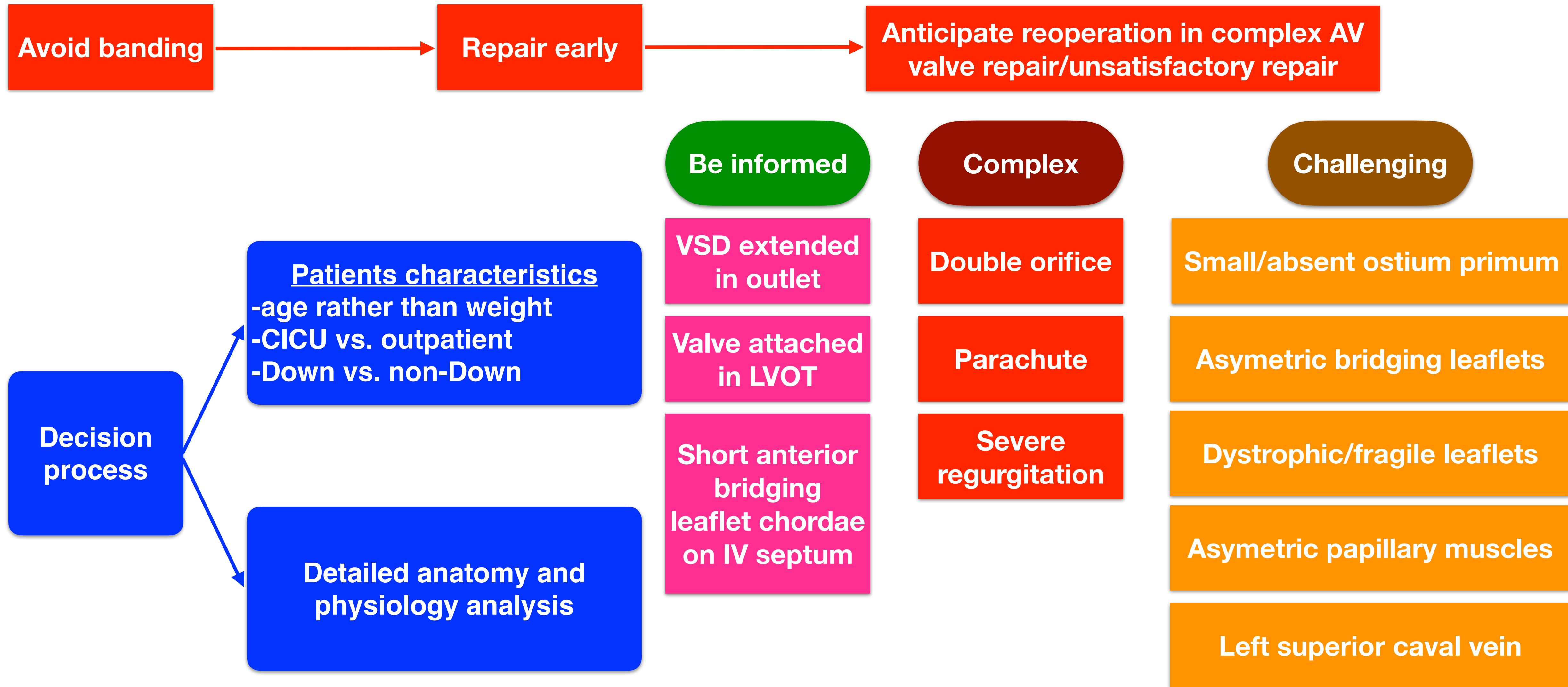
# Leaflets anomalies



# Atrioventricular valve regurgitation



# « Parisian » strategy in « balanced » atrioventricular septal defects





Collective ignorance is our motivation  
Curiosity is our strength  
Research is our path

Individual experience is the brake  
Indifference is the weakness  
Argument from authority is the threat