

# PLACE



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

**ROMA**

Centro Congressi  
di Confindustria

**Auditorium  
della Tecnica**

**9<sup>a</sup> Edizione**

**30 Settembre**

**1 Ottobre**

**2022**



# MULTIMODALITY IMAGING NELLE CARDIOPATIE CONGENITE

PAOLO CILIBERTI

# **MULTIMODALITY IMAGING IN CHD**

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**1. DIAGNOSTIC TECHNIQUES IN CHD**

**2. CMR ROLE IN CHD CARE**

**3. MAIN CT INDICATIONS IN CHD**

# MULTIMODALITY IMAGING IN CHD

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**1. DIAGNOSTIC TECHNIQUES IN CHD**

2. CMR ROLE IN CHD CARE

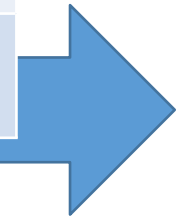
3. MAIN CT INDICATIONS IN CHD

# DIAGNOSTIC TECHNIQUES IN CHD

	PRO	CONTRA
ECHO	<ul style="list-style-type: none"><li>• NON INVASIVE NATURE</li><li>• PORTABILITY</li></ul>	<ul style="list-style-type: none"><li>• POOR ACOUSTIC WINDOW IN ADULTS</li></ul>
CATH	<ul style="list-style-type: none"><li>• OPPORTUNITY OF INTERVENTION AT THE SAME TIME</li></ul>	<ul style="list-style-type: none"><li>• INVASIVE NATURE</li><li>• IONIZING RADIATION</li></ul>
MRI	<ul style="list-style-type: none"><li>• NON INVASIVE NATURE</li><li>• COMBINED FUNCTIONAL AND ANATOMIC INFORMATIONS</li></ul>	<ul style="list-style-type: none"><li>• LONG SCANNING TIME</li><li>• TIME CONSUMING POST PROCESSING</li></ul>
CT	<ul style="list-style-type: none"><li>• SHORT SCANNING TIME</li></ul>	<ul style="list-style-type: none"><li>• IONIZING RADIATION</li><li>• LACK OF FUNCTIONAL INFORMATIONS</li></ul>

# DIAGNOSTIC TECHNIQUES IN CHD

ECHO FIRST LINE IMAGING	ECHO FIRST LINE IMAGING	MRI GOLD STANDARD
CT FOR DETAILED ANATOMY	CT FOR DETAILED ANATOMY	CT FOR DETAILED CORONARY ASSESSMENT OR WHEN MRI NOT SUITABLE.
MRI FOR COMPLEX FUNCTIONAL ASSESSMENT	MRI FOR COMPLEX FUNCTIONAL ASSESSMENT	ECHO FOR ROUTINE FOLLOW UP
CATH IF NEEDING OF INTERVENTION	CATH IF NEEDING OF INTERVENTION	CATH IF NEEDING OF INTERVENTION
NEONATAL AGE	INFANCY	YOUTH AND ADULT AGE



# MULTIMODALITY IMAGING IN CHD

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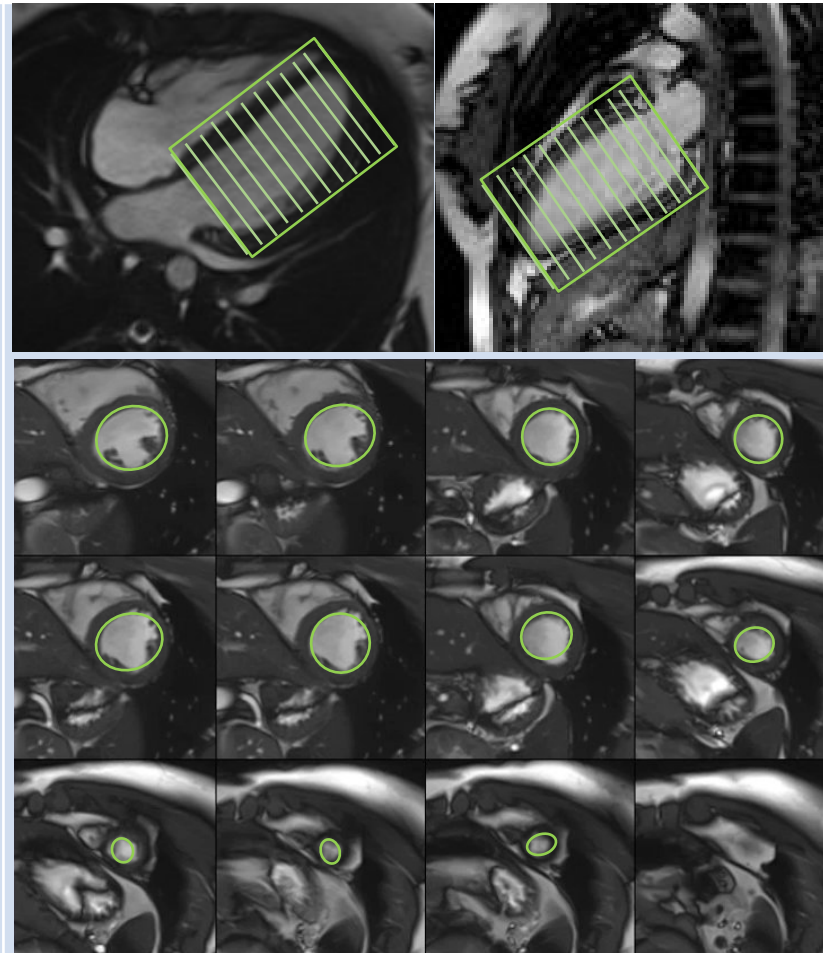
3. MAIN CT INDICATIONS IN CHD

# STRENGTH OF CARDIAC MRI

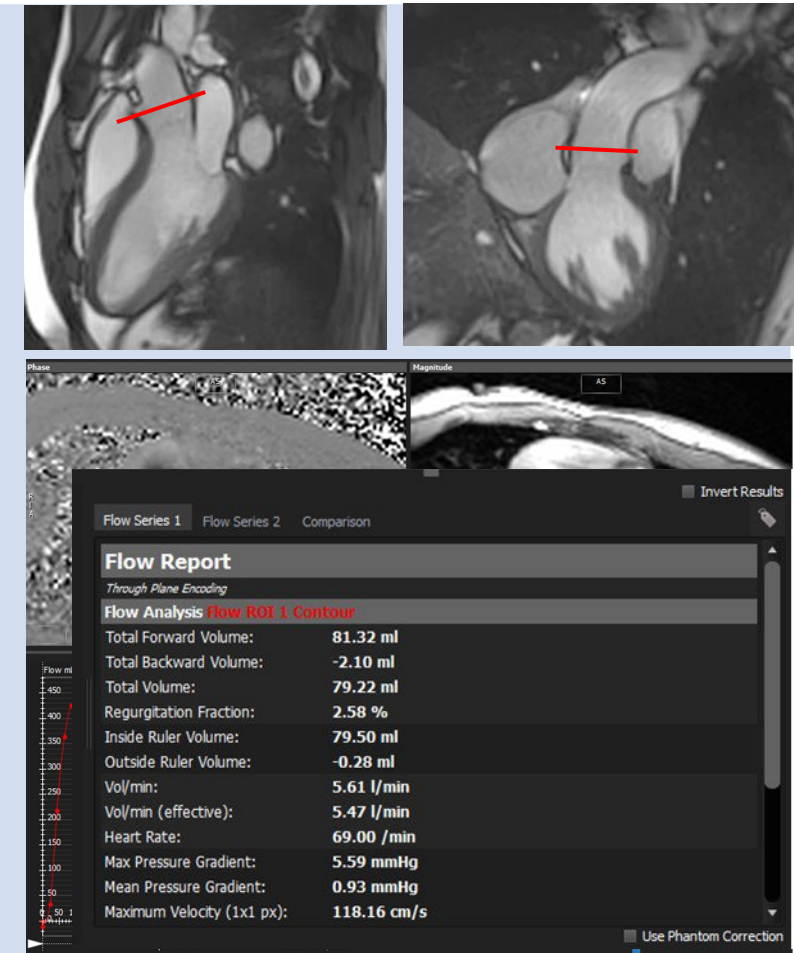
## HIGH SPATIAL RESOLUTION IMAGING



## MYOCARDIAL FUNCTION ASSESSMENT REGARDLESS VENTRICLE MORPHOLOGY



## FLOW QUANTIFICATION



# CARDIAC MRI IN CHD

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## “Standard” CMR

## CMR in CHD

TISSUE CHARACTERIZATION

INDUCIBLE ISCHEMIA TESTING

FUNCTIONAL ASSESSMENT

ANATOMIC ASSESSMENT

FUNCTIONAL ASSESSMENT

ANATOMIC ASSESSMENT

TISSUE CHARACTERIZATION

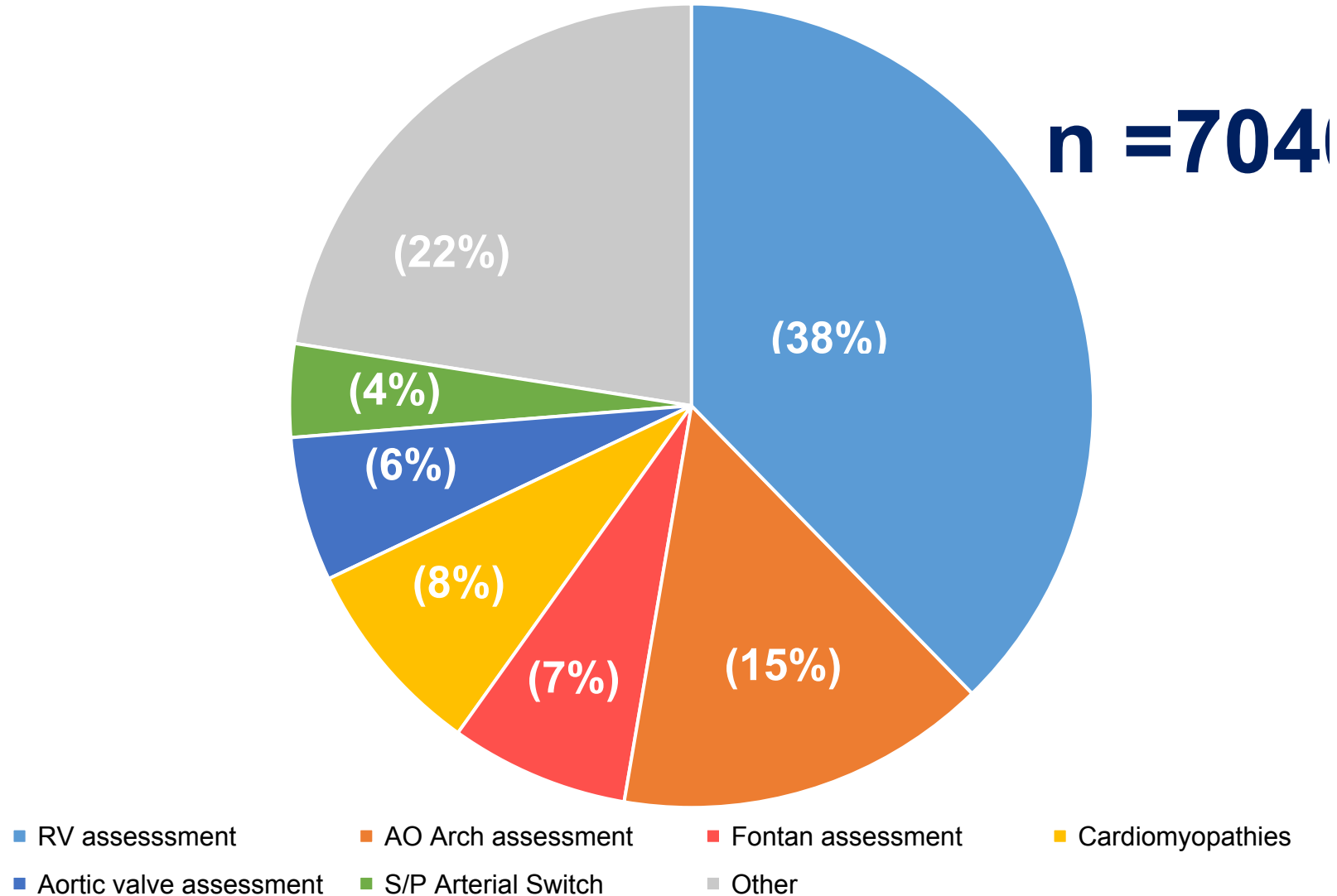
INDUCIBLE ISCHEMIA TESTING



**Numbers often more important  
than pictures**



# CARDIAC MRI OPBG (2007-2022)

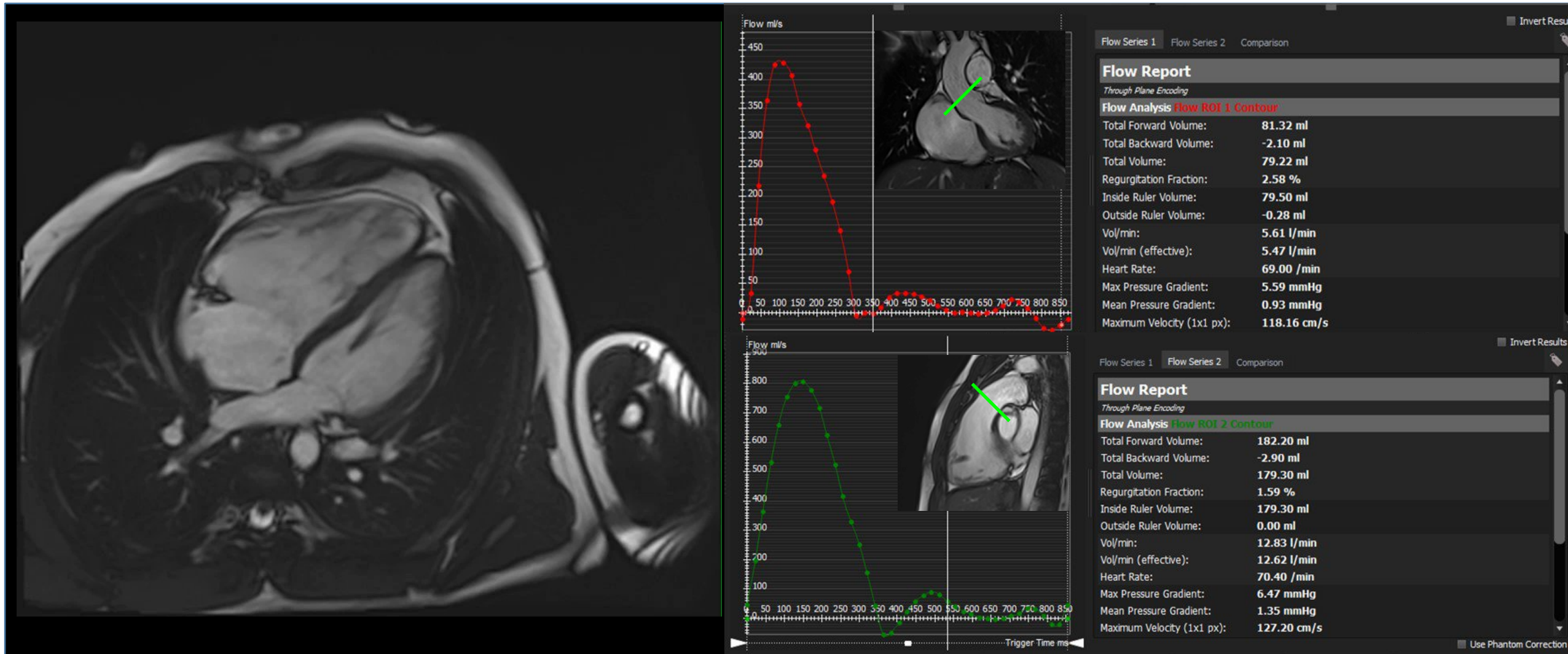


# **CMR IN CHD: MAIN INDICATIONS**

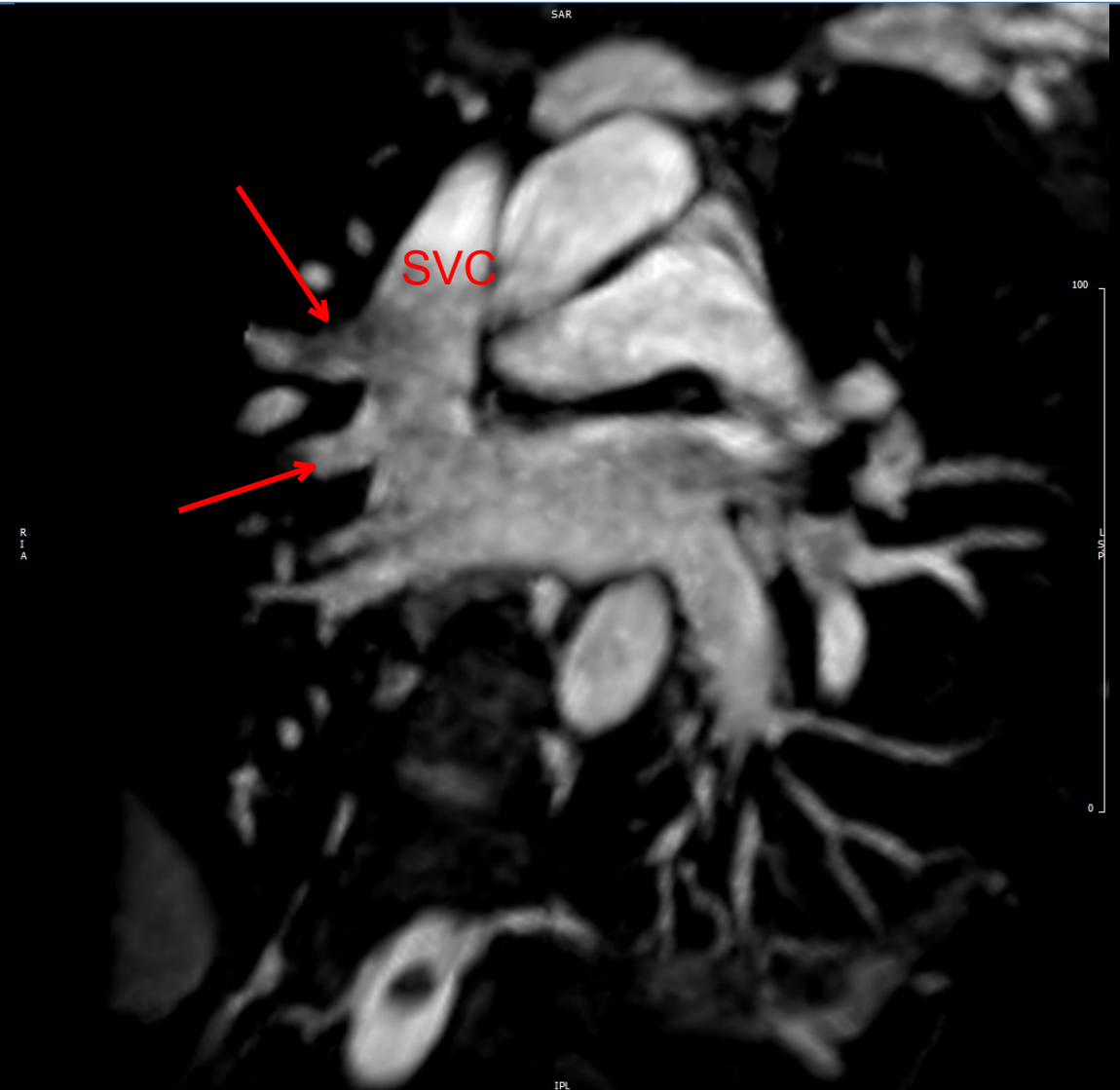
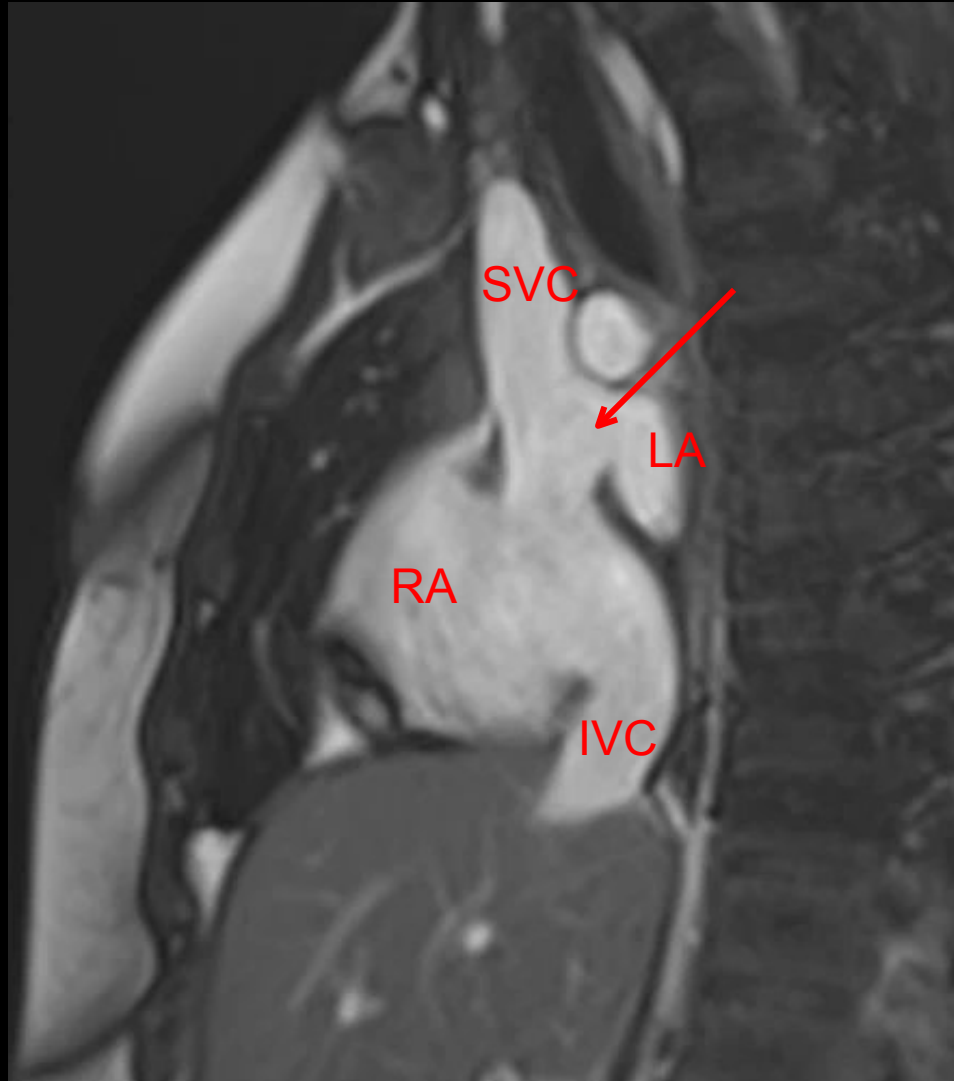
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- CARDIOVASCULAR SHUNTS ASSESSMENT**
- RV ASSESSMENT**
- AORTIC ARCH ASSESSMENT**
- TRANSPOSITION OF THE GREAT ARTERIES  
POST-OP ASSESSMENT**
- FONTAN ASSESSMENT**
- COMPLEX FUNCTIONAL ASSESSMENT**

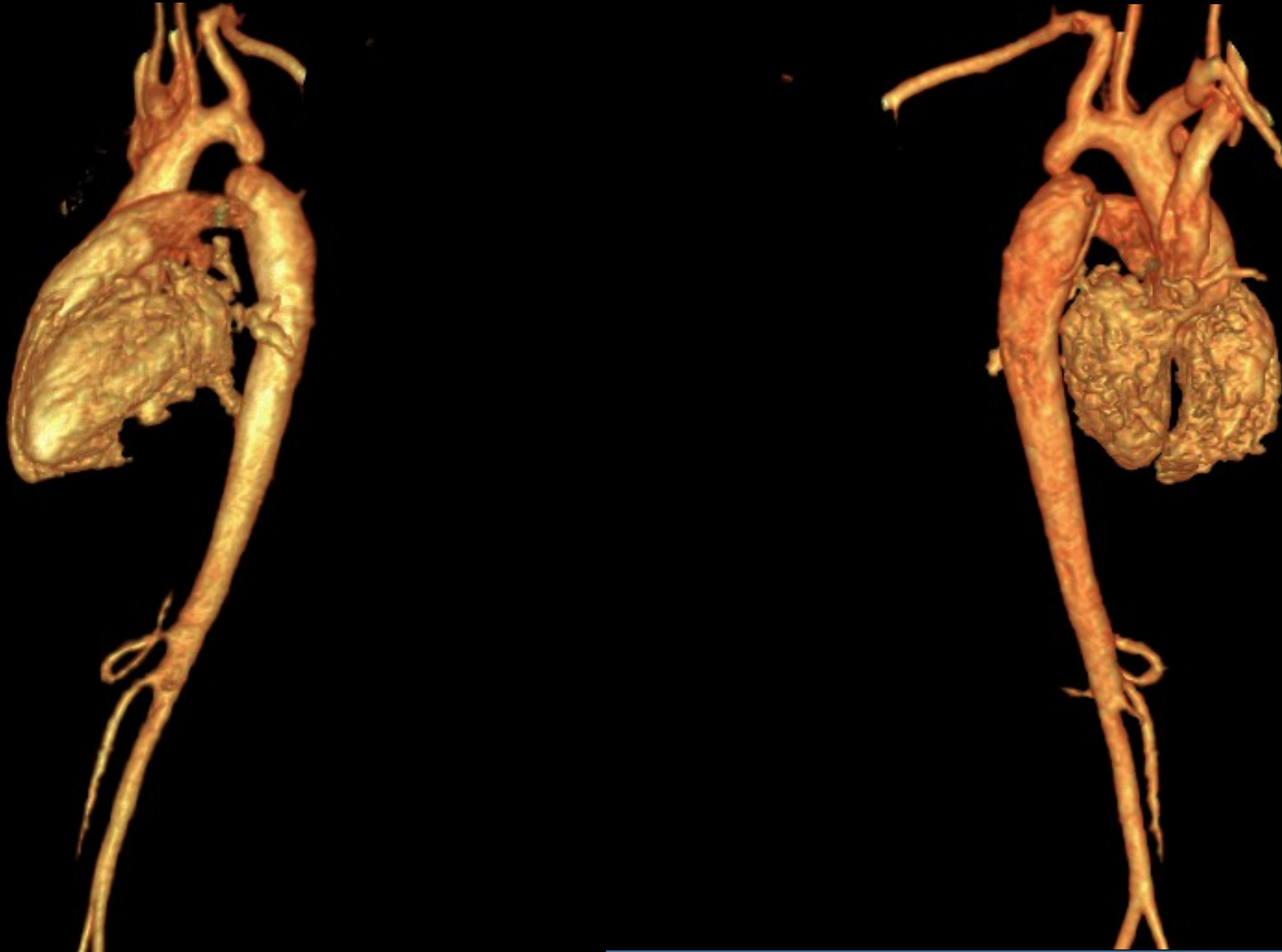
# ARVD ASSESSMENT



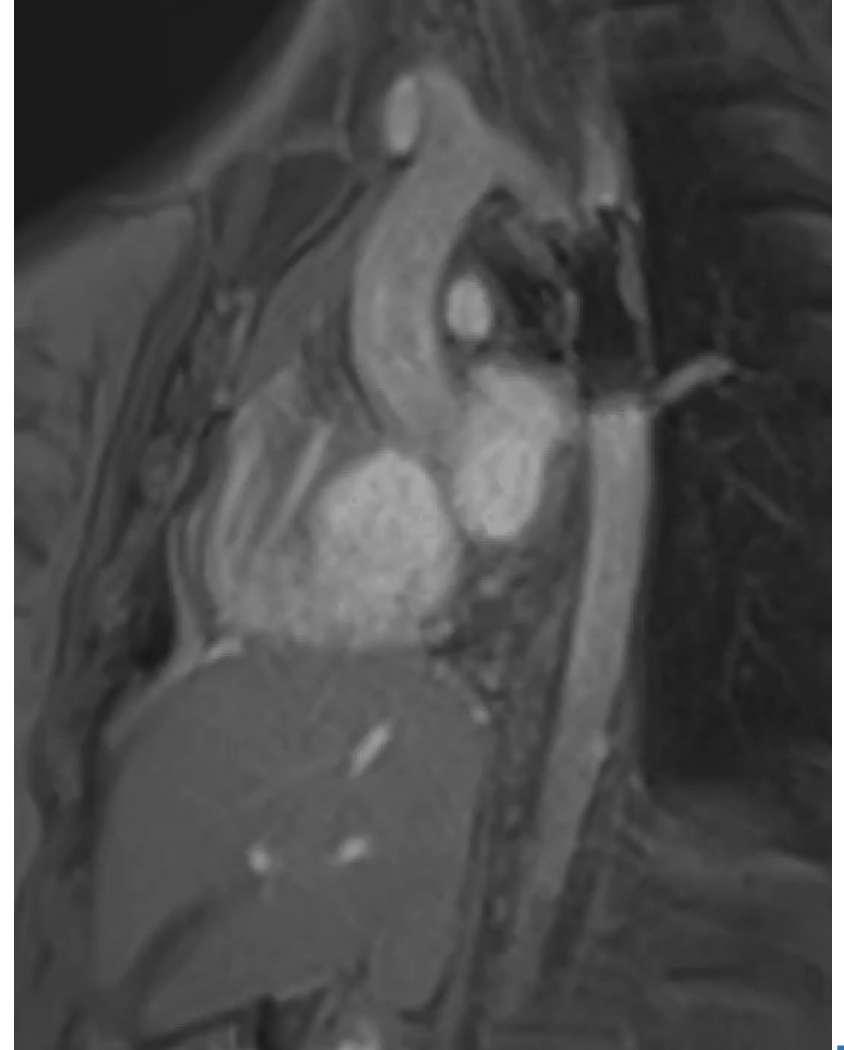
# SHUNT QUANTIFICATION



# AORTIC ARCH ASSESSMENT

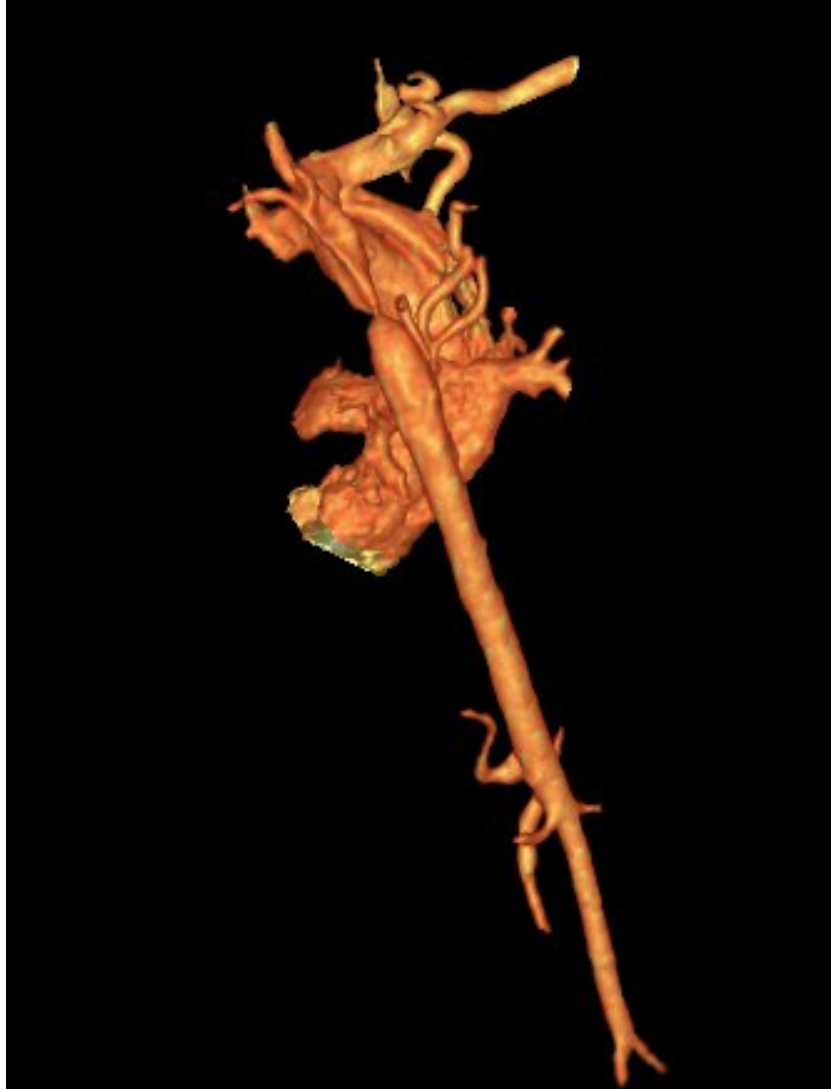


# AORTIC ARCH ASSESSMENT





# AORTIC ARCH ASSESSMENT



# MULTIMODALITY IMAGING IN CHD

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# CARDIAC CT IN CHD

- **FAST ACQUISITION**

ANATOMICAL ASSESSMENT IN SMALL CHILDREN

- **HIGH SPATIAL RESOLUTION**

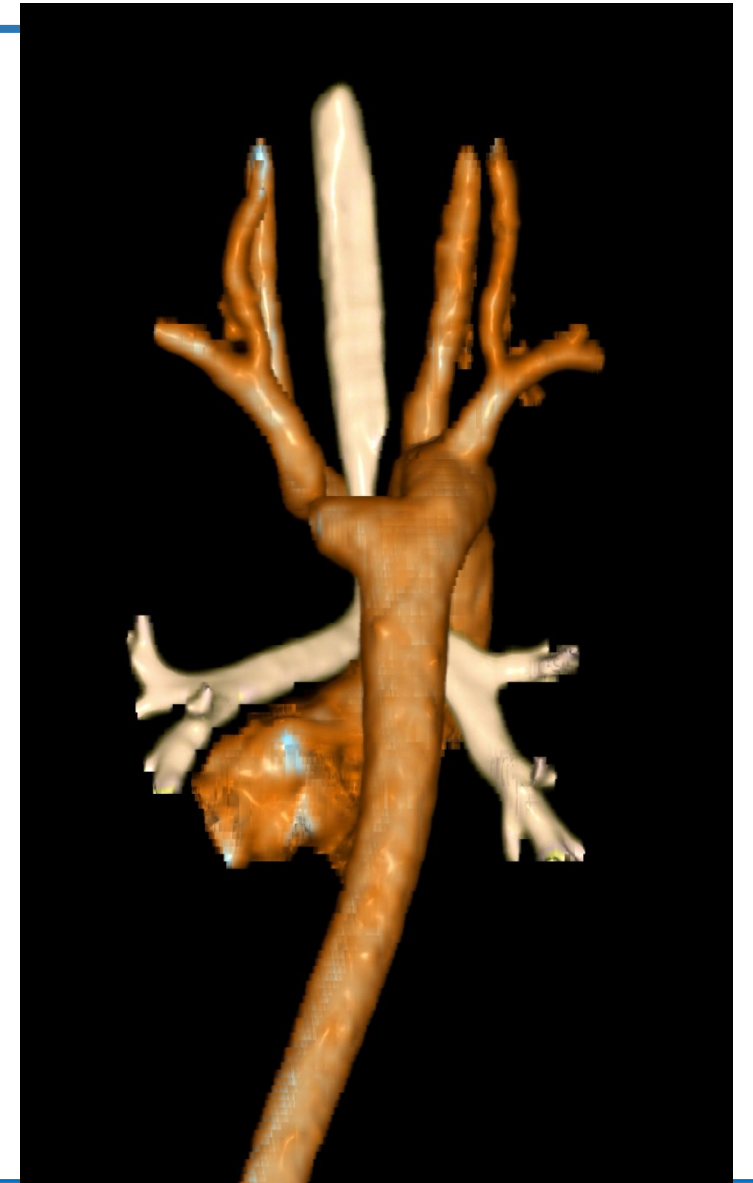
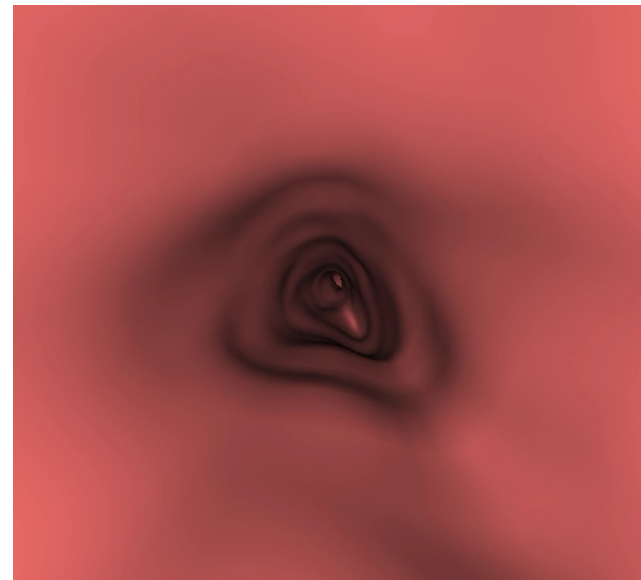
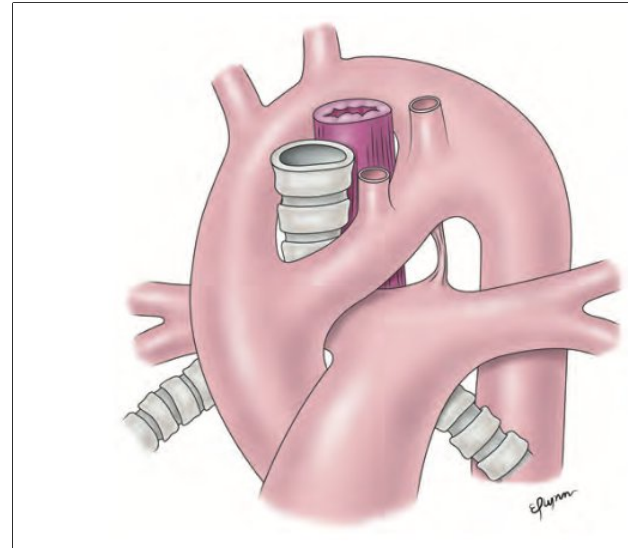
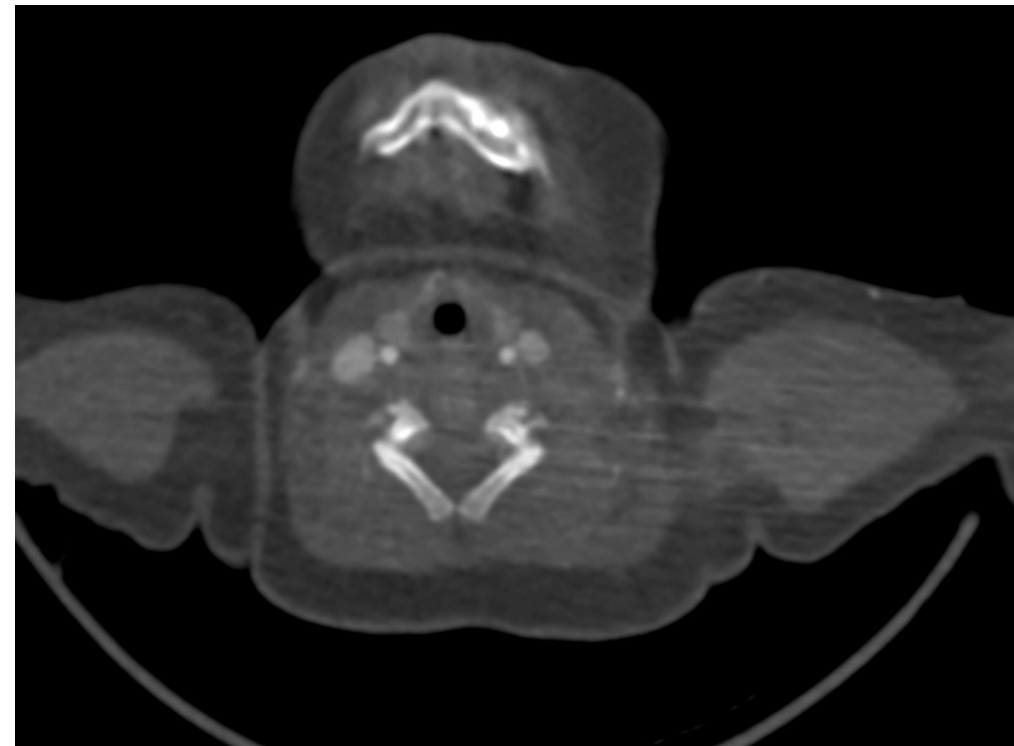
CORONARY ASSESSMENT  
TRACHEA  
/ GREAT VESSELS

- **ABLE TO VISUALIZE ALL THE THORAX**

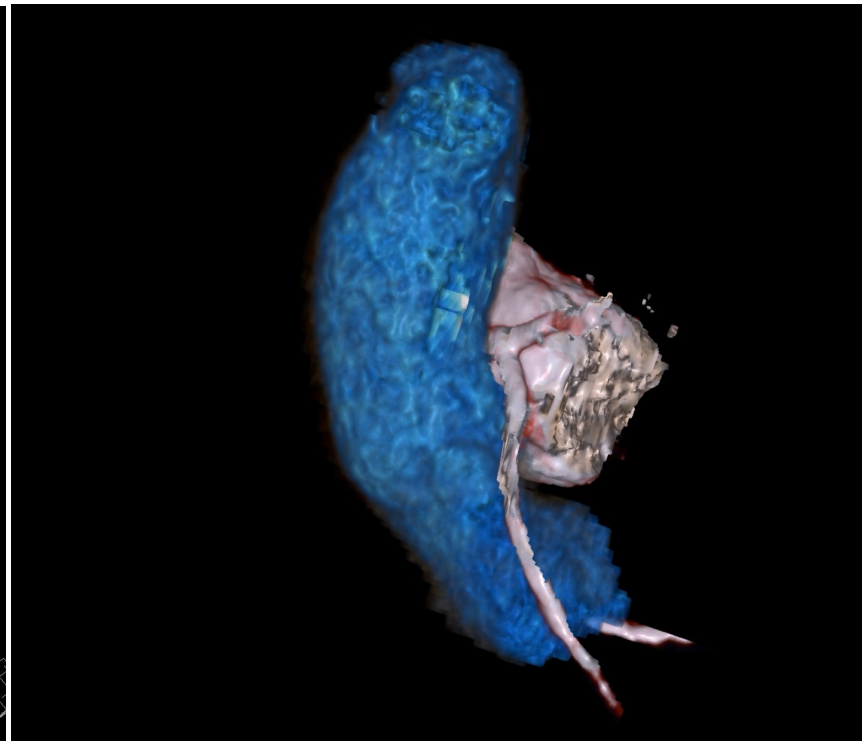
- **LACK OF FUNCTIONAL INFORMATIONS**

- **EXPOSURE TO IONIZING RADIATION**

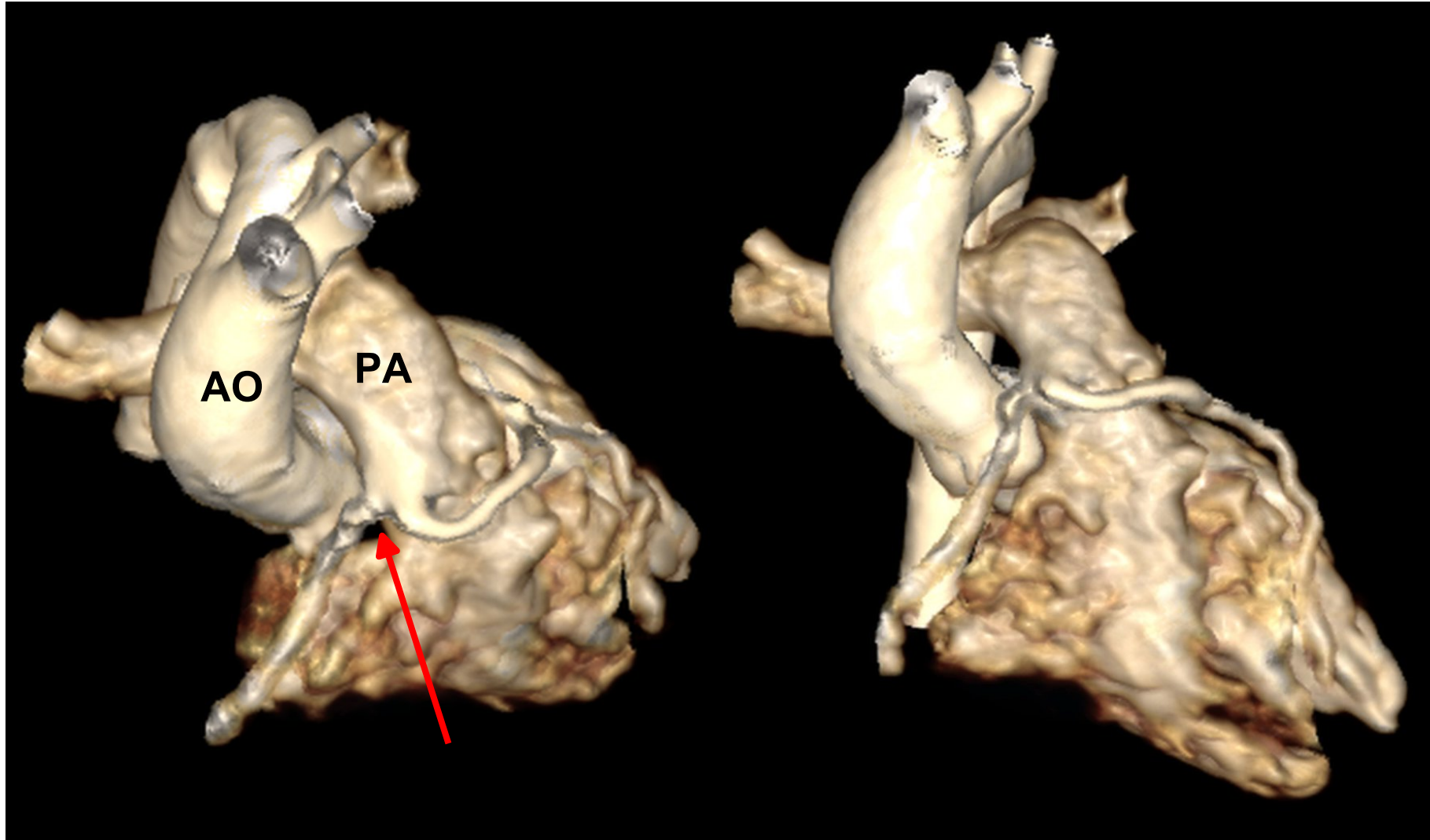
# TRACHEA-GREAT VESSELS



# CORONARY ARTERY ABNORMALITIES

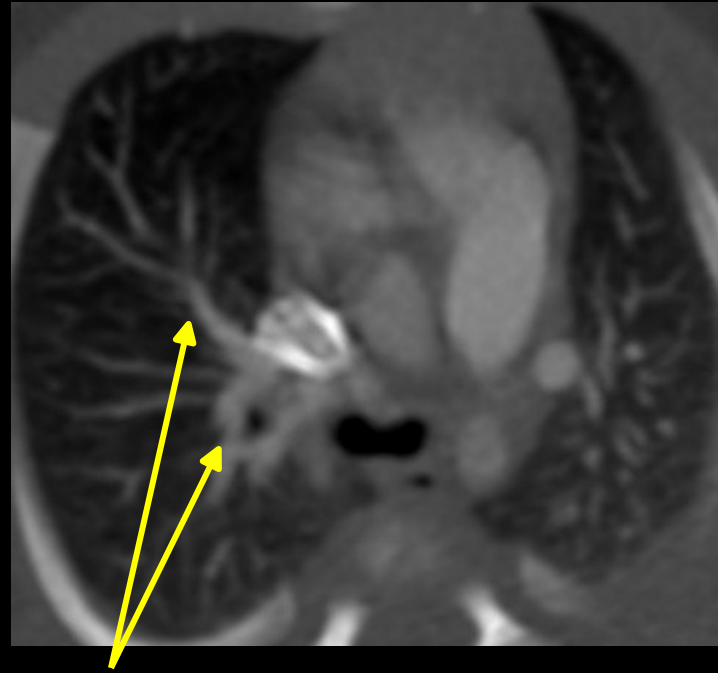
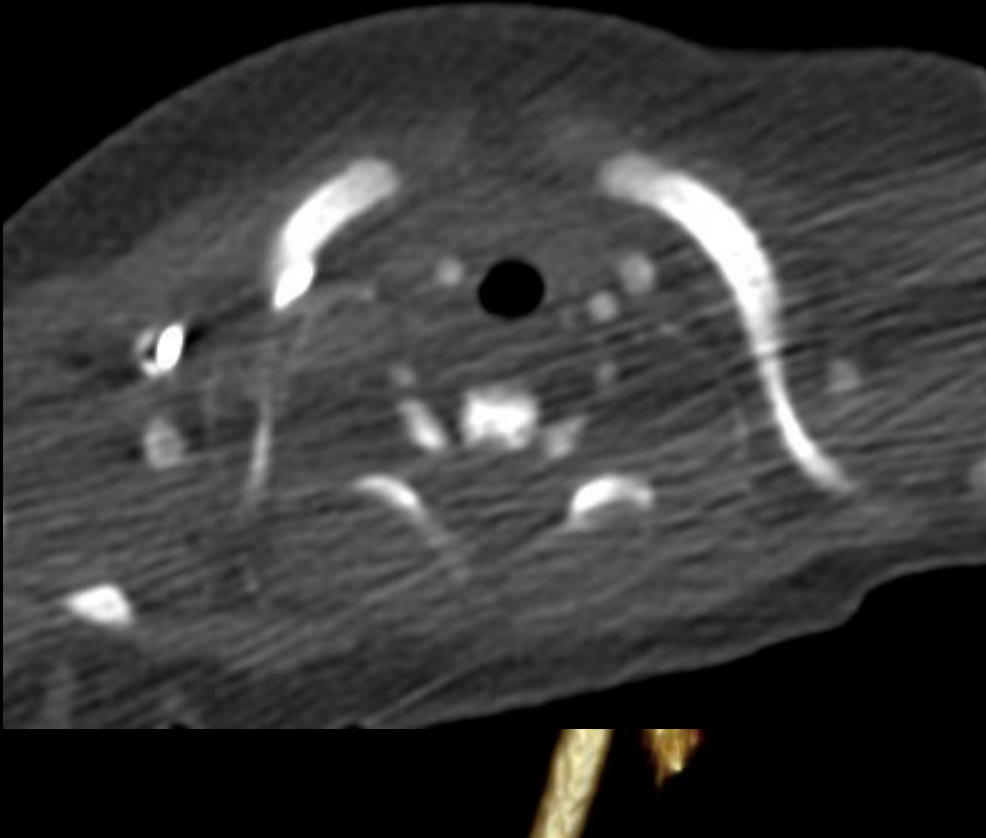


# CORONARY ARTERY ABNORMALITIES



**1-month-old boy with mixed TAPVR**

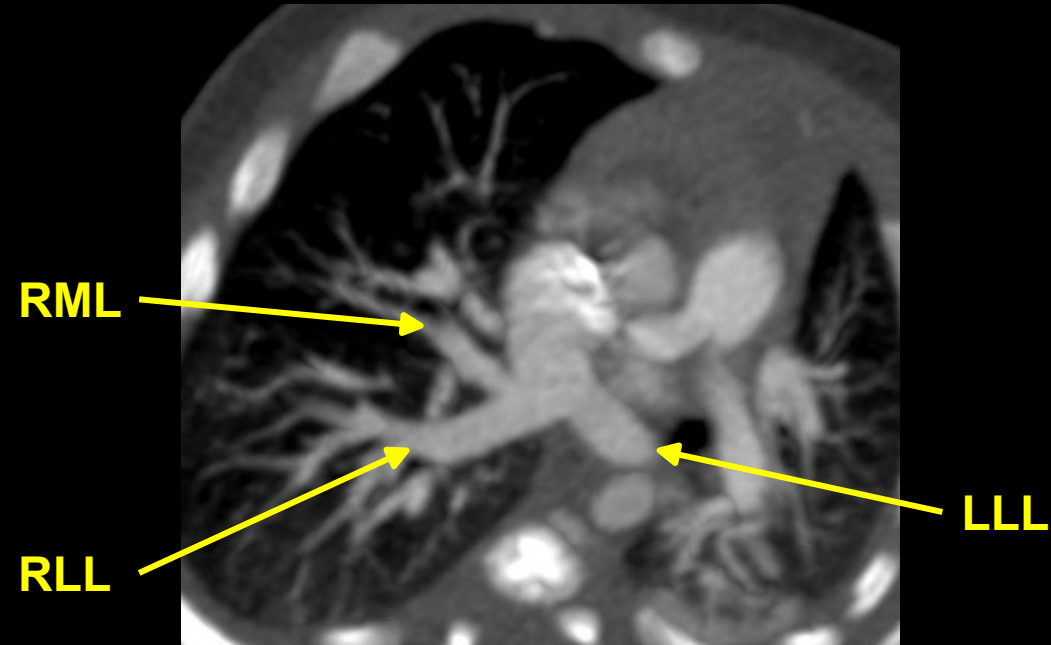
- RUL to SVC
- LUL to L innominate vein
- RML/RLL & LLL to superior cavo-atrial junction



**RUL**



**LUL**

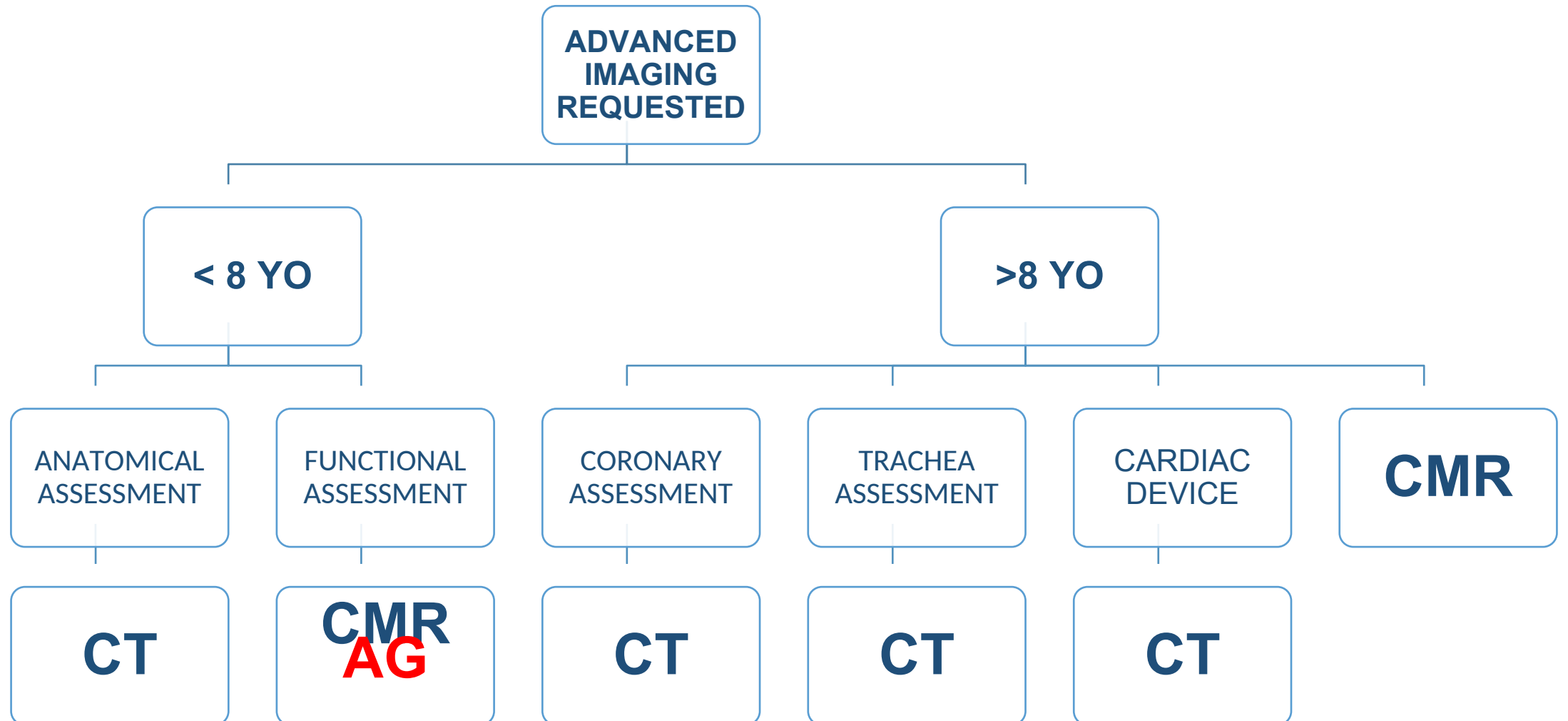


**RML**

**RLL**

**LLL**

# DIAGNOSTIC FLOW-CHART





# **TAKE HOME MESSAGE**

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- **CMR NOWADAYS PLAYS A KEY ROLE IN CHD AND IT IS THE MAIN DIAGNOSTIC TOOL IN GUCH**
- **CMR PROVIDES AT THE SAME TIME RELIABLE ANATOMIC AND FUNCTIONAL INFORMATION**
- **CMR DRAMMATICALLY REDUCED THE USE OF INVASIVE TECHNIQUE AND IONIZING RADIATION**
- **CT IS THE GOLD STANDARD FOR AIRWAYS, CORONARIES AND NEONATAL ASSESSMENT**