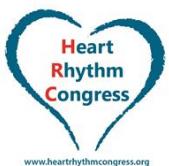


GUCH Heart Rhythm Management 2

What I have learnt from the EP Lab

Waqas Ullah
University Hospital Southampton
October 2016



Journey

- Why are we going?
- How are we getting there?
- What will we find on the way?

Why are we going?



Scale of the Problem

- >1.2 million ACHD pts in Europe
Moons et al., 2006 EHJ
- Admission rate 2-3*general population & ~20% arrhythmia associated
Verheugt et al., 2010 Heart
- Arrhythmias predictive of mortality (HR 1.8)
Verheugt et al., 2010 EHJ

How are we getting there?

Pre-lab planning

- Multidisciplinary
 - ACHD team
 - Imaging
 - Anaesthetics
 - EP



Equipment

- Electroanatomic mapping system
 - Image Integration
 - High Density
- Steerable Sheath
- Contact Force Sensing
- Irrigation

Access

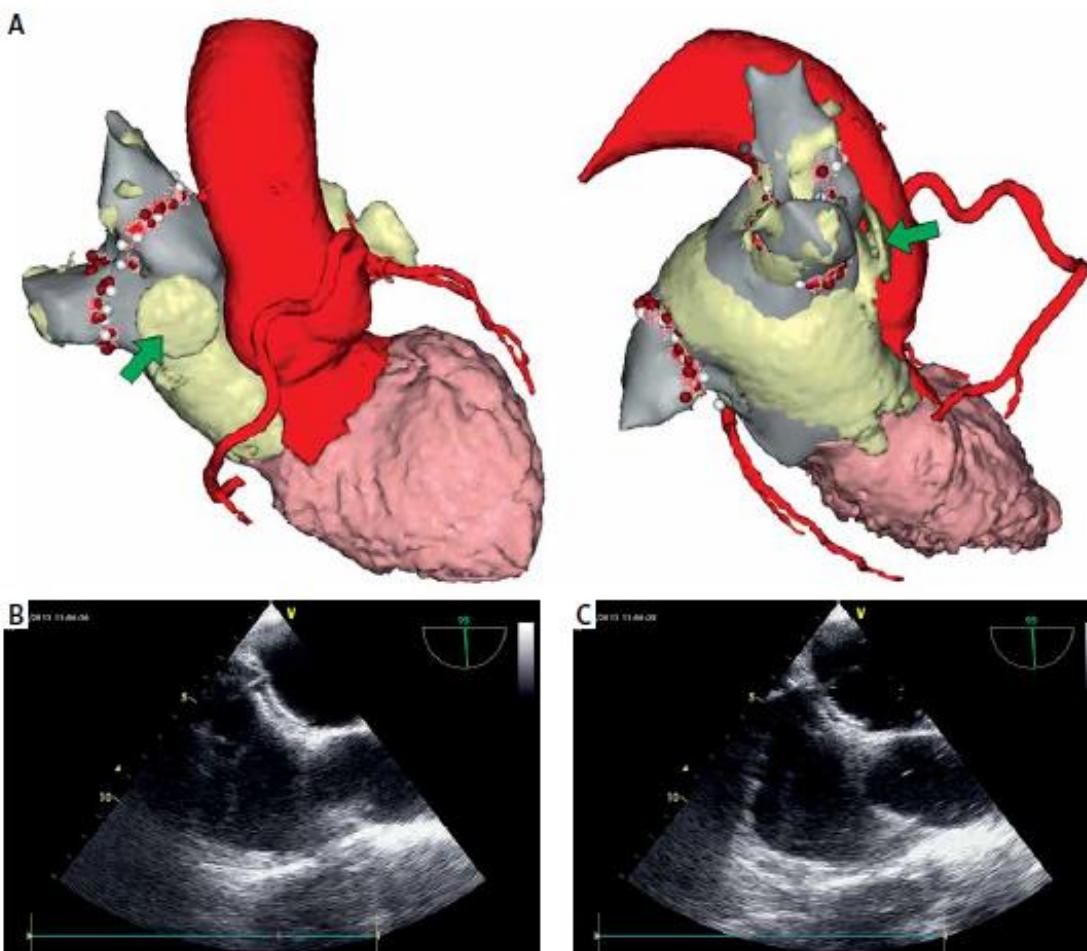
- Vascular Access
 - USS Guided
- Cardiac Chamber

LA Access

- Post ASD Device Closure
 - Postero-inferior to device
 - Through device
 - ICE/TOE guided

Santangeli et al., Heart Rhythm 2011

Li et al., Heart Rhythm 2014



Sabiniewicz et al., 2016 Adv in Interv Cardiol

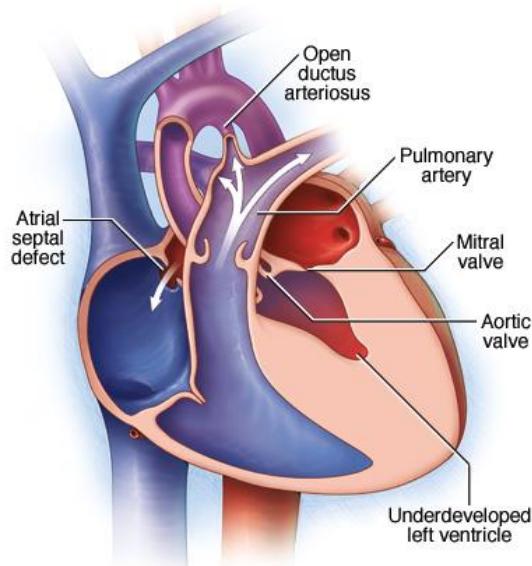
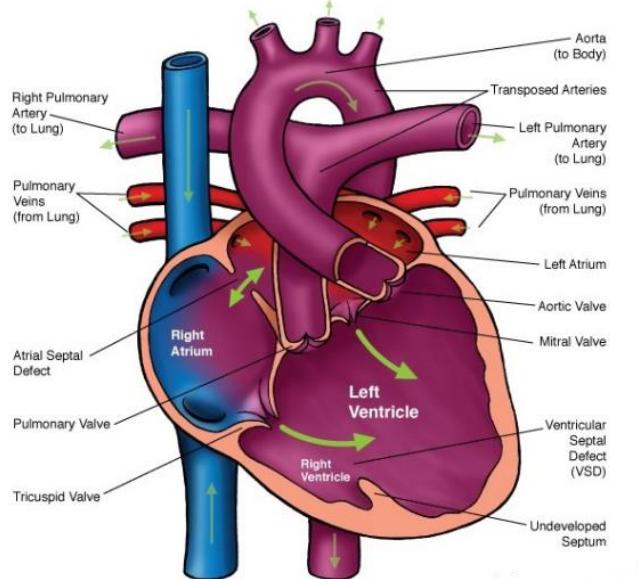
RA/PVA Access

- Fontan
- Mustard/Senning

Fontan - Indications

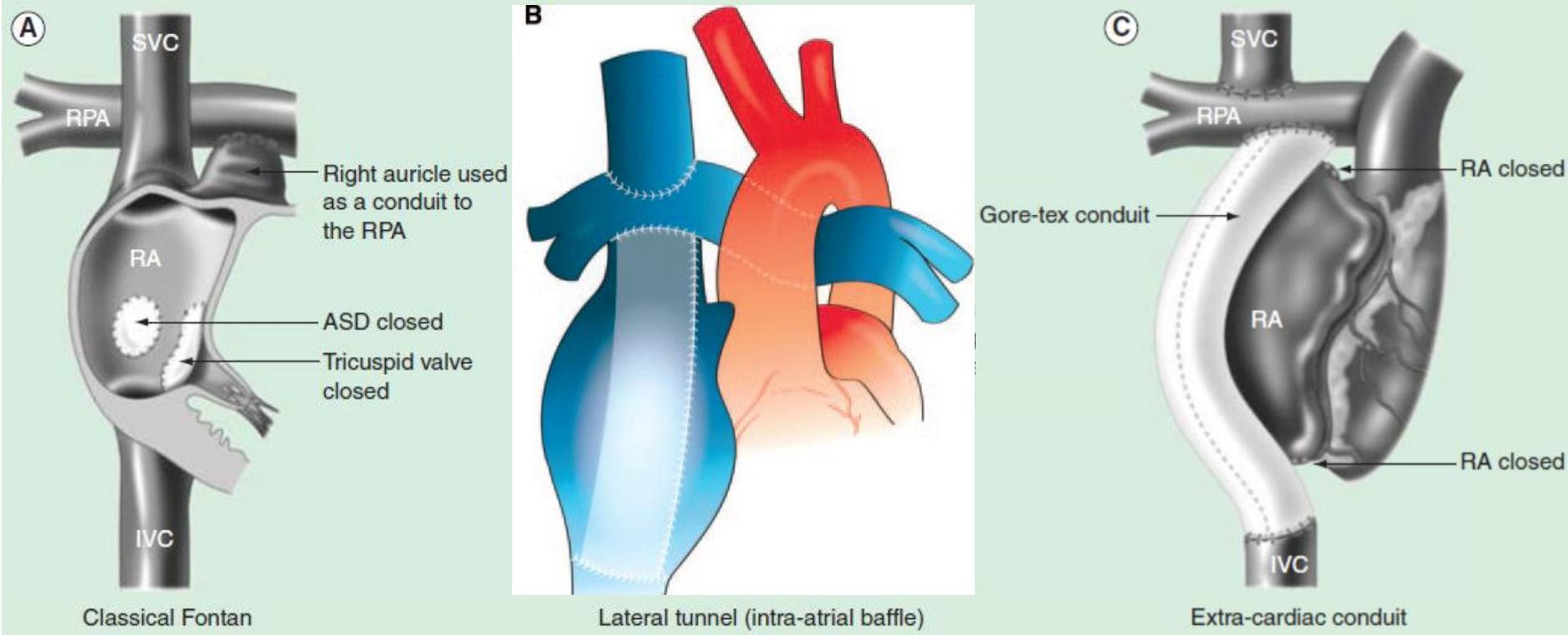
- Univentricular Heart
- Hypoplastic Left Heart Syndrome

Double Inlet Left Ventricle (DILV)



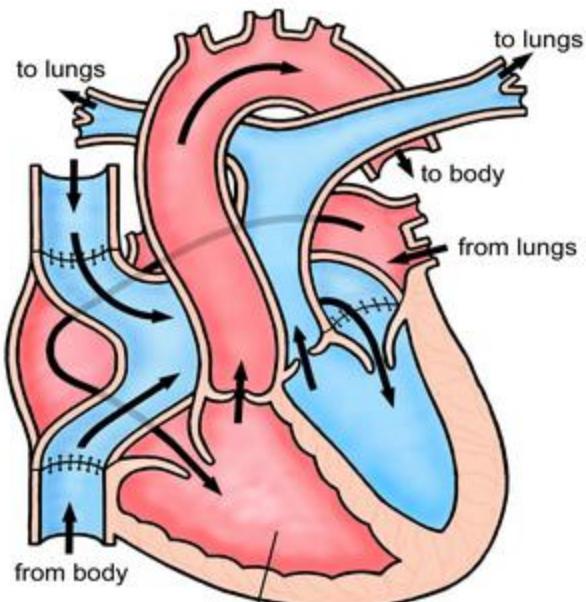
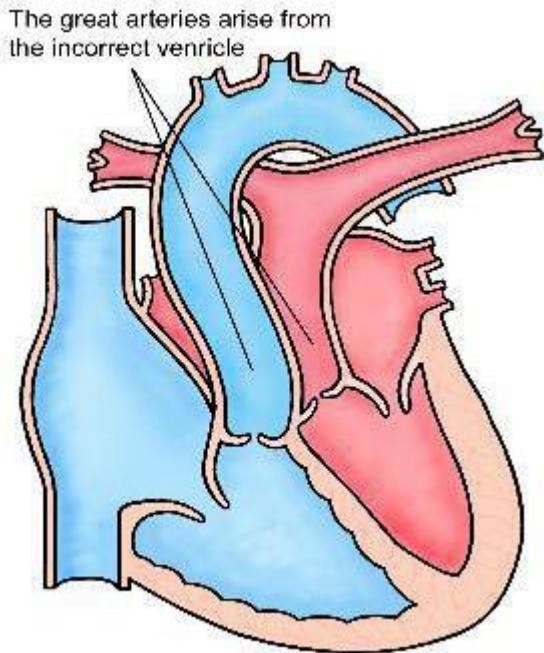
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Fontan



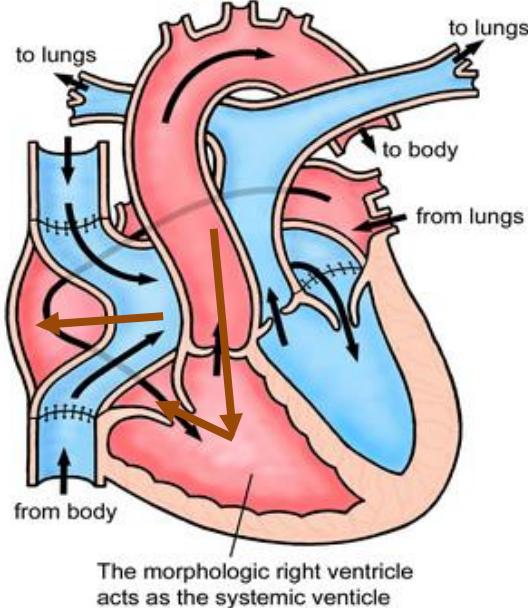
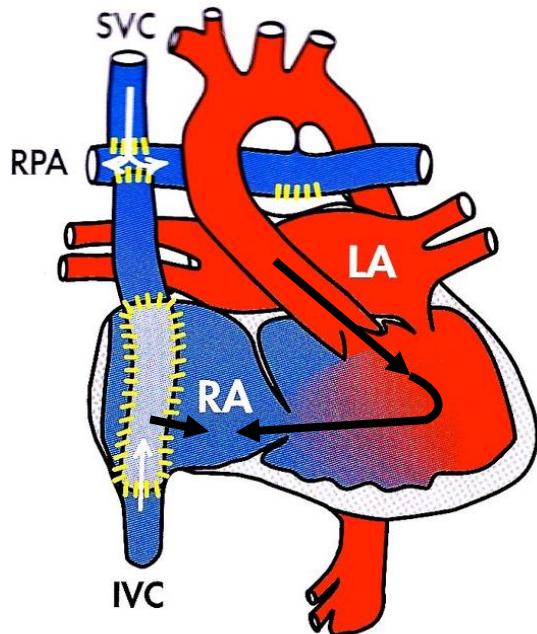
Mustard/Senning

- d-TGA

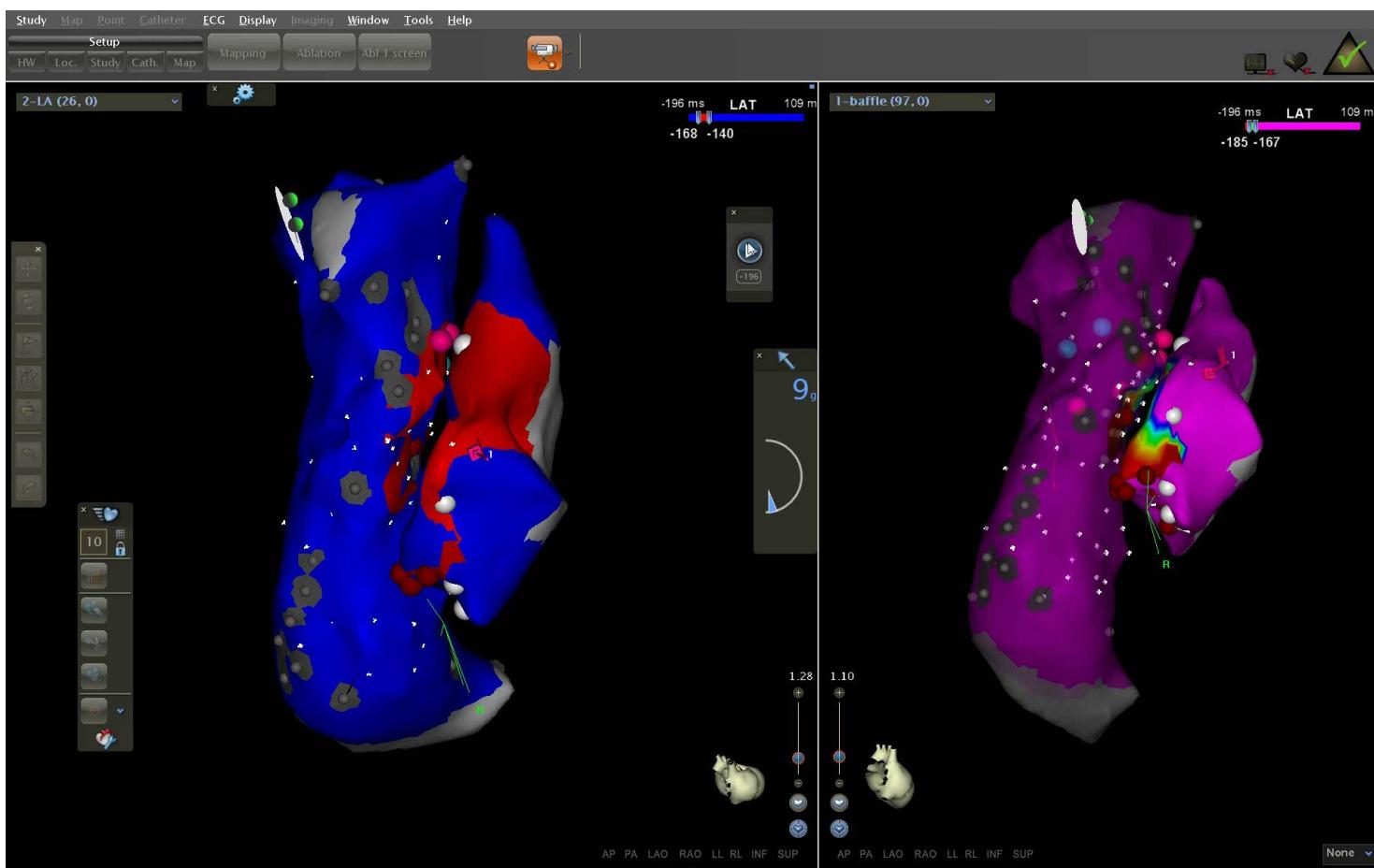


Access Options - Baffles

- Retrograde access
- Trans-Baffle Puncture



25♂ DILV - AT



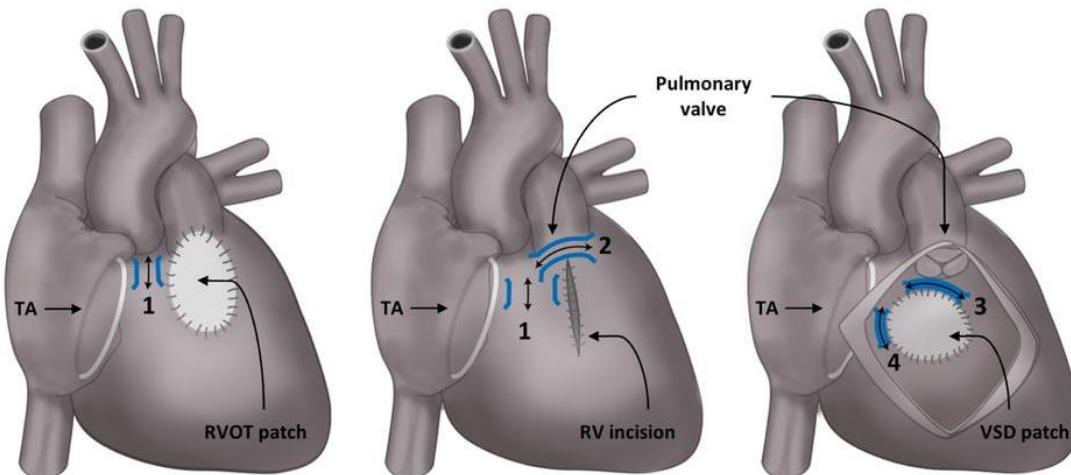
What will we find on the way?

Complexity of CHD	Type of CHD	Prevalence (in CHD population)	Atrial Arrhythmia			Ventricular Arrhythmia
			AT	AF	Other	
Simple	Patent ductus arteriosus	6-8%				
	Pulmonary stenosis	6-8%				
	Ventricular septal defect	30-32%				
	Secundum atrial septal defect	8-10%				
Moderate	Aortic coarctation	5-7%				
	Anomalous pulmonary venous return	0.5-2.5%				
	Atrioventricular septal defect	3-5%				
	Aortic stenosis	3-5%				
	Ebstein's anomaly	0.5-1.5%				
	Tetralogy of Fallot	8-10%				
	Primum atrial septal defect	2-3%				
Severe	Truncus arteriosus	1.5-2%				
	Pulmonary atresia	2-2.5%				
	Double outlet right ventricle	1.5-2%				
	D-transposition of the great arteries	6-7%				
	L-transposition of the great arteries	1-2%				
	Hypoplastic left heart syndrome	3-4%				
	Other (heterotaxy, other single ventricles)	7-10%				

PACES/HRS Consensus Statement 2014

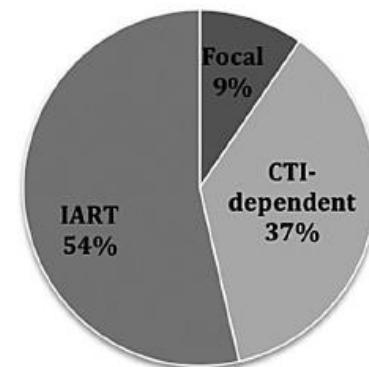
Substrate/Arrhythmia

- Cardiomyopathic
- Surgical Scars



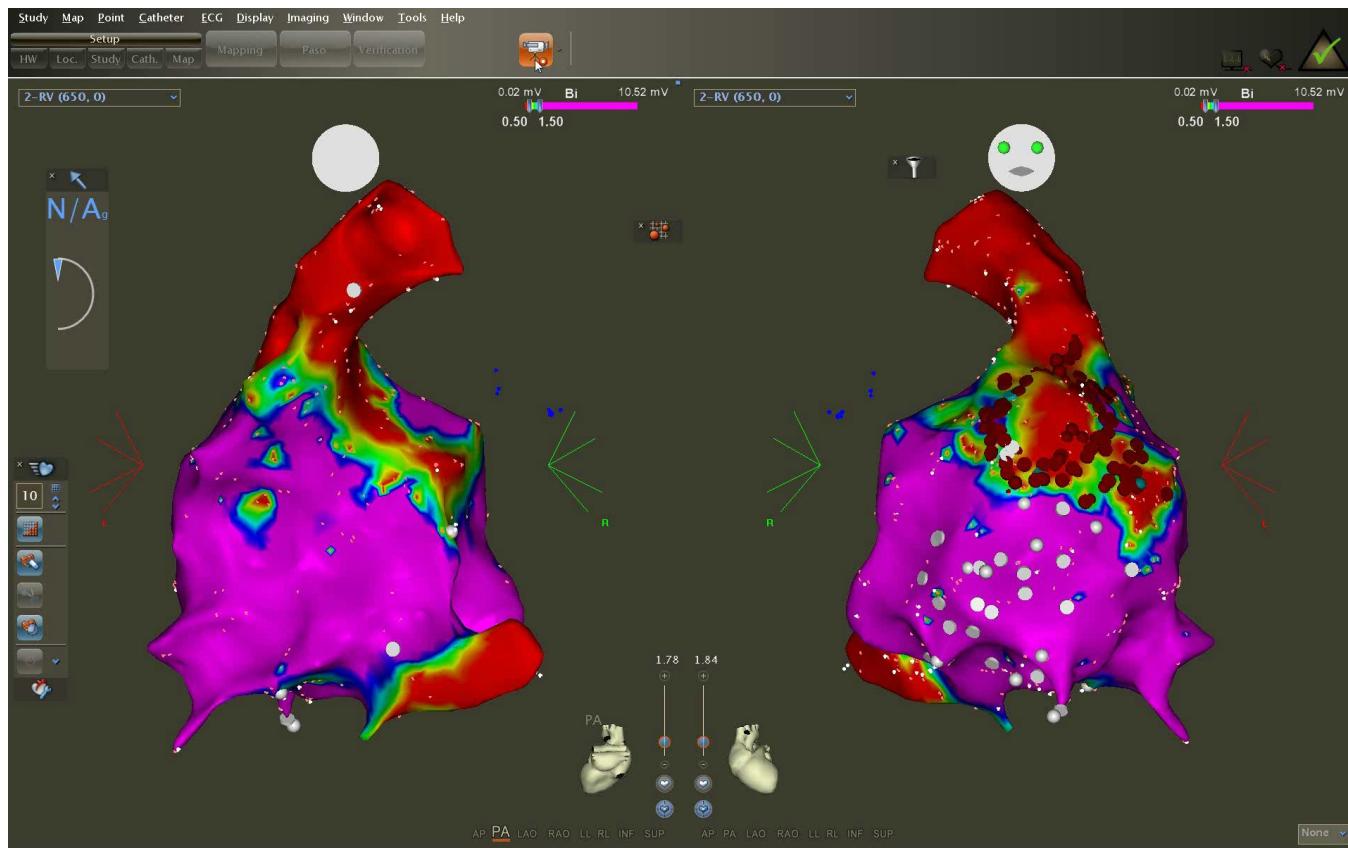
Kapel et ., 2016 EHJ

AT Mechanism

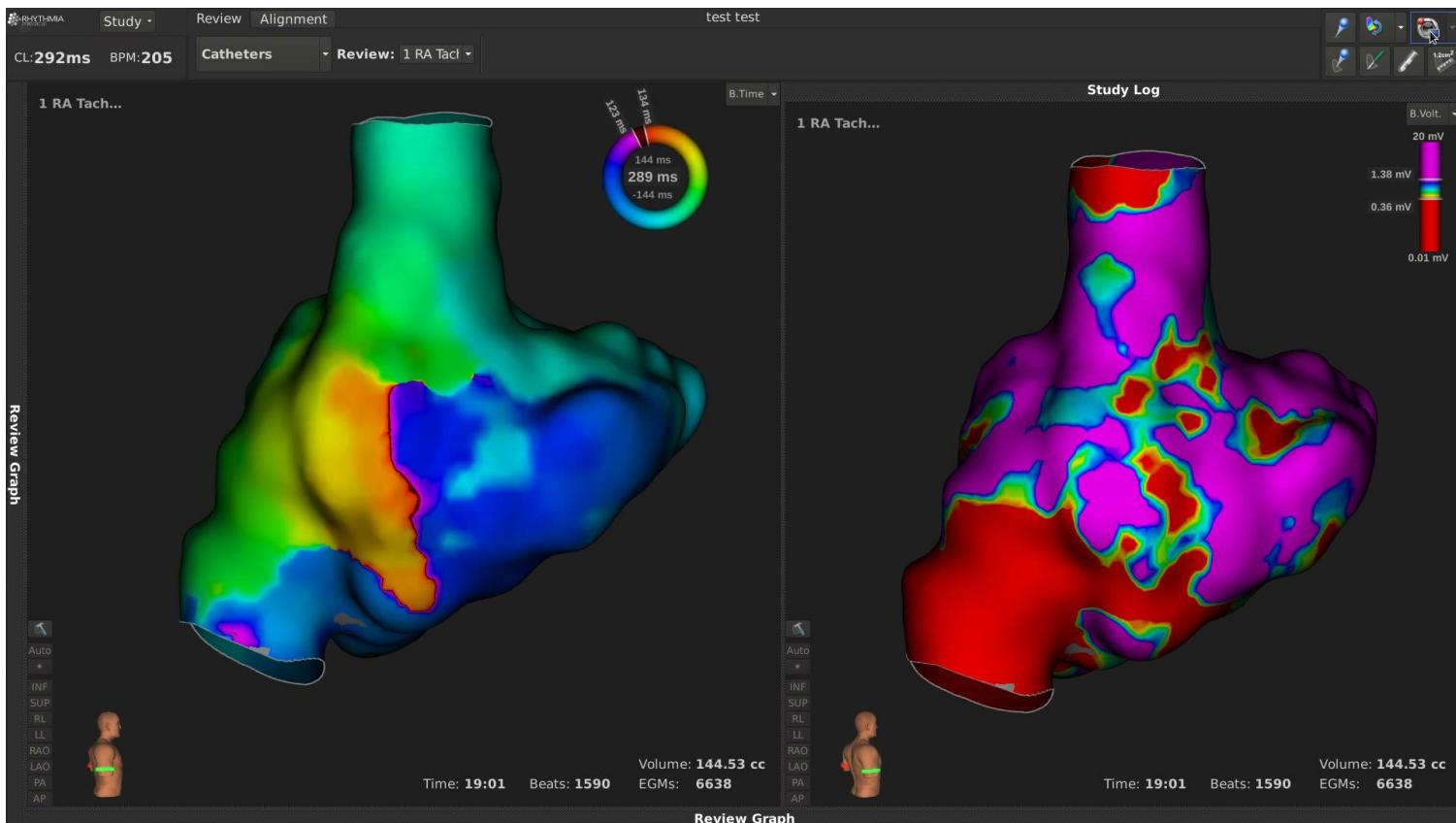


Moore 2014 Minerva Pediatrica

35♀ DORV - VT



25♀ TOF - IART



Conclusions

- ↑ cohort
- ↑ morbidity/mortality
- MDT planning
- Anatomy/Surgery
- Assistive technology