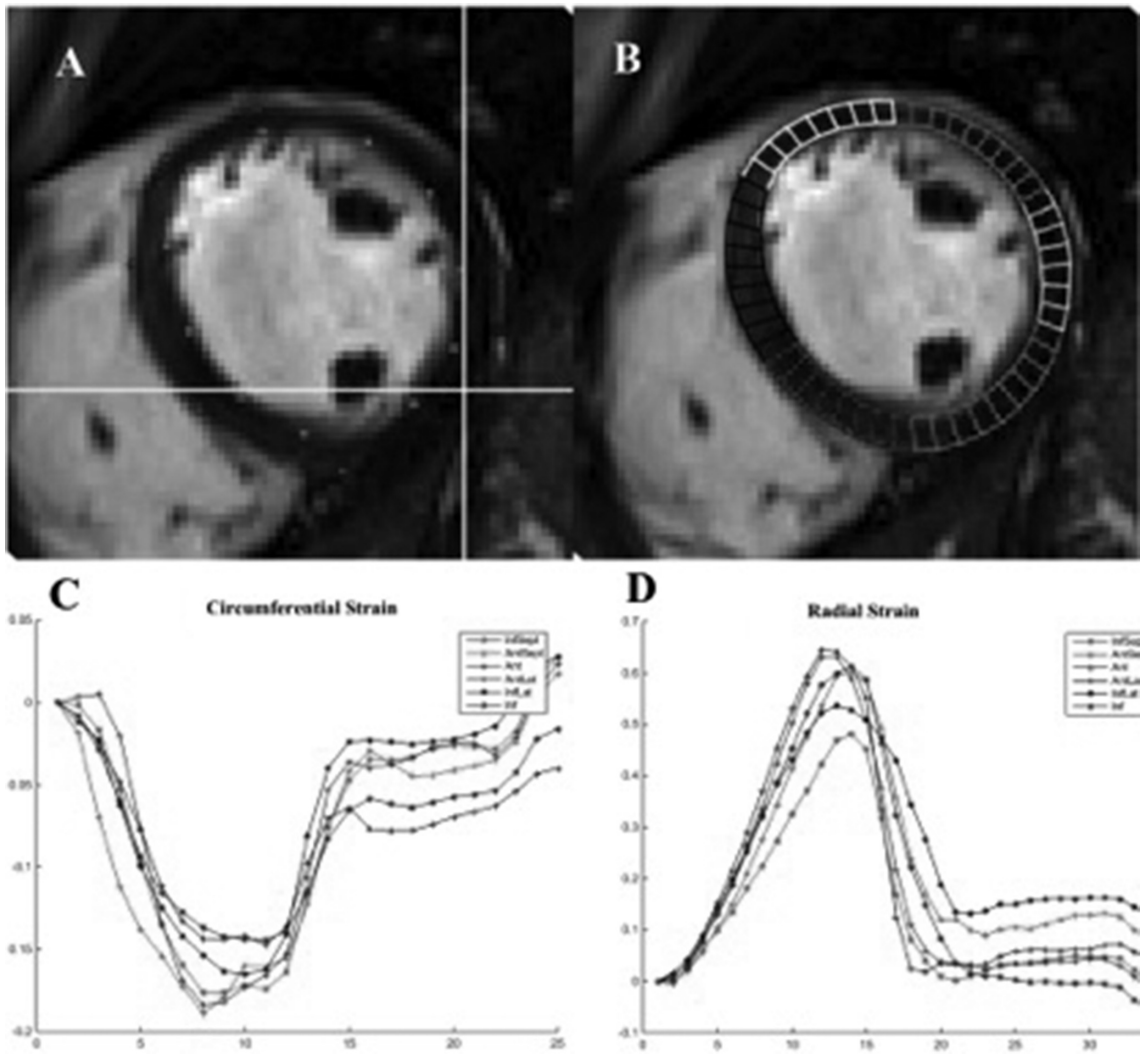

Abstract 18 Figure 1 The Glasgowheart pixel-tracking software. (A) shows border delineation (B) shows automatic segmentation using the inferior right ventricular insertion point. (C) and (D) show graphical output as circumferential and radial strain graphs, respectively

Conclusion The GlasgowHeart method is a robust and reproducible method of assessing cine-derived circumferential strain. By tracking a higher proportion of voxels than the currently available feature tracking software, it has clear potential to provide a more accurate assessment of strain.

19 FEASIBILITY OF NATIVE HIGH-RESOLUTION 3D SSFP MR ANGIOGRAPHY FOR ASSESSMENT OF THE THORACIC AORTA IN PREGNANT SUBJECTS WITH FAMILIAL AORTOPATHIES

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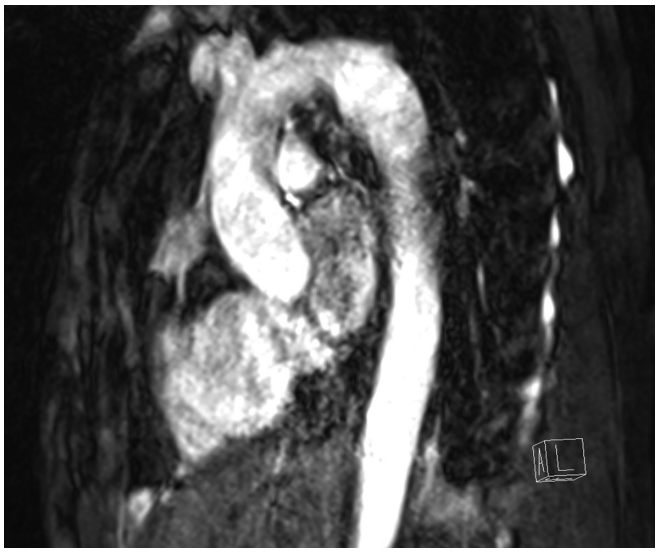
Introduction Native magnetic resonance angiography (MRA) is recommended to assess the thoracic aorta during pregnancy, avoiding the risks of ionising radiation and contrast agent administration. This guidance is however, based only on consensus opinion supported by limited case reports (level of evidence C).
Aim To evaluate the feasibility of performing native 3D steady-state free-precession (SSFP) MRA in pregnant subjects with inherited aortopathy to guide timing and mode of delivery.

Methods Prospective patients (n = 15) with known thoracic aortic disease underwent native 3D-SSFP MRA at 1.5T (Avanto, Siemens) with high isotropic spatial resolution ($1.3\times1.3\times1.3mm^3$) using a modified ECG-triggered sequence orientated in a sagittal-oblique plane, aligned along the aortic arch, with a respiratory navigator at the diaphragmatic level (slice thickness 2.00mm; TR/TE: 274/1.5ms). Subjects were imaged during "free breathing" adopting a "left uterine displacement" position, with a wedge under the right buttock, offloading the gravid uterus from the inferior vena cava. Aortic dimensions were measured at 7 levels by two independent blinded observers after an assessment of image quality (score 0–3: 0=poor, 3=excellent).
Results Native 3D-MRA was successfully acquired in all subjects during the mid-trimester (20.6 ± 4.9wk). Subject characteristics and pregnancy outcomes are available in Table 1. Image quality was deemed excellent in 87% after a mean acquisition time of 3.1 ± 1.5min. Figure 1 provides a typical example of a 3D-MRA image. There was a high level of agreement for aortic measurements, with low intra- and inter-observer variability (ICC ranges; 0.95–0.99 and 0.92–0.96, respectively). All pregnancies reached term (≥37/40) with a mean gestation at delivery of 38.0 ± 0.5wk. Imaging surveillance in combination with satisfactory haemodynamic status permitted vaginal delivery in 60%.



Abstract 19 Figure 1 Mildly dilated proximal descending aorta: 3D non-contrast MRA

Abstract 19 Table 1 Baseline characteristics and outcomes of pregnancy

Variable	N = 15
Age (years)	27 ± 4
Ethnicity	
White	14 (93)
Asian	0 (0)
Afro-Caribbean	1 (7)
Inherited Aortopathy	
Marfan	9 (60)
Ehlers-Danlos	2 (13)
Loeys-Dietz	1 (7)
Undefined	3 (20)
Beta-blocker	12 (80)
Systolic blood pressure (mmHg)	121 ± 9
Diastolic blood pressure (mmHg)	76 ± 4
Aortic dimensions	
Annulus (mm)	25 ± 8
Sinus of Valsava (mm)	35 ± 4
Sino-tubular junction (mm)	29 ± 6
Proximal ascending (mm)	22 ± 8
Mid aortic root (mm)	26 ± 5
Proximal descending (mm)	25 ± 11
Distal descending (mm)	20 ± 4
Quality of study (0 = poor, 3 = excellent)	2.8 ± 0.4
Gestational age at delivery (wk)	38.0 ± 0.5
Mode of delivery*	
Spontaneous vaginal delivery	5 (33)
Assisted (ventouse or forceps)	3 (20)
Induction	4 (27)
Elective Caesarian section	3 (20)
Emergency Caesarian section	3 (20)
Complications of pregnancy	
Aortic dissection	1 (7)
Maternal death	0 (0)
Healthy baby at delivery	15 (100)

Data are mean ± SD or N(%)
*Not mutually exclusive

Conclusion Native SSFP MRA provides a robust and safe method to accurately measure the thoracic aorta in pregnant subjects with aortopathy, helping to inform decisions regarding the timing and mode of delivery.

20 DO ATRIOPULMONARY (AP) FONTAN DIMENSIONS USING CMR INFLUENCE THE DEVELOPMENT OF ATRIAL TACHYARRHYTHMIA?

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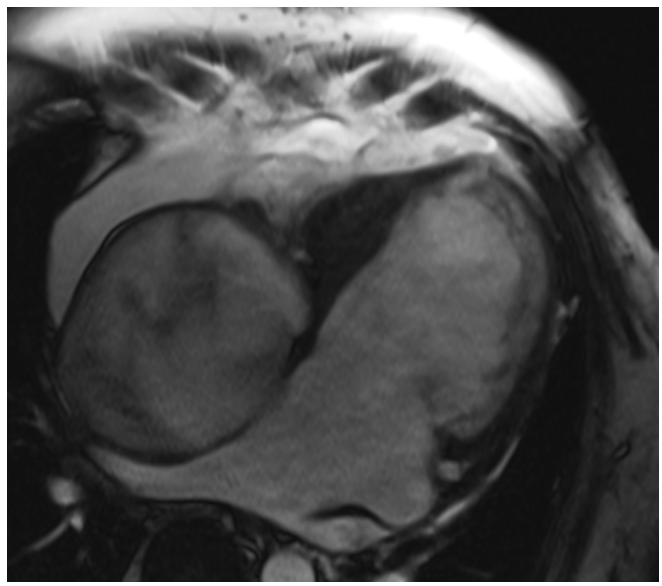
Introduction Atrial tachyarrhythmia is regarded as a late consequence of the Fontan circulation, particularly in those with an AP Fontan and is associated with significant morbidity and mortality. Developing methods to recognise those at the highest risk will allow early intervention, improving patient outcomes.
Purpose To establish relationship between AP Fontan chamber (FC) dimensions, ventricular volumes and function and the development of atrial arrhythmia (AR).
Methods Modified AP Fontan patients with CMR (1.5T, Avanto, Siemens) were reviewed (Figure 1). Horizontal long axis (HLA, TrueFISP cine, flip angle 80, TR/TE 50/1.26ms, retrospective ECG gating) and transaxial 3D MRA non-contrast (Modified Siemens Whole Heart coronary artery sequence, respiratory navigator, ECG-triggered, free breathing, slice thickness 2.00mm) of the FC and the left atrium were examined.



Abstract 20 Figure 1 HLA of 48 year old male with 5 ablations. End-diastolic area of 69cm^2. Slow flow can be seen in the FC

Results 55 patients 58% female and 42% male, mean age 33yrs (SD 7.9). 32 patients suffered a documented AR, most commonly atrial flutter (79%). There was a significant difference in age between the two groups with those having an AR tending to be older (36yrs vs 29yrs $p < 0.05$) the age of procedure was also older in the AR group (11yrs vs. 6yrs $p < 0.05$) (Table 1). There was no difference in ventricular ejection