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### Fibroelastoma: Our 20-Year Clinical Experience

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**Introduction:** Papillary Fibroelastomas (FE) are rare and the third most common primary cardiac tumour. We present our institution's 20-year experience with FE.

**Methods:** All cases of FE between 1 January 2003–1 January 2023 were obtained from our electronic medical record. Individual patient files were then accessed for clinical information.

**Results:** We identified 32 cases of suspected FE initially detected on transthoracic echocardiography. Median age at diagnosis was 67yrs (range 22–90), and 69% were female. The most common presenting symptom was TIA/CVA (22%), followed by chest pain (16%), dyspnoea (16%), and murmur (12%). Lesions were predominantly left-sided valves, affecting the aortic (44%), mitral (34%), tricuspid (13%) and pulmonary (6%) valves; and one was attached to the aortic wall. Size ranged between 5–17mm. After TTE, 47% underwent evaluation with TOE and 22% with MRI, which subsequently excluded FE in 18%. Of patients with suspected FE, 75% were managed conservatively including two with aspirin and two with anti-coagulation. One patient died of an unrelated issue within the follow-up. Five patients were referred for surgery; however, one case was cancelled as no lesion was found on intra-op TOE. Histology of two cases confirmed FE, while the other two showed degenerative calcification only.

**Conclusions:** FE that are initially suspected on echo should be carefully assessed with multimodality imaging as many cases can be excluded or managed conservatively. Special care should be made to attempt to differentiate between FE and degenerative changes.

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### Filling Constraints During Exercise in Athletic and Non-Athletic Hearts

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**Introduction:** Cardiac filling is an integral component in meeting the hemodynamic demands of exercise. The relative contribution of systole and diastole in stroke volume (SV)

augmentation during exercise could have clinical relevance as a measurement of diastolic function.

**Methods:** We evaluated 32 participants, comprising 21 endurance athletes (EA) and 11 controls (CON). All participants underwent cardiopulmonary exercise testing to determine peak oxygen uptake (VO<sub>2</sub>peak) and peak workload (Watts). Semi-supine exercise echocardiography was conducted at rest, 20%, 40% and 60% of peak workload, with final stage equivalent to upright VO<sub>2</sub>peak. SV and ejection times using pulse wave doppler at LVOT were used to calculate systolic (SFR) and diastolic flow rate (DFR) and timing throughout the cardiac cycle.

**Results:** In both groups, SV increased throughout exercise ( $p < 0.001$ ), due to increased DFR and SFR ( $P < 0.001$ ). SV was higher and heart rate was lower in EA vs CON at all stages of exercise ( $P < 0.05$  for all). At rest, no group differences in SFR ( $p = 0.130$ ) and DFR ( $p = 0.739$ ) were present, despite the longer systolic ( $296 \pm 39$ ms vs.  $247 \pm 30$ ms;  $P = 0.001$ ) and diastolic ( $811 \pm 229$ ms vs.  $560 \pm 161$ ms;  $p = 0.003$ ) times in EA. SV response to exercise was higher in EA ( $p < 0.001$ ), which was attributed to a larger augmentation of DFR in EA ( $p < 0.001$ ). SFR response was not different between groups ( $p = 0.066$ ).

**Conclusion:** Endurance athletes have increased ability to augment SV during exercise, which is primarily facilitated by superior DFR. Future research can evaluate the corollary, whether impaired DFR is associated with exercise intolerance and an inability to augment SV.

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### Finding a Trap With the Help of a Map: Parametric Mapping to Aid the Diagnosis of Takotsubo Cardiomyopathy

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**Background:** Myocardial infarction in the absence of obstructive coronary disease (MINOCA) is present in 10% of acute coronary syndromes<sup>1</sup>. Differential diagnoses include coronary ischaemia (spasm, coronary embolus), myocarditis and takotsubo cardiomyopathy (TCM) [1]. Cardiac magnetic resonance (CMR) can reclassify MINOCA to a specific diagnosis in 68% of cases [2] allowing prognostication and preventive therapy.

**Case Presentation:** A 73-year-old female developed typical ischaemic chest pain in regional NSW requiring transfer to our centre. She had a history of paroxysmal atrial fibrillation, cigarette smoking and a family history of premature coronary disease. Initial electrocardiogram demonstrated dynamic biphasic anterior T waves, and a peak troponin I of 1467 ng/L. Transthoracic echocardiography demonstrated mid to distal anteroseptal, mid inferoseptal and mid anterior wall akinesis. Coronary angiography demonstrated non-obstructive coronary disease. A diagnosis of MINOCA was made. Cardiac

MRI (3 Tesla) confirmed persistent mid septal akinesis. T2 weighted imaging was equivocal, but parametric mapping demonstrated significantly elevated native T1 time (1598 msec [normal 1150–1250 msec]), and T2 time in the mid septum (62 msec [normal 34–42 msec]), consistent with myocardial oedema. However, there was no late gadolinium enhancement (LGE) present making infarction and myocarditis unlikely. A diagnosis of mid ventricular TCM was made and she was discharged on bisoprolol and valsartan. Follow-up echocardiography demonstrated a partial improvement in LV function after 3 weeks.

**Conclusion:** Mid-ventricular is a rare pattern of TCM (14% of all presentations [3]). This case demonstrates the value of parametric mapping in making this diagnosis, particularly when myocardial oedema is found in the absence of LGE.

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## First 84 Cardiac MRIs Performed at a Regional Referral Centre: A Single Centre Experience

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**Background:** Cardiac MRI (CMR) is increasingly indicated in assessment of cardiac conditions. Disparities in cardiology services between regional and urban cohorts are well documented, but there is a paucity of data relating to CMR. We report our experience of the first 84 scans performed at a regional hospital.

**Methods:** A retrospective cohort analysis of all adults referred for CMR to Orange Health Service between February 2022 to February 2024 was performed.

**Results:** 84 patients were included, mean age 53 (20-77), men (44) and women (40). Patients had a mean BSA 2.05 m<sup>2</sup> (1.35-2.94). Rurality distribution was assessed by the Modified Monash (MM) model and was 68% regional (MM 3-4) and 32% remote (MM 5-7). Indications for CMR were: myocarditis 15 (18%), infiltration (sarcoid, amyloid) 17 (20%), dilated

cardiomyopathy 32 (39%), viability 4 (5%), and other (tumour, congenital) 15 (18%). Left ventricular dysfunction was present in 15 (22%), right ventricular dysfunction in 2 (3%), dilated chamber size in 11 (14%) and myocardial oedema was present in 1 patient. Late gadolinium enhancement was present in 45 (54%). There were 23 confirmed diagnoses (27%), and 19 (23%) where CMR altered management by excluding significant cardiac disease in 10 (12%) whilst identifying scar for further assessment (such as cardiac PET or electrophysiology review) in 9 (11%). There were no complications.

**Conclusion:** This regional CMR service is safe, effective, and feasible. Increasing access to CMR may improve diagnoses and management of regional cohorts and reduce number and cost to reach city centres.

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## Five-Year Experience in Performing MRIs on Paediatric Patients with CIEDs (Cardiac Implantable Electronic Devices)



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**Background:** Potential interactions between cardiac implantable electronic device (CIED) systems and magnetic resonance imaging (MRI) have been reduced since the introduction of MRI conditional CIEDs and leads. Concerns about potential interactions often prevent patients with CIEDs from undergoing MRI. This abstract's purpose is to describe our experience of performing MRIs on paediatric patients with conditional and non-conditional CIED systems.

**Methods:** A retrospective data review was performed on all patients who underwent MRI at the Queensland Children's Hospital with a CIED (pacemaker, implantable cardioverter defibrillator, implantable loop recorder) between February 2018 and December 2023. 14 regions (two brain, two lower extremities, five cardiac, five multi-region brain and spine) were imaged using MRI on 11 patients; one patient underwent three and one patient underwent two MRIs. Seven patients had conditional systems and four patients non-conditional systems. All non-conditional systems had epicardial leads and one a non-conditional device. Five patients (four with non-conditional systems) had MRI under general anaesthetic.

**Results:** During MRI, no clinical events or symptoms occurred. All cardiac devices were interrogated pre and post MRI, and outpatient follow-up by the electrophysiology team. Post MRI no immediate changes were seen in any CIED system of any manufacturer, model or lead. Three-month post MRI one patient with a non-conditional device and epicardial lead showed increased right ventricular threshold (1.25V pre-MRI, 2.25V three-month post MRI); no further changes have been seen.

**Conclusion:** Using appropriate precautions, and completing a benefit-risk analysis, MRI can be safely performed in paediatric patients with conditional and non-conditional CIED systems.

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