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MULTIPARAMETRIC CARDIAC STRAIN ANALYSIS OF MYOCARDIAL VIABILITY

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Background: Assessing left ventricle (LV) cardiac contractile function is a good indicator of overall heart health and is used to determine which patients are good candidates for revascularization surgery. With over 3 million new coronary artery disease patients annually and over 1 million annual revascularization surgeries in the US, there is need for an improved, non-invasive technique to quantitatively assess LV contractile function.

Technology Description: A team led by Dr. Michael Pasque has developed cardiac MRI-based multiparametric strain analysis techniques to provide quantitative assessments of LV contractile function. The patented techniques and Normal Human Strain Database may be used as a screening mechanism to non-invasively assess heart function or to assess cardiac tissue viability to inform revascularization surgeries.

Key Advantages:

- Uses non-invasive MRI imaging to assess heart function
- Provides an objective, quantitative measure of LV contractile function
- Provides localized information

Publications:

‘Quantifying “normalized” regional left ventricular contractile function in ischemic coronary artery disease’; https://doi.org/10.1016/j.jtcvs.2015.03.049

‘Three‐dimensional regional strain computation method with displacement encoding with stimulated echoes (DENSE) in non‐ischemic, non‐valvular dilated cardiomyopathy patients and healthy subjects validated by tagged MRI’; https://doi.org/10.1002/jmri.24576

‘Regional Myocardial Contractile Function: Multiparametric Strain Mapping’; https://doi.org/10.1510/icvts.2009.220384

‘Dilated Cardiomyopathy: Normalized Multiparametric Myocardial Strain Predicts Contractile Recovery’; http://dx.doi.org/10.1016/j.athoracsur.2015.04.025

Patents: Issued US patent 9,176,211, *Method for quantitatively mapping myocardial contractile function with magnetic resonance based multiparametric strain analysis*

Pending US patent 15/520,991, *Systems and methods for measuring cardiac strain*

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