

Comparative Evaluation of Intensity- and Feature-Based Multimodal Registration for Hypertrophic Cardiomyopathy

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Abstract: *Hypertrophic cardiomyopathy is a genetic cardiac disorder characterized by abnormal thickening of the myocardium, leading to impaired cardiac function and increased risk of sudden cardiac death. Accurate imaging is crucial for early diagnosis, treatment planning, and prognosis. Multimodal image registration, particularly between gadolinium-enhanced magnetic resonance imaging and echocardiography, enables precise structural and functional correlation, improving diagnostic accuracy. This review critically examines intensity- and feature-based registration techniques for HCM evaluation, highlighting their principles, advantages, limitations, and clinical relevance. Insights from recent studies are summarized to guide future research and clinical applications.*

Keywords: Cardiac Image Fusion, Myocardial Wall Assessment, Cardiac MRI