

## Integrated Assessment of Drugs and Interventional Devices in the Management of Acute MI, Refractory Angina and Heart Failure: A Clinical Outcome-Based Study

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### Abstract:

**Aim:** This study aimed to evaluate and compare the clinical outcomes of pharmacological and interventional (device-based) therapies in the management of heart failure, refractory angina, and acute myocardial infarction (AMI), focusing on improvements in survival, recovery, and quality of life. A prospective observational study was conducted on 67 patients diagnosed with AMI, refractory angina, or congestive heart failure. Participants were grouped based on diagnosis and treatment modality, including pharmacological therapy or device-based interventions such as percutaneous coronary intervention (PCI), coronary sinus reducers, and pulmonary artery pressure monitors. Outcomes, including major adverse cardiovascular events (MACE), symptom improvement, and hemodynamic changes, were evaluated over a 24-month period. Statistical analysis was performed using SPSS v26, with significance set at  $p < 0.05$ . Device-based interventions demonstrated superior efficacy compared with pharmacological therapy across all categories. Patients receiving device therapy exhibited a lower incidence of MACE (16.2% vs. 33.3%,  $p = 0.028$ ), faster symptomatic recovery (NYHA I: 64.3% vs. 42.8% in AMI,  $p = 0.037$ ), and reduced hospitalization rates (10.0% vs. 27.3%,  $p = 0.045$ ). Significant improvements in hemodynamic parameters, particularly pulmonary artery pressure reduction ( $p < 0.01$ ), and higher event-free survival ( $p = 0.034$ ) were also observed. The findings suggest that device-based therapeutic strategies confer superior hemodynamic stabilization, symptom relief, and long-term event-free survival compared to pharmacological therapy in patients with AMI, refractory angina, and heart failure. These results highlight the potential clinical advantage of interventional modalities and warrant validation through larger, multicentric randomized controlled trials.

### Keywords:

Acute myocardial infarction (AMI), Congestive heart failure (CHF), Device-based therapy, Pharmacological therapy, Refractory angina.