

### **30. All-Cause Mortality in Ischemic Heart Failure Patient With Functional Mitral Regurgitation Undergoing Percutaneous Coronary Intervention**

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#### **Body**

**Background:** Whether percutaneous coronary intervention (PCI) treatment improves all-cause mortality in ischemic heart failure (HF) patient with left ventricular systolic dysfunction (LVSD) and functional mitral regurgitation (FMR) is undetermined.

**Methods:** This study included 1483 patients with 39.5% (n=586) had moderate-to-severe FMR. A multivariable Cox proportional hazards model was used to assess the association between PCI treatment and all-cause mortality. Furthermore, propensity score matching was used to account for non-random treatment assignment.

**Results:** In those with none-to-mild FMR, after a median follow-up of 3.1 years, the cumulative rate of all-cause mortality between the PCI and non-PCI groups was comparable (10.1% vs 14.2%), with an adjusted hazard ratio (HR) of 0.731 (95% confidence interval [CI] 0.438-1.221, P=0.232). In those with moderate-to-severe FMR, after a median follow-up of 2.9 years, the cumulative rate of all-cause mortality was lower in the PCI group (20.4% vs 31.6%), with an adjusted HR of 0.660 (95% CI: 0.469-0.929, P=0.017), and the result was confirmed with propensity matching (HR: 0.487 and 95% CI: 0.254-0.934, P=0.027). The mortality benefit associated with PCI treatment in patients with moderate-to-severe FMR was consistent regardless of the age, sex, reason for admission, presence of diabetes mellitus, left ventricular ejection fraction value, left main and three vessels disease.

**Conclusion:** In ischemic HF patients with LVSD and moderate-to-severe FMR, PCI treatment improves all-cause mortality. Randomized clinical trials are needed to confirm our current results.

## Central illustration

**Study population**

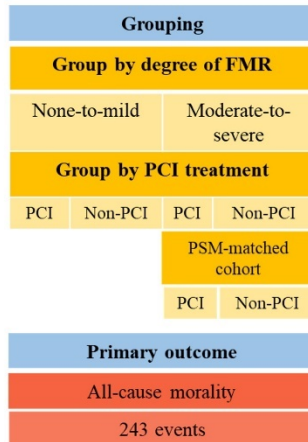
**1483 IHF patients**

**Inclusion**

- Age > 18
- IHF confirmed by coronary angiography, or prior MI, prior revascularization
- LVEF < 45%

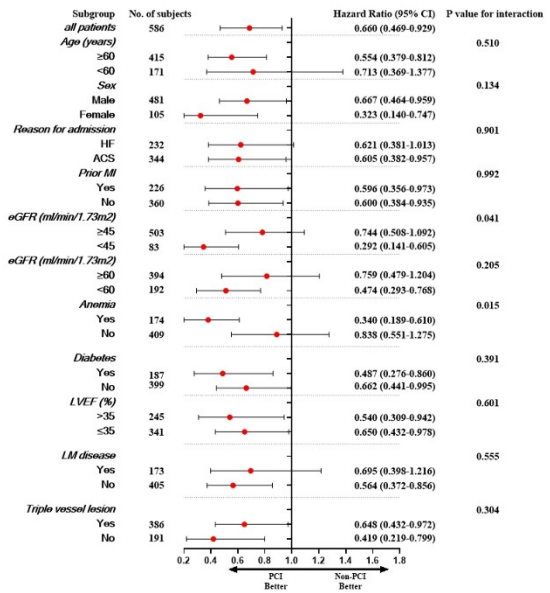
**Exclusion**

- Received CABG
- Lost to follow-up
- Undetermined FMR



| Groups   | Events/Total (%)      | HR (95% CI)         | P-value | Adjusted HR (95% CI) | P-value |
|--|-----------------------|---------------------|---------|----------------------|---------|
| <b>None-to-mild FMR</b>                            | <b>100/897 (11.1)</b> |                     |         |                      |         |
| Non-PCI  | 33/232 (14.2)         | Reference           | 0.097   | Reference            | 0.180   |
| PCI  | 67/665 (10.1)         | 0.704 (0.464-1.068) |         | 0.701 (0.417-1.179)  |         |
| <b>Moderate-to-severe FMR</b>                      | <b>143/586 (24.4)</b> |                     |         |                      |         |
| Non-PCI  | 66/209 (31.6)         | Reference           | 0.002   | Reference            | 0.017   |
| PCI  | 77/377 (20.4)         | 0.597 (0.429-0.830) |         | 0.660 (0.469-0.929)  |         |
| <b>Moderate-to-severe FMR (PSM-matched cohort)</b> | <b>40/166 (24.1)</b>  |                     |         |                      |         |
| Non-PCI  | 26/83 (31.3)          | Reference           | 0.027   | /                    | /       |
| PCI  | 14/83 (16.9)          | 0.487 (0.254-0.934) |         | /                    | /       |

## Subgroup analyses



**Clinical Implications:** My study will help enable cardiovascular clinicians to recognize that on top of medical therapy, percutaneous coronary intervention is associated with improvement in all-cause mortality in ischemic heart failure patients with left ventricular systolic dysfunction and moderate-to-severe functional mitral regurgitation.