Relationship Between Residual Mitral Regurgitation and Clinical and Functional Outcomes in the COAPT Trial

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Disclosure Statement of Affiliations/Financial Relationship

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  Abbott Vascular, Boston Scientific, Gore Medical
- Other Financial Benefit
  Valcare

Background (i)

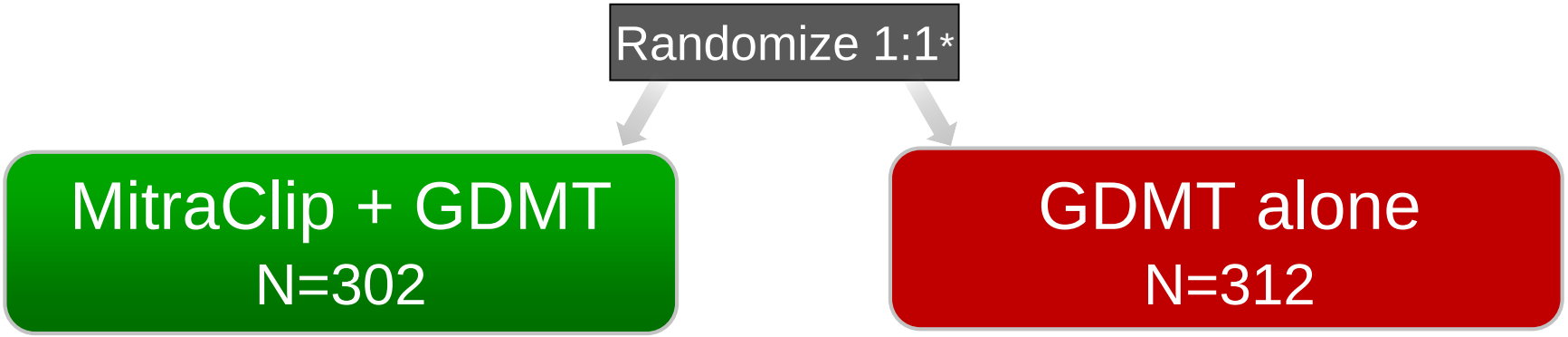
- In the COAPT trial treatment of selected patients with heart failure and severe secondary MR with the MitraClip improved 2-year survival, reduced HF hospitalizations (HFH), and improved quality of life compared with maximally-tolerated guideline-directed medical therapy (GDMT) alone
- In addition, the MitraClip was substantially more effective than GDMT alone in reducing MR

Stone GW, Lindenfeld J, Abraham WT… Mack MJ et al. N Engl J Med. 2018;379:2307-18

The COAPT Trial

Cardiovascular **O**utcomes **A**ssessment of the MitraClip **P**ercutaneous **T**herapy for Heart Failure Patients with Functional Mitral Regurgitation

A parallel-controlled, open-label, multicenter trial in ~614 patients with heart failure and moderate-to-severe (3+) or severe (4+) SMR (US ASE criteria) who remained symptomatic despite maximally-tolerated GDMT and CRT if appropriate



*Stratified by cardiomyopathy etiology (ischemic vs. non-ischemic) and site

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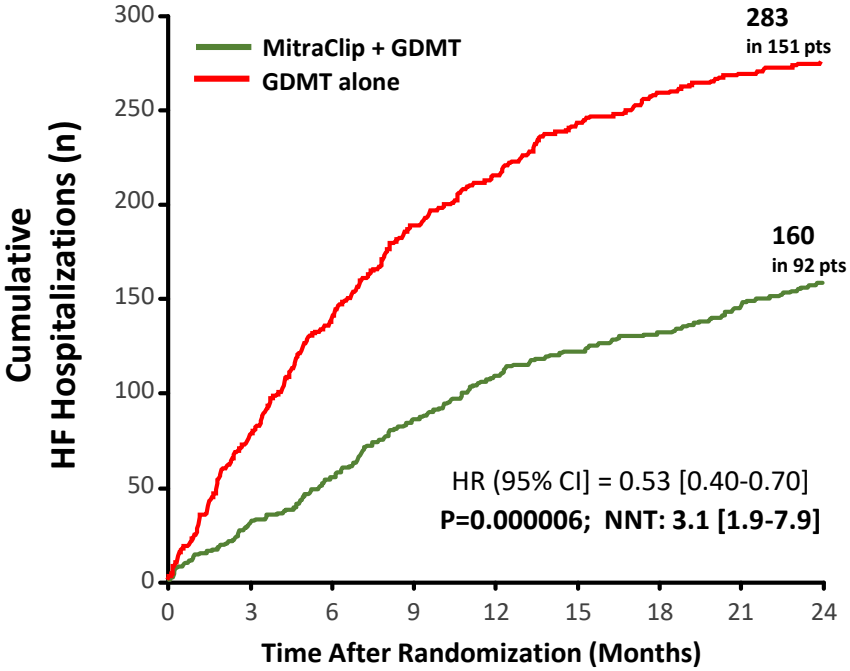
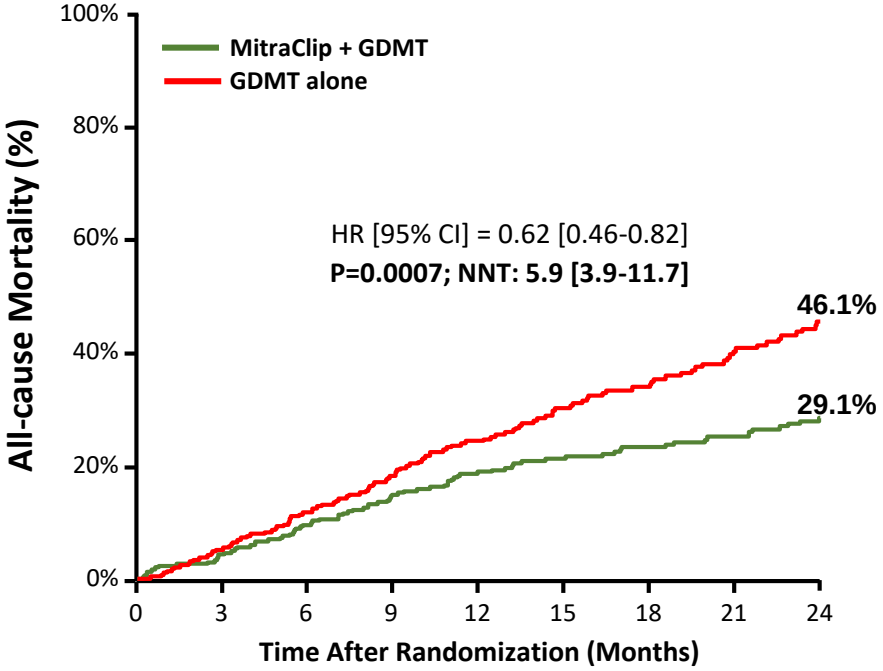
COAPT Primary Outcomes

All Hospitalizations for HF

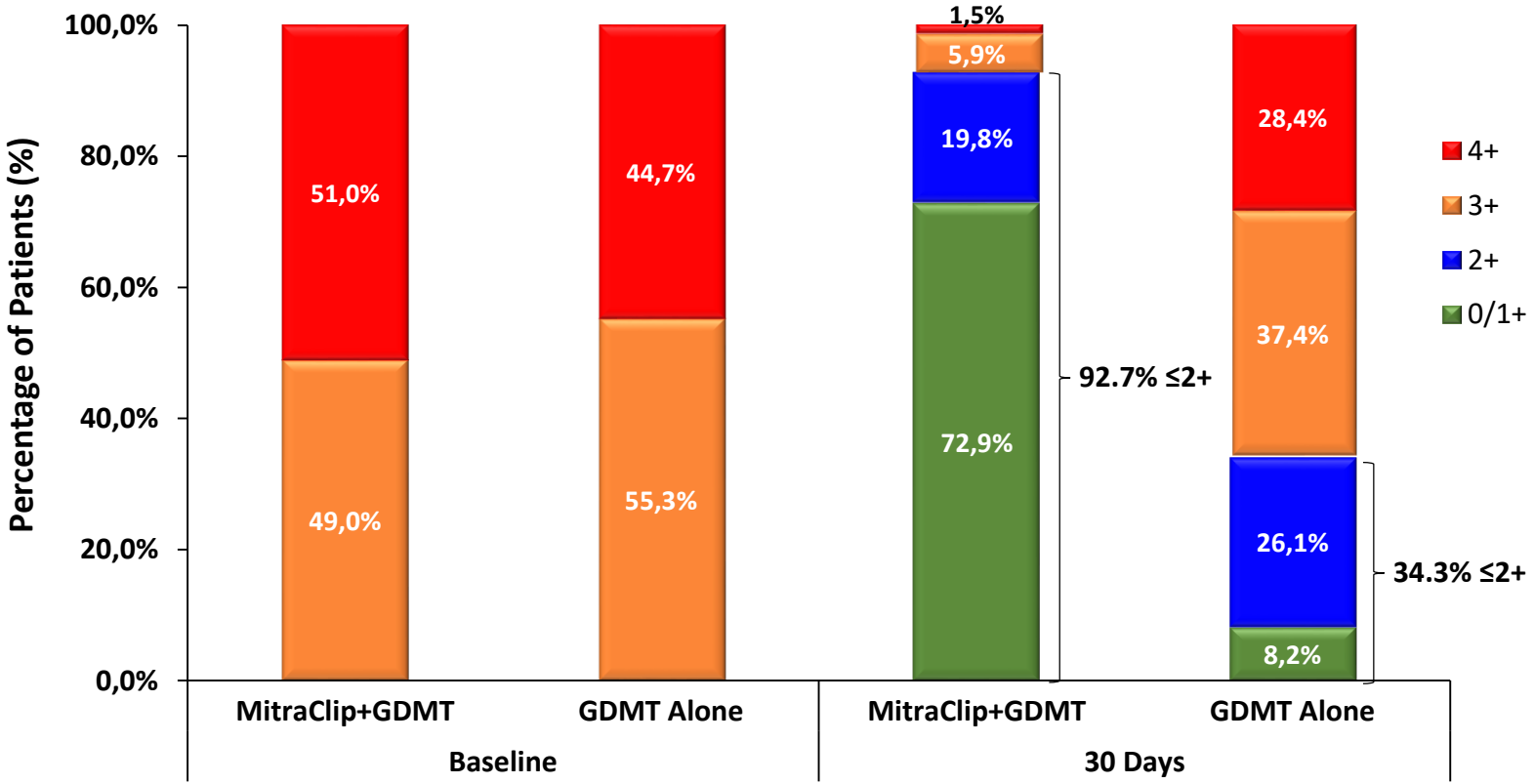


All-Cause Mortality



Stone GW, Lindenfeld J, Abraham WT… Mack MJ et al. N Engl J Med. 2018;379:2307-18

MR Reduction in COAPT[1]



Stone GW, Lindenfeld J, Abraham WT… Mack MJ et al. N Engl J Med. 2018;379:2307-18

Background (ii)

- Although the MitraClip was more successful in reducing MR than GDMT alone, the mechanistic relationship between MR reduction and the observed clinical and functional outcomes in the COAPT trial is uncertain:
  - Whether achieving 2+ MR has as favorable a prognostic impact as ≤1+ MR is unknown; and
  - Whether MR reduction with GDMT alone has the same durability and prognostic impact as MR reduction by the MitraClip is unknown

Stone GW, Lindenfeld J, Abraham WT et al. N Engl J Med. 2018 Dec 13;379(24):2307-2318

Study Objective

- The objective of the present study was to evaluate the durability and impact of the degree of residual MR at 30 days on long-term clinical and functional outcomes in patients enrolled in the COAPT trial, including both the treatment (MitraClip + GDMT) and the control (GDMT alone) groups

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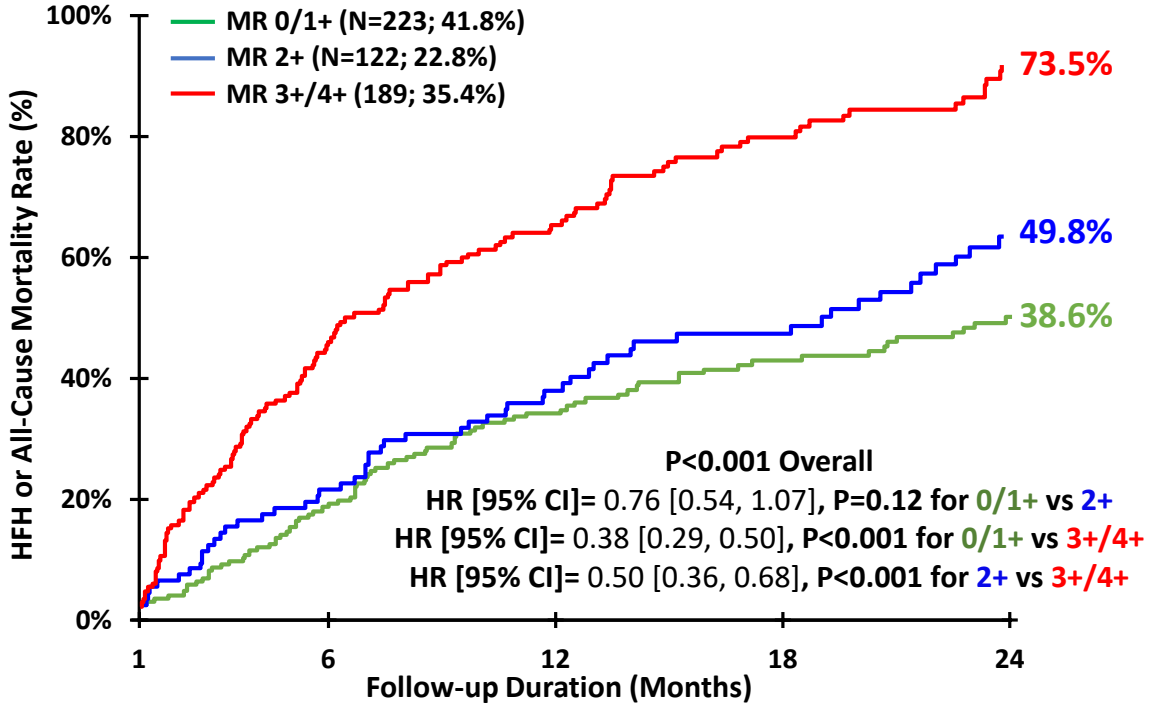
Time to First HFH or All-Cause Mortality

Pooled (MitraClip and Control) Population Stratified by 30-day Residual MR

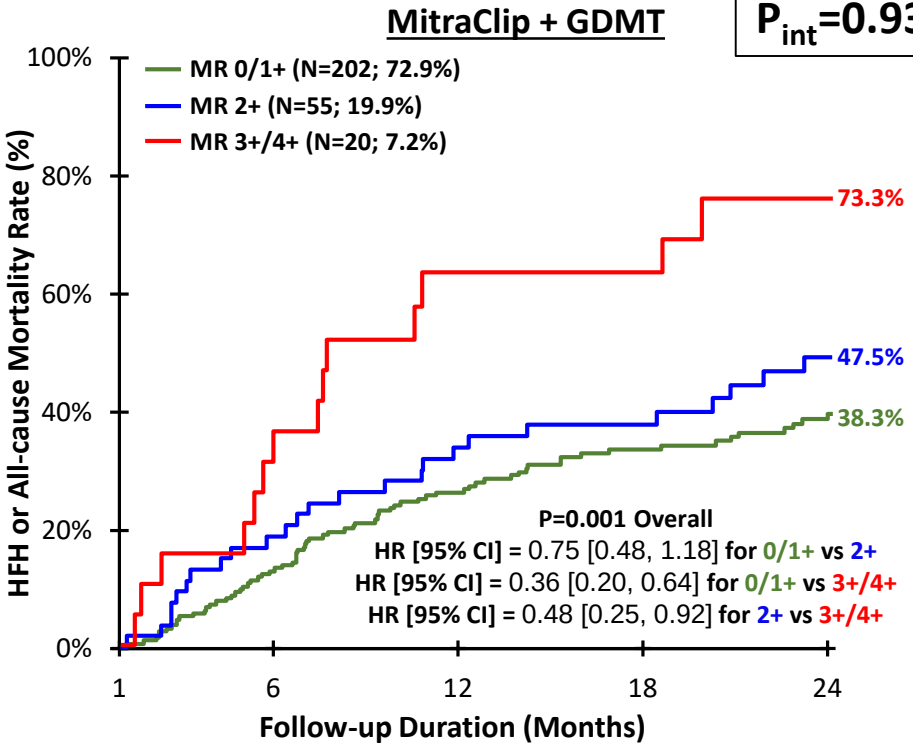


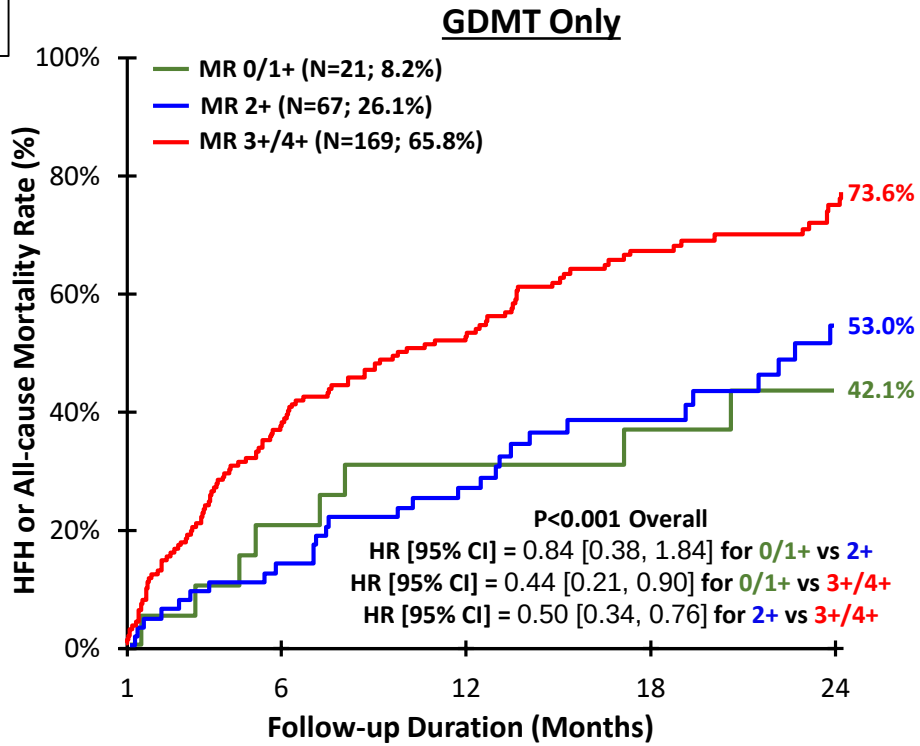
# At Risk					
MR 0/1+	223	192	152	117	73
MR 2+	122	101	81	57	36
MR 3+/4+	189	120	83	51	30

Time to First HFH or All-Cause Mortality

Randomization Groups Stratified by 30-day Residual MR

P_{int}=0.93





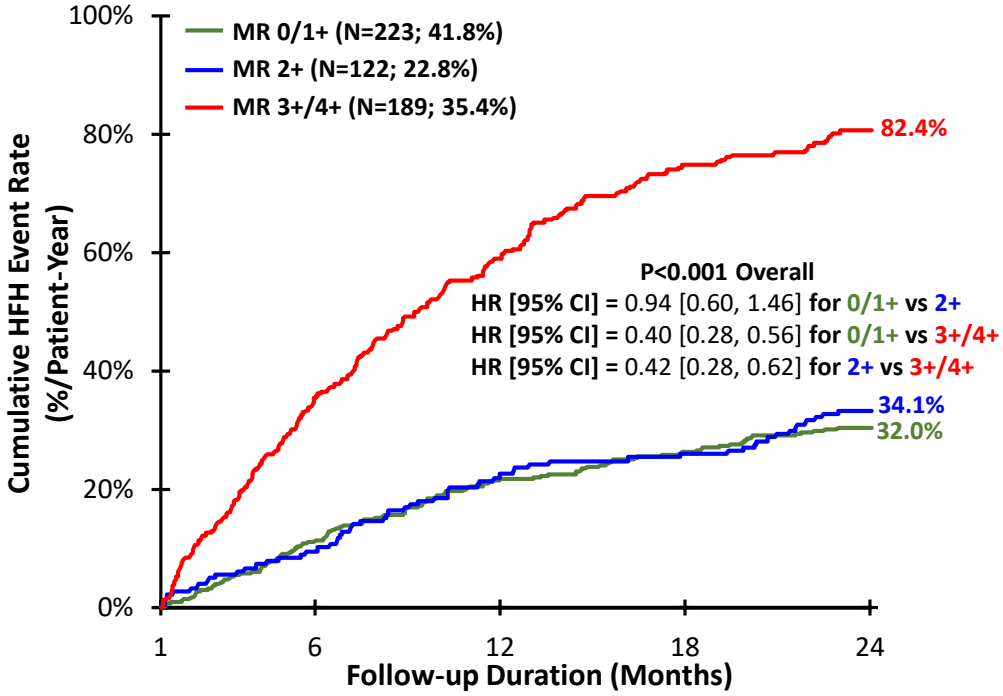
# At Risk					
MR 0/1+	202	176	139	106	66
MR 2+	55	45	37	31	21
MR 3+/4+	20	13	7	7	4

# At Risk					
MR 0/1+	21	16	13	11	7
MR 2+	67	56	44	26	15
MR 3+/4+	169	107	76	44	26

Cumulative HFH Rate and Time to All-Cause Mortality

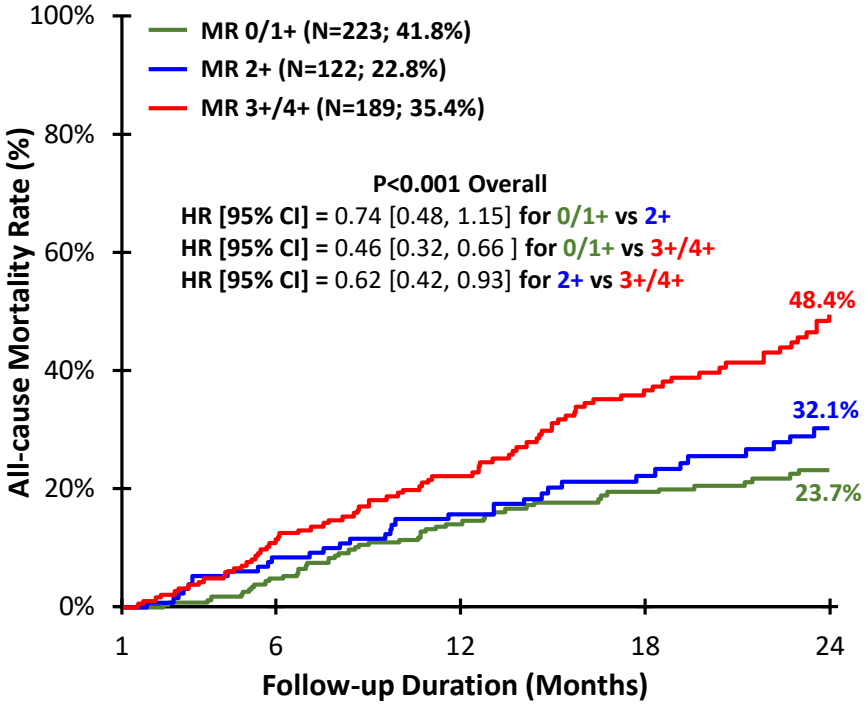
Pooled (MitraClip and Control) Population Stratified by 30-day Residual MR

Cumulative Heart Failure Hospitalization Rate



# At Risk					
MR 0/1+	223	211	177	138	92
MR 2+	122	109	96	67	48
MR 3+/4+	189	164	133	90	54

All-Cause Mortality

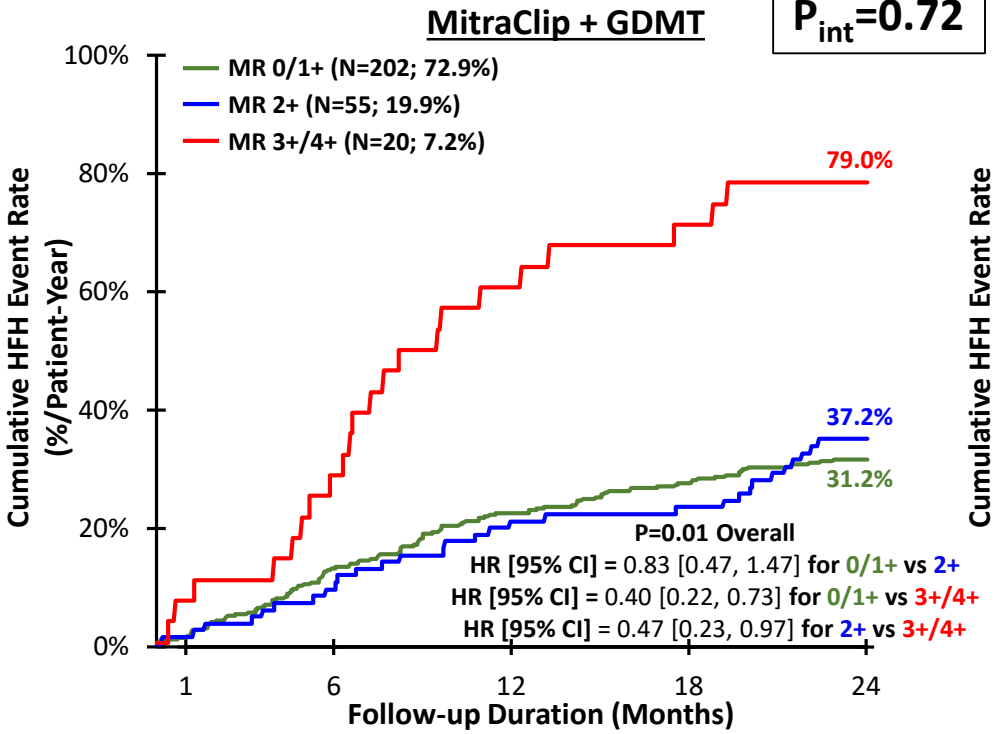


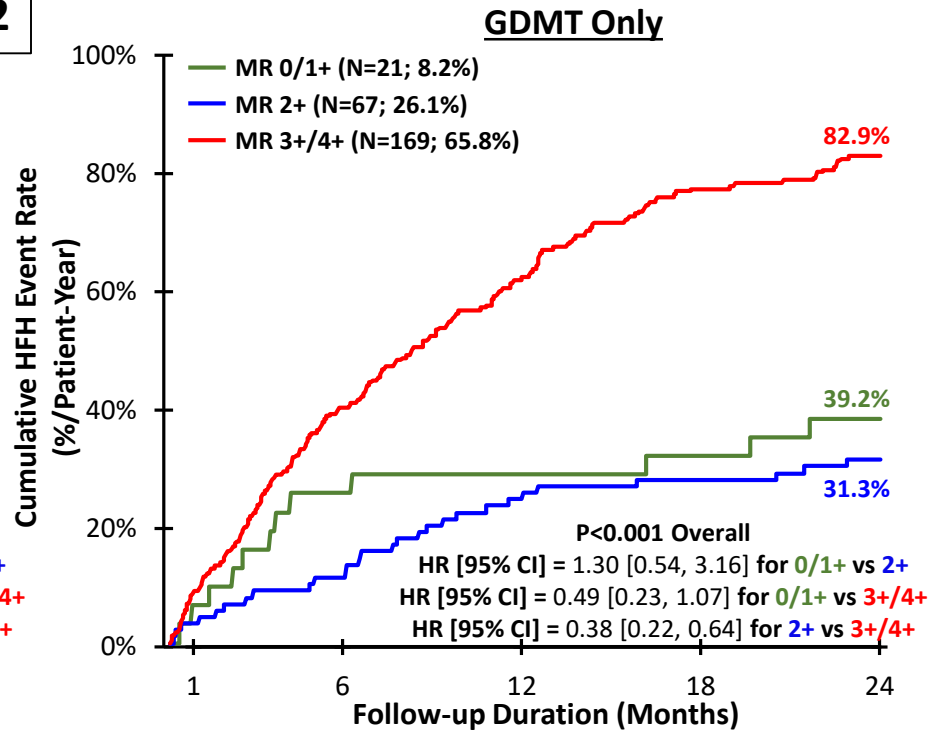
# At Risk					
MR 0/1+	223	211	177	138	92
MR 2+	122	109	96	67	48
MR 3+/4+	189	164	133	90	54

Cumulative HFH Rate

Randomization Groups Stratified by 30-day Residual MR

P_{int}=0.72





# At Risk					
MR 0/1+	202	191	161	124	82
MR 2+	55	48	45	36	27
MR 3+/4+	20	19	15	11	7

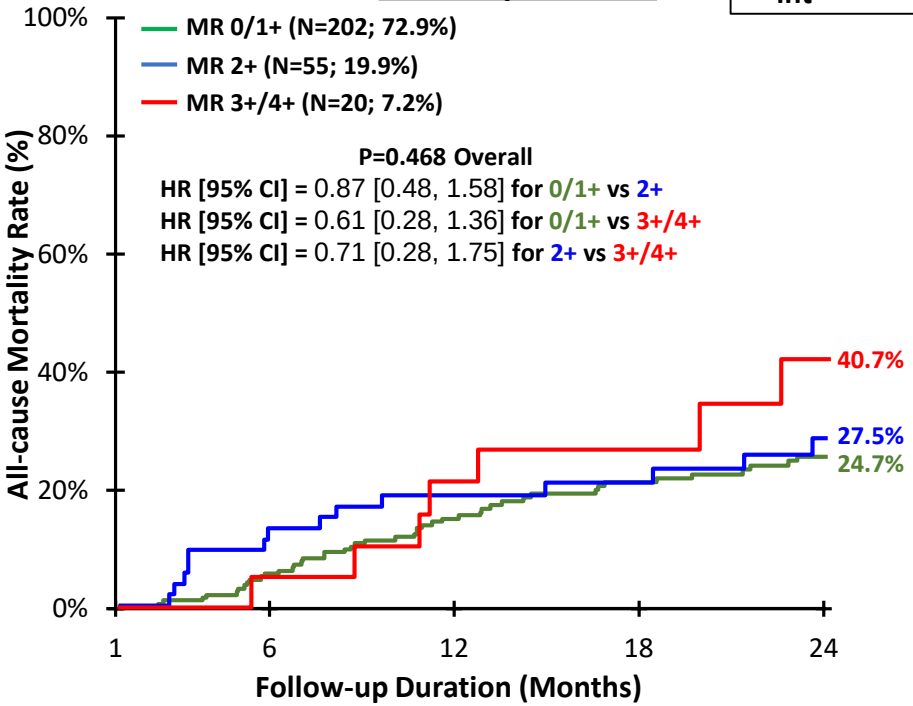
# At Risk					
MR 0/1+	21	20	16	14	10
MR 2+	67	61	51	31	21
MR 3+/4+	169	145	118	79	47

Time to All-Cause Mortality

Randomization Groups Stratified by 30-day Residual MR

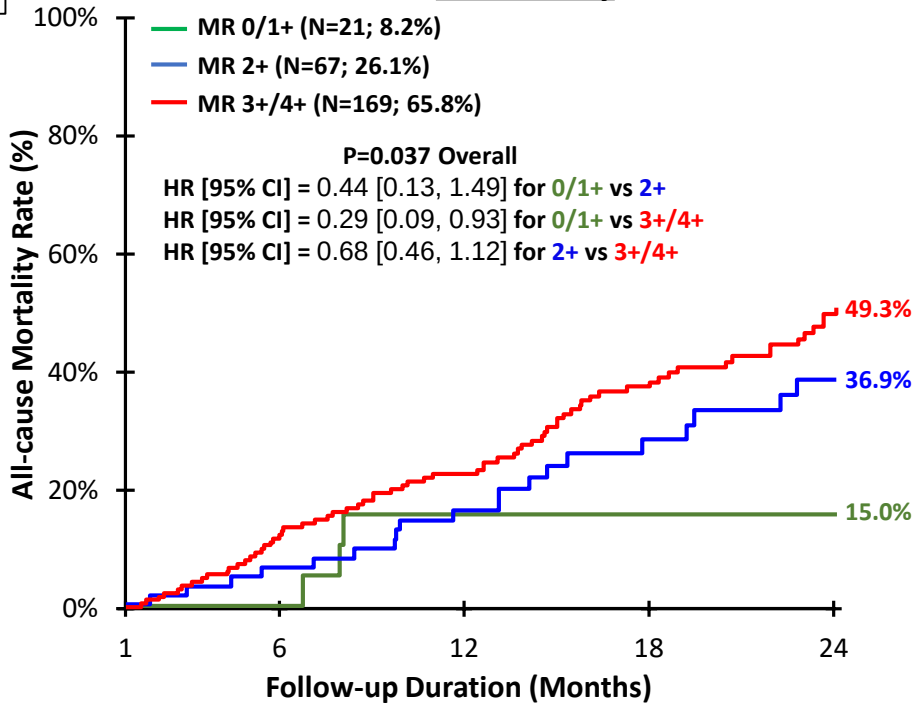
P_{int}=0.55

MitraClip + GDMT



# At Risk					
MR 0/1+	202	191	161	124	82
MR 2+	55	48	45	36	27
MR 3+/4+	20	19	15	11	7

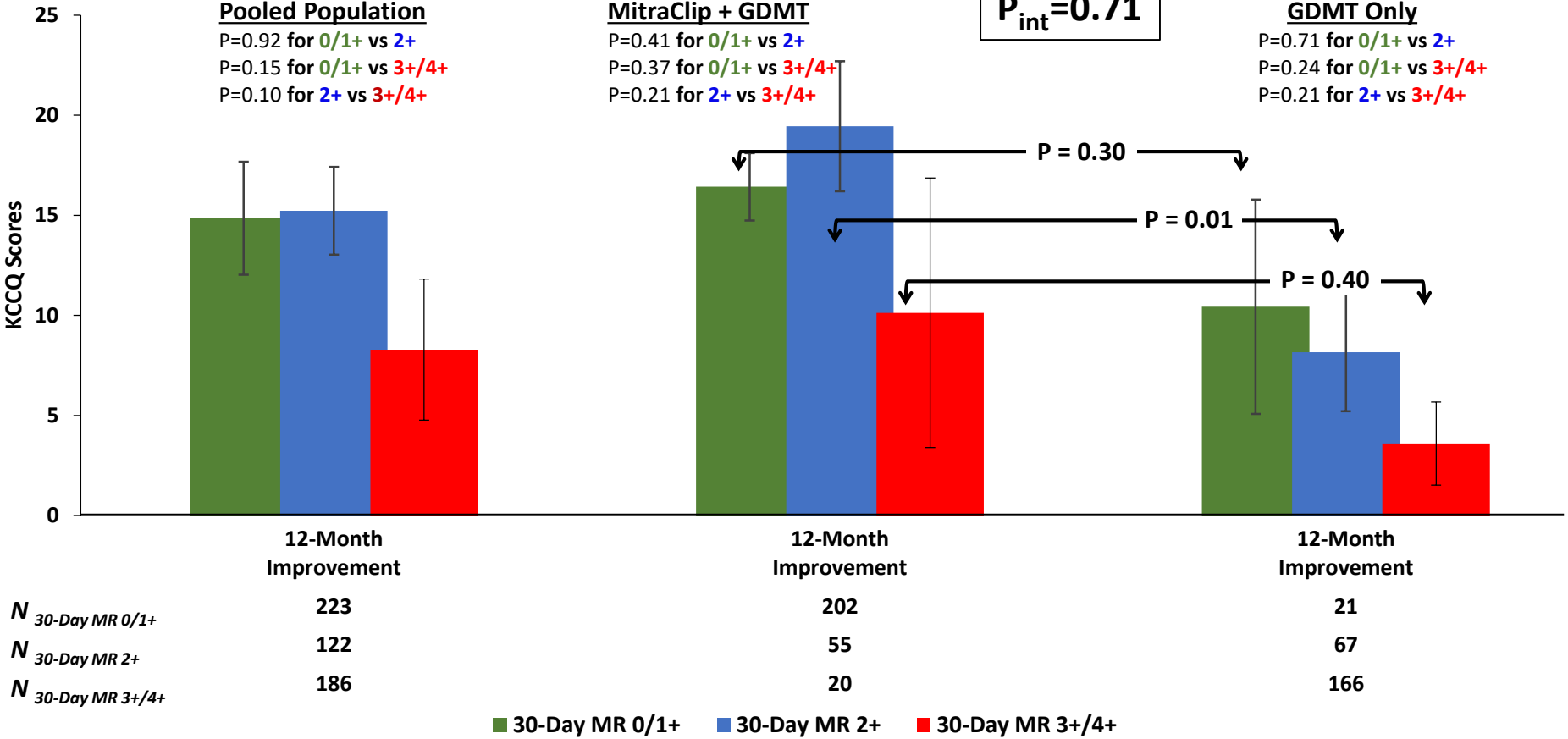
GDMT Only



# At Risk					
MR 0/1+	21	20	16	14	10
MR 2+	67	61	51	31	21
MR 3+/4+	169	145	118	79	47

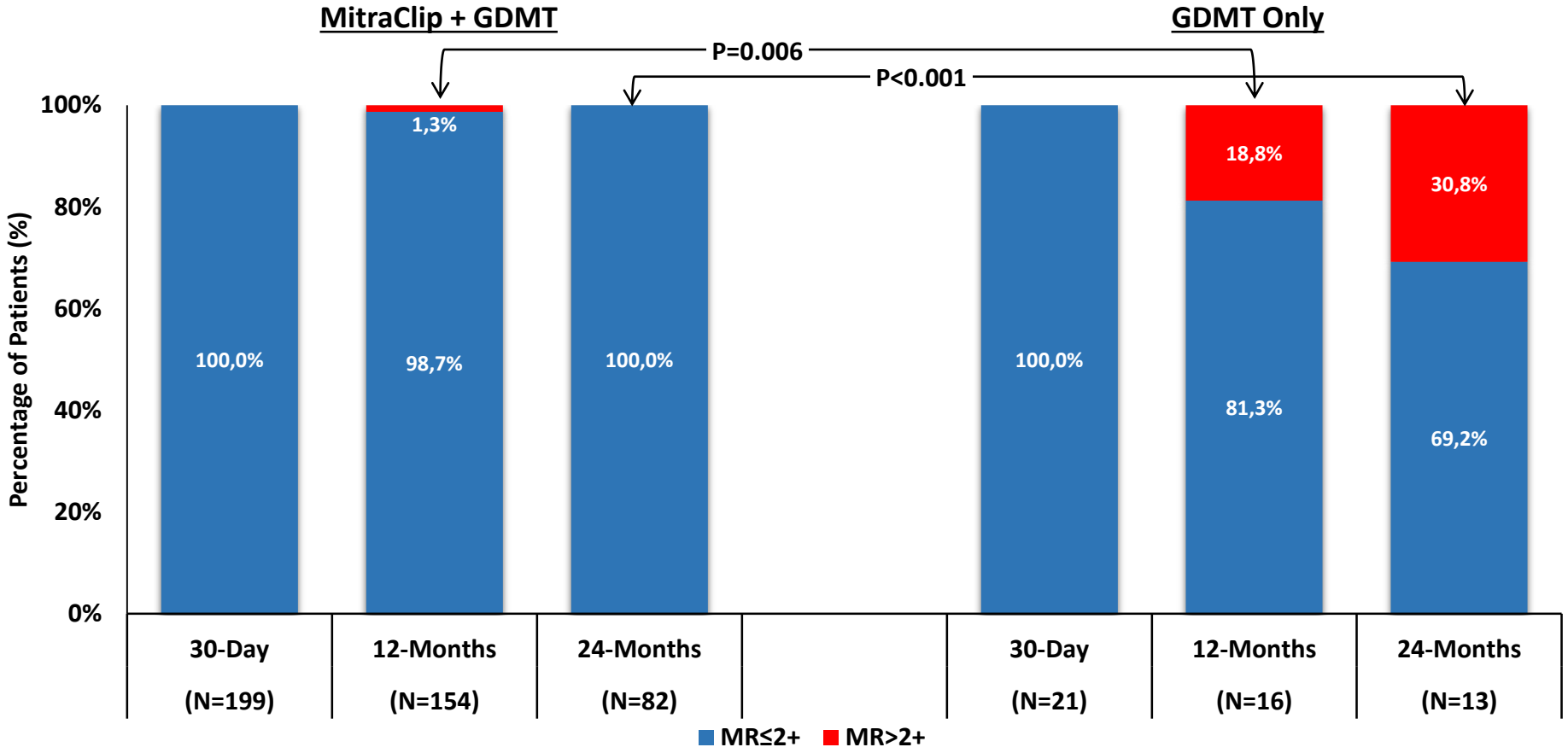
KCCQ Improvement @ 12-Month Stratified by 30-Day MR

Mean ± SE (ANCOVA Model)



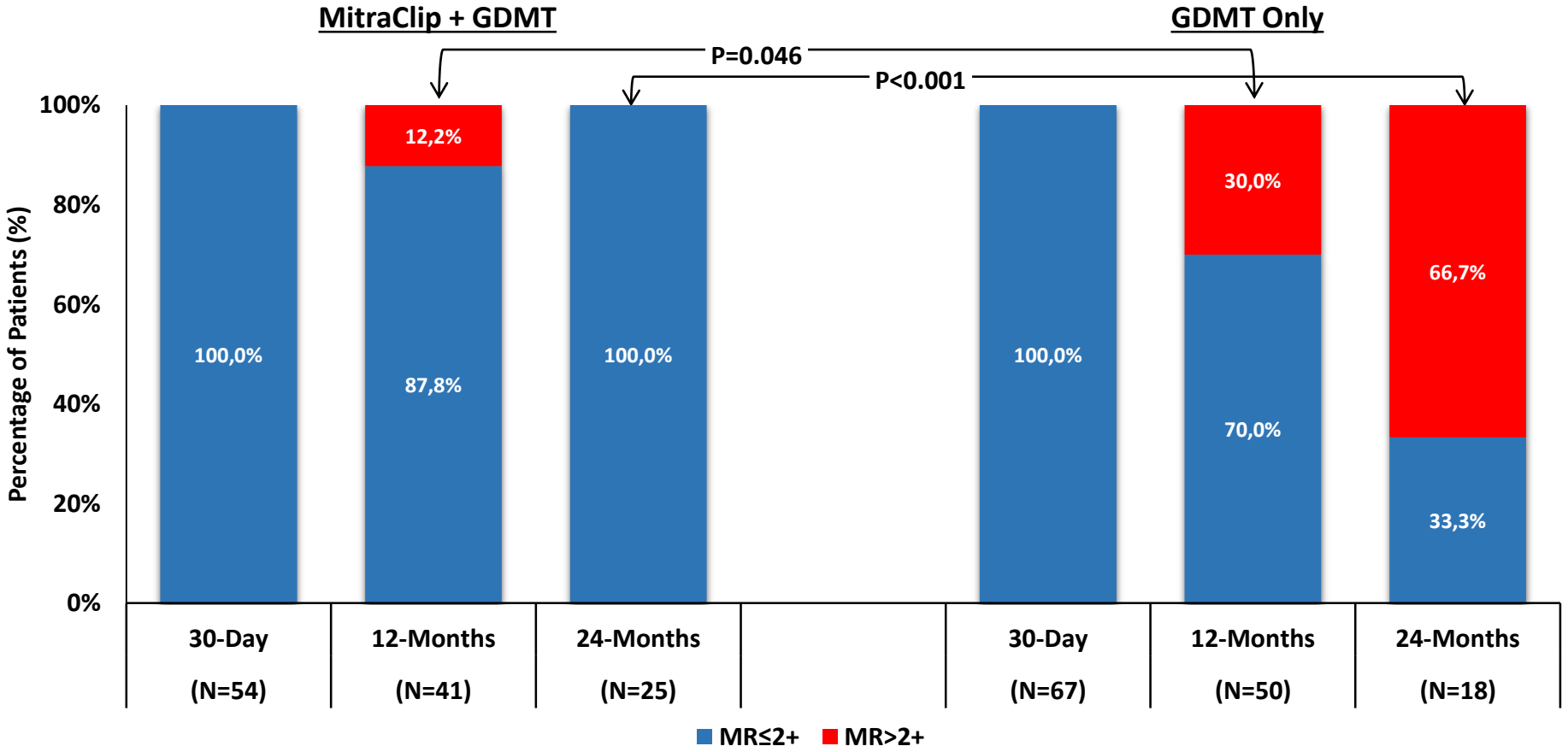
MR Severity

Subgroup: 30 day residual MR ≤1+



MR Severity

Subgroup: 30 day residual MR 2+



Conclusions

- In the COAPT trial, lower residual MR (≤2+) at 30 days in both the MitraClip and GDMT groups was strongly associated with reduced HFH, all-cause mortality and improved quality of life compared with residual MR of 3+/4+.
  - This finding suggests that the greater reduction of MR with the MitraClip compared with GDMT alone underlies the observed clinical benefits from the MitraClip.
- There was no significant difference between achieving 0/1+ and 2+ residual MR on improvements in HFH, all-cause mortality and quality of life at 2 years
- While some pts with GDMT had improved MR at 30 days, many of these pts later had recurrent severe MR. The improvement in MR achieved at 30 days with the MitraClip was significantly more durable