

**The association between early and persistent
microvascular obstruction by CMR and invasive
measures of the microcirculation following
successful PPCI for STEMI.**

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Background:

- Microvascular obstruction (MVO) by CMR is a predictor of poor prognosis following STEMI.
- Traditionally, angiographic measures such as the myocardial blush grade (MBG) at the time of PPCI have been used to assess the microcirculatory flow following restoration of flow to the epicardial infarct related artery.
- The index of microcirculatory resistance (IMR) is an invasive measurement of the microcirculation that has recently been shown to predict poor long-term outcomes with an IMR >40.

Aims: To determine the association between MVO by CMR, and the IMR measured at the time of PPCI in patients with STEMI, and to compare these to an established angiographic measure of the microcirculation (MBG).

Methods

Population:

- 50 patients were prospectively recruited.
- All patients provided informed written consent, the study was approved by ethics committee.

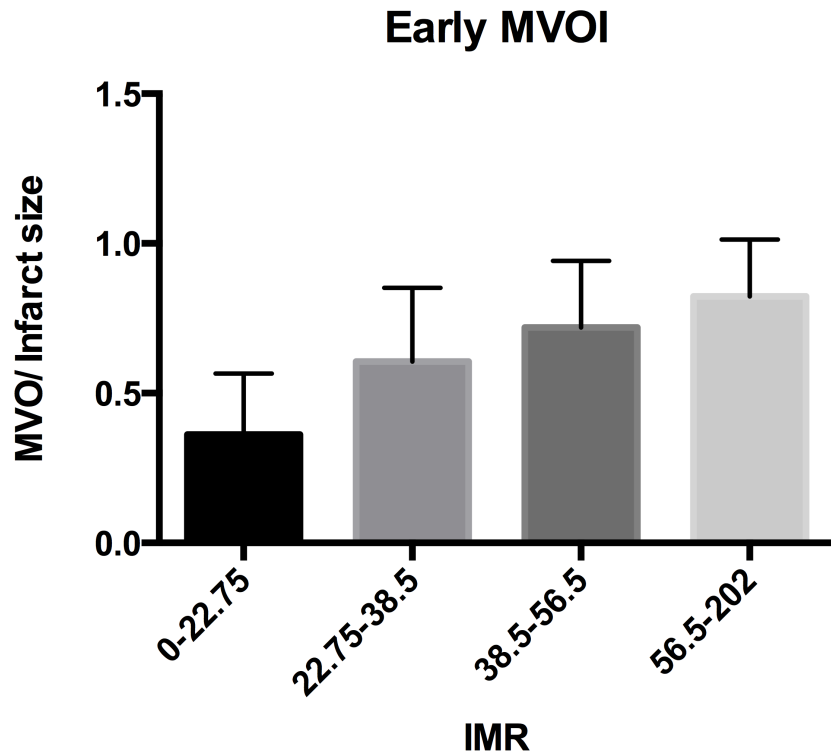
Inclusion Criteria:

- Presentation within 12 hours of STEMI.
- TIMI flow I/0 in the infarct related artery.
- Proceeded with PPCI.

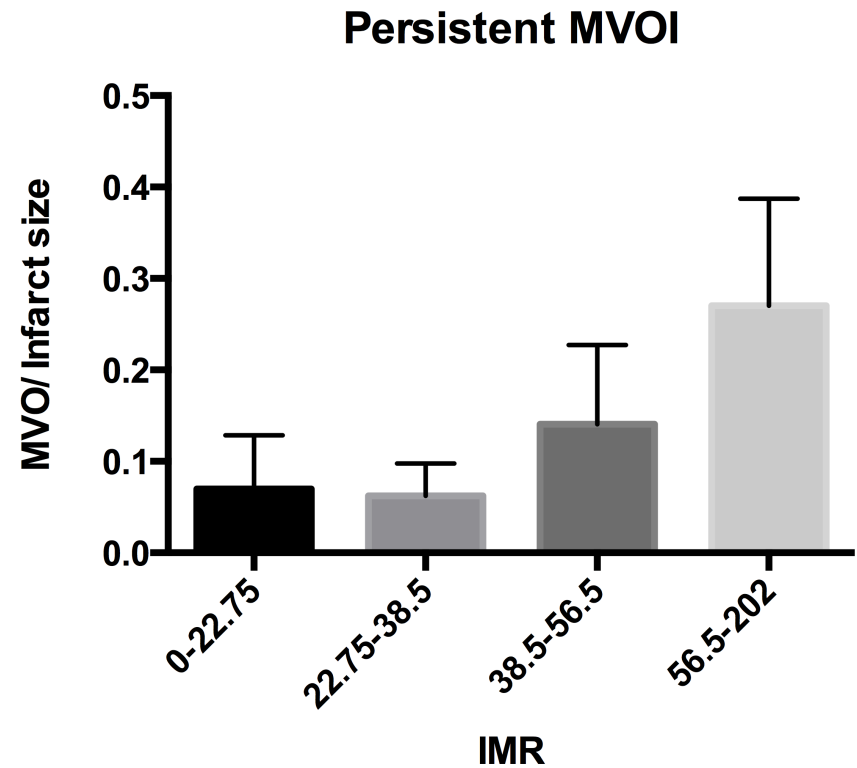
Study Design:

- IMR was performed at maximal hyperaemia using adenosine, and following stent insertion.
- MBG was assessed at the end of PPCI procedure.
- CMR was performed day 2 following STEMI. We used IMR quartiles to investigate an association between MVO and IMR.
- Early MVO was measured on dynamic imaging following contrast.
- Persistent MVO was measured 10 minutes following contrast.

Results 1

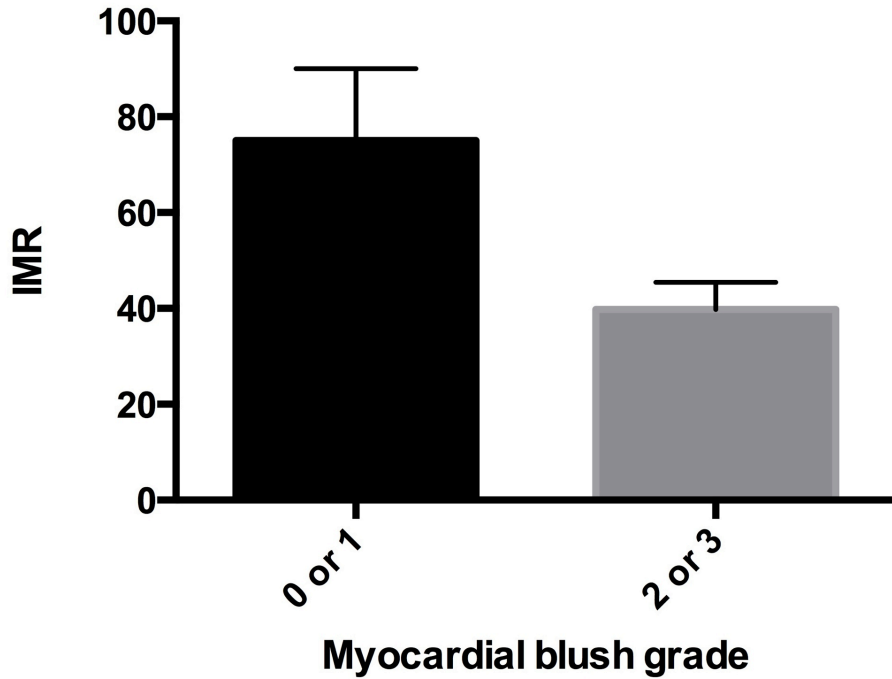


Early MVOI vs IMR: $p=0.02$

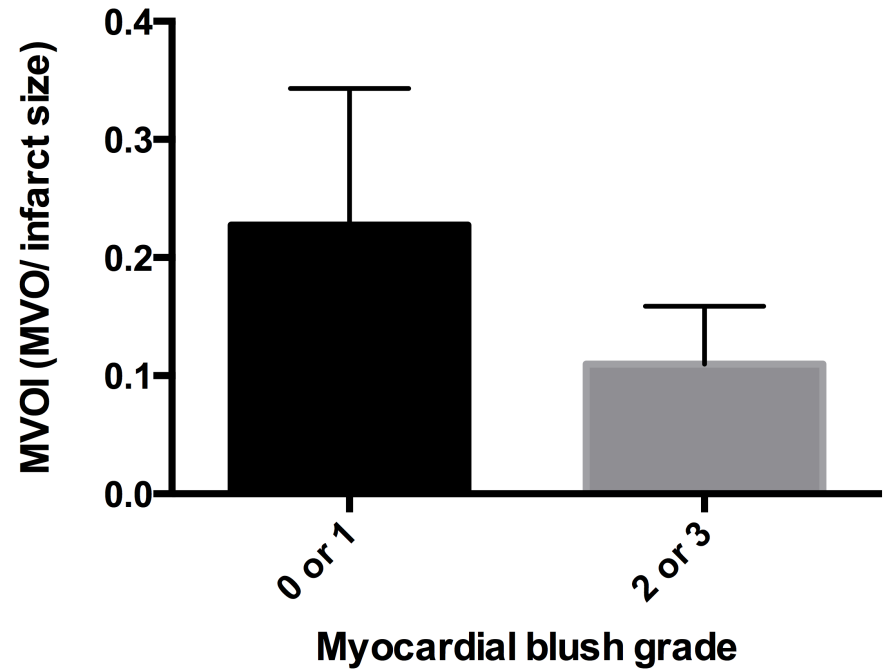


Persistent MVOI vs IMR: $p=0.02$

Results 2



MBG vs IMR: $p=0.03$



MBG vs MVOI: $p=0.03$

Conclusions

- This study provides an invasive functional insight into MVO measured non-invasively by CMR.
- IMR at the time of PPCI can predict the presence and size of MVO day 2 following STEMI.
- MBG is associated with both IMR measured acutely and MVO by CMR.