

Factors Influencing Pain Scores and Opioid Demand after Robotically Assisted Cardiac Surgery

Hasan IS¹, Seese L¹, Deitz R¹, Ashraf F¹, Ogami T¹, Subramaniam K³, Boisen M³, Yoon P^{1,2}, West D^{1,2}, Kaczorowski DF^{1,2}, Sultan I^{1,2}, Bonatti J^{1,2}

¹Department of Cardiothoracic Surgery, ²Heart and Vascular Institute, ³Department of Anesthesiology

BACKGROUND

Introduction of minimally invasive cardiac surgery anticipated the reduction in postoperative pain. Little quantitative data, however, is available in the literature on this effect. This study investigated factors influencing pain scores and opioid demand after robotically assisted cardiac procedures.

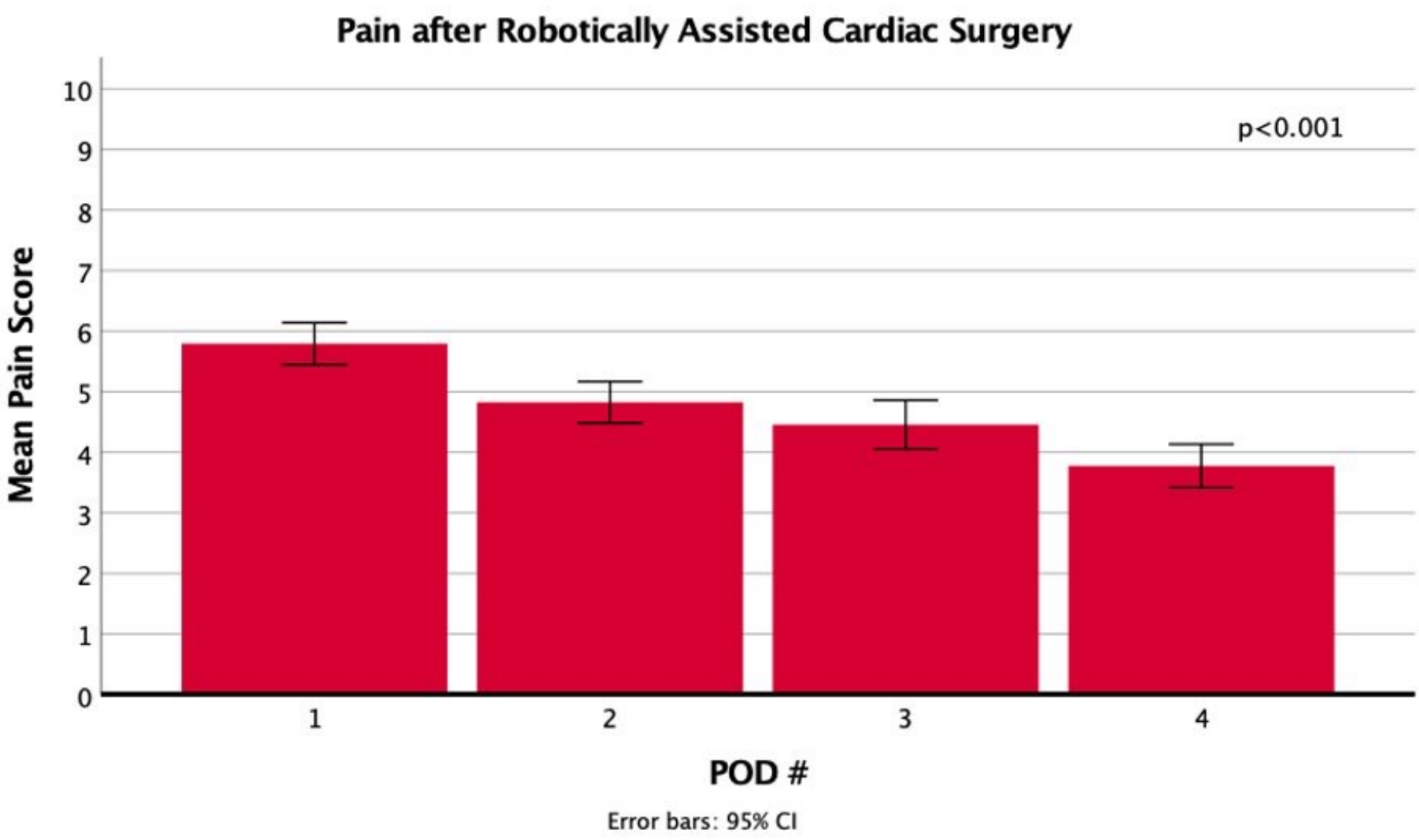
METHODOLOGY

- ❖ Using prospective robotic cardiac surgery and anesthesia databases, we analyzed 75 patients undergoing robotic cardiac surgery (July 2021 to December 2022)
- ❖ Study endpoints were mean cumulative pain scores measured on a 0-10 scale and opioid use on postoperative days (POD) 1 to 4. Opioid utilization during this time was converted to oral morphine equivalence (OME).
- ❖ Patient reported pain scores and OME were correlated with preoperative and intraoperative variables
- ❖ Mean age was 62 ±10.1 years, 71% (53/75) were male, and mean STS risk of mortality was 0.65 ± 0.62%.

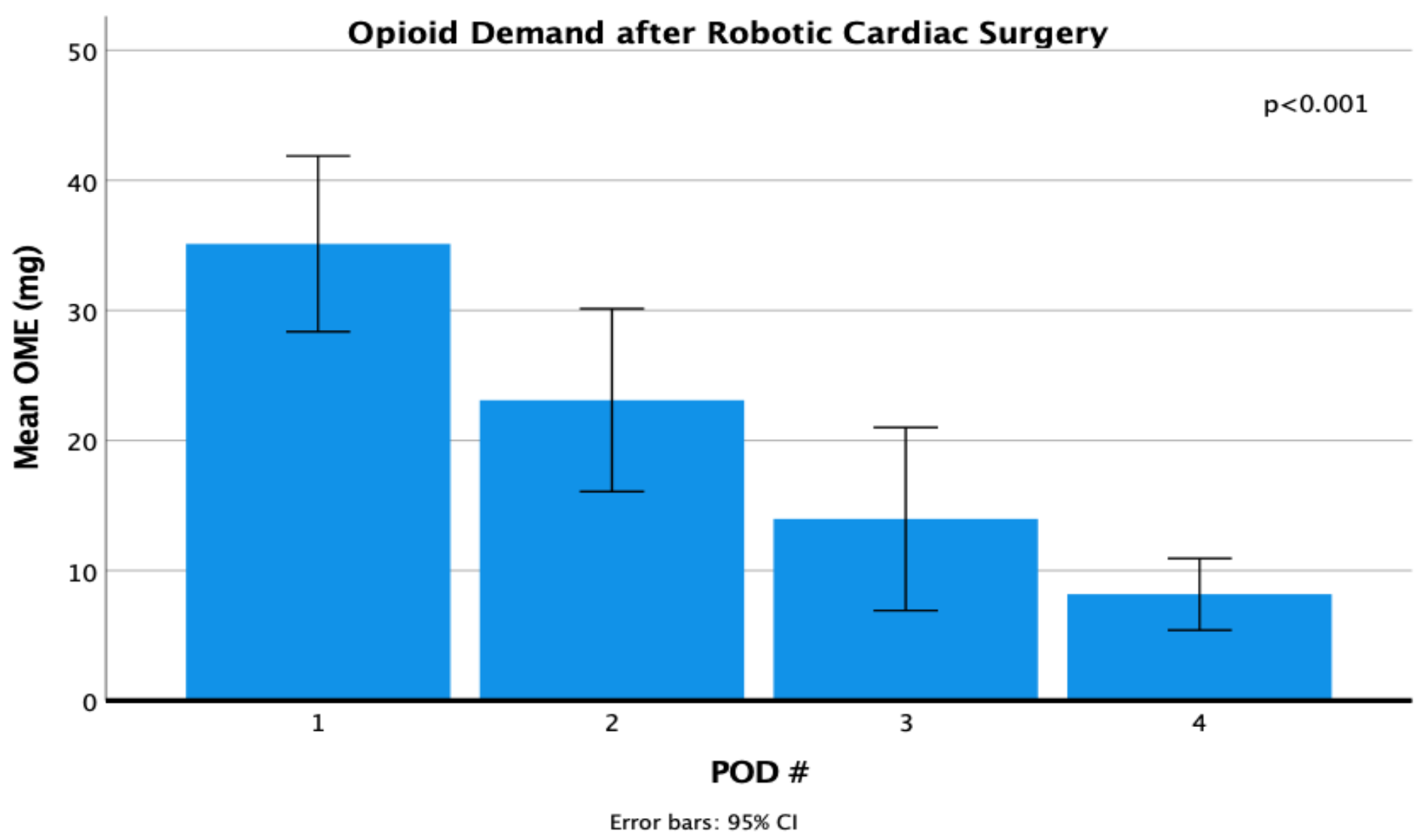
Procedure	N
Mitral valve repair (MVR)	38
Minimally invasive direct coronary artery bypass (MIDCAB)	11
Totally endoscopic coronary bypass grafting (TECAB)	23
Non-valvular surgery	3

RESULTS

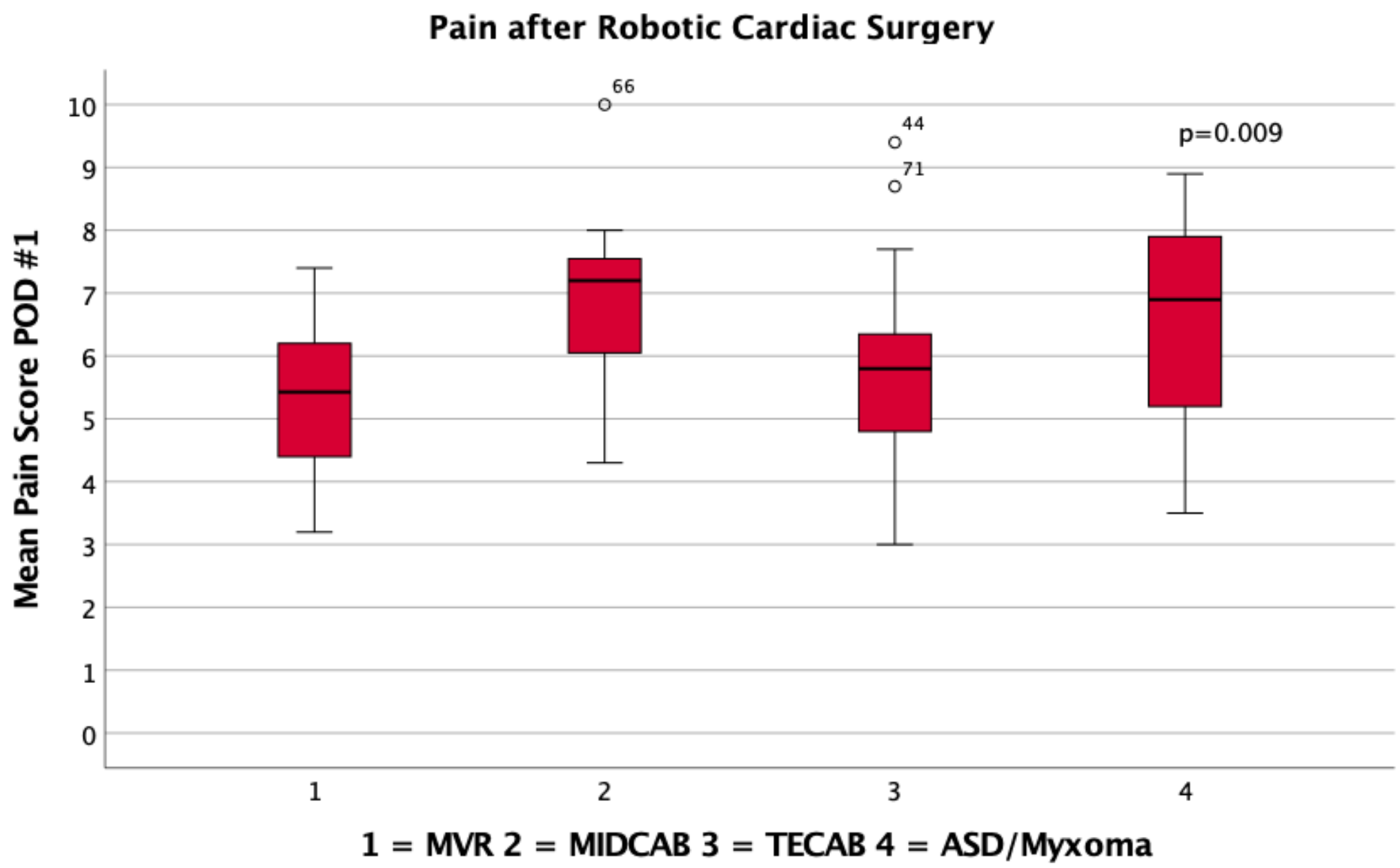
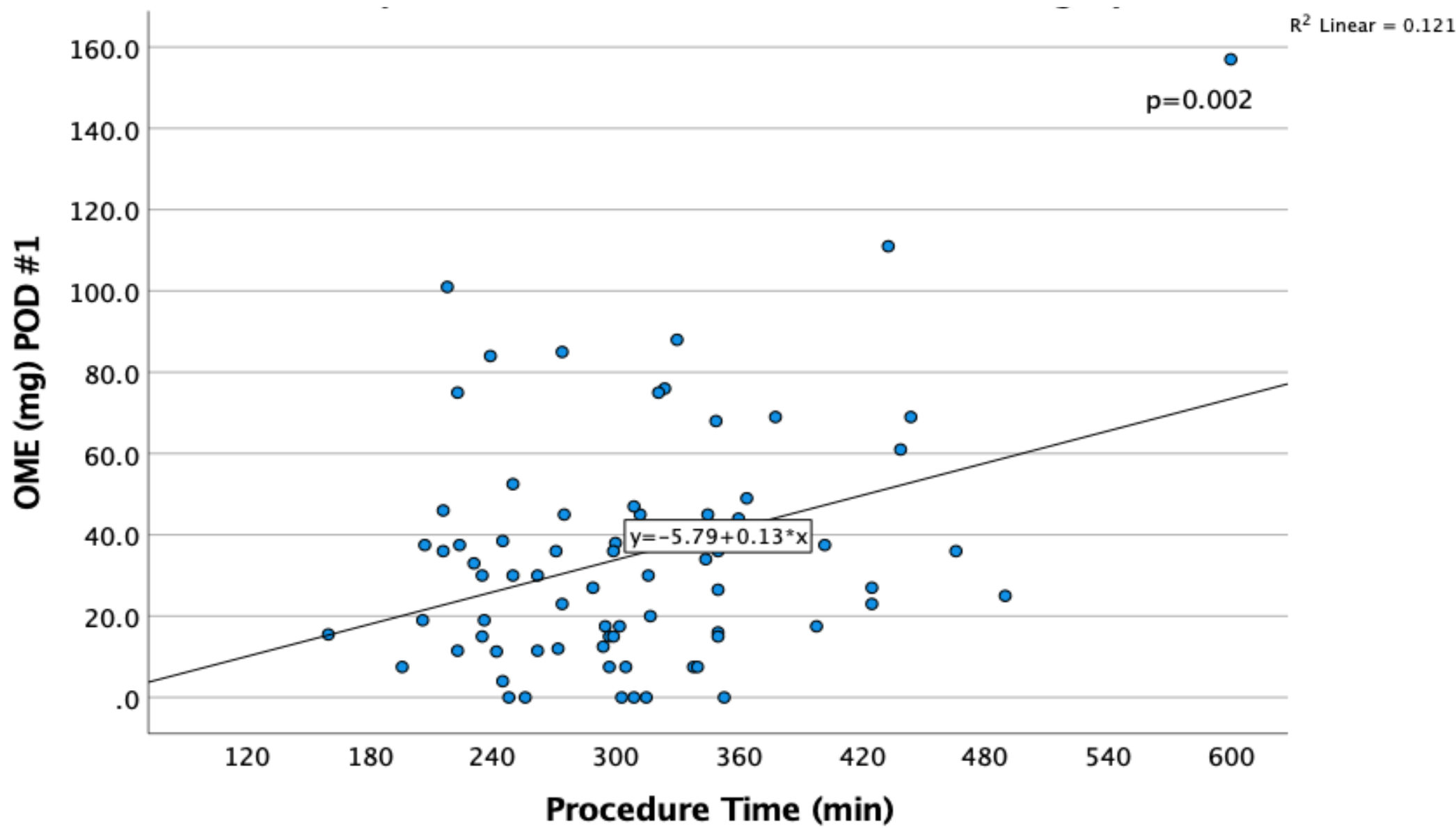
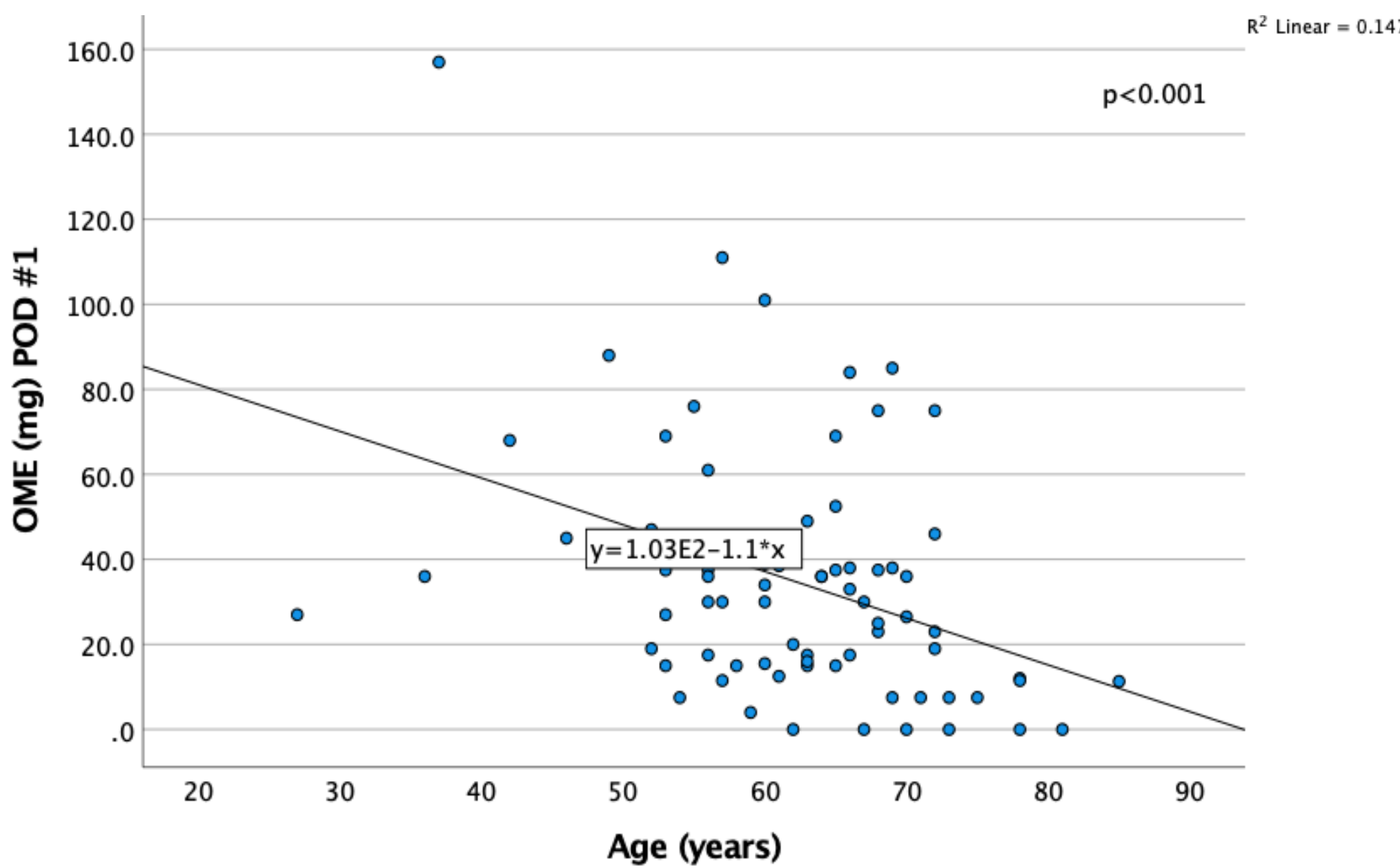
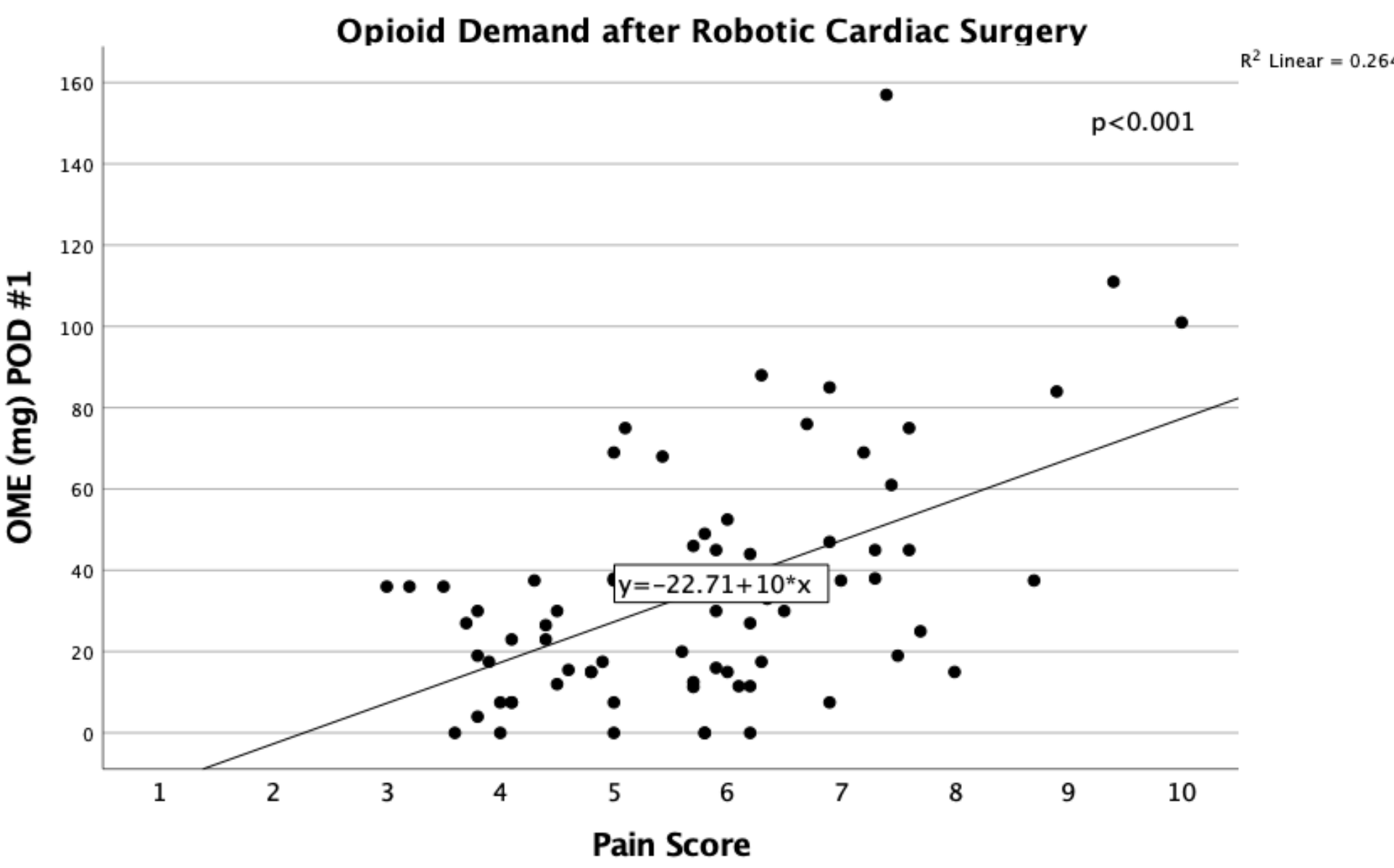
- ❖ Total mean procedure time: 307.9 ± 76.5 minutes; cardiopulmonary bypass time: 118.1 ± 55.7 minutes
- ❖ 39/75 (52%) of patients were extubated in the operating room and 34/75 (45.3%) were extubated within 24 hours



- ❖ Mean pain scores declined from 5.8 (± 1.5) on POD 0 to 3.8 (± 1.6) on POD 4 (p<0.001) (35% reduction)



- ❖ OME fell from 34.9 (SD 29) mg to 8.2 (SD 11.8) mg (77% reduction)



- ❖ Increased pain scores on POD 1 associated with tobacco use (p=0.006) and extubation in the operating room (p=0.017)
- ❖ Opioid utilization higher in younger patients (p<0.001), heavier patients (p=0.033), tobacco use (p=0.01), longer procedure times (p=0.002), and those extubated in the operating room (p<0.001).

CONCLUSION

Pain and opioid consumption correlated and found to be moderate after robotic assisted cardiac surgery but significantly decline within the first 4 postoperative days. Higher pain scores in MIDCAB group compared to other procedures.

Factors influencing both higher pain scores and opioid consumption were smoking and extubation in the operating room. Additionally, young patients and longer procedure times required more opioids.