Intraoperative Hypotension in ASA IV Interventional Radiology Patients: Investigating 30-day Mortality and Adverse Events

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No differences were detected in 30-day mortality, PACU LOS, 30-day unplanned urgent or emergency visits and admissions for ASA IV patients with and without intraoperative hypotension, suggesting that intraoperative hypotension is not associated with worse 30-day outcomes for these patients. Longer anesthesia duration associated with increased odds of 30-day mortality.

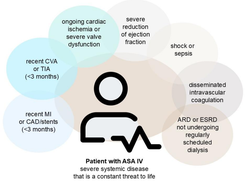
Memorial Sloan Kettering Cancer Center

Source: https://www.anesthesiologynews.com/

Background

- Intraoperative hypotension (IOH) associated with increased risk of major adverse events (AEs): myocardial infarction, acute kidney injury, stroke, and mortality[1]
- American Society of Anesthesiologists (ASA) **physical status IV** patients:
  - vulnerable population due to severe systemic disease[2] and limited physiologic reserve or ability to compensate
  - typically excluded from undergoing procedures at freestanding ambulatory surgery centers (ASCs)[3]
- ASA IV patients receive interventional radiology (IR) procedures for diagnostic, palliative, and therapeutic purposes at Memorial Sloan Kettering Cancer Center (MSK) Monmouth → case-by-case assessment

Objective: **Determine whether IOH is associated with 30-day postoperative mortality and adverse events in ASA IV patients undergoing ambulatory IR procedures at a freestanding outpatient center**



Methods

IRB approved retrospective review of ASA IV patients who underwent MSK Monmouth IR procedures: 1/5/2017 – 12/11/2024

IOH: mean arterial pressure (MAP) <65 mmHg, at least once

Primary outcome: 30-day mortality

Secondary outcomes: post-anesthesia care unit length of stay (PACU LOS), transfers & 30-day unplanned postoperative visits:
- symptom care clinic (SCC) & urgent care clinic (UCC)
- emergency department (ED)
- hospital admissions

Groups: ASA IV patients, IOH vs. no IOH

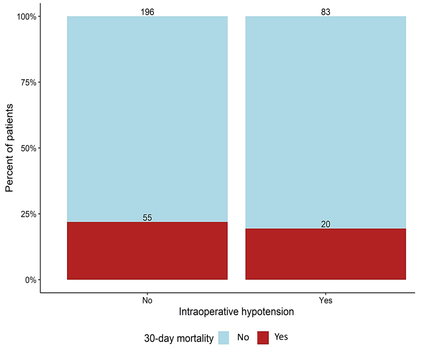


Figure 1: 30-day mortality event between patients who experienced intraoperative hypotension vs. no hypotension

Results

Table 1: Patient and clinical characteristics

Characteristic	Overall N = 354[1]	Intraoperative hypotension No N = 251 (71%)[1]	Intraoperative hypotension Yes N = 103 (29%)[1]
Age at procedure			
Median (Q1, Q3)	68 (59, 76)	68 (59, 76)	68 (59, 76)
Min, Max	19, 94	19, 94	29, 88
Female	200 (56%)	139 (55%)	61 (59%)
Anesthesia duration (minutes)			
Median (Q1, Q3)	44 (37, 55)	44 (36, 54)	47 (39, 58)
Min, Max	20, 113	21, 113	20, 85
Intraoperative propofol	197 (56%)	123 (49%)	74 (72%)
Intraoperative vasopressor[2]	51 (14%)	3 (1.2%)	48 (47%)
Intraoperative hypoxia[3]	60 (17%)	46 (18%)	14 (14%)
Intraoperative tachycardia[4]	88 (25%)	68 (27%)	20 (19%)
Clinically significant perioperative bradycardia[5]	7 (2.0%)	6 (2.4%)	1 (1.0%)

[1] n (%)
[2] Exposure to either ephedrine or phenylephrine in exposure window (five minutes after anesthesia start to anesthesia end)
[3] Intraoperative oxygen saturation (SpO2) <93% for 2 consecutive measurements during exposure window
[4] Intraoperative heart rate >100 beats per minute for 2 consecutive measurements during exposure window
[5] Intraoperative heart rate <50 beats per minute for 2 consecutive measurements during exposure window

- No statistically significant differences were observed in odds of 30-day mortality, PACU LOS, 30-day unplanned urgent care/emergency visits and admissions for ASA IV patients with versus without IOH
- No statistical comparison for transfers due to limited events observed
- 72% of IOH patients received intraoperative propofol compared to 49% of patients without IOH (Table 1)
- Longer anesthesia duration associated with increased odds of 30-day mortality (Table 2)

Table 2: Odds ratio of 30-day mortality for patients who experienced intraoperative hypotension vs. no hypotension estimated from multivariable logistic regression adjusting for listed factors

Characteristic	OR	95% CI	p-value
Intraoperative hypotension			
No	—	—	
Yes	0.80	0.43, 1.42	0.5
Age at procedure	1.00	0.98, 1.02	0.8
Sex (assigned at birth)			
Female	—	—	
Male	0.82	0.48, 1.40	0.5
Intraoperative propofol	0.99	0.58, 1.69	>0.9
Anesthesia duration (minutes)	1.03	1.01, 1.04	0.004

Abbreviations: CI = Confidence Interval; OR = Odds Ratio

Conclusions

- We found that **IOH was not associated with 30-day adverse outcomes** for **ASA IV** patients undergoing **IR procedures** in a freestanding ambulatory surgery center
- Further research should elucidate the relationship between anesthesia length and 30-day mortality in ASA IV patients

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