



V-Fib Arrest After Induction for High-Risk CABG: Should He Have Received an IABP?

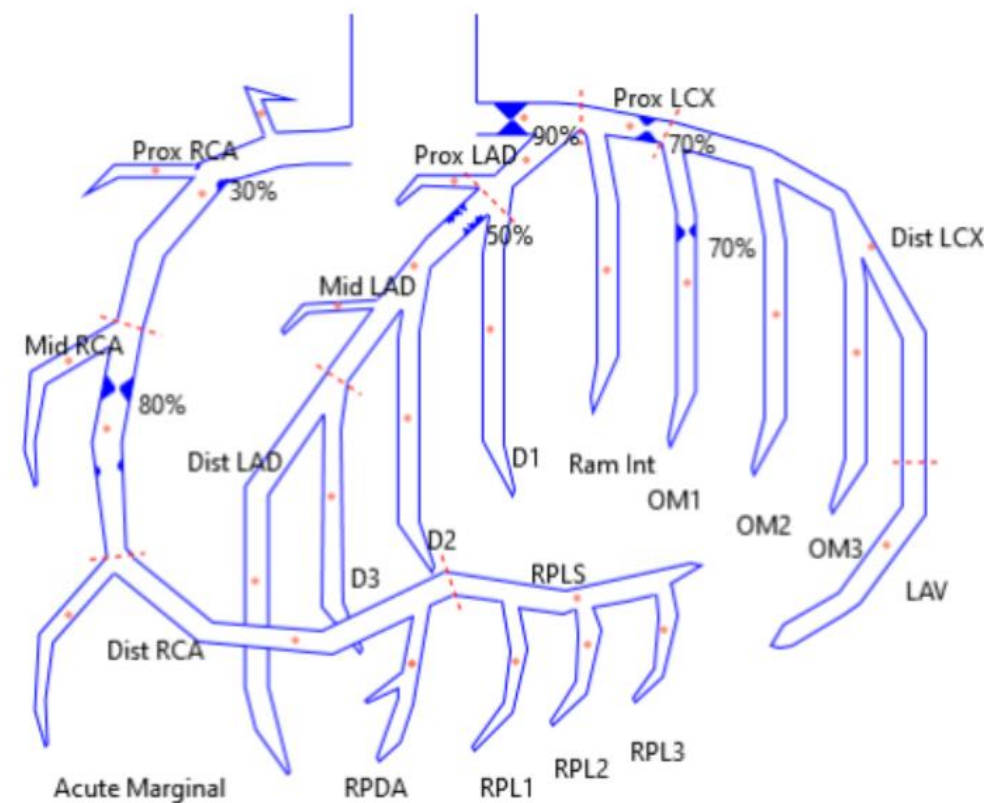
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The Patient

Pre-Op

- 69-year-old male with history of coronary artery disease (moderate three-vessel disease on coronary angiogram in 2012), hypertension, hyperlipidemia, and prior tobacco use
- Presented to ED with chest pain, found to have **NSTEMI**
- Coronary angiogram showed **severe left main disease and RCA disease:**



- Admitted, scheduled for CABG 3 days after presentation

Intra-Op

- Awake A-line placement: pt complains of chest pain, new ST depressions noted
- After induction: wide complex tachycardia → **Vfib arrest → CABG aborted, placed on VA-ECMO**

Should this patient have received an IABP prior to CABG?

Learning Objective

To discuss the role of preoperative intra-aortic balloon pump (IABP) placement in high-risk patients scheduled to undergo coronary artery bypass graft (CABG) surgery.

The Evidence

Notable Meta-Analyses

Meta-Analysis (Year)	Studies Included	Number of Patients	Results	Limitations
Deppe et al. (2017) ¹	- 7 RCT's, 16 observational studies - Compare prophylactic IABP prior to CABG with no IABP	9,212	- Reduced mortality, MI, renal failure - Reduced hospital and ICU length of stay	- “High risk” definition varies - Outcomes varied
Poirier et al. (2016) ²	- 11 RCT's, 22 observational studies - Compare prophylactic IABP prior to CABG with no IABP	46,067	- Reduced in-hospital and 30-day mortality - Reduced hospital and ICU length of stay - Severe IABP-related complications in 3%	- 5 RCT's: same investigators at single institution - “High risk” definition varied - Rate of IABP crossover 13-100% - No clear benefit in observational studies
Hu et al. (2024) ³	- 13 RCT's - Excluded patients with cardiogenic shock	1,657	- Reduced in-hospital mortality - Reduced major adverse cardiac and cerebral events - Reduced ICU length of stay	- 5 RCT's: same investigators at single institution - “High risk” definition varied

Notable RCT's

RCT (Year)	Study Type	# of Patients	Patient Population	Results	Limitations
Christenson et al. (1997) ⁴	RCT	52	High-risk CABG – randomized to IABP vs no IABP	- Decreased in-hospital mortality - Decreased ICU length of stay	- Small, single center
SHOCK II (2012) ⁵	RCT	600	Hx MI with cardiogenic shock expected to undergo early PCI or CABG – randomized to IABP vs no IABP	- No difference in 30-day mortality - No difference in time to hemodynamic stability, ICU length of stay, renal function, major bleeding, peripheral ischemic complications	- Heterogeneous – PCI or CABG
PINBALL Pilot Feasibility Trial (2020) ⁶	RCT (Feasibility Study)	24	Listed for CABG, impaired LV function + other risk factor for low cardiac output	- No difference in 6-month mortality - No difference in hospital/ICU length of stay - No IABP-related complications	- Recruitment rate insufficient for planned full RCT

Discussion

- Lack of large, multicenter RCT's comparing prophylactic IABP to no IABP prior to high-risk CABG**
- Existing studies: heterogeneous definitions of “high risk”
- Our patient = “high risk” under most existing studies**
- IABP-related complications rare but present
- Overall, trend towards IABP being beneficial in high-risk patients: reduced mortality, reduced ICU stay**
- IABP and ECMO?

Patient Outcome

- 2 days post-VA-ECMO, successfully underwent CABGx3 and ECMO decannulation
- Post-op: uneventful ICU stay, discharged home
- 3 days post-discharge: admitted for saddle PE, significant LE DVT burden; managed medically, discharged home again

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