When to Call Code H: Challenges to Managing Acute ST Depressions in the Intraoperative Setting

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Case Description:
A 56 year old Caucasian male on the renal transplant list is notified that a cadaveric kidney is available and ready for transplantation immediately. His past medical history is significant for hypertension, hyperlipidemia, end stage renal disease secondary to type I diabetes, and coronary artery disease with a 3 vessel coronary artery bypass graft done 5 years prior. He presents to the hospital where preoperative assessment reveals no findings suggestive of ischemia. He denies chest pain and shortness of breath upon exertion and can achieve greater than 4 metabolic equivalents. His ECG demonstrates no acute changes from previous ECGs and therefore he urgently proceeds to the operating room without additional testing. In the operating room, he is induced and central venous access and radial arterial lines are placed without complications. He is tolerating the procedure well when suddenly, approximately 1.5 hours into the procedure, deep ST depressions and inverted T waves are noted in inferior leads II, III, and aVF.

Discussion:
Early coronary reperfusion has been established as the optimal treatment for acute ST elevation myocardial infarction1. A door to balloon time goal of 90 minutes has been set forth by the American College of Cardiology1. Unlike the classic Code H, treatment of acute NSTEMI is not as precisely delineated. NSTEMI can be managed in the acute setting by early invasive intervention with PCI or CABG or can be managed conservatively with optimized medical therapy and control of hemodynamics. To further complicate treatment, surgery under general anesthesia presents a variety of unique challenges for the anesthesia provider. Namely, thrombolytic therapy cannot be initiated and signs and symptoms cannot be assessed. Therefore, the practitioner must make decisions based on hemodynamics, ECG readings, and biomarkers alone.

Conclusion:
Management of Acute Coronary Syndrome intraoperatively is a relatively rare event during non-cardiac surgery. It presents a variety of challenges to the anesthesia provider and therefore a
review of its management would be beneficial to most practitioners. This case presentation is intended to familiarize the anesthesiologist with possible treatment options and to review the physiological variables that must be considered when treating this emergency.