

OCCURRENCE OF SYMPTOMATIC HYPOTENSION IN PATIENTS ON ENHANCED RECOVERY AFTER SURGERY PROTOCOL

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Introduction: Enhanced Recovery After Surgery (ERAS) initiatives have been implemented in many hospitals with the aim to improve post-operative function and recovery. Although goal directed fluid therapy is a cornerstone of many ERAS programs, we have noted an increased occurrence of post-operative symptomatic hypotension. We sought to compare the outcomes of patients undergoing abdominal based free flap breast reconstruction before and after implementation of ERAS protocol with a specific focus on fluid administration and post-operative hypotension.

Methods: This is an IRB approved retrospective chart review. Subjects were defined as those who have undergone abdominal free flap breast reconstruction at Duke University Hospital. Patient demographics, perioperative surgical and anesthesia data were collected and summarized. Symptomatic hypotension was defined as mean arterial pressure below 80% of baseline as well as clinician documented symptoms including dizziness and light headedness.

Results: There were 100 and 145 patients in the control and ERAS groups respectively. The ERAS group overall had a significantly reduced length of stay (LOS) (4 v. 4.5 days, $p<0.005$) and 48hr post-operative morphine equivalent dose (89 v. 208, $p<0.001$), as well as earlier return of bowel function (2 v. 3.3 days, $p<0.001$). However, in the ERAS population there was significantly less fluid administration during surgery (3.5L v. 4.5L, $p<0.0001$) and more time spent intra-operatively below 80% of their baseline mean arterial pressure (18% v. 32%, $p<0.005$). Post operatively, patients on ERAS protocol received more fluid boluses (47/145 v. 28/100, $p<0.001$) and those who received bolus had an increased LOS (3.8 v. 4.4 days, $p<0.005$) compared to those who did not. ERAS patients also had a significantly higher rate of symptomatic hypotension post operatively (29/145 v. 4/100, $p<0.0005$). There was no difference in blood loss (180 ml v. 188 ml, $p=0.57$), hemoglobin (9.9 v. 10.1 g/dL, $p=0.18$), creatinine (0.85 v. 0.79 mg/dL, $p=0.16$), flap loss (3/145 ERAS v. 1/100 control, $p=0.52$) or 30-day readmission (16/145 ERAS v. 11/100 control, $p=0.99$).

Conclusion: This is the largest series to date. Implementation of an ERAS protocol for abdominal free flap breast reconstruction was associated with significantly reduced LOS, resulting in a significant decrease in cost to the healthcare system, as well as decreased narcotic pain medication and earlier return of bowel function. However, this protocol was also associated with significantly higher rate of post-operative symptomatic hypotension. Patients that developed this clinical finding spent more time intraoperatively below 80% of their baseline mean arterial pressure and required more fluid bolus post operatively suggesting under resuscitation. Current goal directed fluid resuscitation needs further refinement to avoid the clinical picture of symptomatic hypotension with the constellation of findings described here.

Comment [MM1]: We had to exclude 45 patients from the control group because we did not have intraoperative data from those patients. Anesthesia records were kept in a program called OR view that we do not have access to and according to Tom Hopkins there aren't continuous blood pressure recordings so it would not be useful.

Comment [SHM2]: How about intra-op urine output? Perhaps you could compare I's and O's for each group, look at intra-op and POD1 and POD2 and POD3.

Comment [MM3R2]: We did not collect UOP data as nursing charting wasn't reliable post-op, we did however also collect post op occurrence <80% of baseline MAP.

Comment [SHM4]: Also need something about heart rate. Probably some kind of mean HR for intra-op and post-op D 1, 2 and 3 periods.

Comment [MM5R4]: We did not collect HR, the thinking was that this could be reflective of pain as opposed to fluid status so we went with the MAP. We could however go back and get this data.