Conservative Fluid Management as a Component of an Enhanced Recovery Protocol

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Background:
Enhanced Recovery After Surgery (ERAS) represents a multidisciplinary approach to perioperative care designed to improve recovery by minimizing organ dysfunction and the physiologic stress response. Goal directed fluid therapy (GDFT) is an integral component to intraoperative management and is designed to limit complications associated with hyper and hypovolemia. Although advanced stroke volume and pulse pressure monitoring devices are available, it is unclear if their cost is warranted in all cases. Rather than using these devices, our protocols specify that fluids be placed on a pump in the preoperative area, and remain at a specific flow rate during the entirety of the perioperative period.

This retrospective chart review compared perioperative fluid balance (delivery, loss, and requirements) in colorectal surgery patients before and after ERAS implementation. Secondary outcomes included assessments of length of stay and 30 day readmission.

Methods:
338 consecutive patients from our colorectal ERAS registry were chosen for data analysis. A similarly sized cohort of pre-ERAS patients were chosen for comparison. Data points included intraoperative fluid administration and urine output/blood loss, case duration, and demographic data including weight and age. Other outcome variables included 24 hour postoperative fluid requirements, length of stay, and 30d readmission.

Results:
See table.

Discussion:
The results of our study demonstrate that the ERAS group received on average 675.62mL less IV fluids during the intraoperative period than the pre-ERAS group (p=.0039). Weight differences and time under anesthesia were not significantly different (p=0.95 and 0.21 respectively). This did not correlate with a statistically significant difference in postoperative fluid requirement (p=0.41). Postoperative length of stay was 2 days shorter in the ERAS group (p=0.023) and readmissions were reduced by one third.

The ERAS data presented correlate with less intraoperative IV fluid administration, no impact on 24 hour postoperative fluid requirements, decreased length of hospital stay, and reduced 30 day readmissions. Although it is unclear how much of an impact these fluid reductions had on measured
outcome improvements, they represent a simple and cost effective means of reducing fluid administration variability in a protocolized care model.