

# UOF Impact of Glucose Concentration of Perfusate on Perioperative Outcomes in Patients Undergoing Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy

Phillip T. Lindsey, M.S.<sup>1</sup>, Robert C.G. Martin II, M.D.<sup>1</sup>, Charles R. Scoggins, M.D.<sup>1</sup>, Prejesh Philips, M.D.<sup>1</sup>, Bryce M. Marshall<sup>1</sup>, Toni S. Carter<sup>1</sup>, Michael E. Egger, M.D.<sup>1</sup>  
 University of Louisville School of Medicine<sup>1</sup>

## Introduction

- Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) is commonly used to treat peritoneal surface malignancies.
- The procedure carries a high rate of morbidity and prolonged recovery.
- Previous work evaluating direct peritoneal resuscitation with dextrose-containing peritoneal dialysate in trauma settings has shown favorable impact on bowel edema, intestinal blood flow, and functional recovery.
- In 2015 there was a practice shift from a 1.5% dextrose perfusion solution (low-dextrose) to a 2.5% solution (high-dextrose).

## Hypothesis

- The higher concentration dextrose perfusate (mirroring a peritoneal dialysate solution) will be associated with faster return of bowel function and fewer complications.

## Methods

- This was a single center retrospective chart review identifying patients undergoing CRS/HIPEC from 2008 to 2019.
- Perioperative outcomes, including time to return of bowel function and diet, length of stay (LOS), and perioperative complications were compared.
- Disease burden (assessed by peritoneal carcinomatosis index) and degree of debulking were compared using prospectively recorded standardized assessments.
- Peak intraoperative and daily postoperative glucose levels were recorded.
- Comparisons were made using chi square test, Fisher's exact test, Student's t-test, or Wilcoxon rank sum test. Repeated measures ANOVA used to compare differences in post-op glucose levels.

## Results

**Table 1. Preoperative Variables**

	1.5% (n=73)	2.5% (n=24)	P value
Age, median (IQR)	58 (48-66)	56.5 (47.5-68)	0.86
PreOp Albumin, median (IQR)	4.1 (3.8-4.3)	4.2 (3.9-4.4)	0.34
PreOp Hemoglobin, median (IQR)	12.8 (12.0-13.9)	12.4 (11.4-13.7)	0.25
Preop Glucose, median (IQR)	92 (83-107)	99 (92.5-115)	0.06
Hypertension	41 (56.2%)	7 (29.2%)	0.02
Diabetes	8 (11.0%)	2 (8.3%)	1.0
Preop Insulin	5 (6.9%)	0	0.33
Any Preop Comorbidity	43 (58.9%)	9 (37.5%)	0.07
Previous Surgery	70 (95.9%)	24 (100%)	0.57
Prior Chemo	43 (58.9%)	15 (62.5%)	0.76
Diagnosis			0.86
Appendiceal	26 (35.6%)	10 (41.7%)	
Colorectal	33 (45.2%)	10 (41.7%)	
Other	14 (19.2%)	4 (16.7%)	

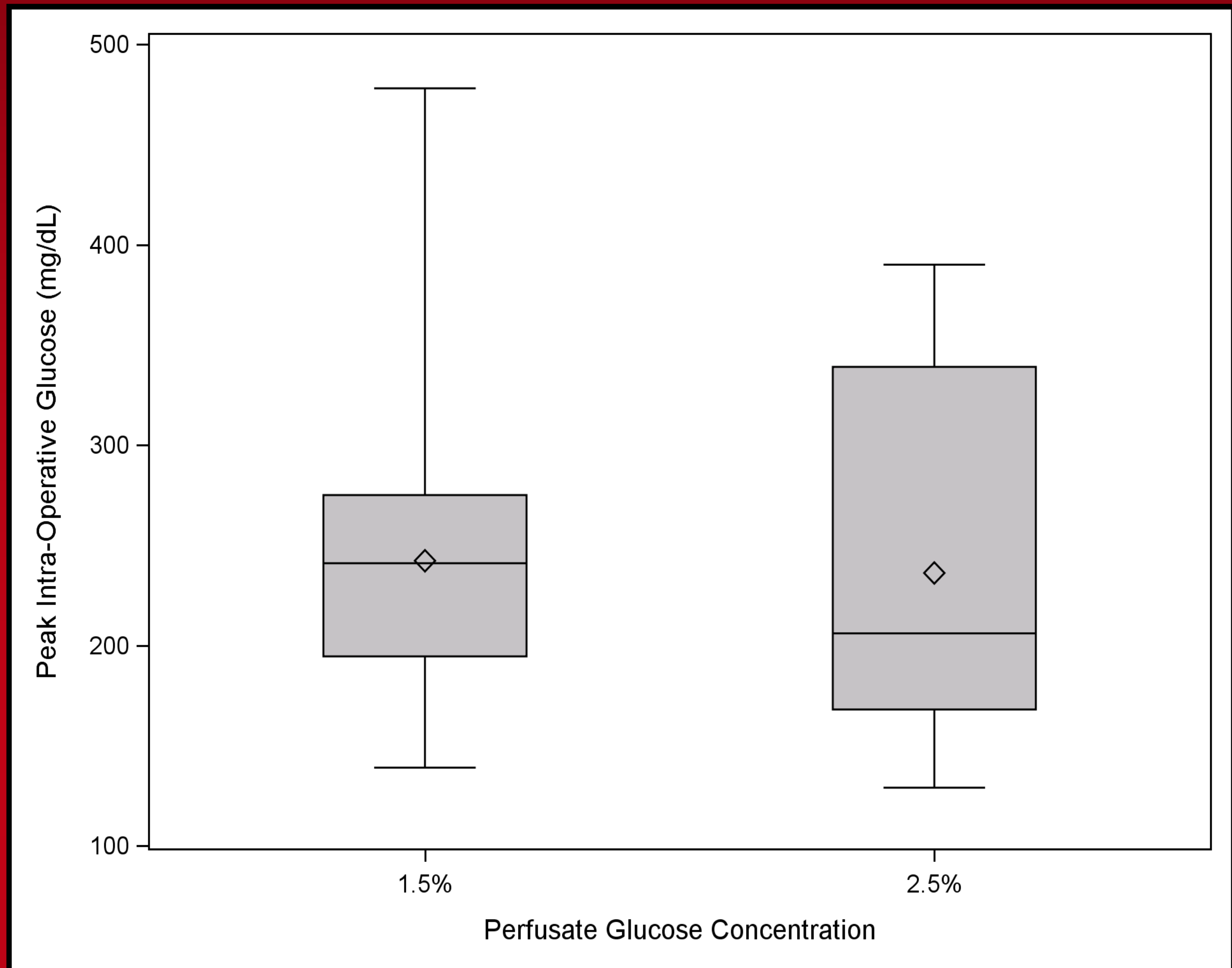
**Table 2. Operative Factors**

	1.5% (n=73)	2.5% (n=24)	P value
Operative time, minutes, median (IQR)	341 (300-387)	303.5 (270-371.5)	0.23
PCI, median (IQR)	9 (5-14)	6 (2.5-14)	0.23
Number of organs resected, median (IQR)	5 (3-6)	4 (4-5)	0.89
PCI > 15	14 (19.2%)	4 (16.7%)	1.0
Perfusion Base			0.44
Mitomycin	34 (46.6%)	13 (54.2%)	
Oxaliplatin	34 (46.6%)	8 (33.3%)	
Other	5 (6.9%)	3 (12.5%)	
Perfusion Time 90 minutes	64 (87.7%)	23 (95.6%)	0.44

**Table 3. Postoperative Outcomes**

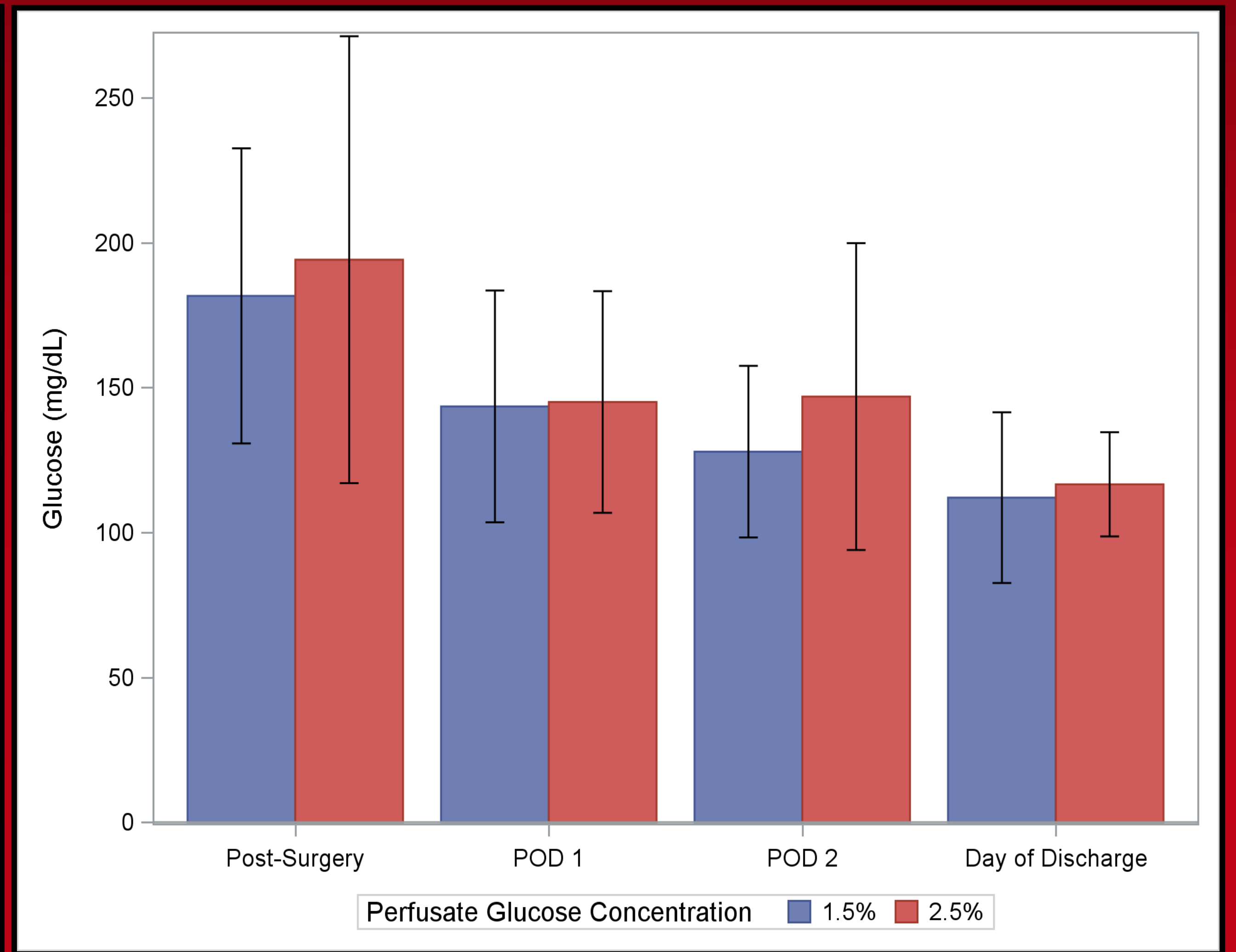
	1.5% (n=73)	2.5% (n=24)	P value
Length of Stay, days, median (IQR)	12 (9-17)	10 (8-15)	0.29
Return of GI function, days, median (IQR)	6 (5-7)	6 (4-9)	0.87
Days to Clear Liquids, median (IQR)	7 (6-10)	7 (6-11.5)	0.96
Days with NG tube, median (IQR)	6 (5-7)	6 (4.5-7)	0.89
Any Complication	36 (49.3%)	5 (20.8%)	0.0143
Infectious Complication	22 (30.1%)	4 (16.7%)	0.20
ICU stay, n	34 (46.6%)	6 (25.0%)	0.06
Readmissions, n	15 (20.6%)	4 (16.7%)	0.68
90 day Mortality	2 (2.7%)	1 (4.2%)	1.0

**Figure 1.**



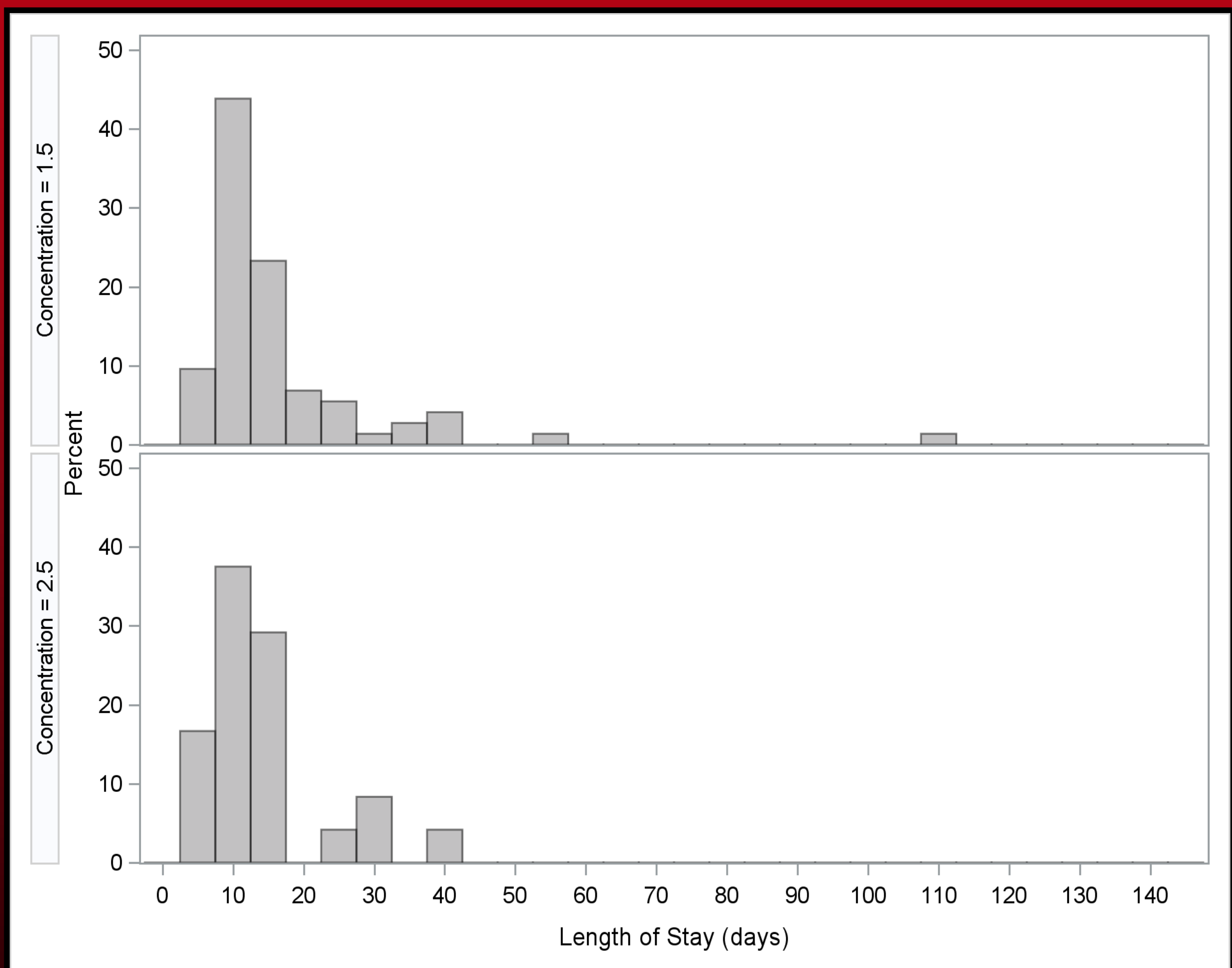
**Figure 1. Peak Intra-operative Glucose Concentrations by Perfusate Glucose Concentration (p=0.84)**

**Figure 2.**



**Figure 2. Average Glucose Levels After CRS/HIPEC with Either 1.5% or 2.5% Glucose Perfusate. Error bars represent standard deviation, repeated measures ANOVA (p = 0.18).**

**Figure 3.**



**Figure 3. Length of Stay by Perfusate Concentration.**

## Conclusions

- Use of 2.5% dextrose-containing perfusate with HIPEC administration appears safe for CRS/HIPEC operations.
- The higher dextrose solution does not negatively impact intra- or postoperative glucose levels and may be associated with a decreased risk of complications.

## Acknowledgements

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