

# Are We Optimizing Nutrition Enough Prior to Hartmann's Reversal?

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## Background

- Hartmann's reversal (HR) is an elective procedure with complication rates up to 40% and mortality up to 3%
- Malnourishment is underdiagnosed and associated with worse GI and oncologic surgical outcomes
- Variable methods exist to measure nutritional status such as albumin, weight loss, or BMI

## Objective

To further evaluate the impact of malnutrition on postoperative outcomes in HR

## Methods

- Retrospective of ACS-NSQIP database from 2012-2019
- Primary Outcome of Interest
  - Mortality
- Secondary Outcomes
  - Wound Infection
  - Reoperation
  - Readmission
- Composite variable to define malnutrition
  - Albumin < 3.5 g/dL
  - BMI < 18.5 kg/m<sup>2</sup>
  - > 10% body weight loss in past 6 months

**Table 1. Demographics for Patients Undergoing Hartmann's Reversal by Nourishment Status.**

Variables	n=8,878	Well Nourished n=7116	Malnourished n=1762	
Age (mean ± SD, years)	59.01±14.07	58.76±14.03	60.06±14.21	.001
Sex (Male %)	4515 (50.9%)	3707 (52.1%)	808 (45.9%)	<.001
BMI (mean ± SD, kg/m <sup>2</sup> )	28.55±6.51	28.74±6.20	27.78 ± 7.59	<.001
Preoperative Albumin	3.98± .55	4.15±.36	3.25± .59	.000
Indication (%)				
Diverticulitis	688 (7.7%)	560 (7.9%)	128 (7.3%)	
CRC	245 (2.8%)	204 (2.9%)	41 (2.3%)	.781
Other Malignancy	78 (0.9%)	65 (0.9%)	13 (0.7%)	
CD	89 (1.0%)	77 (1.1%)	12 (0.7%)	
History of Hypertension (%)	4109 (46.3%)	3256 (45.8%)	853 (48.4%)	.048
History of COPD (%)	444 (5.0%)	319 (4.5%)	125 (7.1%)	<.001
Preoperative Dyspnea (%)	445 (5.0%)	323 (4.5%)	122 (6.9%)	<.001
Smokers (%)	2027 (22.8%)	1560 (21.9%)	467 (26.5%)	<.001
History of Dialysis (%)	85 (1.0%)	51 (0.7%)	34 (1.9%)	<.001
Functional Dependence	200 (2.3%)	138 (1.9%)	62 (3.5%)	<.001
History of a Bleeding Disorder (%)	250 (2.8%)	182 (2.6%)	68 (3.9%)	.005
ASA Category >3 (%)	4634 (52.2%)	3581 (50.4%)	1053 (59.9%)	<.001
Wound Class 4 (%)	353 (4.0%)	252 (3.5%)	101 (5.7%)	<.001

**Table 2. Multivariate Analysis**

Model for Mortality			
Covariates	p-value	OR	95% CI
Age	<.001	1.062	1.037 - 1.088
Dialysis	.023	3.630	1.195 - 11.021
Transfusion	.041	11.557	1.104- 120.997
Malnourished	<.001	2.720	1.483 - 4.204
Higher ASA Class	.002	3.611	1.406 - 6.074
Dependent Status	.007	3.011	1.354 - 6.694
Model for Wound Infection			
BMI	<.001	1.034	1.025 -1.044
Malnourished	.002	1.291	1.019 - 1.383
Smoking	<.001	1.374	1.191 - 1.585
Steroids	.042	1.286	1.010 - 1.638
Higher ASA Class	.005	1.202	1.056 - 1.367
MIS Approach	<.001	.541	.464 - .631

## Results

- Malnourished group:
  - 85% w/ Low albumin
  - 11.4% w/ Low BMI
  - 9.1% w/ Preop Weight Loss
- Malnutrition was a significant predictor for **30-day mortality** and **wound infection**
- Malnutrition was not significantly associated with reoperation or readmission

## Conclusions

- Malnutrition was a significant predictor of 30-day mortality and wound infection in HR
- Easy and objective screening method for malnutrition
- Nutrition status is a modifiable risk factor that should be optimized prior to HR

## References

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