

Impact of Malnutrition on Radical Nephroureterectomy Morbidity and Mortality: Opportunity for Pre-operative Optimization

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Objective

- Nutritional status is increasingly recognized as an important predictor of prognosis and quality of life in cancer patients.
- The study objective was to evaluate the impact of preoperative nutritional status on the development of surgical complications and mortality following radical nephroureterectomy (RNU) for upper tract urothelial carcinoma (UTUC).
- We hypothesized poor nutritional status would be a predictor of surgical complications and mortality after RNU for UTUC.

Methods

- Data were collected from The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) including perioperative information, 30-day surgical complications, and mortality for patients undergoing RNU for UTUC from 2005-2015.
- The association between the following independent variables suggestive of poor nutritional status and complications and overall mortality following RNU was evaluated:
 - Weight loss 6 months before surgery (>10%)
 - Body mass index (BMI)
 - Hypoalbuminemia (<3.5 g/dL)
- The overall complication rate was calculated, and predictors of complications and mortality were identified using multivariable logistic regression with SPSS

Results

- A total of 1,200 patients were identified who underwent RNU for UTUC and had preoperative nutritional data during the study period. The overall complication rate was 20.5% (n=246) and mortality rate was 1.75% (n=21).

Table 1: Multivariable regression analysis of risk of complication and mortality after RNU for UTUC

Characteristic	Complication		Mortality	
	Odds Ratio (95% CI)	P- Value	Odds Ratio (95% CI)	P-Value
Gender	0.977(0.672-1.419)	0.901	1.509(0.491-4.640)	0.473
Race	0.711(0.435-1.164)	0.176	1.280(0.271-6.051)	0.755
Diabetes	0.706(0.456-1.093)	0.118	1.104(0.284-4.297)	0.887
Current smoker	0.853(0.528-1.376)	0.514	1.901(0.528-6.846)	0.326
Functional Status	1.684(0.554-5.119)	0.358	0.877(0.099-7.801)	0.906
Pulmonary Disorder	1.568(0.987-2.492)	0.358	1.853(0.569-6.034)	0.306
Bleeding disorders	1.675(0.759-3.695)	0.202	1.258(0.144-11.016)	0.836
ASA CLASS	1.480(0.929-2.359)	0.099	1.887(0.390-9.120)	0.430
Transfusion >4 units PRBCs in 72 hours before surgery	3.254(0.904-11.715)	0.071	1.365(0.134-13.930)	0.793
Pre-Op Albumin <3.5g/dL	2.089(1.293-3.375)	0.003	4.312(1.454-12.793)	0.008
Body weight loss >10%	3.176(0.916-11.018)	0.069	2.481(0.246-25.071)	0.441
BMI	1.015(0.984-1.046)	0.348	0.964(0.876-1.062)	0.458

Results

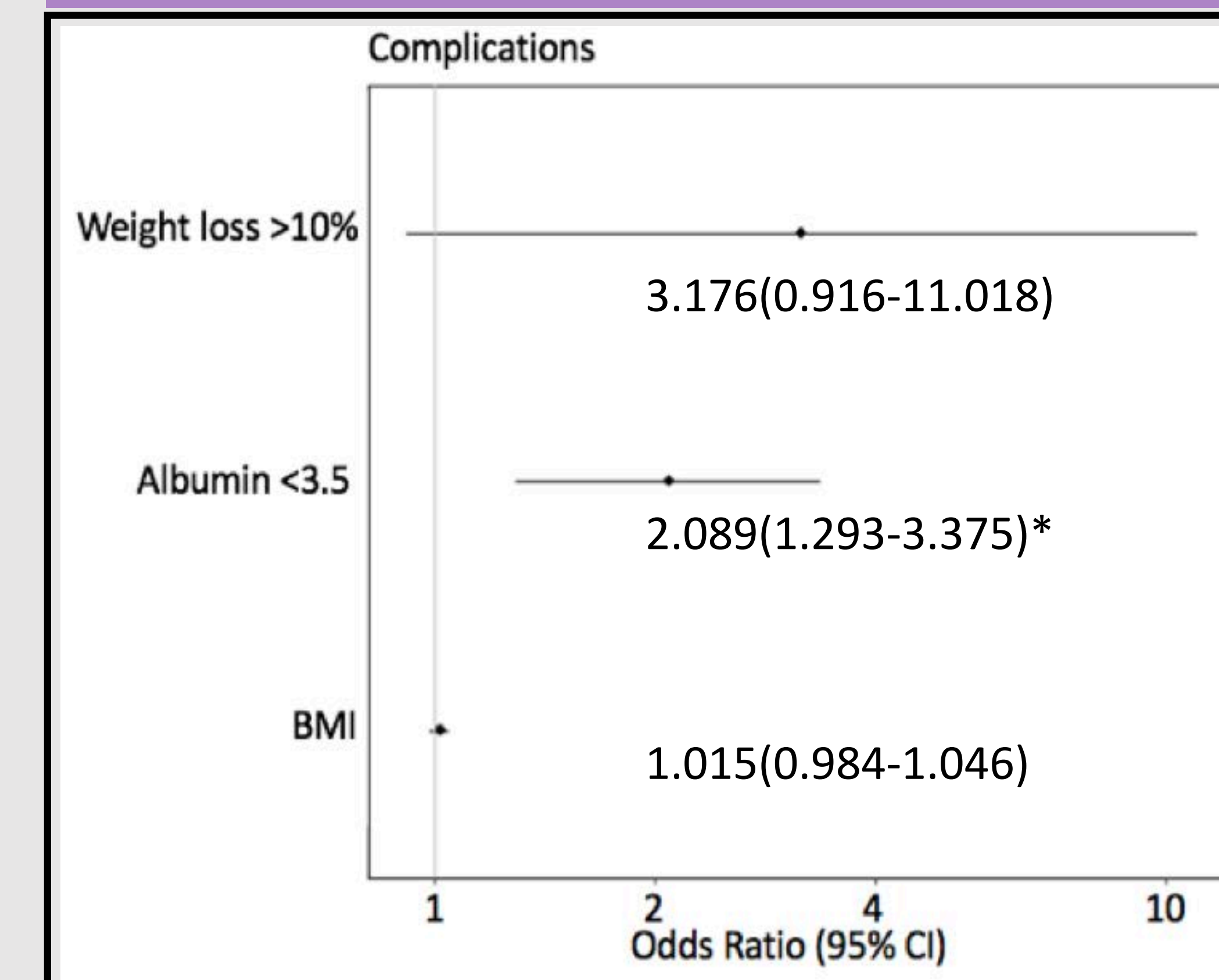


Figure 1: Multivariable analysis odds ratios for nutritional status and postoperative complications. * p=0.003

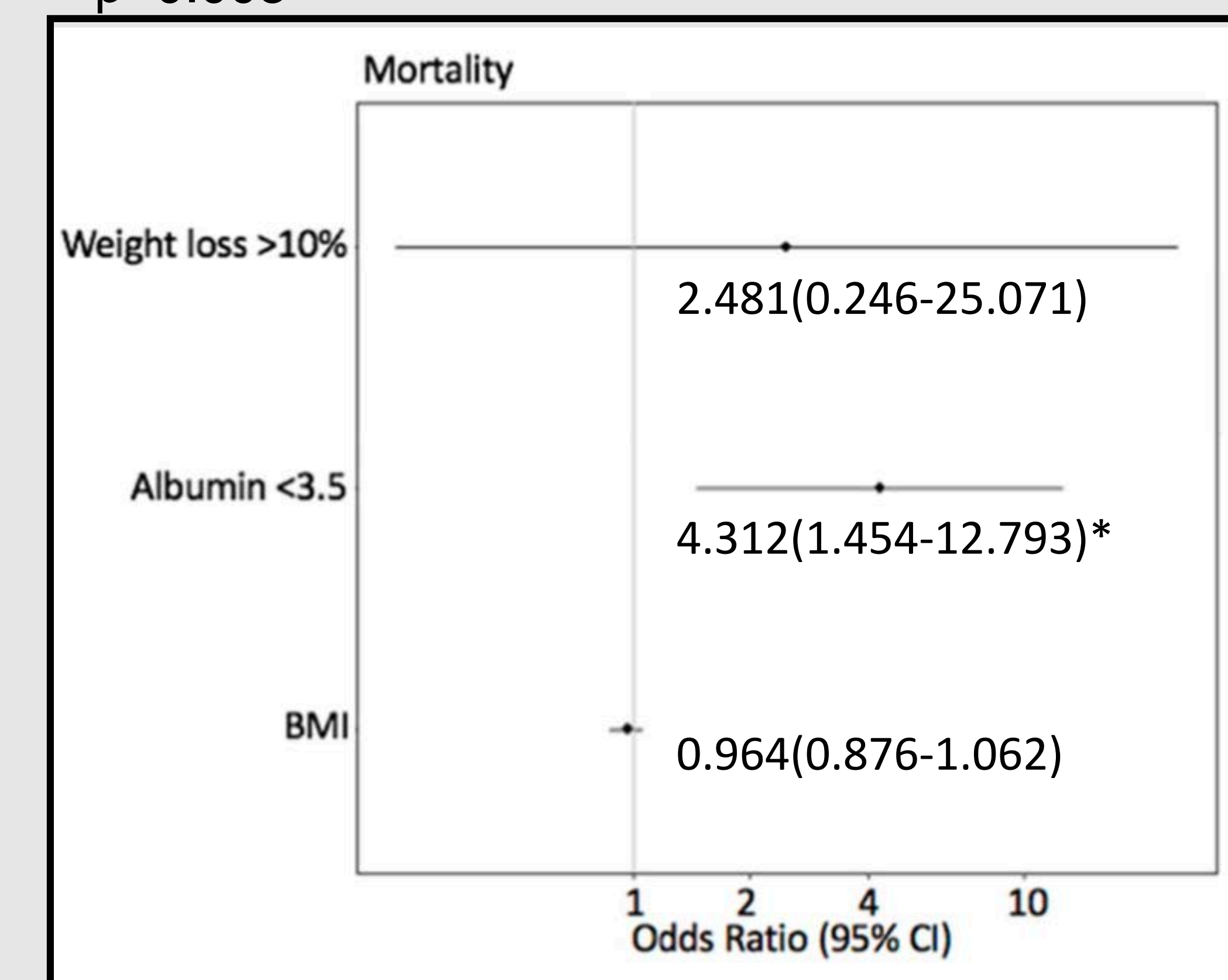


Figure 2: Multivariable analysis odds ratios for nutritional status and postoperative mortality. *p=0.008

Results

- On univariate analysis, patients who had a complication were more likely to be nonsmoker, have a pulmonary risk factor, have hypertension, have a bleeding disorder, have a higher ASA class, and have a transfusion preoperatively
- After controlling for age, sex, medical comorbidities, operation year, operative time, and prior operation, hypoalbuminemia was found to be a significant independent predictor of postoperative complications (OR 2.089 95% CI 1.293-3.375, p=0.000) and 30-day mortality (OR 4.312, 95% CI 1.454-12.793, p=0.008).

Take Home Points

- Patients with preoperative hypoalbuminemia had more than twice the risk of a complication and over four times increased risk of death within 30 days of surgery.
- BMI and weight loss were not significant predictors of complications or mortality.

Conclusions

- Hypoalbuminemia is a significant predictor of postoperative morbidity and mortality following RNU for UTUC.
- This finding supports the importance of preoperative nutritional status in this population and suggests that effective nutritional interventions in the preoperative setting may improve patient outcomes