



IMPACT OF MALNUTRITION ON SURGICAL OUTCOMES IN TOTAL PANCREATECTOMY WITH ISLET AUTOTRANSPLANTATION



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Research Question

How does presurgical nutritional status for patients undergoing total pancreatectomy with islet autotransplantation (TPIAT) impact postoperative complications?

Background

Total pancreatectomy is a therapeutic approach for patients suffering with severe pain from chronic pancreatitis refractory to medical management. This operation can be performed concurrently with autologous islet transplantation to restore hormone secretion necessary for energy regulation.

Malnutrition has been shown to significantly impact postsurgical outcomes for many surgeries but has not been extensively studied in TPIAT. Establishing this relationship would help surgeons have improved predictive power for achieving positive surgical outcomes to better screen and prepare patients for surgery.

Materials and Methods

Nutritional data from 09/2019 – 11/2021 collected from Epic. Patient and surgical data from 12/2007 – 11/2021 compiled in Microsoft Excel. Measures of the patients' nutritional status such as their subjective global assessments and presurgical BMIs were also obtained. Intraoperative complications and blood loss were recorded. Postoperative variables that were recorded include length of hospital and ICU stays and surgical complications. Data was compiled and analyzed using Microsoft Excel and GraphPad Prism.

Results

	Full Data (%)	Nutrition Subset (%)
Delayed Gastric Emptying	25 (17%)	5 (19%)
Surgical Site Infection	16 (11%)	3 (11%)
Postoperative Pneumonia	11 (7%)	2 (7%)
Thrombosis	9 (6%)	1 (4%)
Urinary Tract Infection	8 (5%)	1 (4%)
Small Bowel Obstruction	6 (4%)	0 (0%)
Organ Space Infection	6 (4%)	1 (4%)
Gastric Perforation	6 (4%)	0 (0%)
Urinary Retention	5 (3%)	1 (4%)
Cardiovascular Complication	4 (3%)	0 (0%)
PICC Line Infection	3 (2%)	1 (4%)
Septic Shock	1 (1%)	0 (0%)

Table 1: Surgical complications following TPIAT recorded by 3 months post-operatively. Full: n = 151 patients, Nutrition: n = 27 patients

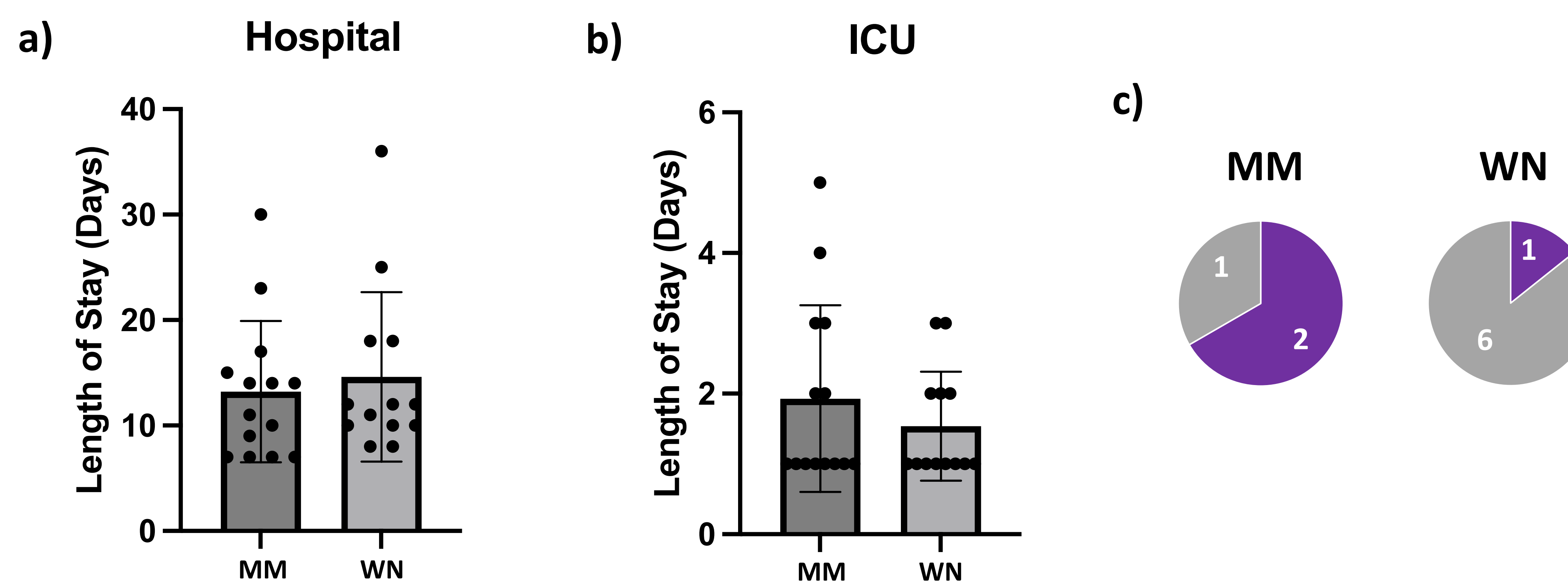


Figure 1: Nutritional subset of patients who were moderately malnourished (MM) and well nourished (WN) patients showing length of stay (a) at hospital and (b) in intensive care (Mean ± SEM, n= 14, 13 respectively). (c) Comparison of complications of Clavien-Dindo classification ≥ III (purple) compared to < III (gray) in moderately malnourished and well nourished patients.

- A trend for patients who were moderately malnourished to have fewer postsurgical complications (36%) compared with those that were well-nourished (54%), that was not statistically significant
- Relatively higher percentage of moderately malnourished patients with complications of Clavien-Dindo classification III or above than those that were well nourished (66% of total complications compared to 14%)
- No statistical difference between LOS for moderately malnourished (13 days) and well-nourished (15 days, p-value: 0.63). Length of ICU stay was also similar between moderately malnourished (1.9 days) and well-nourished (1.5 days, p-value: 0.36)

Conclusion

- Nutritional status of patients is known to be an important prognostic indicator to help evaluate patients for surgery.
- In TPIAT, more patient data is needed to confidently discern a correlation between presurgical nutrition and surgical complications. However, patients who are undernourished appear to experience relatively more severe complications than their well-nourished counterparts.
- Despite this observation, there does not appear to have differing hospital lengths of stay or any difference in critical care time spent that correlates with presurgical nutritional status.

Future Directions

- Integrate a larger patient data set with nutritional data through a multi-center study or to enroll additional patients at Baylor Scott and White
- Attempt interventions to modify nutrition preoperatively, such as length of preoperative tube feeding, oral supplements or provide set additional caloric consumption
- Perform more objective testing of nutrition such as bioelectrical impedance analysis or skinfold testing

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