

RELATIONSHIP BETWEEN PREOPERATIVE HEMOGLOBIN A1C AND COMPLICATIONS FOLLOWING PANCREATODUODENECTOMY

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Objective: This study was designed to determine the relationship between immediately preoperative hemoglobin (Hgb) A1c levels and the rate of post-operative complications following pancreaticoduodenectomy (PD).

Background: PD is a complex gastrointestinal operation with a historically high perioperative morbidity and a variable mortality rate. Expertise gained at centers of excellence has reduced rates of morbidity and mortality to approximately 40% and 2%, respectively. Recently, preoperative serum BUN and albumin levels have been shown to be predictors of postoperative complication following PD (Winter et al, J Am Coll Surg., in press). Hgb A1c is an indicator of glycemic control over time and is a more accurate indicator of diabetic control than preoperative blood glucose. Recently a study by Tajima et al (J Am Coll Surg. 2006 May;202(5):723-31) noted an association between elevated preoperative Hgb A1c and pancreatic anastomotic leakage in a subset of patients undergoing PD with nonfibrotic or soft pancreata. Further study is necessary to determine if preoperative Hgb A1c is a reliable predictor of postoperative complications following PD.

Methods: We retrospectively reviewed the preoperative laboratory values and postoperative complications of patients undergoing PD included in our prospectively collected pancreatic surgery database. Fifty-three patients who underwent PD between May 2006 and December 2006 had preoperative Hgb A1c levels measured and therefore were available for analysis. Patients were divided into three groups for analysis based upon preoperative Hgb A1c (normal, borderline, high).

Results:

| Preoperative Hgb A1c | N | Overall Complication Rate | P | Pancreatic Fistula Rate | P |
|-----------------------|----|---------------------------|----|-------------------------|----|
| Normal ($\leq 6\%$) | 26 | 34% | NS | 15% | NS |
| Borderline (6.1%-7%) | 13 | 31% | NS | 15% | NS |
| High ($\geq 7.1\%$) | 14 | 36% | NS | 7% | NS |

Conclusions: Preoperative Hgb A1c does not seem to be predictive of the overall rate of complications after PD. There is a trend towards a lower rate of pancreatic fistulas in patients with elevated preoperative Hgb A1c. This may well indicate a correlation between impaired glucose control (indicated by elevated hgb A1c) and pancreatic parenchymal fibrosis from prolonged obstruction of the pancreatic duct. Pancreatic parenchymal fibrosis is typically associated with a firm pancreatic texture, a well known predictor of low pancreatic fistula rates. Continued analysis of our expanding database will be necessary to reconcile differences in observations between this and previous studies.