Immediate Preoperative Blood Glucose and Hemoglobin A1c levels are not Predictive of Post-operative Infections in Diabetic Men undergoing Penile Prosthesis Placement

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1. Introduction

Recent reports have suggested that pre-operative diabetic control (assessed via blood glucose levels) may be predictive of infection rates following penile prosthesis (PP) implantation.

The present study seeks to investigate whether immediate pre-operative serum blood glucose (PBG) levels were associated with PP infection rates in diabetic patients.

2. Methods

Retrospective chart review of 669 diabetic patients undergoing primary penile prosthesis placement (inflatable and malleable) from April 2003 to May 2018.

- **Variables of Interest:** PBG and HbA1c within 6 hours of surgery; both continuous and categorical (75th and 90th percentile thresholds).
- **Covariates:** age, diabetes type, diabetes-related complications, BMI, prosthesis type, Charlson Comorbidity Index (CCI), history of immunosuppression and prior radical prostatectomy

Primary, secondary, and tertiary outcome measure were post-operative infection, revision, and explantation rates, respectively. Logistic regression models were used to explore

3. Results

Of the 669 patients, the median age was 61 years (range 34-86) and median postoperative follow-up time was 7 months (range 0-157). Median preoperative blood glucose and HbA1c levels were 134 mg/dL (range 54-344) and 7.2% (range 4.8-15.2), respectively.

Post-operative infection, revision, and explanation rates in this cohort were 3.8%, 5.9%, and 4.5%, respectively.

Table 1. Cohort Demographics, Stratified by Infection Status

	Control (n=655)		Infection (n=23)		
	Mean	SD	Mean	SD	p
Age (years)	60.53	8.79	59.04	9.68	0.427
BMI	31.68	5.55	33.27	7.25	0.333
Preoperative HbA1c Levels	7.51	1.51	7.78	1.31	0.430
Preoperative Glucose	148.9	51.07	140.6	44.25	0.413
Charlson Comorbidity Index	3.48	1.59	3.73	1.812	0.509
	No.	%	No.	%	p
Race / Ethnicity					0.211
Caucasian	232	36.5%	11	47.8%	
African American	157	24.7%	8	34.8%	
Asian	198	31.2%	2	8.7%	
Hispanic	34	5.4%	1	4.3%	
Other	14	2.2%	1	4.3%	
Diabetes Type					0.352
Type I	117	17.9%	6	26.1%	
Type II	519	79.2%	17	73.9%	
Type of Penile Prosthesis					0.682
Inflatable	620	94.7%	26	4.0%	
Malleable	4	0.6%	0	0.0%	
Approach					0.054
Penoscrotal	413	73.1%	22	95.7%	
Infrapubic	10	1.8%	0	0.0%	
Subcoronal	142	25.1%	1	0.7%	
Reservior Location					0.400
SOR	473	77.7%	17	94.4%	
Submuscular	108	17.7%	1	5.6%	
Suprafascial	22	3.6%	0	0.0%	
Unspecified / Other	6	1.0%	0	0.0%	
Prior Radical Prostatectomy	96	15.2%	1	1.0%	0.151
Drain Placement	258	45%	15	65%	0.060

Table 2. Logistic Regression Model Predicting Infection Status

In univariate analysis, neither preoperative blood glucose nor HbA1c levels were predictive of postoperative infection, revision, or explanation rates.

However, after controlling for differences in preoperative HbA1c, preoperative blood glucose, and age, patients with prior history of DM-related complications were estimated to be approximately 3.2 times at increased risk for postoperative infection (95% CI: 1.073 – 9.932, OR: 3.264, p=0.037).

	B	SE	P	OR	95% CI Low	95% CI High
Preoperative HbA1c (cont.)	0.112	0.183	0.540	1.118	0.782	1.600
Immediate PBG (cont.)	-0.005	0.006	0.449	0.995	0.983	1.007
Prior DM-related Complications	1.183	0.568	0.037	3.264	1.073	9.932
Age (cont.)	0.024	0.033	0.471	1.024	0.960	1.093
Charlson Comorbidity Index (cont.)	-0.418	0.219	0.056	1.659	0.429	2.011
Constant	-3.020	2.347	0.198	0.049		

This multivariate model was also applied to predict risks of explantation and / or revision and there were no significant predictors found.

4. Conclusion

In this large multi-institutional cohort of diabetic men undergoing penile prosthesis implantation, neither preoperative blood glucose nor preoperative HbA1c levels were predictive of device infection, need for explantation, nor revision.

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