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 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 and pre-operative HbA1c levels are associated with PP infection rates in diabetic patients.

2. Methods

- Retrospective chart review of 923 diabetic patients undergoing primary PP placement (inflatable and malleable) from April 2003 to August 2018 across 18 institutions
  - **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, Charlson Comorbidity Index (CCI), and diabetes type
- Primary outcome measure was post-operative infection rates and secondary outcome measures were revision and explantation rates.
- The effects of covariates were adjusted for using logistic regression models.

3. Results

- 885 patients had complete data. The median age was 61 years (range 32-86) and median postoperative follow-up time was 7 months (range 0-157). Median PBG and HbA1c levels were 136 mg/dL (range 54-344) and 7.1% (range 4.8-16.3), respectively.
- Post-operative infection, revision, and explantation rates in this cohort were 3.4%, 7.1%, and 4.1%, respectively.

Table 1. Cohort Demographics, Stratified by Infection Status

	Control (n=855)		Infection (n=30)		
	Mean	SD	Mean	SD	p
Age (years)	60.41	8.78	57.93	9.98	0.131
BMI	30.91	5.42	31.46	7.30	0.611
Preoperative HbA1c Levels	7.46	1.50	7.62	1.33	0.609
Preoperative Glucose	148.99	49.74	135.82	43.15	0.134
Charlson Comorbidity Index	3.87	1.82	3.73	1.68	0.694
	No.	%	No.	%	p
Race / Ethnicity					**0.002**
Caucasian	349	40.8%	16	53.3%	
African American	177	20.7%	8	26.7%	
Asian	200	23.4%	2	6.7%	
Hispanic	68	8.0%	3	10.0%	
Other	61	7.1%	1	3.3%	
Diabetes Type					0.071
Type I	184	21.7%	11	36.7%	
Type II	662	78.3%	19	63.3%	
DM-Related Complications	231	27.0%	17	56.7%	**0.011**
Prior Radical Prostatectomy	120	14.0%	3	10.0%	0.788
Approach					**0.047**
Penoscrotal	533	69.5%	27	90.0%	
Infrapubic	92	12.0%	2	6.7%	
Subcoronal	142	18.5%	1	3.3%	
Reservoir Location					0.419
SOR	569	66.5%	21	70.0%	
Submuscular	184	21.5%	4	13.3%	
Suprafascial	49	5.7%	0	0.0%	
Unspecified / Other	53	6.2%	5	16.7%	
Drain Placement	440	51.5%	22	73.3%	0.091

Table 2. Logistic Regression Model Predicting Post-Operative Status

	Infection		Revision		Explantation	
	P	OR	P	OR	P	OR
Preoperative HbA1c (cont.)	0.746	1.054	0.188	1.185	0.614	1.085
Immediate PBG (cont.)	0.296	0.994	0.075	0.991	0.763	0.999
Prior DM-related Complications	0.192	1.881	**0.028**	2.653	0.074	2.303
Age (cont.)	0.304	0.972	0.857	0.995	0.606	0.986
Charlson Comorbidity Index (cont.)	0.516	0.910	**0.007**	0.636	0.306	0.862
Penoscrotal Approach	0.287	0.440	0.820	0.879	0.095	0.174
Race	0.944	0.969	0.765	1.133	0.846	0.918

4. Conclusion

- In this large multi-institutional cohort of diabetic men undergoing PP implantation, neither PBG nor HbA1c levels were predictive of device infection, explantation, nor revision.
- Patients with a history of diabetes-related complications and higher CCI were found to be at significantly increased risk of post-operative revision.

Contributing Institutions: ArkLaTex Urology, Boston University, Christian Albrechts University of Kiel, CHU de Liège, Dartmouth-Hitchcock, Duke University, Einstein Healthcare Network, Fox Chase Cancer Center, Hackensack University Center, Johns Hopkins, Julius-Maximilians-University of Würzberg, Mayo Clinic, MD Anderson, Medical College of Wisconsin, Ohio State University, Perito Urology, Rutgers NJMS, Sewum Prosthetic Urology, UC San Diego

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