

Adherence to the AUA penile prosthesis antibiotic prophylaxis guidelines in diabetic patients is associated with significantly higher risks of device infection

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Introduction: The most devastating complication following penile prosthesis (PP) implantation is an infection requiring device explantation. Current AUA guidelines recommend antibiotic prophylaxis before PP implantation with an aminoglycoside and either a 1st/2nd generation cephalosporin or vancomycin.

Objective: We conducted a multi-institutional study to examine infection rates in diabetic patients undergoing PP implantation with different prophylactic antibiotic regimens, and compared outcomes based on adherence to AUA guidelines.

Methods: Between April 2003 and August 2018, data was collected from 18 different institutions, and charts of 923 patients with diabetes receiving primary PP implantation were reviewed. Perioperative antibiotic regimen was recorded for each patient and the primary outcome was post-operative infection rates, the secondary outcomes were explantation and revision rates. Patients had a median follow up time of 8 months (range: 0 – 157). Patients were included in the analysis only if they had complete information regarding perioperative antibiotics and outcomes. Univariate comparisons of proportions were completed for rates of infection between different antibiotic regimens. Multivariate analysis controlling for immediate pre-operative blood glucose levels, Hemoglobin A1c, age, diabetes-related complications, and surgical approach was completed for rates of infection, revision, and explantation rates.

Results: Overall, 804 patients had complete records and were included in this study. The total number of infections, explantations, and revisions for all patients included were 30 (3.7%), 38 (4.7%), and 57 (7.1%), respectively. The AUA prophylaxis guidelines were followed in 348 patients, 286 (35.6%) received Gentamicin + Vancomycin as prophylaxis and 62 (7.7%) received Gentamicin + Cephalosporin (Cefazolin), while 456 (56.7%) received prophylaxis that differed from guidelines. The number of infections in the AUA guidelines group was 22 (6.3%) vs. 8 (1.8%) for the non-AUA guidelines group, $p < 0.001$. The number of explantations in the AUA guidelines group was 29 (8.3%) vs. 9 (2.0%) in the non-AUA guidelines group, $p < 0.001$. On multivariate analyses, patients in the AUA guidelines group were at approximately 5.8 times increased risk for infection, 2.6 times increased risk for revision, and 6 times increased risk for explantation of their device compared to those in the non-AUA guidelines group. Incidentally, patients with diabetes-related complications were found to have a 2.6 times increased risk for device revision. On further analysis, the infection rate for patients treated with Gentamicin + Vancomycin (7.7%) dropped significantly when a Quinolone (1.0%) was added to the regimen, $p < 0.001$. Similar reductions were seen with explantation (9.8% to 1.0%, $p < 0.001$) and revision (9.4% to 3.0%, $p = 0.006$) rates. Adding an anti-fungal in combination with Gentamicin + Vancomycin non-significantly lowered the infection (0%) and explantation rates (2.4%); and significantly reduced revision rates (0%) ($p = 0.041$).

Conclusions: Adherence to the AUA penile prosthesis antibiotic prophylaxis guidelines confers approximately 5.8 times increased risk of device infection in diabetic patients. The AUA guidelines should be amended to reflect findings of this and other device infection related studies.