CLINICAL ARTICLE SUMMARY

Multicenter Investigation of the Micro-organisms Involved in Penile Prosthesis Infection: An Analysis of the Efficacy of the AUA and EAU Guidelines for Penile Prosthesis Prophylaxis

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ABSTRACT

Introduction: Penile prosthesis infections remain challenging despite advancements in surgical technique, device improvements, and adoption of antibiotic prophylaxis guidelines.

Aim: To investigate penile prosthesis infection microbiology to consider which changes in practice could decrease infection rates, to evaluate current antibiotic prophylaxis guidelines, and to develop a proposed algorithm for penile prosthesis infections.

Methods: This retrospective institutional review board exempt multi-institutional study from 25 centers reviewed intraoperative cultures obtained at explantation or Mulcahy salvage of infected three-piece inflatable penile prostheses (IPPs). Antibiotic usage was recorded at implantation, admission for infection, and explantation or salvage surgery. Cultures were obtained from purulent material in the implant space and from the biofilm on the device.

Main Outcome Measures: Intraoperative culture data from infected IPPs.

Results: Two hundred twenty-seven intraoperative cultures (2002-2016) were obtained at salvageor explantation. No culture growth occurred in 33% of cases and gram-positive and gram-negative organisms were found in 73% and 39% of positive cultures, respectively. *Candida* species (11.1%), anaerobes (10.5%) and methicillin-resistant *Staphylococcus aureus* (9.2%) constituted nearly one third of 153 positive cultures. Multi-organism infections occurred in 25% of positive cultures. Antibiotic regimens at initial implantation were generally consistent with American Urological Association (AUA) and European Association of Urology (EAU) guidelines. However, the microorganisms identified in this study were covered by these guidelines in only 62% to 86% of cases. Antibiotic selection at admissions for infection and salvage or explantation varied widely compared with those at IPP implantation.

Conclusion: This study documents a high incidence of anaerobic, *Candida*, and methicillin resistant *S aureus* infections. In addition, approximately one third of infected penile prosthesis cases had negative cultures. Micro-organisms identified in this study were not covered by the AUA and EAU antibiotic guidelines in at least 14% to 38% of cases. These findings suggest broadening antibiotic prophylaxis guidelines and creating a management algorithm for IPP infections might lower infection rates and improve salvage success.

COLOPLAST KEY TAKEAWAYS

- Significant advances in infection prevention have occurred since the introduction of inflatable penile prostheses (IPPs).
- Experienced prosthetic surgeons have innovated and standardized the surgical technique for better care, as seen in a recent study of implanters' practices showing diverse strategies.
- Over 70% of IPP infections were caused by gram-positive organisms.
- *Candida* species (11.1%), anaerobes (10.5%) and methicillin-resistant *Staphylococcus aureus* (9.2%) constituted nearly one third of 153 positive cultures.
- Multi-organism infections occurred in 25% of positive cultures.
- Antibiotic selection at admission for infection and salvage or explantation varied widely compared with those at IPP implantation.
- This study documents a high incidence of anaerobic, *Candida*, and methicillin-resistant *S aureus* infections. In addition, approximately one third of infected penile prosthesis cases had negative cultures.
- Micro-organisms identified in this study were not covered by the AUA and EAU antibiotic guidelines in at least 14% to 38% of cases.
- These findings suggest broadening antibiotic prophylaxis guidelines and creating a management algorithm for IPP infections might lower infection rates and improve salvage success.

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