



Case Report

Penile prosthesis in an organ transplanted diabetic: a challenging case

Dechapol Buranapitaksanti

Department of Surgery, Piyavate Hospital, Bangkok, Thailand

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Abstract

Most patients with erectile dysfunction have various comorbidities. These may lead to an increase in postoperative complications after penile prosthesis implantation especially with regard to prosthesis infection. This case study reports on the outcome of a penile prosthesis implantation in an immunocompromised patient with underlying comorbidities of diabetes and post kidney transplantation. A literature review regarding surgical site infection after this procedure reinforce the finding that the incidence of infection need be no greater than a non-immunocompromised patient.

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Introduction

Erectile dysfunction (ED) is defined as the inability to attain or maintain penile erection sufficient for satisfactory sexual performance. The prevalence of ED is estimated to be around 10% to 20% worldwide,^{1,2} the prevalence increasing in patients with comorbidities including type 2 diabetes mellitus, obesity, cardiovascular disease, hypertension, dyslipidemia, and depression.^{3,4} Although there are various non-surgical treatments for ED, many patients are still not satisfied with the treatment response and seek other options. A penile prosthesis (PP) remains the standard surgical treatment for ED patients who have no response to the other treatments. PP aims for the creation of penile rigidity that differs from a physiologic or pharmacologically induced erection. Malleable (semirigid) and inflatable

(hydraulic) devices are both currently available for this purpose.

Infection following implant of a penile prosthesis remains a rare but devastating complication of urologic prosthetic surgery that results in loss of sexual function, increased healthcare costs, and physical and emotional morbidity for patients. The majority of ED patients have several comorbidities related to the etiologies of ED common ones being diabetes, neurological disorders, and pelvic organ surgery. These conditions may increase the risk of infection. However, there are currently no guidelines to assist surgeons in identifying the patients at high risk of infection and giving clear recommendations for the treatment. This article presents a case study of a complex patient undergoing PP implantation with a focus on infection risk.

Corresponding author: Dechapol Buranapitaksanti

Address: Department of Surgery, Piyavate Hospital, 998, Rim-klong Samsen Road, Bang Kapi, Huai Khwang, Bangkok 10310, Thailand

E-mail: buranadecha@gmail.com

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Case Report

A 41-year-old man had experienced ED for many years and had no effective response from any phosphodiesterase type 5 (PDE5) inhibitors and was seeking alternative treatment. He had a history of type I diabetes mellitus for 25 years and end stage renal disease for 5 years before he underwent living-donor kidney transplantation 4 years ago. His diabetes was not well-controlled. He had suffered from chronic diabetic foot ulcers for 2 years and had had a right below knee amputation 2 years ago. The current medication taken for diabetic control were insulin lispro (Humalog®) 20-20-20 units and insulin glargine (Lantus®) 25 units before bed. His HbA1c was 8.9% and fasting blood sugar was 150-160 mg/dl. Immunosuppressive drugs taken were mycophenolate mofetil (Cellcept®) 500 mg twice daily, tacrolimus (Prograf®) 1mg twice daily and prednisolone 5 mg once daily. His tacrolimus level was 9.50 ng/ml.

After careful evaluation and counselling, PP implantation was recommended to the patient. We elected to use a malleable implant to reduce risk of infection, malfunction and avoid reservoir placement. His diabetes was carefully controlled before the operation. On the morning of the operation, the patient was advised to take a shower with chlorhexidine. Parenteral antibiotics vancomycin 1 gm and amikacin 500 mg were administered half an hour before the incision was made. Hair was clipped in the operating room. The operative site was scrubbed with povidone iodine scrub for 15 minutes. A Foley catheter was inserted. A three-centimeter skin incision was made at the penoscrotal junction and the dartos tissue was opened. Corpora tissue and urethra were identified and dissected. Buck's fascia was incised and released, giving direct access down to the urethra and corpus spongiosum until the corpus cavernosum was clearly bilaterally exposed. An avascular plane was created leading to the inferior pubic rami. A corporotomy was performed. Corpora tissue was dilated and measured. Careful dilation was taken to ensure no crural crossover. A coloplast Genesis 11-mm in diameter and 16-cm in length device was inserted into the corpora tissue after irrigation with antibiotics. The corpora was closed with absorbable sutures. The dartos and skin were subsequently closed with absorbable sutures.

On post-operative day 1, the patient had minor surgical wound pain, the Foley catheter was removed and he could spontaneously pass the urine. Serum glucose was well-controlled with insulin. An oral antibiotic, amoxicillin/clavulanic acid (Amoxiklav®) 1 gm twice daily, was continued for 1 month. At the 1-month follow-up, the patient was doing well with no sign of surgical site infection. He was satisfied with the girth and length of the penis.

Discussion

Although ED is not a severe life-threatening condition, this spectrum of disease has a high impact on the quality of life in men. PP implantation is now a popular procedure for ED treatment worldwide, however, surgical site infection along with prosthesis infection are common complications following this procedure. According to a previous report focusing on immunocompromised patients, studies on infection rates among medically immunosuppressed patients are currently limited.¹

The overall complication rate was found to be significantly higher in transplant patients (22%) than in non-transplant patients (7.9%) receiving prostheses ($p < 0.01$). The difference in the rate of malfunction was statistically significant ($p < 0.001$) when comparing the three-piece prosthesis in the transplant and non-transplant patients ($p < 0.001$).

Cuellar et al followed 46 organ transplanted patients for 2 years after PP implantation. In this series, the incidence of infection was no different to patients without organ transplant. Also, in 2018, Sun et al found no significant increase in infection rate after a 30 month follow up of transplant recipients.⁵ Based on these limited data, it is reasonable to consider transplant recipients on immunosuppression therapy as potentially good candidates for penile prostheses.

Regarding the patients with diabetes, implanters have long considered diabetic patients as high risk for prosthesis infection. In 1998, Wilson et al conducted a 2 year prospective study of 389 patients, including 114 diabetics, who underwent 3-piece penile prosthesis implantation⁶. There was no statistically significant increased infection risk with increased levels of glycosylated hemoglobin A1C among all patients or among only the diabetics. The same result was concluded



by Montague et al.⁷ In contrast, Habous et al reported that an HbA1c threshold level of 8.5% predicted infection with a sensitivity of 80% and a specificity of 65%.⁸

Perioperative serum glucose has also been found to play an important role. Balen et al⁶ retrospectively collected data from diabetic patients for 12 years and found that glucose levels higher than 200 mg/dl at the time of the procedure showed a positive correlation with postoperative infection.⁹ Ussapol et al reported on a case of penile prosthesis implantation in a patient with poorly controlled diabetes mellitus necessitating post paraffinoma excision. This case showed a good result without wound infection.¹⁰

In summary, we can report a good result of PP implantation in an immunocompromised patient without any infectious complications. However, we recommend some strategies to prevent this sequela as follows: firstly, appropriate systemic prophylactic antibiotic usage is mandatory, secondly, copious irrigation with antibiotic-containing solution is recommended throughout the surgery and finally a 'no touch technique' or minimal touching of the skin in the operative field is advised. In a case of the development of infection early recognition and treatment are the mainstays of a successful outcome and minimize the burden of the complication.

Conclusion

The infection of a surgical site after PP implantation can be devastating for both the patients and implanters. However, this operation can be performed safely in an immunocompromised patient at a high risk of infection. Careful patient selection, appropriate counselling and thorough surgical care during the operation are the mainstays of success in this area.

Conflict of Interest

The author declares no conflict of interest.

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