

SURGERY

Conservative Therapy is an Effective Option in Patients With Localized Infection After Penile Implant Surgery



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ABSTRACT

Introduction: Traditionally, penile implant (PI) infections have been managed by removal with immediate or delayed replacement. Recently, interest has been focused on conservative therapy (CT) using antibiotic therapy.

Aim: To investigate the success rate and predictive factors affecting the outcome of CT in PI infection patients.

Methods: Patients diagnosed with early, localized PI infection were considered candidates for CT. Exclusion criteria included temperature $>37.5^{\circ}\text{C}$, WBC $>13,000/\mu\text{L}$, and appearance of any sign of sepsis. In patients with purulent drainage, culture swabs were taken and an antibiotic was chosen based on sensitivity results. Oral antibiotics were used until the local infection was completely resolved. Patients were evaluated weekly during this process.

Results: Thirty-seven patients were retrospectively reviewed and constituted the study population. Mean age was 58.1 (range 37–85; SD 9.9) years. All were diabetic. Mean BMI was 31.8 (range 24–47; SD 5.0). PI was malleable in 33 cases and inflatable in 4 cases. Culture results ($n = 19$) included *Staphylococcus epidermidis* (42%), pseudomonas (21%), *Escherichia coli* (21%), and *S aureus* (16%). Four of 37 patients needed the PI removed due to CT failure and onset of systemic symptoms, at a mean time-point of 75 ± 1.8 days after CT commencement. In men who were cured, mean time to complete healing was 49 (range 29–97; SD 15.8) days. Two of 37 patients (5%) had PI removal because of persistent penile pain despite complete wound healing, at a mean time point of 128 ± 2.5 days after CT commencement. All men managed conservatively resumed sexual intercourse.

Conclusion: CT of localized PI infection appears to be a viable option for such patients, with the majority of patients retaining their implant and resuming sexual activity.

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INTRODUCTION

Penile prosthesis implantation has a major role in the treatment of organic erectile dysfunction (ED), even in the era of effective and safe oral medications.¹ Improvements in penile prosthesis design have extended the long-term survival of implants. The improved design of prostheses has led to their increased mechanical survival and decreased complications. Still, one of the most devastating complications is infection, having an incidence of 1% to 4%, in fresh cases with minimal risk factors, but which can reach up to 20% in complicated high-risk patients and when penile reconstruction is accompanied the process of implantation as reported in large series of implants.^{2–4}

The previous classic approach called for the immediate removal of the entire device followed by a lengthy course of IV and oral antibiotics with attempted reimplantation 3 to 6 months

later. The main disadvantage of this approach is the intracorporeal fibrosis that occurs, leading to penile length loss and increase in difficulty with future implant surgery.⁵ Salvage procedures have been proposed that allow placement of a new penile prosthesis at the same time as removal of the infected device.⁶ The principles of salvage are to remove any foreign material entirely, lest any organisms attached to any remnant material continue to be protected in the biofilm. Thorough cleansing and vigorous irrigation of the cavities are aimed at eradicating the organisms. After that, the wound is presumed to be sterile and a new implant may be placed.⁶

Bacterial colonization with positive cultures and visible bacterial biofilm have been shown to be present on clinically uninfected penile prostheses at revision, which raises the question as to whether low-grade implant infections need to be removed at all.⁷ Recently, conservative therapy (CT) using antibiotics has received increased interest as successful CT saves patients from needing invasive surgery and is a much less costly approach.

We aimed to investigate the success rate and predictive factors affecting the outcome of CT in patients with penile implant (PI) infections.

METHODS

This study was run in 3 specialized centers for andrological and urological surgery in Saudi Arabia. Penile surgery is done in a day surgery well-equipped hospital designed for penile and cosmetic surgery. Infection control protocols are strictly applied. Surgeries are done by high-volume (≥ 70 implants/year on local or international visitors) experts. Follow-up is supervised by the surgeon himself or 1 of the consultants in his team. The patient routinely returns to the office the day after surgery to remove the bandage and/or catheter (if still in place), then is rechecked at day 7, 14, and 30 postoperatively. After complete healing the patient is taught how to use the implant, usually at a week 6 visit, and then is allowed to have sexual activity. The patient then has follow-up visits at 3, 6, 12, 18, 24, 30, and 36 months. If the patient encountered any problem related to his implant any time starting from the early postoperative period onward, he can contact his doctor at once and schedule an emergency appointment.

Study Population

Between June 2011 and July 2014, patients diagnosed with early, localized PI infection were considered candidates for CT. Patients who showed signs of infection postoperatively were enrolled in this study. The diagnosis of PI infection was established when 1 or more of the following signs and symptoms were found during the period between the first week after surgery up to 6 months postoperatively: penile erythema, tenderness, swelling, wound dehiscence, fluctuance, erosion, discharge, or persistent pain. Patient demographics, comorbidities, preoperative, operative notes, and postoperative data were collected.

Management Algorithm

Any systemic symptoms related to the PI infection (temperature $\geq 37.5^\circ\text{C}$, leukocytosis, skin necrosis) were excluded from the CT management pathway. In patients with purulent drainage, culture swabs were taken and the antibiotic was chosen based on sensitivity results. In patients without discharge or negative culture results, the standard was to give ceftriaxone 1 g parenteral injection once daily for 10 days, then switch over to oral antibiotics (amoxicillin and clavulanate potassium) until the local infection was completely resolved. Patients were evaluated weekly during this process, but they were instructed to contact their physician at once if they developed 1 or more of obvious systemic symptoms (fever, chills, malaise) and increasing penoscrotal pain. If at any time during CT, the patient developed signs of sepsis or systemic symptoms (temperature higher than 37.5°C (99.5°F), rigors, malaise, continuous local unresolved pain, and leukocytosis more than 13,000), immediate surgical intervention was performed.

Statistical Analysis

Descriptive statistics was used to describe the study group and calculate proportions, means, and SDs. To identify possible predictors of CT failure we used the χ^2 test for discrete variables and the independent sample *t* test for continuous variables. A *P* value $< .05$ was considered significant for all comparisons.

RESULTS

Patient Population

In this study the total number of implants was 411. The percentage of infected implants according to the criteria mentioned in our study was 9%. A total of 37 patients were retrospectively reviewed and constituted the study population. Mean age was 58.1 (range 37–85; SD 9.89) years. All were diabetic with a mean HbA_{1c} 9.2% (range 6.0–11.2%; SD 1.36). Mean BMI was 31.8 (range 24–47; SD 5.03). PIs were malleable in 33 cases and inflatable in 4 cases. We used malleable implants by Genesis (Coloplast; Minneapolis, MN, USA) and of the inflatable implants used, 2 were the Titan OTR (Coloplast), and the other 2 were AMS 700 LGX (American Medical Systems; Minnetonka, MN, USA).

Sixteen of 37 patients were smokers (43%) and 30 patients had Peyronie's disease (81%). Four cases were revision implants, 1 case had severe fibrosis after priapism, and 12 cases were described as difficult procedures because of moderate to severe Peyronie's disease. Implanting the prosthesis was enough to straighten the penis in the majority of Peyronie's patients, whereas some needed modeling, some needed plaque excision, and no one needed grafting.

Infection Data

The local signs of infection were described as erythema, penile/scrotal tenderness, or swelling in 14 patients; incision

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