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Fulminant Progression of Penile Prosthesis Infection to Penile Fournier's Gangrene and Secondary Salvage of a Stenosed Perineal Urethrostomy in a Diabetic Patient

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Abstract **Case Report**

Penile prosthesis implantation is a standard treatment for severe refractory erectile dysfunction, with high satisfaction rates; however, device infection remains its most feared complication, particularly in diabetic patients [1-4]. We report the case of an adult diabetic patient, initially managed for severe erectile dysfunction, in whom implantation of a penile prosthesis was decided after clear counseling regarding the increased infectious risk associated with diabetes. The postoperative course rapidly deteriorated, with extensive penile necrosis. Upon admission to our department, emergency surgical exploration revealed necrotic involvement extending from the urethral meatus to the base of the penis, necessitating prosthesis explantation, total penectomy, and creation of a definitive perineal urethrostomy. Initial septic control was achieved, but follow-up was subsequently complicated by symptomatic stenosis of the perineal urethrostomy. Temporary urinary diversion with a suprapubic catheter was first required, followed by delayed reconstructive surgery consisting of excision of the stenotic segment and definitive perineal anastomosis, with restoration of satisfactory voiding [to be specified]. This case illustrates a rare and particularly severe cascade of complications, progressing from penile implant infection to penile-predominant Fournier's gangrene, and subsequently to secondary failure of perineal urinary diversion. It highlights the importance of early recognition of prosthetic sepsis, prompt excisional surgery when extensive necrosis compromises tissue viability, and prolonged reconstructive follow-up to manage urinary sequelae.

Keywords: penile prosthesis; Fournier's gangrene; diabetes; total penectomy; perineal urethrostomy; urethral stenosis; case report.

INTRODUCTION

Penile prosthesis implantation is a third-line surgical treatment for severe organic erectile dysfunction refractory to pharmacologic and intracavernosal therapies. Contemporary series report high satisfaction rates, generally in the range of 80% to 90%, which explains its expanding role in the urological therapeutic armamentarium [1,2]. Nevertheless, device infection remains the most serious complication, as it may lead to explantation, cavernosal fibrosis, complex reinterventions, and, in extreme cases, potentially fatal sepsis [1,2].

Diabetes mellitus is consistently identified as a risk factor for infectious complications following penile implantation. A recent meta-analysis found a significant increase in infection risk among diabetic patients (odds ratio 1.53; 95% CI 1.15-2.04), while a large population-based study reported an infection incidence of approximately 3% in diabetic patients versus 2% in non-diabetic patients [2,4]. The literature also suggests the importance of preoperative metabolic optimization, although no universally accepted HbA1c threshold has yet reached consensus [1-4].

Fournier's gangrene complicating a penile prosthesis is exceptional, and isolated or predominantly penile involvement is even rarer, probably because of the rich penile vascular supply [5,6]. When extensive tissue destruction involves the penis and distal urethra, total penectomy associated with perineal urethrostomy may become the only salvage procedure compatible with infection control and patient survival. However, perineal urethrostomy is not free of complications, particularly secondary stenosis, which may require reconstructive revision [7,8]. We report here an original case illustrating

the sequence of these complications and their staged surgical management.

Case Presentation

A 70-year-old male patient with type 2 diabetes mellitus for 15 years, with preoperative glycemic control of 8%, had initially been managed for severe erectile dysfunction refractory to first- and second-line treatments. After specialist urological evaluation and discussion of therapeutic alternatives, implantation of a malleable penile prosthesis was selected. The patient was clearly informed of the increased infectious risk related to his diabetic status and accepted the procedure with full awareness of this risk.

Ten days after implantation, the postoperative course was marked by the onset of penile pain, fever, discharge, and cutaneous necrosis, prompting his return to the treating urologist. After explanation to the patient, the prosthesis was removed, and he was then referred to our department for further specialized management. Clinical examination revealed extensive penile necrosis, predominantly involving the distal penis, with marked involvement of the meatus, glans, and urethral necrosis. Laboratory findings on admission were as follows: leukocytosis of 12,000/mm³, elevated C-reactive protein of 20, blood glucose level of 1.20 g/L, and normal renal function. Preoperative imaging is shown in the following figures.

Figure 1: Appearance of the penis with extensive necrosis, tissue loss, and obliteration of the balanopreputial sulcus

Urgent management was undertaken with initial resuscitation, broad-spectrum empirical antibiotic therapy, microbiological sampling, and immediate surgical exploration. Exploration demonstrated penile-predominant Fournier's gangrene extending from the urethral meatus to the root of the penis, with no possibility of preserving viable peno-urethral tissues. Given the extent of the necrosis, total penectomy and creation of a definitive perineal urethrostomy were performed during the same operative session. Thorough debridement of all necrotic tissue was carried out in accordance with the principles of septic control surgery.

The immediate postoperative course was favorable from an infectious standpoint, with regression of the septic syndrome, subsequent adjustment of antibiotic therapy according to bacteriological results, and progressive local wound healing. No data supported an organ-preserving strategy without loss of opportunity, given the proximal extension of the lesions.

During follow-up, the patient developed progressive deterioration of the urinary stream and subsequently urinary obstruction related to stenosis of the definitive perineal urethrostomy. After failure or impossibility of durable conservative treatment, temporary diversion with a suprapubic catheter was established to ensure bladder drainage and allow local tissues to rest. In a second stage, after local inflammatory resolution, reconstructive reoperation was performed with excision of the stenotic segment and definitive perineal anastomosis. The postoperative course after this reintervention was uneventful, allowing removal of the suprapubic drainage and resumption of satisfactory voiding through the perineal route, with no significant post-void residual; follow-up remained regular.

Figure 2: Final appearance of the perineostomy after surgical revision

DISCUSSION

This case first illustrates the impact of diabetic status in penile prosthetic surgery. Although the majority of implantations proceed without infectious complications, diabetes remains an important determinant of postoperative septic risk [1-4]. Contemporary data show that this excess risk persists despite advances related to antibiotic-impregnated prostheses, antibiotic prophylaxis protocols, and surgical techniques designed to minimize device contamination [1,2,4]. In this context, preoperative patient counseling and metabolic optimization should not be considered mere formalities, but rather essential components of shared therapeutic decision-making.

The second distinctive feature of our observation lies in the progression to predominantly penile Fournier's gangrene. Isolated penile involvement is rare in the literature, as penile vascularization is usually protective [5,6]. Nevertheless, the few published cases show that local aggression, urethral instrumentation, unfavorable vascular or metabolic status, and immune vulnerability may lead to rapidly extensive necrotizing fasciitis. In our case, the combination of an infected foreign body and diabetes probably contributed to this fulminant progression. When intraoperative exploration reveals extension up to the root of the penis, organ sacrifice should not be viewed as excessive radicality, but rather as a salvage strategy aimed at controlling infection and preventing further necrosis.

Management did not end with septic control. Following loss of the penis and anterior urethra, perineal urethrostomy represents a reliable definitive urinary diversion option, with reported success rates of around 88% in dedicated series [7]. However, stenosis of the neomeatus remains the most frequent late complication, occurring in approximately 10% of cases in some cohorts [7]. Data from the TURNS network further confirm that perineal urethrostomy can provide good urinary functional outcomes with limited impact on reported sexuality in selected patients with complex strictures [8]. Our case emphasizes that prolonged surveillance is essential, as urinary obstruction may appear long after the initial procedure.

The therapeutic sequence adopted in our patient—transient suprapubic diversion followed by delayed open surgical revision—appears consistent with the principles of urethral reconstructive surgery. In the presence of symptomatic perineal stenosis in an inflammatory scarred field, temporary drainage allows treatment of retention, limits further local aggression, and prepares a more favorable tissue bed for definitive repair. The successful secondary perineal anastomosis achieved in our patient suggests that a staged strategy can restore satisfactory voiding even after an especially burdensome surgical course.

The originality of this case therefore lies less in each surgical step taken separately than in their succession: penile prosthesis infection in a diabetic patient, extensive penile Fournier's gangrene requiring total penectomy, followed by secondary stenosis of a definitive perineal urethrostomy necessitating delayed reconstruction. This clinical trajectory deserves to be reported because it documents the continuity of urological reasoning, from life-saving excisional surgery to salvage reconstructive surgery.

CONCLUSION

Infection of a penile prosthesis in a diabetic patient may, in very rare situations, progress to penile-predominant Fournier's gangrene and result in complete loss of the organ. In this setting, explantation and radical excisional surgery should not be delayed when tissue viability is compromised. This case also underscores that

urinary rehabilitation does not end with creation of a perineal urethrostomy: secondary stenoses may occur and must be recognized and managed sequentially, if necessary, after temporary suprapubic diversion. Expert management extending from initial septic control to secondary urinary reconstruction is crucial to preserve survival and subsequently restore an acceptable voiding quality of life.

Learning points

- Diabetes increases the risk of infection after penile implantation and requires rigorous preoperative counseling and metabolic optimization.
- Extensive penile necrosis after penile prosthesis implantation should raise suspicion for a severe prosthetic infection or even penile-predominant Fournier's gangrene.
- When necrosis extends from the meatus to the root of the penis, explantation combined with total penectomy and perineal urethrostomy may represent the only life-saving treatment.
- Definitive perineal urethrostomy carries a risk of secondary stenosis; prolonged reconstructive follow-up is therefore essential.
- In cases of complex perineal urethrostomy stenosis, temporary suprapubic diversion followed by delayed open surgical revision may allow restoration of satisfactory voiding.

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