Case Report

Modified "parachute technique" of partial penectomy: A penile preservation surgery for carcinoma penis

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Abstract

Carcinoma penis is a rare malignancy which mostly occurs after the sixth decade of life. It is managed surgically and partial penectomy is the most common procedure done in carcinoma involving the distal penis. Partial penectomy provides the opportunity of preservation of sexual function and enables the patient to micturate in standing position. The conventional technique of neourethra creation in partial penectomy is slitting the urethra dorsally. We propose an alternative approach to neourethra formation. Technique involves ventral slitting of the urethra followed by suturing which begins at the ventral aspect and continued in a parachute fashion toward the dorsal end. This new technique will help primary physicians and **surgeons** in providing better surgical results in caring for patients with carcinoma penis.

Keywords: Carcinoma penis, modified parachute technique, partial penectomy, penile preservation

Introduction

The carcinoma penis is the disease of older men but not unusual in younger, and it has also been reported in children. It is more common in the developing world. In some African and South American countries, it constitutes about 10% of all malignant diseases of men.[1] Squamous cell carcinoma accounts for 95% of all penile carcinoma. The age-adjusted incidence of penile cancer in India is approximately 0.7–3 per 1,00,000 individuals.[2] The diagnosis of penile cancer is often based on self-revealed penile growth and wedge biopsy. Total penectomy or penile preservation surgeries (PPS) and thorough lymphadenectomy can offer a chance of cure in the early stage of the disease.[3] Several PPS have been described including partial penectomy (PP), glansectomy, glans resurfacing, wide local excision, circumcision, laser, and Mohs micrographic surgery.[4] The primary goal of surgical management is the complete eradication of the tumor and maintaining the function of the penis as much as possible. For urinary function, a stump of at least 2 cm with a 5 mm safety margin is accepted nowadays.[4] The PP is the most frequently done procedure and it provides the possibility of sexual function and control while micturating in a standing position.[5] Partial penectomy has a lower rate of recurrence compared to other organ-preserving surgeries.[6] Meatal stenosis is the major postoperative complication after partial penectomy following retraction of the urethra which may require secondary meatoplasty.[7] The following technique is a modification of the urethral suturing technique to create a more anatomically appropriate meatus with a decreased chance of meatal stenosis.

Case Report

The patient was a 47-year-old male who presented to us with a history of spontaneous development of an ulcer over his

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glans which gradually increased in size over 3 months and was associated with itching and foul-smelling discharge. He was not having any difficulty in micturition. He is a known smoker for the past 20 years. On examination, there was a 4 × 3 cm hard ulcero-proliferative growth over glans. There was no clinically palpable or sonologically detectable lymph node in the groin. After taking informed consent, he underwent partial penectomy and neourethra creation with "modified parachute technique" as described below. At 12 months of follow-up, he has a good flow of urine (Qmax-22 ml/sec) and satisfactory sexual intercourse with the International Index of Erectile Function (IIEF-5) score of 15 (mild to moderate ED).

Technique

The procedure was done under spinal anesthesia. The penile area involved with the tumor was covered in a sterile gauze piece. A safety margin of 1 cm was marked with a marker pen and a tourniquet was applied at the base of the penis to minimize blood loss and provide a bloodless field for dissection. The incision was given over the marked line. Dissection forwarded in layers namely skin, Buck's fascia, tunica albuginea, corpora cavernosa, and corpus spongiosum. Vessels were ligated or cauterized. Uninvolved urethra was transacted 1 cm distal to the penile stump for adequate spatulation. Corpora spongiosa was sutured in a continuous manner using 3-0 Vicryl sutures. Tourniquet was released and hemostasis ensured. Skin to urethral suturing was done by the "Parachute" technique using 3-0 Vicryl. The first suture is taken on the ventral surface of the urethra at the apex of spatulation to fix it to the skin followed by on lateral sides and lastly at the dorsal side. After completion of the procedure and ensuring hemostasis, a light dressing is done [Figures 1, 2].

The technique is a modification of that described by Korkes *et al.*[8] as no V-shaped kin flap was created because we feel that enough redundant penile skin is there to suture it with the apex of the spatulated urethra.

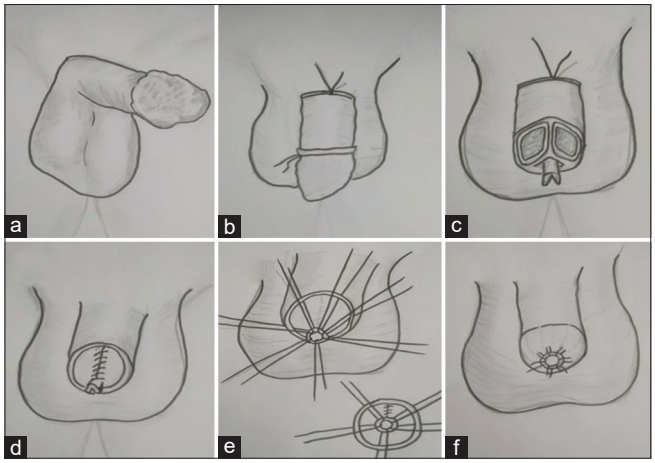

Figure 1: Schematic drawing of modified parachute technique of partial penectomy, (a). distal penile growth, (b). a tourniquet is applied over base and growth is covered with gauze piece, (c). urethra is isolated from corpus spongiosum and spatulated ventrally, (d). corpora cavernosa is closed with continuous suture (e). urethro-cutaneous suturing started ventrally in parachute fashion, (f). final appearance of neomeatus and stump

Discussion

Partial penectomy is done in cases where glans and distal penis is involved with carcinoma.[9] Partial penectomy is a type of organ-preserving surgery. Preservation of sexual and micturational function depends on the surgical dissection and reconstruction of residual urethra. Appropriateness of functional preservation is reflected by satisfactory vaginal penetration and direction of the urinary stream without splaying. Recommended minimum residual penile stump to achieve this goal is variable. Solsona *et al.* mandates that it should be at least 4 cm.[10] The classical technique of partial penectomy has been well described and practiced by most of the surgeons.[5] There is a variety of different modifications and reconstructions procedures to improve cosmesis, patient satisfaction, and functional outcomes. Penile stump lengthening can be done by mobilizing the corpora proximally and dissecting it from the pubic arch and excising the suspensory ligament of the penis.[11] A ventral phalloplasty and skin graft to cover the distal corpora creating a neoglans can improve the cosmesis and perceived penile length.[12] Many of this type of reconstructive procedure is technically demanding and may require being staged and specific surgical training.

We performed the mentioned technique in three patients, at a mean follow-up of 8 months all the patients achieved good cosmesis and satisfactory functional preservation. This procedure is simple, universally applicable, and requires no special surgical instrument or training other than the basic surgical skills. Hence can be performed by a primary care surgeon. It is very important to understand the presentation and management of carcinoma penis by a primary care physician also because they encounter many such penile lesions in daily practice.

Ventral spatulation of the urethra provides a more streamlined flow and less splaying of urine. It also confers better cosmesis

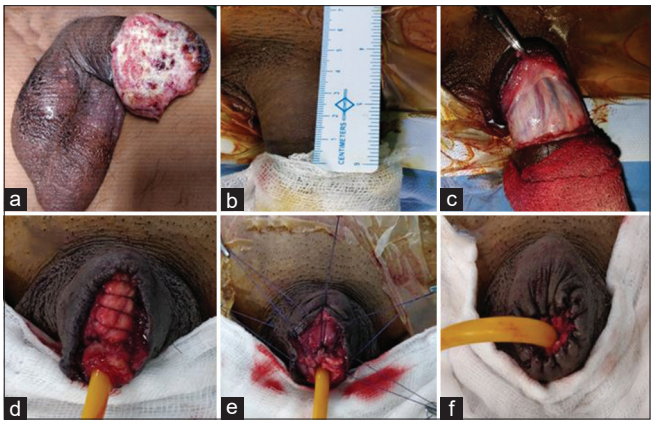

Figure 2: Surgical steps of modified parachute technique, (a). 4 × 3 cm growth involving glans and distal penis, (b). safety marking 1 cm beyond growth, (c). deep dorsal artery and vein, (d). closure of corpora cavernosa, (e). parachuting, (f). final appearance

and decreased possibility of meatal stenosis and retraction as neourethra is spatulated and everted. A large prospective study is required to affirm our findings. Modified parachute technique of neomeatal reconstruction after partial penectomy is a simple, easily learnable technique with good functional outcome.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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