Management of a case of extensive penile condyloma acuminata with full thickness skin graft for penile skin reconstruction

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A R T I C L E  I N F O

Keywords:
Penile
Warts
Full-thickness skin graft
Reconstruction

A B S T R A C T

We present a case of extensive Condyloma acuminata lesions involving significant area of the penile and genital skin. He underwent a complete excision of the lesions. Reconstruction of the penile skin was performed using full-thickness skin graft. The patient recovered well with no graft contracture or disfigurement.

1. Introduction

Infection with human papilloma virus can result in multitude of clinical presentations depending on the serotype of the virus, the extent of the infection, and the patient’s immune status. In some cases, untreated genital warts can progress markedly and affect a significant part of the genital skin.\textsuperscript{1} There are several clinical approaches to managing these benign lesions, ranging from topical creams to more extensive surgical excision. In this article we report on a case of extensive condyloa acuminata involving penile, scrotal and perineal skin.\textsuperscript{1}

2. Case presentation

A 55-year-old male who presented with extensive genital warts. The genital warts started to appear years ago and were managed with Podofilox cream, which resulted in no improvement. The patient’s warts progressed and eventually affected most of the penile skin and spread to the scrotum and perineum. Physical examination of the genitourinary system revealed extensive condyloma acuminata along the entire shaft of the penis with satellite lesions at the superior aspect of the scrotum, perineum and peri-anal (Fig. 1-A).

Management was planned to be done by a multidisciplinary approach including urology, colorectal surgery, and plastic surgery. Treatment options were discussed with the patient, and we agreed to proceed with complete excision of penile skin and penile lesions, and excision of the satellite genital warts with reconstruction of penile skin using full-thickness skin graft (FTSG).

We started by excision of the satellite lesions by incising the surrounding skin in an elliptical fashion, and the defects were closed using absorbable stitches. For the penile lesions, we performed a complete degloving of the penis and the entire penile skin was excised and removed. A circumferential incision was made 3 mm proximal to the subcoronal sulcus and another circumferential incision was made at the penoscrotal junction. The penile skin was then dissected away from dartos fascia, preserving it to provide blood supply to the graft. Next, we harvested a FTSG for penile skin reconstruction. The stretched length of the exposed penile shaft was measured excluding the glans, which was 9 cm in length and 7 cm in circumference. Next, we turned our attention to harvesting a FTSG from the lower abdomen, midway between the umbilicus and the symphysis pubis. Rectangular area with needed measurements was marked. We extended the upper and lower borders laterally on both sides to form an elliptical shape to facilitate wound closure. The marked area of the skin was harvested using sharp dissection and was defatted. Next, a wedge part of the subcutaneous tissue was excised to allow a tension-free approximation of the wound edges and the wound was closed in two layers.

The graft was tubularized around the penis, and the edges of the graft were approximated using absorbable sutures. Proximal and distal edges of the graft were circumferentially fixed to the edges of the subcoronal sulcus distally and skin at the base of the penis proximally (Fig. 1-B). The middle part of the graft was found to be tight, so it was augmented ventrally with a patch from extra skin graft that was harvested. Quilting

\begin{itemize}
\item \textbf{Abbreviations:} FTSG, Full-thickness skin graft; STSG, Split-thickness skin graft.
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https://doi.org/10.1016/j.eucr.2022.102212
Received 22 August 2022; Accepted 3 September 2022
Available online 8 September 2022
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stitches were placed between the graft and underlying dartos fascia and tunica albuginea ventrolaterally and dorsolaterally to avoid urethra and dorsal vessels and nerves. A Foley catheter was placed and a dressing was applied using occlusive gauze and foam wrapped around the penis. The dressing was removed after 5 days. The suprapubic donor site healed well. The graft also healed well and follow-up at 4 months showed no signs of contracture or disfigurement. The patient was satisfied with the results and denied urinary symptoms (Fig. 1-C).

3. Discussion

Genital warts are one of the most common manifestations of HPV infection (3). Choosing the appropriate treatment plan is based on lesion’s characteristics and patient’s characteristics. The goal of treatment is to remove visible wart and minimize tissue destruction. Management of condyloma acuminata can be nonsurgical or surgical treatments.

Nonsurgical options may be used for less extensive disease. Surgical treatment is appropriate for large number of lesions, or extensive lesions that extend over a large surface area. Surgically removing genital warts that extend over a large surface area can lead to significant skin loss that requires reconstruction. Genital skin reconstruction techniques vary based on the size of the defect, which include mobilization of local skin flap or harvesting of a skin graft. Split-thickness skin grafts (STSG) and FTSG are two options that have been reported for reconstruction of penile skin. Despite STSG being a good option for penile skin reconstruction, it has a higher risk of shrinking more than FTSG which may affect penile erection. For this patient, we planned to use FTSG to provide the best chance of maintaining the elasticity of the skin during erections and decrease the risk of graft contraction. During the harvesting stage of FTSG, it is important to allow for 40%–45% primary contraction compared to only 10% for STSG; however, after transfer to the recipient site, FTSG maintains the same size, while STSG exhibits significant secondary contraction. FTSG has been commonly used in areas where cosmetic outcome is of high priority like facial skin reconstruction. There are not many articles in the literature that directly compare the outcomes and effectiveness of STSG and FTSG for genital skin reconstruction. The outcome for this patient was excellent, as the skin graft healed appropriately with no contracture, infection, or dehiscence. The patient was able to achieve normal erections and maintained satisfactory sexual function as a result of the elastic quality offered by FTSG.

4. Conclusion

Surgical removal is an appropriate option for the management of large, extensive condyloma acuminata. There are multiple reconstruction techniques to restore the penile skin defect. Full-thickness skin grafting can offer a great option due to greater elasticity and lower risk of graft contraction.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

None.

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