

# Radical Excision of a Buschke-Lowenstein Tumor and Excellent Reconstruction of the Tissue with Cutaneous Flap and Split-thickness Skin Graft

Ümit Eskidemir<sup>1</sup>, Adnan Şimşir<sup>2</sup>

<sup>1</sup>Department of Urology, İzmir Menemen State Hospital, İzmir, Turkey, <sup>2</sup>Department of Urology, Ege University School of Medicine, İzmir, Turkey

## ABSTRACT

Buschke-Lowenstein tumor (BLT) is rare and potentially malignant tumor which can be transformed from condyloma acuminata. Aggressive local growth, destruction, and infiltration of neighboring tissues significantly reduce the quality of life. Although various treatment modalities have been described, surgical excision remains the “gold standard” therapy and should be the treatment of choice. Reconstruction of the wound is safe and feasible using several flap and graft techniques in experienced hands. Herein, we report a case of BLT which was successfully reconstructed with cutaneous flap and split-thickness skin graft after radical excision.

**Key words:** Buschke-Lowenstein tumor, Condyloma acuminata, Flap, Graft, Human papillomavirus, Radical excision, Reconstruction

## INTRODUCTION

Condyloma acuminata (CA), also known as anogenital warts, represents a cutaneous infection caused by sexual transmission of the human papillomavirus (HPV).<sup>[1]</sup> More than 80% of genital warts are associated with low-risk HPV subtypes 6 and 11 and the rest with high-risk HPV subtypes 16, 18, 52, and 56.<sup>[2]</sup> CA may progress to a form called giant CA, also known as a Buschke-Lowenstein tumor (BLT).<sup>[3]</sup> The progression of CA to a BLT occurs on very rare occasions. The most common risk factor is immunosuppression with HIV; however, any other cause of immunodeficiency can be a predisposing factor.<sup>[4]</sup> BLT is a benign, slow-growing, and locally destructive cauliflower-like lesion. Although the characteristic feature of BLT is a benign appearance on histopathology, the lesion has locally destructive behavior and may undergo malignant transformation.<sup>[5,6]</sup> The most distinctive feature of BLT is malignant behavior, aggressive local growth by compression, destruction, and infiltration of neighboring tissues and lack

of spontaneous resolution.<sup>[7]</sup> Due to the risk of malignancy, surgery is the first-line treatment for BLT.<sup>[8,9]</sup> Herein, we report a case of BLT which was successfully reconstructed with cutaneous flap and split-thickness skin graft after radical excision.

## CASE REPORT

The patient, a 64-year-old Turkish male, was referred to dermatology in August 2015 for a giant tumor in penopubic and prepubic regions extending from the penis shaft. The tumor had been growing in the patient for almost 10 years. Due to feelings of shame with his condition, he did not seek any medical advice until the overgrown tumor has started to give him problems while sexual intercourse.

The clinical examination revealed a giant irregular cauliflower-like tumor in penopubic and prepubic regions extending from the penis shaft. The tumor was 12 cm × 20 cm in diameters and it was significant for BLT [Figure 1].

### Address for correspondence:

Ümit Eskidemir, Department of Urology, İzmir Menemen State Hospital, İzmir, Turkey. Tel.: +90 505 872 96 82.  
E-mail: dr.eskidemir@gmail.com

© 2018 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

The diagnosis of BLT was histologically confirmed with condylomas' biopsies consistent with verrucosis and papillomatous hyperkeratotic lesions with many superficial koilocytes, a slightly congestive chorion punctuated of some mononucleated inflammatory elements, and a few basal mitosis. No cellular atypia was found. There were no features of malignancy. The ELISA test for detecting the HIV1/HIV2 antibodies was negative. The medical history of the patient did not reveal chronic disease or the administration of some medications which might have suppressed the function of the immune system.

After pathologic evaluation, the patient was referred to urology for surgical excision of the tumor. On October 2015, after receiving the written consent of the patient, surgery was performed and the giant tumor was totally excised by means of an electric scalpel, until healthy tissue is reached in spinal anesthesia [Figure 2]. The prepubic and penopubic tissue loss was covered with fatty subcutaneous tissue flaps and the penile tissue loss was covered with split-thickness skin graft [Figure 3]. A wide-spectrum antibiotic was administered intravenously (both pre- and post-operatively) along with analgesic and anti-inflammatory treatment. The wound was cleaned and dressed on a daily basis. The wounds healed by primary intention approximately 1 week after the procedure. The patient was discharged home at post-operative day 8, before the wounds were fully healed. The histopathological outcome was papillary CA, with no signs of invasion, dysplasia, or any malignant transformation. The 2- and 4-month follow-up examinations showed full wound healing and a normal sexual activity. The patient was then lost to follow-up after 4 months of follow-up. After surgery, the patient's subjective quality of life improved a lot, mainly due to the full, radical tumor removal.

## DISCUSSION

CA is among the most common sexually transmitted disease worldwide. The incidence of CA seems to be increasing, with a peak incidence observed in the 20–24-year-old age group.<sup>[10,11]</sup> HPV transmission usually occurs after epithelial contact with an HPV-infected surface and depends on sexual behavior. Previous studies have reported that, in fact, HPV infection is highly related to the lifetime number of sexual partners and that condoms have a very limited role in preventing the transmission of the virus.<sup>[12-14]</sup> CA is commonly associated with low-risk HPV types 6 and 11. About 90% of genital warts are caused by HPV 6 and 11.<sup>[15]</sup> HPV is an epidermotropic DNA virus which causes various benign and malignant lesions involving the anogenital region.<sup>[16]</sup> Even though most of the genital warts are considered benign, a long-standing genital wart can turn malignant due to the dynamics between the virus and the immunologic response of the host.<sup>[4]</sup> More than 90% of the genital warts regress



**Figure 1:** Pre-operative view of the Buschke-Lowenstein tumor located in penopubic and prepubic regions



**Figure 2:** Perioperative view of the wound after radical excision



**Figure 3:** Post-operative view of the operation site after reconstruction

within 18 months, whereas others persist and recur over time. Immune deficiency status augments the malignant potential of the giant warts.<sup>[17]</sup>

Rarely, CA may progress to a form called giant CA, also known as BLT.<sup>[3]</sup> BLT has an incidence of 0.1% in the general population with a male-to-female ratio of 2.7:1.<sup>[18]</sup> Negligence, shame, and fear induced by a possible malignant lesion often lead to a delayed arrival to the physician, which might affect the quality of life, might increase the risk of malignant degeneration and the likelihood of tumor growth to monstrous dimensions. In previous studies, malignant transformation into squamous cell carcinoma has been reported.<sup>[19]</sup> Malignancy, local invasion, and recurrence are the major causes of morbidity in these patients. Coinfection with other viruses enhances the oncogenic ability of HPV. Since the oncogenic process is slow, an early removal of the genital warts when noticed by the patient could be useful to prevent a BLT.<sup>[20]</sup>

Various treatment modalities have been described for the treatment of CA and BLT. Selection of therapy depends on the physical and psychosocial condition besides the availability of medical facilities. Size, anatomical location, and the amount and character of genital warts, as well as the presence of comorbidity such as pregnancy and immune system deficiency, will affect the therapy selection. A pre-exposure HPV vaccination could reduce the incidence in susceptible high-risk populations, and a post-exposure vaccination can potentially prevent genital wart formation.<sup>[21]</sup> The topical treatment mainly consists of podophyllin, a substance successfully used in genital wart therapy, but in BLT, there is an immediate recurrence rate and the lesions present tissue modifications resembling squamous cell carcinoma.<sup>[9,22]</sup> Adjuvant therapies such as chemotherapy, radiotherapy, or immunotherapy might have favorable effects, but their effectiveness is still under study and BLT is usually unresponsive to these treatment modalities.<sup>[23-25]</sup> The surgical treatment represents the “gold standard” therapy and consists of full-thickness excision and tumor-free margins control.<sup>[3,8,9,26,27]</sup>

Our case of great size BLT involving widely prepubic, penopubic, and penile shaft skin with no malignant transformation was treated by wide tissue excision. Very large excision defects were successfully covered by fatty subcutaneous tissue flaps and split-thickness skin graft. This technique was selected because it offers a rapid fasciocutaneous closure. The other advantages of our technique are the good vascular supply, reliable healing, short operative time, less post-surgical care, minimal patient morbidity, relatively pain-free surgery, and cost-effective wound closure compared to other approaches. Furthermore, esthetically, the patient was satisfied with the result of surgery.

## CONCLUSION

Radical surgery including full-thickness excision of the affected tissues represents the “gold standard” therapy for BLT. Reconstruction of the wound with fatty subcutaneous tissue flaps and split-thickness skin grafts provides an excellent esthetic outcome after radical excision of giant tumors.

## REFERENCES

1. Brentjens MH, Yeung-Yue KA, Lee PC, Tyring SK. Human papillomavirus: A review. *Dermatol Clin* 2002;20:315-31.
2. Garland SM, Steben M, Sings HL, James M, Lu S, Railkar R, *et al.* Natural history of genital warts: Analysis of the placebo arm of 2 randomized phase III trials of a quadrivalent human papillomavirus (Types 6, 11, 16, and 18) vaccine. *J Infect Dis* 2009;199:805-14.
3. Talwar A, Puri N, Singh M. Giant *Condyloma acuminatum* of Buschke and Lowenstein: Successful surgical treatment. *Int J STD AIDS* 2010;21:446-8.
4. Lilungulu A, Mpondo BC, Mlwati A, Matovelo D, Kihunrwa A, Gumodoka B. Giant *Condyloma acuminatum* of vulva in an HIV-infected woman. *Case Rep Infect Dis* 2017;2017:5161783.
5. Ahsaini M, Tahiri Y, Tazi MF, Elammari J, Mellas S, Khallouk A, *et al.* Verrucous carcinoma arising in an extended giant *Condyloma acuminatum* (Buschke-löwenstein tumor): A case report and review of the literature. *J Med Case Rep* 2013;7:273.
6. Creasman C, Haas PA, Fox TA Jr, Balazs M. Malignant transformation of anorectal giant *Condyloma acuminatum* (Buschke-loewenstein tumor). *Dis Colon Rectum* 1989;32:481-7.
7. Qian G, Yu H. Giant *Condyloma acuminata* of Buschke-Lowenstein: Successful treatment mainly by an innovative surgical method. *Dermatol Ther* 2013;26:411-4.
8. Chu QD, Vezeridis MP, Libbey NP, Wanebo HJ. Giant *Condyloma acuminatum* (Buschke-Lowenstein tumor) of the anorectal and perianal regions. Analysis of 42 cases. *Dis Colon Rectum* 1994;37:950-7.
9. Spinu D, Rădulescu A, Bratu O, Checheriță IA, Ranetti AE, Mischianu D, *et al.* Giant *Condyloma acuminatum* Buschke-Lowenstein disease a literature review. *Chirurgia (Bucur)* 2014;109:445-50.
10. Persson G, Andersson K, Krantz I. Symptomatic genital papillomavirus infection in a community. Incidence and clinical picture. *Acta Obstet Gynecol Scand* 1996;75:287-90.
11. Simms I, Fairley CK. Epidemiology of genital warts in England and wales: 1971 to 1994. *Genitourin Med* 1997;73:365-7.
12. Burk RD, Ho GY, Beardsley L, Lempa M, Peters M, Bierman R, *et al.* Sexual behavior and partner characteristics are the predominant risk factors for genital human papillomavirus infection in young women. *J Infect Dis* 1996;174:679-89.
13. Hippeläinen M, Syrjänen S, Hippeläinen M, Koskela H, Pulkkinen J, Saarikoski S, *et al.* Prevalence and risk factors of genital human papillomavirus (HPV) infections in healthy males: A study on Finnish conscripts. *Sex Transm Dis* 1993;20:321-8.
14. Wiley DJ, Harper DM, Elashoff D, Silverberg MJ, Kaestle C, Cook RL, *et al.* How condom use, number of receptive anal

- intercourse partners and history of external genital warts predict risk for external anal warts. *Int J STD AIDS* 2005;16:203-11.
15. Smith JS, Lindsay L, Hoots B, Keys J, Franceschi S, Winer R, *et al.* Human papillomavirus type distribution in invasive cervical cancer and high-grade cervical lesions: A meta-analysis update. *Int J Cancer* 2007;121:621-32.
  16. de Sanjose S, Quint WG, Alemany L, Geraets DT, Klaustermeier JE, Lloveras B, *et al.* Human papillomavirus genotype attribution in invasive cervical cancer: A retrospective cross-sectional worldwide study. *Lancet Oncol* 2010;11:1048-56.
  17. Gormley RH, Kovarik CL. Human papillomavirus-related genital disease in the immunocompromised host: Part I. *J Am Acad Dermatol* 2012;66:867.
  18. Radovanovic Z, Radovanovic D, Semnic R, Nikin Z, Petrovic T, Kucic B, *et al.* Highly aggressive Buschke-Löwenstein tumor of the perineal region with fatal outcome. *Indian J Dermatol Venereol Leprol* 2012;78:648-50.
  19. Trombetta LJ, Place RJ. Giant *Condyloma acuminatum* of the anorectum: Trends in epidemiology and management: Report of a case and review of the literature. *Dis Colon Rectum* 2001;44:1878-86.
  20. Venter F, Heidari A, Viehweg M, Rivera M, Natarajan P, Cobos E, *et al.* Giant *Condylomata acuminata* of Buschke-Lowenstein associated with paraneoplastic hypercalcemia. *J Investig Med High Impact Case Rep* 2018;6:2324709618758348.
  21. Blomberg M, Dehlendorff C, Munk C, Kjaer SK. Strongly decreased risk of genital warts after vaccination against human papillomavirus: Nationwide follow-up of vaccinated and unvaccinated girls in Denmark. *Clin Infect Dis* 2013;57:929-34.
  22. Machacek GF, Weakley DR. Giant *Condylomata acuminata* of Buschke and Lowenstein. *Arch Dermatol* 1960;82:41-7.
  23. De Toma G, Cavallaro G, Bitonti A, Polistena A, Onesti MG, Scuderi N, *et al.* Surgical management of perianal giant *Condyloma acuminatum* (Buschke-Löwenstein tumor). Report of three cases. *Eur Surg Res* 2006;38:418-22.
  24. von Krogh G, Lacey CJ, Gross G, Barrasso R, Schneider A. European course on HPV associated pathology: Guidelines for primary care physicians for the diagnosis and management of anogenital warts. *Sex Transm Infect* 2000;76:162-8.
  25. Shi H, Zhang X, Ma C, Yu N, Wang J, Xia L, *et al.* Clinical analysis of five methods used to treat *Condylomata acuminata*. *Dermatology* 2013;227:338-45.
  26. Ilkay AK, Chodak GW, Vogelzang NJ, Gerber GS. Buschke-Lowenstein tumor: Therapeutic options including systemic chemotherapy. *Urology* 1993;42:599-602.
  27. Hum M, Chow E, Schuurmans N, Dytoc M. Case of giant vulvar *Condyloma acuminata* successfully treated with imiquimod 3.75% cream: A case report. *SAGE Open Med Case Rep* 2018;6:2050313X18802143.0

**How to cite this article:** Eskidemir U, Şimşir A. Radical Excision of A Buschke-Lowenstein Tumor and Excellent Reconstruction of the Tissue with Cutaneous Flap and Split-thickness Skin Graft. *Clinic Res Urol* 2018;1(2):1-4.