

# A Case Report of Progression of a Buschke-Lowenstein Tumor of the Right Inguinal Region into Invasive Squamous Cell Carcinoma

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## Abstract

Buschke-Lowenstein tumors are primarily slow growing giant condylomata acuminata of the anogenital region. The tumors are located in the anogenital region and are classified as a sexually transmitted carcinoma. They are locally destructive with a low rate of metastasis. Sexually transmitted oncogenic human papillomavirus (HPV) infections type 6 and 11 are the greatest risk factor for Buschke-Lowenstein tumors or verrucous carcinomas. Verrucous carcinoma is a special type of squamous cell cancer. Generally, they are characterized by exophytic and endophytic growths destroying the underlying dermal and other surrounding structures. Grossly, the tumor appears as a large fungating, erythematous, cauliflower-like mass. Radical surgical excision of the tumor is the treatment of choice and close follow-up for recurrence is essential. The use of radiation or chemotherapy as adjunct treatments is controversial in the literature. In this case report, we have discussed the overview of the tumor, clinical presentation, diagnosis, and up-to-date management of this rare disease.

**Keywords:** Buschke-Lowenstein tumor; Verrucous carcinoma; Anogenital neoplasms; Human papillomavirus infections; Squamous cell carcinoma

## Introduction

Buschke-Lowenstein tumors are cauliflower-like tumors of the anogenital region. These tumors can progress to verrucous carcinoma, which is a variant of a squamous cell carcinoma. The tumors have a distinctive cauliflower-like appearance. The incidence of inguinal tumors is low and fifteen cases are reported in the literature. These tumors are commonly located on the penis, and very rarely in the inguinal region or fold. Verrucous carcinoma of the penis accounts for approximately 5% to 16% of all penile squamous cell cancer [1]. The tumors are broad base well-differentiated low-grade tumors extending to the underlying stroma. Regional lymph node involvement is rare, and few distant metastasis have been reported [1,2]. In this paper, we have presented the case of a 57-year-old male with progression of a giant Buschke-Lowenstein tumor of the right inguinal fold into invasive squamous cell carcinoma.

## Case Report

A 57-year-old male presented to the hospital with history of bloody and foul smelling discharge from his right groin area. The patient initially noticed a small strawberry-like lesion in his right groin area 4 years ago. Initially, the lesion was not bothersome, and thus, he never sought medical attention. The lesion started increasing in size 2 years ago extending into his right groin area. The lesion perforated about one week prior to admission in the hospital in May 2017 and started bleeding. It became painful and itching. The pain was associated with

a burning sensation. The patient decided to seek medical attention in an Urgent Care setting, but left without being seen after waiting for 2 hours. One week after presenting at the Urgent Care, he presented to the Emergency Department in a local hospital. He reported no fever, weight loss, chills, urinary discomfort, change in bowel movement, and any other skin lesions elsewhere. The rest of the reviews of systems were unremarkable.

On physical examination, the patient was afebrile and vital signs were hemodynamically stable. The patient was obese with difficulty ambulating because of the right groin pain. Examination of the right inguinal area showed an extensive, foul smelling cauliflower-like ulcerative lesion, measuring approximately 8cm in length by 6cm in width extending to the lateral aspect of the scrotal base (Figure 1). The lesion was perforated and bleeding (Figure 2). The lesion was not tender to palpation. The remainder of the physical examination was unremarkable.

Laboratory studies revealed mild leukocytosis (white blood cell count 12,400 per mm<sup>3</sup>), hemoglobin 12 gm/dL, hematocrit 35.7 gm/dL, and platelet count 324,000 per mm<sup>3</sup>. Basic metabolic panel revealed glucose 98 mg/dL, BUN 13 mg/dL, Cr 0.9 mg/dL, sodium 140 mEq/L, chloride 98 mEq/L, total bilirubin 0.6 mg/dL, alkaline phosphatase 66 U/L, ALT 12 U/L, and lactic acid 1.6 mmol/L. Human immunodeficiency virus and rapid plasma regain serological tests were unremarkable. The computer tomography (CT) scan of the abdomen and pelvis showed mild enlargement of the prostate with enlarged inguinal lymph nodes bilaterally, mostly on the right inguinal region. Furthermore, the CT showed a diffusely enhancing lobulated skin lesion in the medial right groin region with tiny foci of air with no fluid accumulation appreciated. Contrast enhanced CT of the chest, abdomen, and pelvis did not reveal any other lymph node involvement or distal metastasis. The patient stated that he was claustrophobic and refused to undergo an MRI study.



**Figure 1:** Cauliflower-like ulcerative right inguinal lesion exposed prior to surgery.



**Figure 2:** Strawberry-like large right inguinal lesion prior to surgical excision.

Based on the clinical presentation, a diagnosis of a benign giant condyloma accuminatum or condyloma accuminatum of Buschke-Lowenstein was suspected. The lesion appeared as cauliflower-like growths that resemble large warts. Since the clinical picture was not one of malignancy, the lesion was radically excised in multiple fragments with lymph node sparing. The entire specimen was sent for gross pathological examination and histopathological testing. Grossly, the tumor appeared as a large fungating, erythematous, cauliflower-like mass. Histopathology, the tumor showed papillary fronds without the central connective tissue core, typical of condylomata accuminata.

A preliminary pathological diagnosis of squamous cell carcinoma was made. A final diagnosis of invasive verrucous carcinoma with pathological staging T3 was made. The background showed a warty lesion with varying degrees of dysplasia ranging from mild to moderately severe. The true margins could not be accurately determined and evaluated for involvement by the malignancy because the specimen was received in multiple fragments. The tumor was strawberry-like and could not be resected in one piece. The tumor focally extended into the underlying subcutaneous tissue.

Using the DNA polymerase chain reaction and Southern blot method, samples taken from the tumor were positive for HPV DNA 6. The patient insisted on going home on post-op day 3. The wound culture was positive for pseudomonas with few normal skin flora. The Pseudomonas infection was treated with Ciprofloxacin 500mg twice a day for 2 weeks. The patient recovered well from the surgery and was discharged home on post-op day 3 with Ciprofloxacin antibiotics and transdermal tissue to apply to the surgical area. The patient followed up in the surgeon office in one week after discharged from the hospital. The wound was healing well with minimal discharge noted on physical examination.

The patient was seen in the oncologist office in 2 weeks post discharged for a follow up. The patient reported worsening right groin pain and limited activities of daily living. A firm tender mass was noted in his surgical site with no drainage or bleeding from the wound and no evidence of post op infection was appreciated. The patient had right and left inguinal adenopathy, which were present prior to surgery. A positron emission tomography of the pelvis in June 2017 revealed hypermetabolic masses within the subcutaneous tissue of the right groin extending toward the scrotum with enlarged hypermetabolic bilateral external iliac and inguinal adenopathy. There was an area of nodal uptake in the ascending colon highly suspicious for distal metastasis.

In May 2017, the patient was transferred to the University Hospital for further evaluation and treatment. The case was presented at the University Hospital tumor board meeting and the University oncologist discussed the case with the patient's family members. The patient was placed on Percocet and Neurontin for pain management. The patient was scheduled to undergo a colonoscopy. The tumor board recommended chemotherapy treatment for the invasive squamous cell carcinoma. In June 2017, the patient developed sepsis and was unable to undergo the colonoscopy and the chemotherapy. Because of the invasive nature of the disease, the family decided to place the patient under hospice care in another local hospital.

## Discussion

### Overview of the tumor

Anogenital verrucous carcinoma also known as condyloma accuminatum of Buschke-Lowenstein is a variant of squamous cell carcinoma [3]. Buschke and Lowenstein first described Buschke-Lowenstein tumors in 1925 [4]. These tumors resembling giant condylomata accumulata are located in the anogenital region. Some writers have described Buschke-Lowenstein tumors as benign tumors [5], and others have described them as malignancies [2]. Buschke-Lowenstein tumor differs from benign condylomata accuminata by its deep of infiltration and destructive growth into adjacent tissues [2]. In

1948 Ackerman described Buschke-Lowenstein tumors as verrucous carcinoma with low invasion potential and low rate of metastases [6]. Verrucous carcinoma is a variant of squamous cell cancer. Squamous cell carcinoma can develop on any cutaneous surface including the head, neck, trunk, extremities, mucosa, peri-inguinal areas, and anogenital areas. Inguinal fold or groin tumors have low incidence and prevalence in the United States and Europe. The low incidence of groin tumors limit the conduction of randomized trial studies [7]. These tumors have a low rate of metastasis. Handisurya, et al. studied the rapid progression of a Buschke-Lowenstein tumor in a 47 year-old human immunodeficiency (HIV) patient, and found metastases to the lymph nodes [2]. Thus, despite their low rate of metastasis, they can rapidly metastasize, especially in immunosuppressant patients.

The risks factors for verrucous carcinomas include HPV infection, anal receptive intercourse, HIV infection, immunosuppression, and poor hygiene [8]. Sexually transmitted oncogenic HPV infection type 6 and 11 is the greatest risk factor for verrucous tumors. HPV infection has been linked to intraepithelial neoplasia of the genital region and HPV associated invasive carcinoma [9]. In a study by Del Pino et al. [10], the prevalence of HPV in verrucous carcinoma was only 18.5%. Inguinal lymph nodes metastasis is the single most important adverse prognosis [11]. In addition, the depth of invasion and measurement of the tissue are important predictors of positive outcomes post-surgical excision of the tumor [11]. In this case study, the depth of invasion and measurement of the tumor was not measured because the tumor was excised in multiple fragments because of its fragility.

## Clinical Presentation

The most common site of Buschke-Lowenstein tumors is the penis [3]. Also, they can frequently be found at any anogenital mucosal surface, including the vulva, the vagina, perianal region, the rectum, and sometimes the bladder [12]. Cutaneous squamous cell carcinoma presents with a wide variety of clinical manifestations including papules, plaques, nodules, hyperkeratotic, ulcerative, or smooth lesions. The lesion grows slowly and rarely metastasized to lymph node, but might be locally destructive [2,8]. They are associated with a broad pushing border instead of infiltrative growth [11]. Giant condylomata accumulata are wildly growing tumors that are associated with HPV type 6 and 11 [9]. Generally, they are characterized by exophytic and endophytic growths destroying the underlying dermal and other surrounding structures.

## Diagnosis

Genitoanal and urethral HPV are the most common sexuality transmitted viral infections in the developed world [13]. It is difficult to differentiate benign giant condylomata accumulata from Buschke-Lowenstein tumor of the anogenital area [9]. Skin or lesion biopsies are required to confirm the diagnosis, but in our case, the surgeon decided on excisional biopsy. Histologically, the tumors are low-grade well-differentiated benign tumors whose degeneration can lead to a deadly local evolution because of difficulty and late diagnosis [3,12]. In addition, the tumors are characterized by local invasion with minimal dysplasia, and biologically by a low incidence of metastasis [3,12]. Unfortunately, most of these tumors are diagnosed at an advanced stage. The reasons that most patients delay in seeking medical treatment is due to psychological factors such as guilt, low self-esteem, fear of loss of fertility, and carcinophobia [3]. The use of CT scan and MRI studies is to evaluate for distant metastasis and other primary sources of the cancer. The patient's immunological status should be checked during the initial diagnosis of a Buschke-Lowenstein tumor [5]. In addition, testing for sexually transmitted infections such as HIV and syphilis is essential during the initial diagnosis.

## Management

Most HPV infections usually clear within 1-2 years. However, HPV

infections that persist, can progress to precancerous or invasive cancer. In our case, the Buschke-Lowenstein tumor persisted and progressed to a squamous cell carcinoma of the inguinal fold. Prevention of HPV through vaccination, use of condoms, and limiting the number of sexual partners is essential in reducing the incidence and prevalence of verrucous carcinoma.

Furthermore, radical surgical excision of the tumor is the treatment of choice for Buschke-Lowenstein tumors [13,14]. Recurrence is common, especially for tumors that have not been adequately excised. Conservative treatments such as Mohs microsurgery, cryosurgery, and laser surgery produce poor results in terms of disease control and recurrence [8]. Thus, radical surgery is the treatment of choice employed by many surgeons. Skin defects resulting from radical excision of these tumors can be corrected using surgical reconstructions. Mesh-skin grafts, S-plasty, split-thickness grafts, and other kinds of reconstructions may be employed in correcting skin defects. In our case, we performed radical excision and allowed healing by secondary intention. The incision site was healing well and we continued to monitor the patient for signs of recurrence.

The use of radiation therapy is controversial because of the risk of anaplastic transformation, extensive appearance of new condylomas, and lack of long-term positive results [15]. Furthermore, the use of systemic chemotherapy is not well defined in the literature for verrucous carcinomas [8]. Topical chemotherapy with 5-Fluorouracil produces poor results [16]. However, chemotherapy and radiation therapy may be used to treat recurrent Buschke-Lowenstein tumors. In addition, the efficacy of these therapies is not clearly documented in the literature. The use of chemotherapy and radiation therapy in the management of Buschke-Lowenstein tumors that have progressed to squamous cell carcinoma is documented in the literature [7]. However, we could not find the efficacy of radiation therapy for the treatment of these tumors in the literature.

## Conclusion

In the United States, prevention of HPV infection is a public health issue. HPV is the most important factor in the development of Buschke-Lowenstein tumors. Early diagnosis and treatment of condylomata acuminata are essential in the prevention of Buschke-Lowenstein tumors that could progress to squamous cell carcinoma. Radical excision with regular follow-up is essential in the management of Buschke-Lowenstein tumors and verrucous carcinoma. The frequency of follow-up has not been established. However, patients who have been diagnosed with Buschke-Lowenstein tumors should be followed closely by a primary care physician, a surgeon, and an oncologist. For patient with tumor metastases, chemotherapy is the treatment of choice.

## Declaration of Interest

1. This case report did not receive any specific grant from any funding agency in the public, commercial, or not-for-profit sector.
2. There is no conflict of interest that could be perceived as prejudicing the impartiality of this case presentation.

## Consent for Publication

A verbal consent was obtained from the patient for the publication of this case report and any accompanying images.

## References

1. Nomikos M, Barmapoutis P, Papakonstantinou E, Zacharias C, Ouzounoglou P, Efstathiadou P, et al. A Giant Verrucous Carcinoma of the Penis Presenting with Urinary Sepsis and Angina. *Case Reports in Medicine*. 2014; Article ID 207026.
2. Handisurya A, Rieger A, Bago-Horvath Z, Schellenbacher C, Bankier A, Salat A, et al. Rapid progression of an anal Buschke-Lowenstein tumour into a metastasising squamous cell carcinoma in an HIV-infected patient. *Sexually Transmitted Infections*. 2009; 85:261-263.
3. Lu S, Bodemer W, Ostwald C, Barten M, Zimmermann R, Seipp C, et al. Anal Verrucous Carcinoma and Penile Condylomata acuminata. *Dermatology*. 2000; 200:320-323.
4. Heinzerling LM, Kempf W, Kamarashev J, Hafner J, Nestle FO. Treatment of Verrucous Carcinoma with Imiquimod and CO<sub>2</sub> Laser Ablation. *Dermatology*. 2003; 207:119-22.
5. Correia E, Santos A. Buschke-Lowenstein Tumour: Successful Treatment with Minimally Invasive Techniques. *Case Reports in Dermatological Medicine*. 2015; Article ID 651703.
6. Ackerman L. Verrucous carcinoma of the oral cavity. *Surgery*. 1948; 23:670-8.
7. Mitra A, Agarwal P, Singh R, Verma S, Srivastava V, Chugh A, et al. Squamous cell carcinoma of the scrotum - still an occupational hazard. *Indian Journal of Occupational and Environmental Medicine*. 2014; 18:150-2.
8. Gole G, Shekhar T, Gole S, Prabhala S. Successful treatment of buschke-lowenstein tumour by surgical excision alone. *Journal of Cutaneous and Aesthetic Surgery*. 2010; 3:174-6.
9. Gross G, Pfister H. Role of human papillomavirus in penile cancer, penile intraepithelial squamous cell neoplasias and in genital warts. *Medical Microbiology and Immunology*. 2004; 193:35-44.
10. Del Pino M, Bleeker MC, Quint WG, Snijders PJ, Meijer CJ, Steenberg RD. Comprehensive analysis of human papillomavirus prevalence and the potential role of low-risk types in verrucous carcinoma. *Modern Pathology*. 2012; 25:1354-63.
11. Bezerra SM, Chau A, Ball MW, Faraj SF, Munari E, Gonzalez-Roibon N, et al. Human papillomavirus infection and immunohistochemical p16INK4a expression as predictors of outcome in penile squamous cell carcinomas. *Human Pathology*. 2015; 46:532-40.
12. Schwartz RA. Verrucous carcinoma of the skin and mucosa. *J Am Acad Dermatol*. 1995; 32:1-21.
13. Rhea WG, Jr., Bourgeois BM, Sewell DR. Condyloma acuminata: A fatal disease? *The American Surgeon*. 1998; 64:1082-7.
14. Gholam P, Enk A, Hartschuh W. Successful Surgical Management of Giant Condyloma Acuminatum (Buschke-Lowenstein Tumor) in the Genitoanal Region: A Case Report and Evaluation of Current Therapies. *Dermatology*. 2008; 218:56-9.
15. Sobrado CW, Mester M, Nadalin W, Nahas SC, Bocchini SF, Habr-Gama A. Radiation-induced total regression of a highly recurrent giant perianal condyloma: report of case. *Dis Colon Rectum*. 2000; 43:257-60.
16. 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.