

Malignant Transformation of a Giant Buschke-Lowenstein Tumor: Review of Treatment Options and Case Report

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AUTHOR CONTRIBUTIONS

Magdalena Konieczna: Study Design, Data Collection

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Krzysztof Batycki: Study Design, Data Collection, Data Interpretation, Funds Collection

Robert Wiraszka: Statistical Analysis, Manuscript Preparation

ETHICS STATEMENT

The study does not meet criteria of medical or therapeutic experiment as it does not intervene into the treatment process. Therefore, informed consent was not required.

CONSENT

The study contains only de-identified data, including anonymized images. The study does not contain any data or images that would de-anonymize the patient.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

ABSTRACT

Condylomata acuminata (genital warts, condylomata cuminata) are benign epithelial proliferations caused by infection with the human papillomavirus, most frequently types 6 and 11. They occur mainly on the skin of the genital organs and around the anus and on the oral mucosa, usually as soft, papillomatous growths with a mild course and limited size. In rare cases, particularly in immunocompromised individuals, untreated condylomata may progress to giant condylomata, known as Buschke-Lowenstein tumors, which carry a potential risk of malignant transformation.

We report a case of a 58-year-old patient in whom an ulcerated perianal skin lesion developed into an invasive squamous cell carcinoma infiltrating the dermis. Clinically, the lesion presented as a giant, cauliflower-like mass, necessitating the creation of sigmoid colostomy due to progressive bowel obstruction and tumor compression of the distal gastrointestinal tract. This decision was made prior to the planned palliative radiotherapy, the urgent implementation of which was justified by recurrent, intense bleeding from the tumor leading to the anemia and deterioration of the patient's general condition.

CASE REPORT

BACKGROUND

Condylomata acuminata, caused by human papillomavirus (HPV) infection, are benign lesions. Although the prevalence of BLT in the general population is low, it increases in certain groups, including homosexual men. Other important risk factors include immunosuppression, particularly in patients with acquired immunodeficiency syndrome (HIV) and in those receiving immunosuppressive therapy. Chronic inflammation accompanying infection, which contributes to its progression, often prevents patients from receiving appropriate and timely medical care. The aim of this article is to highlight the need to raise health awareness among patients, particularly regarding the early recognition and diagnosis of lesions in the anogenital

region. Many cases, especially those with a chronic course, remain undiagnosed and untreated in the early stages due to feelings of embarrassment, fear of judgment, or discomfort associated with examination.

Giant condylomas (Buschke-Löwenstein tumors) are rare, slow-growing neoplastic lesions of a locally malignant nature, caused mainly by human papillomavirus (HPV) types 6 and 11.

Although histologically benign, they exhibit clinically aggressive local growth, with a tendency to recur and a potential for malignant transformation into squamous cell carcinoma, observed in 30-56% of cases [1]. These changes

are most commonly located in the anogenital area, including the anal area, perineum, and groin. Risk factors include anal intercourse among homosexual men, immunosuppression, sexually transmitted infections, long-term HPV infection, poor hygiene and smoking. Due to their deep infiltration and potential complications, such as fistulas, abscesses, or bleeding, early diagnosis and treatment are crucial [2]. The gold standard treatment is wide surgical excision with clear margins, often allowing the wound to heal by secondary intention. However, even after radical treatment, the recurrence rate remains high, reaching up to 67%. Alternative methods, such as radiotherapy or immunotherapy (e.g. imiquimod), are used in selected cases, especially when surgery is contraindicated [1].

We present the case of a 58-year-old patient with higher education, exhibiting with massive giant condyloma acuminata lesions in the perineal and inguinal regions, which underwent malignant transformation into squamous cell carcinoma. Despite surgical treatment and radiotherapy, the patient died of massive bleeding during palliative radiotherapy. This case highlights the importance of early diagnosis and a comprehensive therapeutic approach in the treatment of Buschke-Löwenstein tumors.

CASE REPORT

Imaging Findings

A 58-year-old man presented to the oncologist in February with progressively increasing difficulty in sitting due to extensive lesions in the anogenital region.

On physical examination, giant, cauliflower-like masses involving the perineal area and the right inguinal region were noted (Figure 1). The patient's general condition was assessed as WHO performance status 2.

Ultrasound of the groin (22 February) demonstrated a right inguinal lymph node measuring 20×9 mm, raising suspicion of a metastatic lesion.

Subsequently, on February 29, a biopsy was obtained from an ulcerated area of skin in the perianal region. Histopathological examination revealed the presence of squamous cell carcinoma infiltrating the dermis.

Further diagnostic procedures included pelvic magnetic resonance imaging (MRI) performed on March 19, which demonstrated a large, heterogeneous mass consistent with a giant Buschke-Löwenstein tumor (Figure 2), extending through the perineal and inguinal regions. The lesion was massive, but exact three-dimensional measurements were not available in the medical documentation. Focal neoplastic infiltration of the lower left rectal wall was suspected.

PET/CT (21 March) revealed multiple areas of pathologically increased glucose uptake:

- Left inguinal region – SUVmax ≈ 12 , with infiltration of the skin and subcutaneous tissue (Figure 3),

- Anal fissure – SUVmax 19.0, consistent with malignant transformation,
- Pulmonary lesions: segment 1/2 of the left lung (20×13 mm, SUVmax 6.7), segments 9 and 10 of the right lung (10 mm each, SUVmax up to 4.8),
- Lymph nodes: right lower paratracheal (SUVmax 9.0), subcarinal (SUVmax 6.9), pulmonary hila (SUVmax up to 5.3), para-aortic (SUVmax up to 4.7), common and external iliac (SUVmax up to 8.1), inguinal (SUVmax up to 8.7) (Figures 4-6).

Additionally, lower abdominal skin edema was observed, further supporting the impression of advanced systemic disease (Figures 7-9).

Management

On 28 March, a multidisciplinary tumor board recommended a protective loop sigmoid colostomy to reduce symptoms of bowel obstruction, improve quality of life, and facilitate further oncological treatment. The procedure was performed electively on 16 April without immediate complications.

The patient was referred for palliative radiotherapy due to recurrent bleeding from the tumor.

Follow-up

Despite initiation of palliative radiotherapy and supportive care, the patient's clinical status continued to deteriorate. On 22 May, during the course of treatment, he developed a sudden and massive hemorrhage from the perineal tumor, leading to rapid exsanguination and death in the radiotherapy ward.

DISCUSSION

Etiology & demographics

In most individuals infected with human papillomavirus (HPV), particularly types 6 and 11, the course of infection is limited to mild, small lesions of the genital or perianal region. Only a small proportion of patients develop massive, infiltrative lesions known as Buschke-Löwenstein tumors (BLT), which are characterized by local aggressiveness and a potential for malignant transformation. This transformation, which most often leads to squamous cell carcinoma, is observed in 30-56% of cases, especially in the context of chronic inflammation, lack of adequate treatment, or concomitant immunosuppression [3,4]. Although BLT is rare in the general population, its incidence increases significantly in high-risk groups, which include men who have sex with men (MSM), HIV-infected individuals and patients with chronic immunodeficiency [5,7]. The literature also highlights the importance of factors such as tobacco smoking, chronic HPV infection, poor personal hygiene, and delayed diagnosis [3-5]. These changes are most commonly located in the anogenital area, including the anal area, perineum, and groin.

Clinical & imaging findings

Clinically, BLT may resemble benign genital warts for a long time, however, its true nature is manifested by aggressive local growth, invasion of adjacent tissues, destruction of anatomical structures, and susceptibility to complications such as ulceration, fistula formation, or bleeding [3,7]. Patient did not report any symptoms of immunodeficiency, he was a middle-aged man who had probably had untreated condyloma acuminata for a long time, which led to their massive growth and malignant transformation.

Due to their deep infiltration and potential on complications, such as fistulas, abscesses, or bleeding, early diagnosis and treatment are crucial [2].

Treatment & Prognosis

The gold standard treatment is wide surgical excision with clear margins, often allowing the wound to heal by secondary intention. However, even after radical treatment, the recurrence rate remains high, reaching up to 67% [1]. Alternative methods, such as radiotherapy or immunotherapy (e.g. imiquimod), are used in selected cases, especially when surgery is contraindicated [1]. Our patient was referred to specialist care at an advanced stage of the disease, with extensive infiltrates in the perineum and groin and general symptoms in the form of inability to sit. Imaging studies (MRI and PET/CT) revealed lesions characteristic of BLT, as well as foci suspicious for malignant transformation. Despite surgical intervention in the form of colostomy creation and the initiation of radiotherapy, the patient died due to massive hemorrhage, one of the possible complications of this pathology.

Differential Diagnoses

The differential diagnosis of Buschke-Löwenstein tumor (BLT) includes condyloma acuminatum, verrucous carcinoma, and squamous cell carcinoma. Condyloma acuminatum typically presents as small, benign papillomatous lesions without aggressive local invasion. Verrucous carcinoma shares the exophytic morphology of BLT but demonstrates malignant behavior with infiltrative growth. Squamous cell carcinoma is usually rapidly progressive, with deep infiltration and destructive features. Imaging is helpful for distinction, as BLT presents as large, cauliflower-like masses with local invasion but often retains benign histology until malignant transformation occurs.

The case highlights the importance of early diagnosis and the need to raise health awareness, especially among men, about anogenital diseases. Delayed visits to the doctor are often due to feelings of shame, fear of social judgment, or discomfort associated with the examination of intimate areas [4,6].

TEACHING POINT

Giant condylomas are rare, predominantly epithelial lesions that typically present as large, exophytic, cauliflower-like

masses on imaging, often with local tissue invasion. Despite their benign histology, they carry a risk of malignant transformation, making early recognition and multidisciplinary management essential for preventing serious complications.

QUESTIONS

Question 1: Condylomata acuminata:

- a) occur on the skin in the form of flat, diffuse lesions
- b) are caused by HPV types 16 and 18 infection
- c) there is no risk of malignant transformation
- d) are mainly located in the genital area, anus, and oral mucosa (applies)
- e) progression to giant condylomata is very common

Explanation:

a) Condylomata acuminata occur as soft, papillomatous growths with a mild course. [They occur (...) usually as soft, papillomatous growths with a mild course and limited size.]

b) Condylomata acuminata are caused by HPV types 16 and 18 infection [Condylomata acuminata (genital warts, condylomata acuminata) are benign epithelial proliferations caused by infection with the human papillomavirus (HPV), most frequently types 6 and 11.]

c) Condylomata acuminata may progress to Buschke-Löwenstein tumors (BLT). [In rare cases, particularly in immunocompromised individuals, untreated condylomata may progress to giant condylomata, known as Buschke-Löwenstein tumors (BLT), which carry a potential risk of malignant transformation.]

d) Condylomata acuminata are mainly located in the genital area, anus, and oral mucosa [They occur mainly on the skin of the genital organs and around the anus and on the oral mucosa(...)]

e) Progression to giant condylomata is rare. [In rare cases, particularly in immunocompromised individuals, untreated condylomata may progress to giant condylomata, known as Buschke-Löwenstein tumors (BLT), which carry a potential risk of malignant transformation.]

Question 2: Mark the correct answer regarding the risk of developing BLT:

- a) increased risk in homosexual women
- b) tobacco smoking does not increase the risk
- c) the risk is the same in both healthy patients and those with HIV infection
- d) personal hygiene does not affect the risk
- e) delayed diagnosis is a factor that increases the risk (applies)

Explanation:

a) The risk of transformation increases in homosexual men. [(...) incidence increases significantly in high-risk groups, which include men who have sex with men (MSM), HIV-infected individuals, and patients with chronic immunodeficiency]

b) Tobacco smoking increase the risk. [The literature also highlights the importance of factors such as tobacco smoking, chronic HPV infection, poor personal hygiene, and delayed diagnosis.]

c) The risk increases in patient with HIV infection. [(...) incidence increases significantly in high-risk groups, which include men who have sex with men (MSM), HIV-infected individuals, and patients with chronic immunodeficiency]

d) Personal hygiene affect the risk [The literature also highlights the importance of factors such as tobacco smoking, chronic HPV infection, poor personal hygiene, and delayed diagnosis]

e) Delayed diagnosis is a factor that increases the risk [The literature also highlights the importance of factors such as tobacco smoking, chronic HPV infection, poor personal hygiene, and delayed diagnosis.]

Question 3: Malignant transformation potential of BLT:

- a) occurs in about 90% of cases
- b) most commonly leads to squamous cell carcinoma (applies)
- c) BLT does not show malignant transformation potential
- d) chronic inflammation has no effect on transformation
- e) most commonly leads to adenocarcinoma.

Explanation:

a) Transformation potential of BLT occurs in 30-56% of cases. [(...) This transformation, which most often leads to squamous cell carcinoma, is observed in 30-56% of cases(...)]

b) Transformation potential of BLT most often leads to squamous cell carcinoma [(...) This transformation, which most often leads to squamous cell carcinoma, is observed in 30-56% of cases(...)]

c) BLT show malignant transformation potential. [(...) This transformation, which most often leads to squamous cell carcinoma, is observed in 30-56% of cases(...)]

d) Chronic inflammation increase the risk of transformation. [(...) This transformation (...), especially in the context of chronic inflammation, lack of adequate treatment, or concomitant immunosuppression]

e) Transformation potential of BLT most often leads to squamous cell carcinoma.[(...) This transformation, which most often leads to squamous cell carcinoma, is observed in 30-56% of cases(...)]

Question 4: Treatment of BLT:

- a) surgical resection is impossible
- b) surgical resection does not include a safety margin
- c) alternative methods include radiotherapy and immunotherapy (applies)
- d) after radical treatment, no recurrences are observed
- e) the gold standard treatment is radiotherapy

Explanation:

a) Surgical resection is a gold standard. [(...) The gold standard treatment is wide surgical excision with clear margins, often allowing the wound to heal by secondary intention.]

b) Surgical resection include a safety margin. [(...) The gold standard treatment is wide surgical excision with clear margins, often allowing the wound to heal by secondary intention.]

c) Alternative methods include radiotherapy and immunotherapy. [Alternative methods, such as radiotherapy or immunotherapy (e.g., imiquimod), are used in selected cases,

especially when surgery is contraindicated.]

d) After radical treatment recurrences are observed. [However, even after radical treatment, the recurrence rate remains high, reaching up to 67%.]

e) The gold standard treatment is surgical resection. [(...) The gold standard treatment is wide surgical excision with clear margins, often allowing the wound to heal by secondary intention.]

Question 5: Choose the correct statement about BLT:

- a) it is characterized by benign and generalized growth
- b) it does not cause destruction of surrounding anatomical structures
- c) it has no tendency to complications
- d) it does not infiltrate adjacent tissues
- e) it may resemble benign genital warts for a long time (applies)

Explanation:

a) It is characterized by aggressive local growth. [Clinically, BLT (...) however, its true nature is manifested by aggressive local growth, invasion of adjacent tissues, destruction of anatomical structures(...)]

b) It cause destruction of surrounding anatomical structures. [Clinically, BLT (...) however, its true nature is manifested by aggressive local growth, invasion of adjacent tissues, destruction of anatomical structures(...)]

c) It has tendency to complications. [Clinically, BLT (...) and susceptibility to complications such as ulceration, fistula formation, or bleeding.]

d) It infiltrate adjacent tissues. [Clinically, BLT (...) however, its true nature is manifested by aggressive local growth, invasion of adjacent tissues, destruction of anatomical structures(...)]

e) It may resemble benign genital warts for a long time. [Clinically, BLT may resemble benign genitals warts for a long time (...)]

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FIGURES



Figure 1: Cauliflower-like Buschke-Löwenstein tumor in the anal and perianal area

Findings: Clinical image shows large, exophytic, cauliflower-like mass involving the perianal area.

Technique: Clinical photograph at presentation, anonymized.

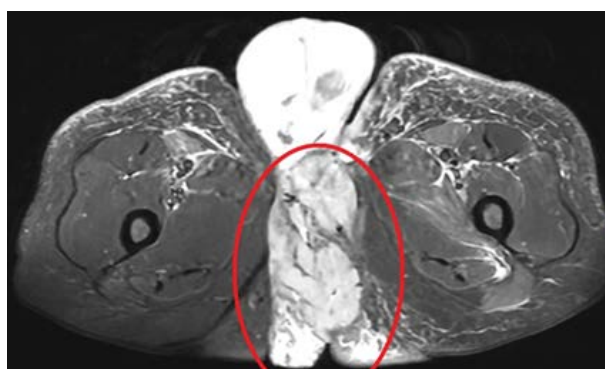


Figure 2: MR Ax STIR, cauliflower-like Buschke-Löwenstein tumor in the anal and perianal area

Findings: Axial STIR MRI demonstrates a heterogeneous, cauliflower-like mass in the anal and perianal area.

Technique: MRI pelvis, STIR sequence, axial plane.



Figure 3: MR sag T2, cauliflower-like Buschke-Löwenstein tumor in the anal and perianal area

Findings: Sagittal T2-weighted MRI reveals extensive mass in the perianal area.

Technique: MRI pelvis, T2-weighted, sagittal plane.



Figure 4: MR cor T2 FSE, cauliflower-like Buschke-Löwenstein tumor in the anal and perianal area

Findings: Coronal T2 FSE MRI demonstrates extensive exophytic mass in the perianal area.

Technique: MRI pelvis, T2 FSE sequence, coronal plane.

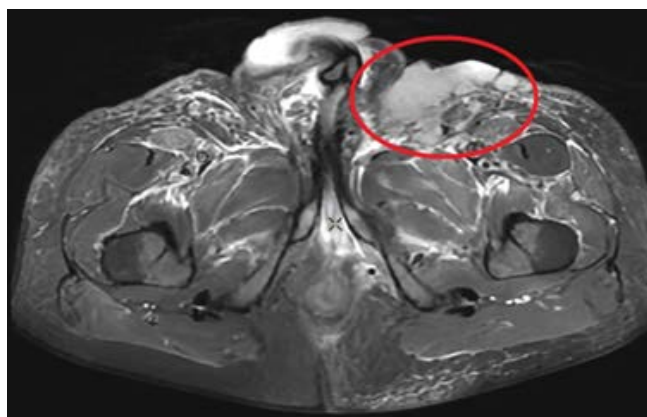


Figure 5: MR Ax STIR, infiltration of the left groin

Findings: Axial STIR MRI demonstrates infiltration of the left groin region.

Technique: MRI pelvis, STIR sequence, axial plane.

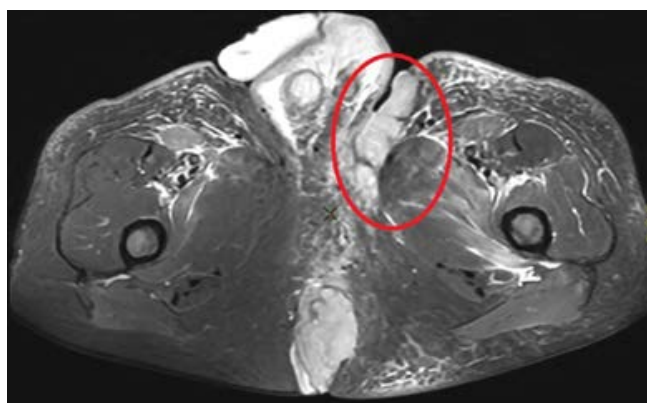


Figure 6: MR Ax STIR, infiltration of the left groin

Findings: Additional axial STIR MRI slice confirming infiltration of the left groin.

Technique: MRI pelvis, STIR sequence, axial plane.

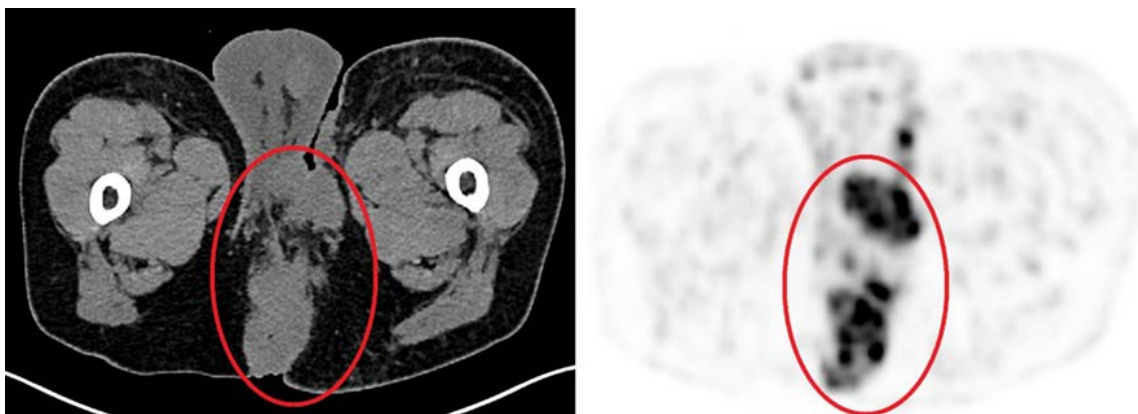


Figure 7: PET-CT, pathologically increased glucose uptake in giant, cauliflower-like masses in perineal area

Findings: PET/CT demonstrates pathologically increased glucose uptake in giant perineal masses.

Technique: PET/CT, whole-body scan.

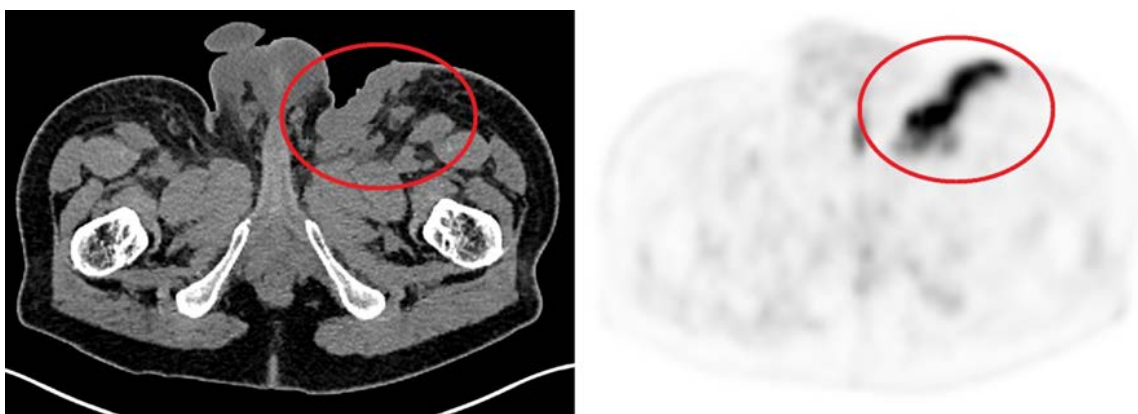


Figure 8: PET-CT, pathologically increased glucose uptake in left groin and infiltration of skin and subcutaneous fat tissue

Findings: PET/CT shows increased glucose uptake with infiltration of left groin skin and subcutaneous tissue.

Technique: PET/CT, whole-body scan.

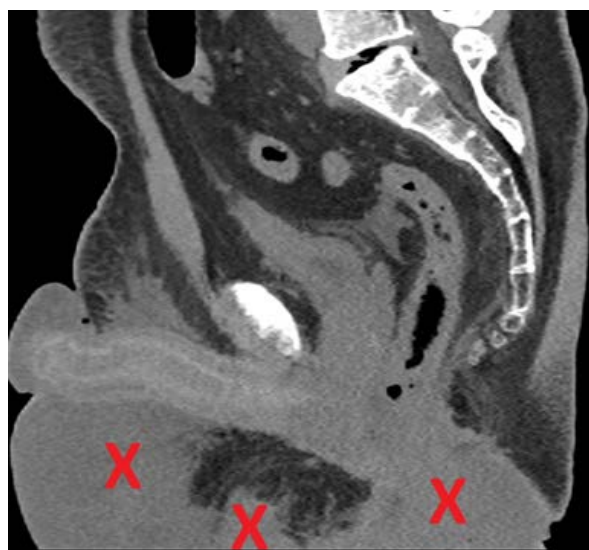


Figure 9: PET-CT, extensive infiltration of perineal area

Findings: CT demonstrates extensive infiltration of the perineal area.

Technique: PET/CT, whole-body scan.

Summary Table

Feature	Buschke–Löwenstein tumor (BLT)
Etiology	Infection with HPV types 6 and 11
Incidence	Rare in the general population; more frequent in high-risk groups (MSM, HIV-positive, immunosuppressed)
Gender ratio	More common in men
Age predilection	Middle-aged adults (case: 58-year-old man)
Risk factors	Immunosuppression, chronic HPV infection, poor hygiene, smoking, delayed diagnosis
Clinical findings	Large, exophytic, cauliflower-like mass; pain, bleeding, fistulas, abscesses, ulceration
Imaging findings	MRI: heterogeneous, locally infiltrative mass; PET/CT: increased uptake, foci suspicious for malignant transformation; nodal and pulmonary spread possible
Treatment	Wide surgical excision with margins; radiotherapy or immunotherapy in selected cases
Prognosis	High recurrence (up to 67%); risk of malignant transformation (30–56%); severe complications possible (hemorrhage, obstruction)

KEYWORDS

Condylomata Acuminata, Buschke-Löwenstein Tumor, Human Papillomavirus, Squamous Cell Carcinoma, Magnetic Resonance Imaging, Positron Emission Tomography

ABBREVIATIONS

BLT = Buschke-Löwenstein Tumor
MSM = Men who Have Sex with Men
HPV = Human Papillomavirus

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