



Cancer of the penis is a malignant tumour arising from the skin of the penis.
It is a rare condition in the UK.

A desperate disease requires a dangerous remedy

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Incidence

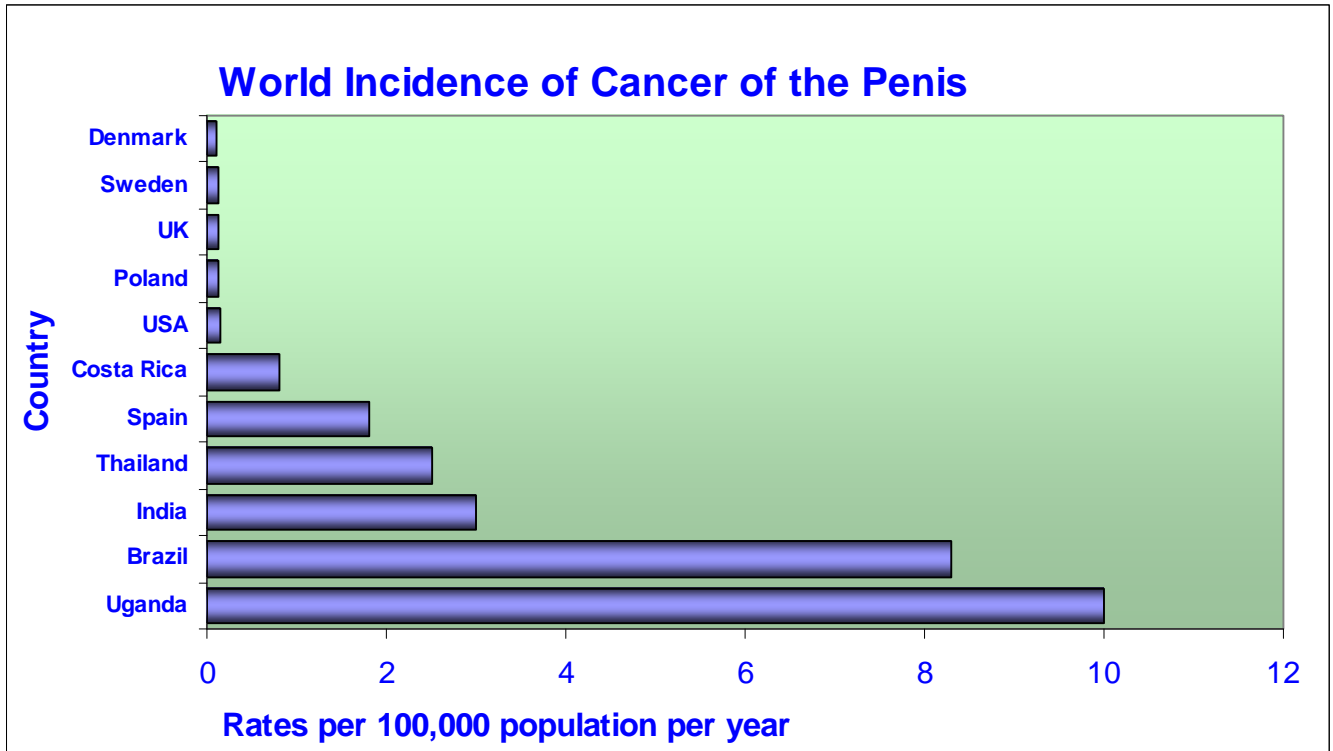
Carcinoma of the penis is a rare disease in Western countries. It is a common cancer in parts of Asia, Africa and South America. In India the age-adjusted incidence is up to 3 cases per 100,000 men.

While the rate in USA and Europe is 0.5% of all male malignancies it can rise to 25% of all male malignancies in Asia, Africa and South America. In Uganda it is the most commonly diagnosed cancer in men.

	UK	USA
New cases	400	1500
Deaths	n/a	290

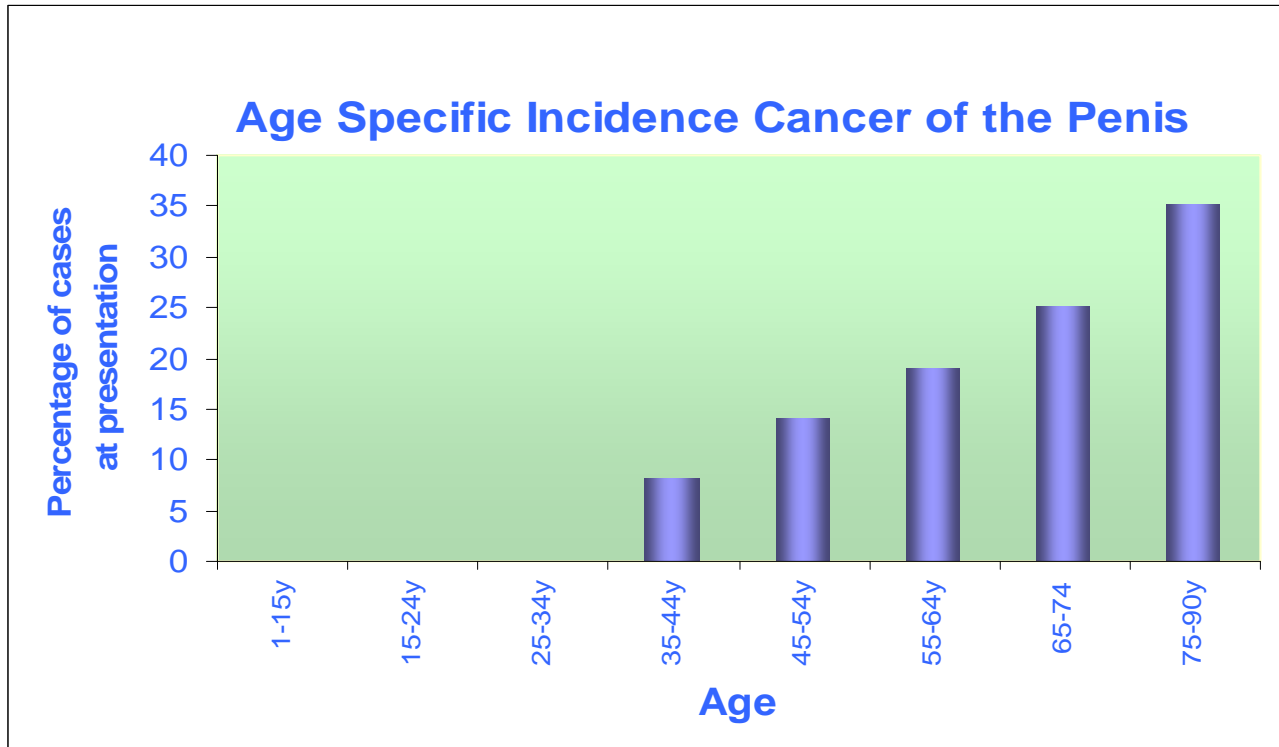


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Age

The tumour incidence increases with age. Most patients are over 60 years.



Sex

It is only found in males

Predisposing factors

The precise cause of penile cancer is not known.

The risk of being diagnosed with penile cancer is one in 600. This risk is reduced to a third if the man has been circumcised at birth. Large series have demonstrated that the disease is almost never observed in individuals who are circumcised in the neonatal period. Smegma is the cheesy secretions found under the foreskin. Smegma has been implicated in the causation of this disease. Smegma may in fact be a carcinogen but that has not been definitely proved. Good personal hygiene may also be important in reducing the risks. These reasons may be why circumcision at birth helps. Circumcision in adulthood affords no benefit.



Human Papilloma virus (HPV) is associated with this disease. This viral infection is also implicated in causing carcinoma of the cervix in women. It produces a condition called condyloma acuminatum. The prevalence of cervical cancer is increased in women whose sexual partners had penile cancer. The virus has been identified in up to a third of penile cancers. Circumcision may also assist in the prevention of HPV infection. Buschke-Löwenstein tumour (Giant condyloma acuminatum) is a tumour that invades locally but rarely metastasises.

Penile cancer is more common in people who smoke cigarettes.

Other conditions are suspected to be linked to penile cancer. Balanitis Xerotica Obliterans (BXO) is a chronic inflammatory disorder affecting the foreskin, glans penis and urethra. It produces scarring which leads to decreased blood supply to the skin. Cutaneous horns are thought to be pre-malignant.

Erythroplasia of Queyrat is a condition of the foreskin or glans characterised by red patches. It is also known as carcinoma in situ (CIS). A similar condition on the shaft of the penis is known as Bowen's disease. Both these disorders are pre-malignant.

Penile intraepithelial neoplasia is also pre-malignant but not all cases of penile intraepithelial neoplasia lead on to cancer.

Leukoplakia is a skin condition associated with chronic irritation. It is often improved when the irritation is removed. It is a hyperkeratosis of the skin which thickens the outer layers of the skin. It has been implicated in squamous cell carcinoma. Their appearance is a solitary white plaque on the skin.

Kaposi's sarcoma is a skin tumour of the reticulo-endothelial system (lymph and spleen). It is associated with Aids. Approximately 20% of these patients have penile/genital lesions which manifest as raised, painful and ulcerated lesions. The tumour is also seen in immunosuppressed patients who are on anti rejection therapy following a transplant operation.

PUVA is a treatment for psoriasis (a skin condition). A combination of a drug called psoralen and phototherapy (light therapy). Men who have had PUVA appear to have an increased risk of penile cancer.



Types

There are several types of penile cancer which are classified by the cellular origin of the tumour.

Squamous cell carcinoma

This is the most common type (90% of all penile cancers). It can present as a lump or an ulcer on the skin.

Verrucous carcinoma

This unusual tumour presents as a warty growth and may be caused by the human papilloma virus. It is a variety of squamous cell cancer and is slow growing (5% of all penile cancers).

Carcinoma in situ

This is the earliest form of cancer of the penis. If it is seen on the glans penis or foreskin it is called Erythroplasia of Queyrat. It is referred to as Bowen's disease on the shaft of the penis (35% of all penile cancers).

Adenocarcinoma

This is a very rare tumour arising from sweat glands (5% of all penile cancers).

Sarcoma

This is a very rare tumour (2% of all penile cancers).

Malignant Melanoma

This is a very rare tumour (1% of all penile cancers).

Site

Cancer of the penis is found at various sites

Glans penis	50%
Foreskin	33%
Glans and foreskin	9%
Coronal Sulcus	6%
Shaft	2%



Presentation

Cancer of the penis symptoms include

- An ulcer that does not heal in 4-6 weeks
- A lump on the skin
- A warty growth
- Bleeding from under the foreskin
- Foul smelling discharge from under the foreskin
- Changes in skin coloration
- Pain
- Difficulty retracting the foreskin
- White plaques on the skin

Many patients are initially reluctant to seek medical help. They may have their symptoms for many months or even more than a year before presenting.

The patient may have noticed a lump in the groin. These may be palpable lymph nodes. Because they are palpable does not automatically mean they are involved with the cancer. The patient's tumour may be infected leading to the regional inguinal lymph nodes being inflamed as well.

Differential Diagnosis

Conditions that may be confused with cancer of the penis include

- Contact Dermatitis
- Candidiasis
- Psoriasis
- Balanitis Xerotica Obliterans
- Balanitis Circumscripta Plasmacellularis (also known as Balanitis of Zoon or plasma cell balanitis)

Screening

There is currently no screening program for this disease

Investigations

Biopsy

This is the most important investigation. In certain circumstances the biopsy may be an excision biopsy if the lesion is small or confined to the foreskin. Any biopsy must include the tissue deep to the tumour so that accurate staging can be assessed.



Fine needle biopsy

This technique assesses whether any lymph nodes are involved. It is often CT or ultrasound guided to increase the accuracy of the test.

CT scan

Computerised tomography scans are used to stage the disease especially in advanced lesions.

MRI Scans

Magnetic Resonance Imaging is used to stage the disease especially in assessing lymph node status.

Bone scan

This scan will detect bone metastases if suspected.

G1	Well differentiated	Low grade
G2	Moderately differentiated	Intermediate grade
G3	Poorly differentiated	High grade

Grades

Grading of Cancer of the Penis

Tumour grading is important especially in establishing a prognosis.

The number of mitoses (cell divisions) helps to assess the degree of differentiation of the tumour.

Staging

The Jackson classification has been used for 40 years.

The Jackson Classification

- Stage I The tumour is confined to the glans and/or foreskin
- Stage II The tumour extends onto the shaft of the penis
- Stage III Inguinal node involvement that is operable
- Stage IV Adjacent structures involved or inoperable inguinal nodes or distant metastases



The TNM classification system is increasingly being used to stage tumours.

The “T” refers to the primary **T**umour

The “N” refers to the lymph **N**odes draining the bladder

The “M” refers to all other distant **M**etastases

The primary tumour is staged as follows:

Stages of Cancer of the Penis - Tumour

T _x	Primary tumour not assessed
T ₀	No evidence of primary tumour
T _a	Non-invasive verrucous carcinoma
T _{is}	Carcinoma in situ
T ₁	Tumour invades subepithelial connective tissue
T ₂	Tumour invades corpus spongiosum or cavernosum
T ₃	Tumour invades urethra or prostate
T ₄	Tumour invades other adjacent structures

Secondary node involvement is staged as follows:

Stages of Cancer of the Penis - Nodes

N _x	Lymph node status unknown
N ₀	No lymph node metastases
N ₁	Metastasis in single superficial inguinal lymph node
N ₂	Metastases in multiple or bilateral superficial inguinal lymph nodes
N ₃	Metastases in any other lymph nodes

13% of all patients have involved inguinal lymph nodes at the time of presentation.



Distant metastases are staged as follows:

Stages of Cancer of the Penis - Metastases

M _x	Metastatic status unknown
M ₀	No distant metastases
M ₁	Distant metastases

2.5% of all patients have distant metastases at the time of presentation. 8% of patients were unstaged.

An alternative staging system is used. It is called the AJCC staging (American Joint Committee on Cancer). However the TNM classification is becoming the more popular method of staging.

Alternative AJCC staging of Cancer of the Penis

Stage	Criteria	TNM equivalents		
0	Non-invasive verrucous carcinoma Carcinoma in situ	T _a	N ₀	M ₀
		T _{is}	N ₀	M ₀
1	Tumour invades subepithelial tissue	T ₁	N ₀	M ₀
2	Tumour invades corpus spongiosum or cavernosum	T ₁	N ₁	M ₀
		T ₂	N ₀	M ₀
		T ₂	N ₁	M ₀
3	Tumour invades urethra or prostate	T ₁	N ₂	M ₀
		T ₂	N ₂	M ₀
		T ₃	N ₀	M ₀
		T ₃	N ₁	M ₀
		T ₃	N ₂	M ₀
4	Tumour invades other adjacent structures	T ₄ any T any T	any N N ₃ any N	M ₀ M ₀ M ₁



Treatment

Medical

If the patient has enlarged inguinal lymph nodes at the time of presentation then a course of antibiotics is prescribed. Any infection will be treated and the nodes will go down. If they do not then the nodes will need to be biopsied.

Surgery

Surgery is the most common treatment of all stages of cancer of the penis.

Wide local incision

Very small tumours can be treated by wide local excision. Circumcision will cure lesions confined to the foreskin.

Laser ablation

Small lesions can be treated by lasers. This form of treatment gives excellent cosmetic results if it is indicated.

Cryotherapy

Freezing the tumours has been useful in carcinoma in situ and verrucous carcinoma.

Amputation of the penis

Partial Amputation

In this operation the distal part of the penis is removed.

Total Amputation

The whole of the penis including the erectile tissue passing under the pubic bone is excised.

Radical Amputation

In this procedure the whole of the penis is removed together with the regional inguinal lymph nodes. These operations are performed in advanced cases in order to control symptoms.



Lymphadenectomy

Because of the high likelihood of lymph node metastases in poorly differentiated lesions lymphadenectomy may be appropriate. The removal of the inguinal lymph nodes carries a significant morbidity.

Radiotherapy

Radiation therapy uses x-rays or other high-energy rays to kill cancer cells. External beam radiation is administered by a machine outside the body. Alternatively the xrays can be given internally via radioactive rods inserted into the tumour. Radiation may be used alone or in combination with surgery.

Chemotherapy

Chemotherapy drugs kill cancer cells. 5- Fluorouracil cream is applied to carcinoma in situ (Erythroplasia of Queyrat and Bowens disease). Systemic chemotherapy is used in advanced metastatic disease. Chemotherapeutic agents used include vincristine, bleomycin and methotrexate usually in combination. Response rates of up to 43% have been recorded with combination chemotherapy.

Follow up

It is imperative that any patient diagnosed with penile carcinoma must be followed up. Any local recurrences can be treated with a variety of treatments including surgery, radiotherapy, laser therapy and chemotherapy.

Prognosis

The grading of the tumour affects the prognosis. Well differentiated tumours carry the best prognosis while poorly differentiated ones carry the worst.



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The stage of the tumour is also important

Penile Cancer Prognosis

	5 year survival
Stage I	93%
Stage II	55%
Stage III	30%
Stage IV	5%

[Further information](#)

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Cancer Research UK

info.cancerresearchuk.org

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National Cancer Institute

www.cancer.gov