

Case report

Primary surgical approach to a patient with erythroplasia of Queyrat

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Abordaje quirúrgico primario en un paciente con eritroplasia de Queyrat

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Abstract

Case presentation. A 52-year-old male patient presented to the urology office with a two-year history of noticing a bright red, pruritic, and painful lesion on the glans and foreskin with a progressive increase in size that did not improve with antibiotic and antifungal treatments. **Treatment.** Partial glandectomy with thigh skin graft was performed. **Outcome.** After one month, the graft presented a 95 % of coupling. No local recurrence of cancer was observed. The histopathological study reported invasive squamous cell carcinoma in the lesion of the foreskin and glans skin, with all surgical margins, lateral and deep limits, negative for malignancy. After eight months post-surgery, the covering of the glans was observed with an appropriate esthetic result, with a similar appearance to the natural covering.

Keywords

Penile cancer, squamous cell carcinoma, erythroplasia of Queyrat.

Resumen

Presentación del caso. Paciente masculino de 52 años que se presentó a la consulta de urología con historia de dos años de notar una lesión en el glande y el prepucio, de color rojo brillante, pruriginosa y dolorosa con aumento progresivo del tamaño que no mejoró con tratamientos antibióticos y antifúngicos. **Intervención terapéutica.** Se realizó una glandectomía parcial con injerto de piel de muslo. **Evolución clínica.** Luego de un mes, el injerto presentó un 95 % de acoplamiento. No se observó recurrencia local de cáncer. El estudio histopatológico reportó un carcinoma escamoso invasor en la lesión del prepucio y en la piel del glande, con todos los márgenes quirúrgicos, límites laterales y profundos, negativos a malignidad. Luego de ocho meses posquirúrgicos, se observó el recubrimiento del glande con un adecuado resultado estético, con apariencia similar a la cubierta natural.

Palabras clave

Cáncer de pene, carcinoma de células escamosas, eritroplasia de Queyrat.

Introduction

Erythroplasia of Queyrat (EQ) is a squamous cell carcinoma *in situ* arising from the mucosal surface of the glans and prepuce¹⁻³. It was first described in 1891 by Tarnowsky, who found a lesion on the glans, similar to the erythroplasia previously described by Paget^{4,5}. In 1893, it was named as papillary epithelioma by Fournier and Darier^{4,6}. In 1911, Queyrat coined the term, conducted a further study of the lesion and gave it the name of *érythroplasie*. Therefore, it is now known as erythroplasia of Queyrat (EQ)⁷ when referring to lesions in plate-shaped or velvety bright red patches, clearly defined raised edges, pruritic, sometimes bleeding, which require surgical treatment due to the danger of progression to invasive carcinoma^{8,9}.

EQ is one of the three most frequent variants of carcinoma *in situ* of the penis. There is not tendency to spontaneous resolution and 30 % of cases progresses to invasive carcinoma and metastasis if not adequately treated and in a timely manner¹. This disease is most frequently suffered by uncircumcised males with an average age of 68 years¹⁰.

Penile cancer can affect men of any age, although it is most commonly diagnosed between the sixth to seventh decade of life. Squamous cell carcinoma, usual type is the most frequently reported¹², followed by premalignant lesions of penile carcinoma *in situ*¹. Other less frequent correspond to sarcoma, melanoma and basal cell carcinoma¹².

It is calculated that 10 % of penile neoplasms correspond to premalignant lesions, the most frequent ones are EQ, Bowen's disease and bowenoid papulosis. The exact etiology of these premalignant lesions is not yet known; however, bowenoid papulosis is probably a virus-induced epithelial dysplasia associated mainly with human papillomavirus (HPV) 16 and 18. Patients usually consult for pruritus, pain, bleeding and difficulty in retracting the prepuce. When evaluating the characteristics of the penis, it is red, shiny and slightly pigmented, with plaques or patches on the glans in either EQ or Bowen's disease. The difference in EQ is that the prepuce mucosa is affected and presents multiple lesions similar to pigmented, keratinized, numerous and inflamed warts¹.

A low incidence of penile cancer has been described, mainly in countries with good socio-sanitary conditions and in those that practice circumcision. In the United States it represents one percent of the malignant tumors diagnosed and causes more than 400 deaths per year¹¹⁻¹³, although in coun-

tries of Asia, South America and Africa the incidence reaches 10 % and the risk of malignant degeneration increases by 30 % if treatment is not received in a timely manner¹. The 2020 Global Cancer Observatory reported an incidence of 0.28 % in El Salvador, with a mortality of 0.17 % per year¹⁴.

Multiple risk factors contributing to its development are mentioned such as not having been circumcised, phimosis, obesity, poor hygiene, lichen sclerosus, infection by HPV-16 and HPV-18, smoking, use of psoralens, immunosuppression, trauma¹ and multiple sexual partners^{2,3,15}.

Its diagnosis is usually late in most cases and seems to be associated with the low frequency of cases, patients' poor attention to their genitalia or fear of treatment¹⁶. This diagnosis is confirmed by histopathological study¹⁷. Patients who experience these conditions must be counseled and tested for HPV and other sexually transmitted diseases, including human immunodeficiency virus (HIV)¹.

Case presentation

This is a 52-year-old man, who consulted multiple times in primary care areas with a two-year history of noticing a bright red, ulcerated, painful, pruritic lesion at the level of the crown of the glans penis, with a slow and progressive increase in size and shape; there were neither lower urinary tract symptoms nor relevant past medical history. His sexual initiation was at age of 16 and referred having had multiple sexual partners; He was medicated on multiple instances with oral antibiotics and topical treatments, such as steroids, antifungals, fluoropyrimidines, chemotherapeutics, without clinical improvement. He was referred to dermatology where a tissue sample was taken from the glans and prepuce for histopathological study, which revealed the presence of invasive squamous cell carcinoma of the glans and prepuce, so he was referred to urology consultation.

Physical examination showed an abdomen with scarce adipose panniculus, soft and depressible, without inguinal nor pelvic adenopathies. There were not abnormalities at the level of the scrotum. The mucosa of the glans had an erythematous lesion of velvety appearance, indurated, bright red, with raised edges of approximately 2 × 2 cm, which did not involve the urethral meatus (Figure 1). The mucosa of the prepuce had lesions of the same characteristics, with raised edges, indurated, without bleeding, not painful and difficulty in prepuce retraction. The laboratory tests were reported within normal values (Table 1).



Figure 1. Bright red velvety lesion on the glans penis with invasion into the mucosa of the prepuce



Figure 2. After glans lining plus extended circumcision



Figure 3. Glans covering seven days after surgery, 80 % attached

Treatment

Two weeks after the outpatient evaluation, the patient was admitted to the urology department for the surgical procedure. One day before the surgical procedure, intravenous ceftriaxone prophylaxis was administered and a transurethral catheter was placed.

The surgical procedure was performed under spinal anesthesia. This consisted of local excision of the lesions of the glans and prepuce, and superficial partial glansectomy plus extended circumcision. After resection, a partial thickness skin graft was prepared from the right thigh, which created a new skin cover over the glans and was stitched with resorbable suture to the urethra and penile skin (Figure 2).

Table 1. Laboratory tests

Laboratory test	Results
Hemoglobin	16 g/dL
Leukocytes	$7.2 \times 10^3/\mu\text{L}$
Neutrophils	55 %
Platelets	$300 \times 10^3/\mu\text{L}$
Creatinine	0.4 mg/dL
Urea Nitrogen	8 mg/dL
HIV test	Non-reactive
Rapid syphilis test	Negative to date

Outcome

Post-surgical treatment with ketotolac was indicated for three days and ceftriaxone for five days, both intravenously. After one week the transurethral catheter was removed and he was discharged.

After a week the patient was evaluated in a follow-up consultation showing 80 % graft coupling (Figure 3), with areas of necrosis at the level of the urethral meatus. Two weeks after the surgery, the graft coupling was 90 % and scar tissue was observed in the urethral meatus. Sexual intercourses were not initiated despite having normal erections. He also had no alterations in the onset of urination and had a moderate caliber urinary stream. The histopathological study presented the invasive squamous cell carcinoma and the skin of the glans, all the lateral and deep surgical margins were negative for malignancy.

One month after the surgery, there was evidence of a 95 % coupled graft (Figure 4). Urethral meatus stenosis was identified; therefore, a urethral meatus dilation regimen was indicated for four consecutive weeks. There was not local recurrence

of disease. Eight months after the surgery, an adequate coloration of the glans lining was found with an adequate aesthetic result similar to the natural skin; the external urethral meatus had an adequate caliber (Figure 5). The patient reported resuming of sexual activity without alterations of orgasmic sensation.

Follow-up consultations will continue every three months for the next two years, then every six months for three years, then every year for five years. Finally, if recurrence does not occur during ten years of follow-up, he will be discharged from the urology service. The patient has been instructed on the need to attend for an early evaluation if recurrence in the penile skin or lymphadenopathies are detected.

Clinical diagnosis

Erythroplasia of Queyrat, defined as squamous carcinoma of the mucosa of the glans and prepuce.

Discussion

Differential diagnosis includes Zoon's balanitis, Bowen's disease, malignant melanoma of the penis, basal cell carcinoma of the penis, lichen sclerosus, bowenoid papulosis, and psoriasis¹.

In some cases, dermoscopy is considered to evaluate pigmented or non-pigmented lesions by providing information on the structures of the glans penis, finding glomerular blood vessels on a bright red background, twisted blood vessels and small red areas without structure^{3,18}. In this case, the lesion at the level of the glans and prepuce had a hard consistency and had been treated with different topical medications, so it was decided the excision and complement with histopathological studies. This study confirms the diagnosis when reporting the presence of atypical squamous cells or proliferating cells in the epidermis without invasion into the dermis in early cases. It is usually indicated in doubtful cases to conclude the clinical diagnosis. It is necessary to repeat this study if the first result is not conclusive¹.

Initiation of treatment includes cessation of smoking and risky sexual practices, sexual partner evaluation and long-term follow-up with the standard therapeutic approach including local excision, Mohs surgery and partial or complete phallectomy. Of these surgical approaches, Mohs surgery with total glans lining produces the most favorable cosmetic and functional outcome; however, these invasive procedures have the potential psychosocial effects and harm quality of

life^{1,10}. Other non-surgical modalities include the application of CO₂ laser, Nd-YAG laser, isotretinoin, 5-fluorouracil or imiquimod cream, and procedures such as cryotherapy, curettage and electrofulguration^{1,2,10,19}.

Partial glans lining has been used as a primary surgical approach for carcinoma *in situ* of the glans penis. This approach has the advantage of preserving normal appearance of the glans penis, allowing better preservation of sensitivity, erection and orgasmic sensation achieving an appearance closer to the original glans. This treatment is more suggestive for younger, sexually active men¹. It has been shown that glans penis reconstruction has better results perceived by the patient and his family, as opposed to those who underwent more aggressive procedures such as total or partial phallectomy, having profound effects on sexual function as well as on urinary function which



Figure 4. Glans lining one month after surgery, there is no local recurrence of the disease



Figure 5. Glans lining 8 months after surgery, the urethral meatus is observed with adequate functional caliber

can be drastically affected by the derivation of urinary flow through a perineal neomeatus or urethrostomy¹¹.

The tendency to delay consultation often with a long history of evolution, self-medication and failed treatment can result in progression to invasive carcinoma, requiring more extensive surgery¹.

Early diagnosis and treatment before invasion is essential to avoid the need for more aggressive treatment, thus, this avoids partial or complete amputation of the penis, improving physical, psychological and sexual well-being.

Ethical aspects

For the publication of this case, informed consent was obtained from the patient. It was for both the hospital care where the physical examination of the patient was performed and the publication of this article, with the commitment to maintain the patient's privacy, as stated in the Helsinki Declaration²⁰.

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