

Vulvar basal cell carcinoma arising in the setting of repeated perilamp exposure



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INTRODUCTION

Although basal cell carcinoma (BCC) is the most common skin cancer, the prevalence of vulvar BCC is relatively rare, with only sporadic reports noted in the literature. We present a case of a patient with vulvar BCC, hypothesized to be induced by multiple episodes of perilamp exposure.

CASE REPORT

An 80-year-old white woman presented for treatment of biopsy-proven infiltrative and nodular BCC of the left vulva, present for 6 months. She denied a history of skin cancer, radiation, immunosuppression, and trauma to the area. Clinical examination showed a 1.8 × 1.5-cm pink pearly plaque on the left vulva (Fig 1). Pathologically clear margins were achieved after 3 Mohs layers, resulting in a 7.0 × 4.2-cm symmetric, horseshoe-shaped postoperative defect (Fig 2), which was closed with an 8.2-cm primary intermediate repair (Fig 3). Upon further discussion, the patient mentioned that she had received perilamp treatments for 10 minutes twice daily for several days after the birth of each of her 5 children. Six months after surgery, the patient was diagnosed with pancreatic cancer, and she died 6 months later.

DISCUSSION

BCC is the most common malignancy in humans, and it typically presents on sun-exposed locations, such as the head and neck. Vulvar BCC is rare, with

Abbreviations used:

BCC: basal cell carcinoma
UV: ultraviolet
W: watt

only 5% of vulvar tumors diagnosed as BCC and an estimated 1% to 2% of all BCCs occurring on the vulva.^{1,2} This malignancy is usually diagnosed in patients 70 years or older who have nonspecific symptoms, including pruritus and irritation. Vulvar BCC may be initially misdiagnosed as an inflammatory condition, such as eczema or psoriasis.^{1,2} The preferred treatment for BCC on the vulva, considered a high-risk location as defined by the Mohs Appropriate Use Criteria, is Mohs micrographic surgery and close postoperative follow-up.³ Vulvar BCC generally grows slowly, but it has potential to become aggressive and locally destructive if the correct diagnosis and appropriate treatment are delayed. A literature review shows rare cases of recurrence, metastasis, and even death.^{1,2}

The exact cause of vulvar BCC is uncertain. Unlike BCC, direct ultraviolet (UV) radiation is not thought to be the primary risk factor for the development of vulvar BCC, given its sun-protected location. Several etiologies have been suggested, including chronic inflammation, radiation or arsenic exposure, immunosuppression, lichen sclerosus, vulvar Paget disease, and/or hereditary skin conditions such as basal cell nevus

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Fig 1. Basal cell carcinoma: the left side of the vulva with a thin, pink erythematous shiny plaque, after biopsy and before Mohs surgery.



Fig 2. The final postoperative defect on the left vulva, after completion of Mohs surgery.

syndrome and xeroderma pigmentosum.^{1,2} Ramos et al⁴ found that nonmelanoma skin cancers occurring on sun-protected areas of the body were more commonly seen in individuals who were potentially exposed to chronic low-dose UV radiation, determined by questionnaire and environmental UV measurements. Our patient reported a history of



Fig 3. An 8.2-cm primary intermediate repair on the left side of the vulva after Mohs surgery.

repeated exposure to perilamps, also known as perilites, perineal heat lamps, and heal lamps. Perilamps were designed to promote healing and improve pain and discomfort in the perineal region of postpartum patients after episiotomies, lacerations, infections, hematomas, and other obstetric and gynecologic conditions, through radiation provided by incandescent light bulbs. One of the earliest reports in the literature was a 1949 report by Biskind et al,⁵ which described the perilamp's heat source as a conventional 25-watt (W) incandescent bulb enclosed in an aluminum reflector placed 18 inches from the perineum. The recommended perilamp treatment regimen was 2 to 3 times daily and up to 45 minutes per session. Perilamp use is not well documented in the literature, and current prevalence is uncertain. A 1990 report⁶ from the University of California San Diego/University of California San Francisco describes perilamp use as most prevalent during the 1940s through 1970s; it was then phased out, although it was included in nursing textbooks through the 1980s.

It is generally thought that there is minimal to no risk of UV radiation from incandescent bulbs. However, with the development of new lighting sources, several studies have investigated UV emission levels and safety of indoor lighting and have confirmed the production of UV radiation by incandescent bulbs, although the ultimate conclusion from this is mixed. Eadie et al⁷ confirmed that

60-W incandescent bulbs emitted wavelengths ranging from 280 to 400 nm, which includes UVA, UVB, and UVC radiation, at a distance of only 20 cm. However, their calculations determined the effective irradiance from incandescent bulbs to be within safe limits, according to the Artificial Optical Radiation Directive.⁷ Sayre et al⁸ found that incandescent bulbs emitted UV wavelengths as short as 280 nm. After analyzing the bulb's wattage, filtering material, and distance to the light source, they concluded that illumination from incandescent bulbs may occasionally emit UVA intensities comparable to or greater than those from sunlight.⁸

In addition, more than 80% of energy emitted by incandescent bulbs is in the infrared range, which transmits energy by heat and raises the temperature of the skin.⁹ Repetitive extended exposure to low-grade heat and infrared radiation from sources such as woodburning stoves, radiators, computers, heating blankets, etc, has been associated the development of erythema ab igne. Rarely, erythema ab igne has been shown to progress into cutaneous malignancy, including squamous cell carcinoma, Merkel cell carcinoma, and cutaneous marginal zone B-cell lymphoma.¹⁰

Given the location and symmetric nature of the lesion and our patient's history, our patient's case raises the concern that repeated perilamp use may contribute to the development of vulvar BCC in select patients. It is possible that the close proximity of the incandescent bulb to the cutaneous surface, the frequency and duration of sessions, and/or use of aluminum reflection may have resulted in sufficiently intense UV exposure to the patient's vulva to contribute to the development of a BCC in an otherwise unusual location for this cutaneous malignancy. In addition, it is conceivable that infrared radiation and heat from close proximity of the incandescent bulbs may have promoted malignant

evolution within the skin and increased the risk of BCC development.

This case raises awareness that small doses of UV and/or infrared radiation from obstetric and gynecologic perilamp use may contribute to an increased risk of developing BCC on sun-protected skin of the vulva. The case also highlights the importance of taking a thorough history from patients who develop nonmelanoma skin cancers on non-sun-exposed anatomic locations, especially from older women who no longer receive gynecologic examinations regularly.

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