International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Raju RS et al. Int J Reprod Contracept Obstet Gynecol. 2026 Oct;15(10):4202-4206
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20263474

Case Report

Vulval melanoma: a case report on an uncommon malignancy with poor prognosis

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Received: 18 August 2026
Revised: 20 September 2026
Accepted: 21 September 2026

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ABSTRACT

Vulvar melanoma is a rare and aggressive malignancy of the female genital tract. It predominantly affects older women and is frequently diagnosed late because lesions may be clinically subtle or mistaken for benign vulvar disease. This case report represents a 66 year old postmenopausal woman who with a six-year history of non-foul-smelling, non-blood-stained vaginal discharge and persistent perineal pruritus. Examination revealed a 2×3 cm leukoplakic plaque over the right labium minus. An initial excision biopsy showed mild dysplasia, while repeat biopsy six months later demonstrated focal severe dysplasia. Magnetic resonance imaging subsequently demonstrated suspicious bilateral inguinal lymphadenopathy. Following multidisciplinary counselling, the patient underwent bilateral radical vulvectomy with bilateral inguinal and femoral lymph-node dissection. Histopathology revealed malignant melanoma with a Breslow thickness of 2 mm and Clark level IV invasion; the lesion was non-ulcerated and margins were free of tumour. Immunohistochemistry was positive for HMB-45 and S100. The reported final pathological stage was pT2aN3aMx. The postoperative course was complicated by wound dehiscence, followed by acute pulmonary embolism and death despite resuscitative measures. The case highlights the diagnostic difficulty of vulvar melanoma, the prognostic importance of tumour thickness and nodal disease, and the need to integrate oncological treatment with meticulous postoperative venous-thromboembolism prevention and surveillance.

Keywords: Vulvar melanoma, Mucosal melanoma, Vulvar lesion, Breslow thickness, Inguinofemoral lymphadenectomy, Pulmonary embolism

INTRODUCTION

Vulvar melanoma is a rare malignancy arising from melanocytes in the vulvar region and represents a small proportion of melanomas and vulvar cancers. It is generally regarded within the spectrum of mucosal melanoma, although the biology of vulvar melanoma may show features overlapping with both mucosal and cutaneous melanoma.[1,2] The disease predominantly affects postmenopausal women, with age, tumour thickness and lymph-node involvement consistently identified among important adverse prognostic factors.[1,3,4] Clinical presentation is variable and may include a pigmented or polypoid lesion, pruritus, bleeding, pain, discharge or an apparently benign plaque. The absence of striking pigmentation does not exclude melanoma, and persistent vulvar abnormalities require histological assessment.[2,5] Contemporary guidance emphasizes prompt biopsy of suspicious vulvar lesions and multidisciplinary management. For vulvar melanoma specifically, evidence remains limited because of its rarity; treatment recommendations are derived largely from retrospective series, melanoma literature and multidisciplinary consensus rather than randomized trials dedicated to vulvar melanoma.[2,6,7] Surgery remains the principal treatment for localized disease, with the

objective of achieving complete tumour excision while avoiding unnecessary mutilation. Lymph-node assessment is guided by tumour characteristics and clinical stage. Recent reviews also emphasize that systemic immunotherapy and molecularly targeted treatment have become relevant for advanced disease, although vulvovaginal melanoma-specific evidence remains limited.[1,7,8] This report presents a case in which a clinically subtle vulvar lesion was initially interpreted as dysplasia, subsequently proved to be melanoma, and was associated with extensive regional nodal disease and a fatal postoperative pulmonary embolism.

CASE REPORT

A 66-year-old multiparous woman (P4L3), 20 years postmenopausal, presented with a six-year history of non-foul-smelling, non-blood-stained white vaginal discharge associated with persistent perineal itching. She denied postmenopausal bleeding, anorexia, weight loss, headache, or bowel and bladder symptoms. She had systemic hypertension for 15 years and was receiving antihypertensive medication. She had undergone laparoscopic cholecystectomy approximately 20 years earlier. There was no reported family history of malignancy.

On examination, she was moderately built and nourished, weighed 64 kg and had a BMI of 24.98 kg/m². Pulse was 82 beats/minute and blood pressure was 146/94 mmHg. There was no pallor, icterus, clubbing, cyanosis, pedal oedema or clinically significant peripheral lymphadenopathy. Cardiovascular, respiratory, breast and abdominal examinations were unremarkable.

Local examination revealed a 2×3 cm leukoplakic plaque involving the right labium minus, without ulceration or an exophytic component. Speculum examination showed senile vaginitis, anterior vaginal-wall discoloration and cervical stenosis. Bimanual examination revealed an atrophic uterus, free bilateral fornices and no tenderness. Rectal examination was unremarkable.

Routine haematological and biochemical investigations were within normal limits and viral serology was non-reactive. Imaging did not demonstrate distant metastases. An initial excision biopsy of the vulvar lesion showed mild dysplasia. The patient was followed clinically, and a repeat biopsy six months later demonstrated focal severe dysplasia. Subsequent magnetic resonance imaging demonstrated suspicious bilateral inguinal lymphadenopathy without involvement of the supralevator compartment or adjacent pelvic organs. No significant pelvic or para-aortic lymphadenopathy was identified.

Following multidisciplinary discussion and counselling regarding treatment options, the patient opted for primary surgical management. She underwent bilateral radical vulvectomy with bilateral inguinal and femoral lymph-node dissection. The urethral meatus and clitoris were uninvolved. The right superficial and deep inguinal lymph nodes appeared enlarged intraoperatively.

The immediate postoperative period was initially uneventful. The subsequent course was complicated by wound dehiscence, which was managed conservatively. The patient later developed acute pulmonary embolism and died despite appropriate resuscitative measures.

Histopathological examination of the radical vulvectomy specimen demonstrated malignant melanoma with a Breslow thickness of 2 mm and Clark level IV invasion. There was no overlying epidermal ulceration. Tumour-infiltrating lymphocytes were brisk, with no lymphovascular or perineural invasion. All surgical margins were free of tumour. Immunohistochemistry showed positivity for HMB-45 and S100, confirming melanocytic differentiation. The final pathological stage was reported as pT2aN3aMx.

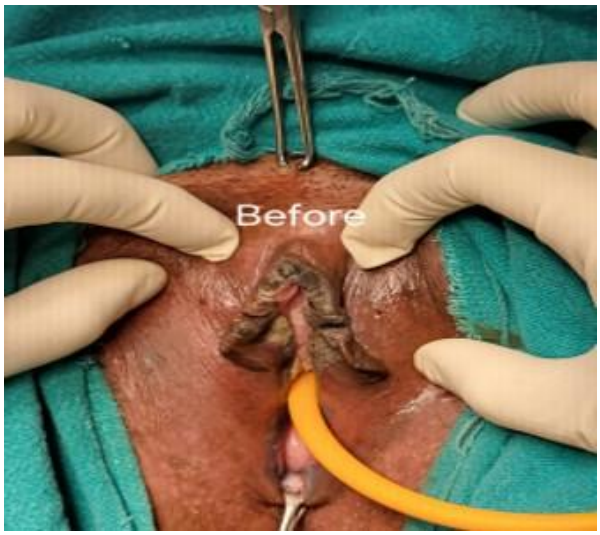

Figure 1: Leukoplakic plaque over the right labium minus.

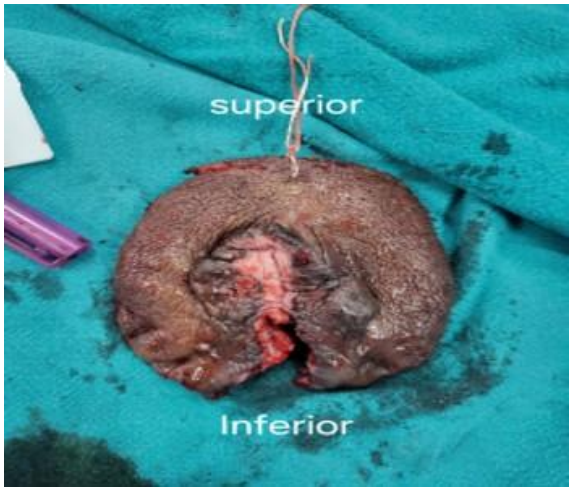

Figure 2: Bilateral radical vulvectomy specimen.

Figure 3: Post-radical vulvectomy operative appearance.

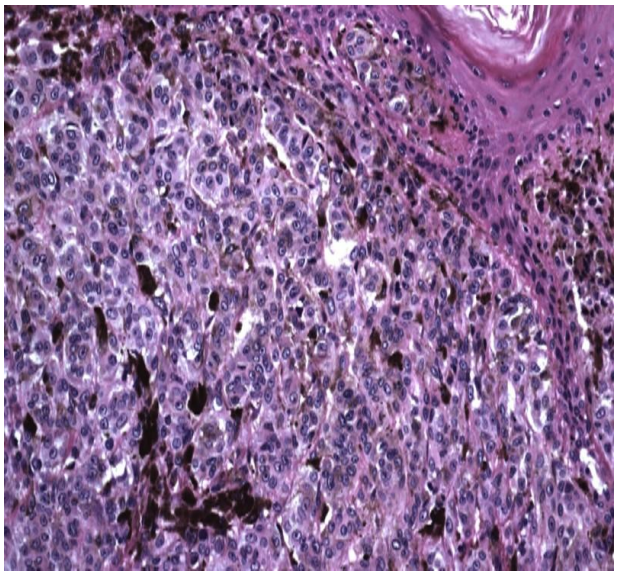

Figure 4: Melanin seen as fine granular intracytoplasmic pigment.

DISCUSSION

Diagnostic challenge and delayed recognition

The principal clinical challenge in this case was the nonspecific appearance of the lesion. Rather than a typical darkly pigmented or exophytic mass, the patient had a leukoplakic plaque associated with long-standing pruritus. Vulvar melanoma can mimic benign, inflammatory or premalignant conditions, and delayed diagnosis has been repeatedly described.[1,2,5] Current ESGO guidance recommends biopsy for suspected vulvar cancer and emphasizes multidisciplinary assessment. In a persistent or changing lesion, an initial benign or premalignant result should be interpreted in the context of the clinical findings, and persistent clinical suspicion should prompt reassessment or repeat biopsy.[6] In the present case, the first two biopsies demonstrated dysplasia rather than invasive melanoma. The possibility that the initial sampling represented limited lesional tissue, sampling error or an adjacent dysplastic component cannot be resolved retrospectively. Therefore, the case supports the practical principle that persistent or clinically discordant vulvar lesions warrant clinicopathological re-evaluation rather than reassurance from a single limited biopsy.

Pathology, immunohistochemistry and microstaging

Breslow thickness is an important prognostic parameter in vulvar melanoma, while lymph-node status provides additional information about regional disease burden. Clark level remains a descriptive pathological parameter but has a less central role in contemporary melanoma prognostication than Breslow thickness and TNM-based staging.[3,4,7] The tumour in this case measured 2 mm, was non-ulcerated and showed Clark level IV invasion. HMB-45 and S100 positivity supported the diagnosis of melanoma. S100 is highly sensitive but relatively less specific, whereas HMB-45 and SOX10 provide useful confirmation of melanocytic differentiation, particularly in diagnostically challenging lesions.[2] Recent pathological research has suggested that additional features may carry prognostic information. In a 2024 multicentre study of vulvovaginal melanomas, tumour necrosis was independently associated with disease-specific mortality, progression and time to metastasis, although such findings require validation before incorporation into routine staging systems.[9] The molecular profile of vulvar melanoma differs from that of many cutaneous melanomas. Alterations involving KIT, NRAS, BRAF and other pathways have been described, and molecular testing may become relevant when systemic targeted treatment is being considered. Molecular testing was not performed in the present patient and therefore no mutation-directed inference can be made.[2,5,7]

Surgical management and nodal disease

The surgical objective in localized vulvar melanoma is complete tumour removal with preservation of function whenever oncologically feasible. Historical practice favoured radical vulvectomy and routine groin dissection, but contemporary management has moved toward less radical local surgery for appropriately selected patients because increasing surgical radicality has not demonstrated a corresponding survival advantage.[1,3,7] For clinically node-negative early disease, sentinel lymph-node assessment may be considered according to tumour characteristics and institutional expertise. In contrast, clinically or radiologically suspicious regional nodes require appropriate therapeutic nodal management. The 2023 ESGO guideline emphasizes individualized staging

and treatment within a specialist multidisciplinary team.[6] In the present case, MRI demonstrated suspicious bilateral inguinal nodes, and the patient underwent bilateral radical vulvectomy with bilateral inguinal and femoral lymph-node dissection. The reported final stage, pT2aN3aMx, indicates substantial regional nodal involvement and places the case in a high-risk category. The operation therefore reflected the extent of disease identified clinically and radiologically rather than being undertaken solely because of the primary lesion thickness.

Systemic therapy and contemporary treatment context

The systemic treatment landscape has evolved considerably with immune-checkpoint inhibitors and molecularly targeted therapies. However, evidence specific to vulvovaginal melanoma remains limited because most pivotal melanoma trials enrolled relatively few mucosal cases and often did not report vulvar melanoma separately.[2,7,8] A 2024 single-institution series of 72 patients with vulvar or vaginal melanoma reported that most patients underwent surgery and more than half received adjuvant treatment; the study illustrates the heterogeneity of real-world management and the limitations of retrospective evidence in this rare disease.[10] A 2026 review similarly describes tumour resection, with or without lymph-node assessment, as the preferred primary approach and emphasizes that treatment decisions should be individualized according to tumour thickness, nodal status, resectability and systemic disease, while clinical-trial participation remains important.[11] Because our patient died during the postoperative period, there was no opportunity for subsequent systemic treatment. Consequently, this case cannot be used to infer the benefit or lack of benefit of adjuvant immunotherapy or targeted therapy.

Postoperative morbidity and fatal pulmonary embolism

The most distinctive aspect of this case was not the melanoma diagnosis itself but the fatal postoperative thromboembolic complication. Radical vulvar surgery with bilateral groin dissection involves extensive tissue dissection and can be associated with wound complications, lymphatic morbidity, reduced mobility and prolonged recovery.[6,12] Wound dehiscence occurred before the pulmonary embolism in this patient. Although a direct causal relationship between the wound complication and subsequent embolic event cannot be established, the clinical sequence illustrates how postoperative morbidity can interact with immobility and other patient- and procedure-related risk factors to increase venous thromboembolic risk. Contemporary perioperative care should therefore integrate oncological management with individualized venous-thromboembolism risk assessment, pharmacological and mechanical prophylaxis when appropriate, early mobilization, hydration, wound surveillance and prompt investigation of new cardiopulmonary symptoms. The occurrence of pulmonary embolism in this case reinforces the importance of postoperative vigilance even when the immediate postoperative period appears initially stable.

What this case adds

This case contributes three practical observations. First, vulvar melanoma may present as a non-pigmented or leukoplakic lesion and may initially be diagnosed as dysplasia. Second, a relatively modest primary tumour thickness can coexist with substantial regional nodal disease, emphasizing that primary tumour appearance alone does not define biological behaviour. Third, mortality in patients undergoing treatment for vulvar melanoma may result from perioperative complications rather than tumour progression. These observations support a broad definition of successful care that includes timely diagnosis, accurate staging, appropriate oncological surgery and structured postoperative risk management.

CONCLUSION

Vulvar melanoma is a rare and aggressive malignancy that may present with deceptively nonspecific vulvar findings, particularly in postmenopausal women. Persistent or clinically discordant lesions require timely biopsy and, when necessary, repeat clinicopathological assessment.1,6In this patient, the eventual diagnosis of a 2 mm, non-ulcerated melanoma with reported extensive nodal involvement justified specialist multidisciplinary management and surgical treatment. Current evidence supports individualized, tissue-preserving surgery when feasible, appropriate nodal assessment, and consideration of contemporary systemic therapy according to stage and molecular characteristics.[7,11] The fatal postoperative pulmonary embolism highlights an additional dimension of care: perioperative morbidity can be clinically decisive even when the primary cancer has been surgically treated. Comprehensive venous-thromboembolism prevention, early mobilization, wound care and postoperative surveillance should therefore be integrated into the management pathway for patients undergoing major vulvar oncologic surgery.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Raju RS, Ishrat N, Akhtar N. Vulval melanoma: a case report on an uncommon malignancy with poor prognosis. Int J Reprod Contracept Obstet Gynecol 2026;15:4202+6.