Primary Gynecological Malignant Melanoma:
A 10-Year Single-Institution Experience and Literature Review

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Introduction

- Malignant melanoma is a neoplasm arising from melanocytes, most commonly affecting the skin.
- A small proportion originates from mucosal surfaces, including the female genital tract, where it is exceedingly rare and aggressive.
- Primary gynecological malignant melanoma accounts for approximately 1–3% of all melanomas and represents a small fraction of gynecological cancers worldwide.
- Among genital sites, the vulva is most frequently involved, followed by the vagina and cervix.
- These tumors are often diagnosed at advanced stages due to their hidden anatomical location and present with nonspecific symptoms, contributing to poor outcomes.
- Data from Pakistan and South Asia are limited, and access to modern systemic therapies such as immune checkpoint inhibitors and targeted therapies remains restricted.
- This study reviews a decade of experience managing primary gynecological melanoma at our institution, with emphasis on clinical presentation, treatment patterns, and outcomes in a resource-limited setting.

Methods

- Retrospective case series of all patients with primary gynecological malignant melanoma (vulva, vagina, cervix) treated from January 2010 to December 2020 at our institution.
- Exclusion criteria: cutaneous melanoma or metastatic melanoma from non-genital sites.
- Data collected: demographics, clinical presentation, histopathology, treatment, recurrence and survival outcomes.
- Descriptive statistics were used.

Key Findings

- Five patients identified (age 29–68 years).
- Sites: vulva (2), cervix (2), lower vagina (1).
- Aggressive local treatment with surgery (± lymph node dissection) and adjuvant radiotherapy.
- Only one patient received immunotherapy (nivolumab).
- Median overall survival: 80 months (28–156).
- Disease-free survival: 10–128 months.
- Distant relapse most commonly in lungs.

Table 1. Clinical Details of Vulvar and Vaginal Melanoma Cases

Case	Age (years)	Site	Stage (AJCC)	Treatment	Recurrence / Metastasis	Outcome (OS, months)
1	62	Vulva	II	Wide local excision + adjuvant RT	None	Alive, 156+
2	68	Vulva	III	Total vulvectomy + bilateral LND + adjuvant RT	Lung metastasis (at 28 months)	Died, 32
3	29	Lower vagina	II	Wide excision + adjuvant RT	Pelvic and para-aortic nodes (at 18 months)	Died, 24

Table 2. Clinical Details of Cervical Melanoma Cases

Case	Age (years)	Site	Stage (AJCC)	Treatment	Recurrence / Metastasis	Outcome (OS, months)
4	45	Cervix	II	Radical hysterectomy + LND + adjuvant RT	Lung and liver metastasis (at 10 months)	Died, 18
5	51	Cervix	II	Chemoradiotherapy + nivolumab	None	Alive, 128+

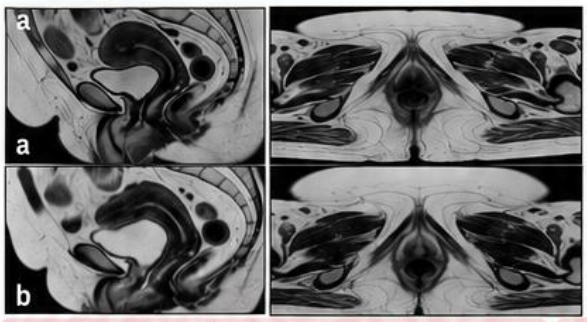


Figure 1. Case 1. MRI pelvis showing vulvar melanoma closely abutting urethra (a). Post-treatment MRI pelvis showing complete response after external beam radiotherapy (b).

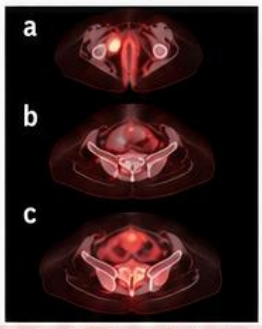


Figure 2. Case 2. PET scan showing baseline disease involving vulva with bilateral inguinal nodes (a). Recurrent disease with femoral iliac node (b). Complete response after SBRT to the node (c).

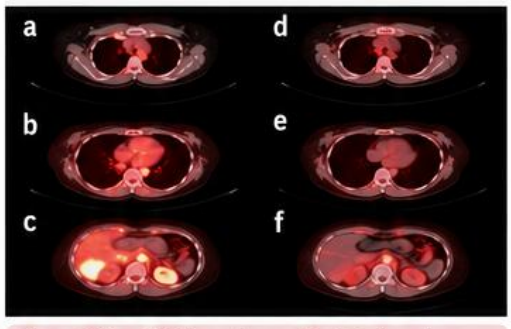


Figure 3. Case 3. PET scan images of metastatic melanoma with avid soft tissue nodule above sternum, pulmonary nodule and hepatic lesion (a,b,c). Complete response to immunotherapy on follow-up PET scan (d,e,f).

Results

- Five patients with gynecological melanoma were treated over 10 years.
- Median age: 29–68 years.
- Sites: vulva (2), cervix (2), lower vagina (1).
- Median overall survival: 80 months (28–156).
- Disease-free survival: 10–128 months.
- Distant relapse most commonly in lungs.

Conclusion

- Gynecological melanomas are rare and aggressive, often diagnosed at advanced stages.
- Aggressive local therapy and long-term follow-up can yield meaningful survival, particularly for vulvar melanoma.
- Access to immunotherapy remains limited in low- and middle-income countries like Pakistan.
- Expanding access to modern systemic therapies is essential to improve outcomes.

Key Messages

- Consider melanoma in atypical gynecological lesions.
- Aggressive local treatment when feasible.
- Long-term follow-up is essential.
- Improved access to immunotherapy is needed.
- Multidisciplinary approach for optimal outcomes.