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Original Article

Oncology Section

Survival Outcome of Patients with Vaginal Malignancy: A 10-year Cohort Study from Tertiary Care Centre, Southern India

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ABSTRACT

Introduction: Vaginal malignancy is a rare gynaecological malignancy, and authors know little about its survival and prognostic factors. The management of vaginal malignancies is largely determined by factors such as histological type, tumor size, anatomical site, disease stage, and patient age. Available treatment approaches include surgery, radiotherapy, chemotherapy, or a combination of these modalities.

Aim: To determine the survival outcomes of patients with vaginal malignancy treated at a tertiary cancer centre.

Materials and Methods: A retrospective cohort study was conducted in the Department of Oncology, Malabar Cancer Centre (Postgraduate Institute of Oncology Sciences and Research), Thalassery, Kerala, India. a period of 10 years, from January 2010 to December 2019, at a South Indian tertiary cancer centre. A total of 49 patients with primary vaginal malignancy were registered at the hospital, and their data were retrospectively reviewed from the medical records department. After treatment completion, patients were followed-up every three months for the first two years, every six months for the next three years, and annually thereafter. The primary endpoints were Overall Survival (OS) and Disease-free Survival (DFS), which were analysed using Kaplan-Meier analysis.

Results: There were a total of 49 patients with primary vaginal malignancy, of which 28 patients received curative treatment, 18 patients received palliative care, and 3 patients with poor performance status were given best supportive care. Squamous cell carcinoma was the most common histology, accounting for 44 (89.8%) cases. The median follow-up period was 139.9 months. The five-year overall survival rate was 54.8%. For patients with curative intent, the five-year overall survival rate was 67.9%, while for palliative patients, it was 25.4%. For curative patients, the two-year OS was 85.7%, and for palliative patients, it was 77.8%. The five-year DFS among curative intent patients was 84.2%, and the two-year DFS was 88.9%.

Conclusion: Curative treatment significantly improved survival outcomes compared to palliative care in patients with vaginal malignancies. Early diagnosis in lower stages and preventive measures are also necessary for increasing the survival rate. Given the scarcity of large-scale data on vaginal cancers, this study adds valuable regional evidence to the global understanding of this rare malignancy and underscores the need for continued research and awareness.

Keywords: Disease-free survival, Overall survival, Squamous cell carcinoma

INTRODUCTION

Vaginal malignancy primarily affects elderly women, with nearly 50% of cases occurring in women over the age of 70 [1]. Primary vaginal malignancy is rare, comprising 1-2% of all female reproductive tract cancers. It is strictly defined as a disease without evidence of cervical or vulvar cancer or a history of either within the past five years [2]. The current estimate of vaginal malignancy is higher than that of vulvar cancer; these estimates include primary and other genital lesions. The peak incidence of primary vaginal malignancy occurs in the sixth and seventh decades of life.

Squamous cell carcinoma is the most common histological type of vaginal malignancy, accounting for about 80% of all cases [1]. Factors that increase a woman's lifetime risk of vaginal malignancy include younger age at coitarche, multiple sexual partners, smoking, in utero Diethylstilbestrol (DES) exposure [3,4], and Human Papilloma Virus (HPV) infection [5,6]. The aetiology of vaginal malignancy is closely linked to cervical cancer, and HPV infection appears to be a necessary cofactor in most cases [5].

The management of vaginal malignancies is largely determined by factors such as histological type, tumor size, anatomical site, disease stage, and patient age. Various treatment approaches are available, including surgery, radiotherapy, chemotherapy, or a combination of these modalities. Surgical intervention is primarily considered for early-stage cases with small tumors (less than 2 cm) that are confined to the vaginal mucosa [7]. In advanced stages, radiation constitutes the cornerstone of treatment for vaginal malignancy [7]. The present study aimed provide significant insight into the clinical landscape of primary vaginal malignancies, which are exceedingly rarely discussed in the Indian setting. The purpose of present study was to determine the OS and DFS of patients with primary vaginal malignancies treated at a tertiary cancer centre from 2010 to 2019 and to evaluate the potential survival and prognostic factors in women with primary vaginal malignancy.

MATERIALS AND METHODS

The present retrospective cohort study of patients who underwent treatment for vaginal malignancy in the Department of Oncology, Malabar Cancer Centre (Postgraduate Institute of Oncology Sciences and Research), Thalassery, Kerala, India. January 1, 2010, to December 31, 2019. The study was approved by the Institutional review board (1616/IRB- SRC/13/MCC/24-05-2024/4).

Inclusion and Exclusion criteria: All cases of vaginal malignancy registered during the study period were included and patients with incomplete data were excluded the study.

Study Procedure

Clinical data, treatment history, follow-up information, and the current status of patients with vaginal malignancy who underwent treatment during this period were collected from case records in the medical records division. The follow-up period ended on December 31, 2024. After treatment completion, patients were followed-up every three months for the first two years, every six months

for the next three years, and annually thereafter. The parameters studied included age, International Federation of Gynaecology and Obstetrics (FIGO) stage, menopausal status, histology, recurrence, and mortality [7].

STATISTICAL ANALYSIS

Categorical variables are expressed in percentages, and continuous variables are expressed as mean±Standard Deviation (SD) or median {Interquantile Range (IQR)}. Univariate analysis for categorical variables was performed using the Chi-square test. The Kaplan-Meier test was used to determine overall and DFS. A p-value of less than 0.05 was considered statistically significant. Data were analysed using Statistical Packages of Social Sciences (SPSS) version 29.0 software.

RESULTS

In present study, the data of 49 patients with primary vaginal malignancy were analysed. Of the 49 patients, with a mean age of 62.43 years (range 44-85 years), 28 patients were planned for curative intent treatment, and 18 patients were planned for palliative treatment. Of the 49 patients, 2 (4%) had a history of Vaginal Intraepithelial Neoplasia (VIN), and one patient had a history of smoking (2.04%). A total of 46 patients (93.9%) were postmenopausal, and 3 (6.1%) were premenopausal.

The most common presenting symptom was bleeding per vagina, reported by 40 (82.3%) patients. White discharge per vaginum was present in 18 (37.5%) patients. Other symptoms included dysuria, burning micturition, and haematuria. One patient (2.04%) diagnosed with lung metastasis presented with a history of weight loss and persistent cough. The most common type of growth was proliferative 25 (49.6%), followed by ulceroproliferative 12 (25.1%), ulcerative 8 (17.4%) and infiltrative 4 (8%). The most common site of growth was the posterior vaginal wall in 24 (48%) patients, while 14 (28.1%) had growth in the anterior vaginal wall, and 11 (23.9%) had growth involving both the anterior and posterior vaginal walls.

Only 5 (10.2%) patients were diagnosed with FIGO stage I, 10 (20.4%) patients were stage II, 22 (44.8%) patients were stage III, 8 (16.3%) patients were stage IV A, and 4 (8.2%) patients were stage IV B [Table/Fig-1].

FIGO stage	n (%)
I	5 (10.2)
II	10 (20.4)
III	22 (44.8)
IV A	8 (16.3)
IV B	4 (8.2)

[Table/Fig-1]: Stage of vaginal malignancy patients (N=49) treated at tertiary care cancer centre.

Three histologic subtypes were identified in the final histopathology: squamous cell carcinoma, malignant melanoma, and adenocarcinoma. The most common subtype was squamous cell carcinoma, found in 44 patients (89.8%), followed by malignant melanoma in 3 patients (6.1%) and adenocarcinoma in 2 patients (4.1%) [Table/Fig-2]. Among the 49 patients, 3 (6.1%) received symptomatic treatment due to their advanced disease, age, and poor general condition.

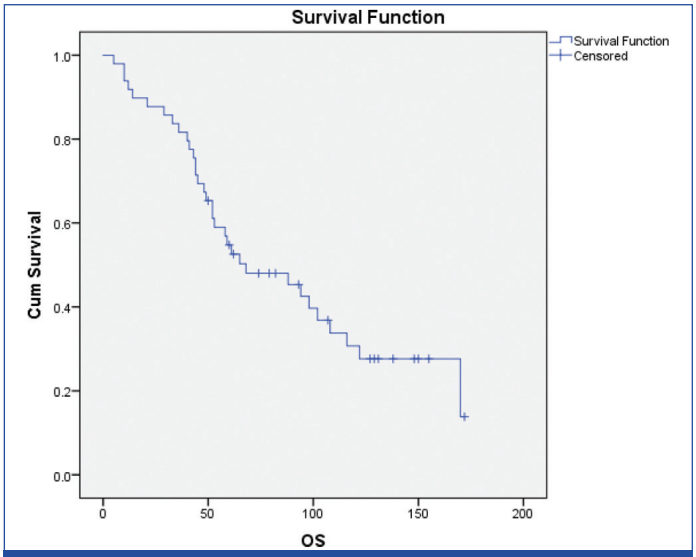
Patient characteristics		n (%)
Histopathology	Squamous cell carcinoma	44 (89.8)
	Malignant melanoma	3 (6.1)
	Adenocarcinoma	2 (4.1)
Curative intent	Chemoradiation	19 (38.8)
	Radiation alone	8 (16.3)
	Surgery alone	1 (2.04)
Palliative radiation		18 (36.73)
Supportive care		3 (6.12)

[Table/Fig-2]: Histopathology and management of vaginal malignancy patients (N=49) treated at tertiary care cancer centre.

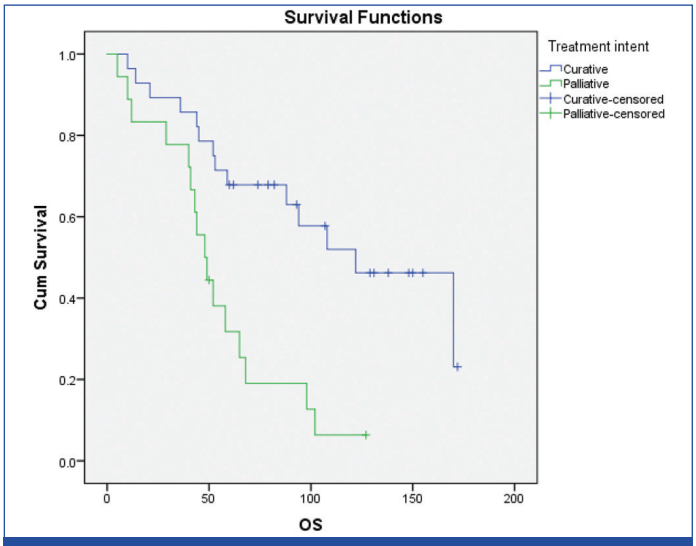
A total of 28 patients (57.1%) were treated with curative intent, while 18 patients (36.7%) were treated with palliative intent. Among those treated with curative intent, only one patient underwent surgery, which was a radical vaginectomy with node dissection. Eight patients (16.3%) received radiotherapy, and 19 patients (38.8%) were treated with chemoradiation. The external beam radiotherapy dose varied from 45 to 50.4 Gy. Among the 18 patients treated with palliative intent, all received palliative radiotherapy, with a common dosage of 20 Gy in 5 fractions.

All five cases of recurrence occurred among patients treated with curative intent, with recurrence sites including the pelvic region (2 patients), meningeal site (1 patient), left supraclavicular nodes (1 patient), and inguinal node (1 patient). None of the patients with recurrence survived.

The median follow-up period was 139.9 months. The mean Overall Survival (OS) was 91.96 months (95% CI: 74.63-109.29), and the median overall survival was 65.5 months (95% CI: 29.29-101.50). The five-year overall survival rate was 54.8%. For patients treated with curative intent, the five-year overall survival rate was 67.9%, while for palliative patients, it was 25.4%. The two-year overall survival rate was 85.7%. For curative patients, the two-year overall survival rate was 85.7%, and for palliative patients, it was 77.8%. The five-year DFS among curative intent patients was 84.2%, and the two-year DFS was 88.9% [Table/Fig-3,4]. The mean DFS among those who



[Table/Fig-3]: Overall Survival (OS) of vaginal malignancy patients treated at tertiary care cancer centre.



[Table/Fig-4]: Survival outcome of curative and palliative patients treated at tertiary care cancer centre.

experienced recurrence was 26 months, with two patients recurring within six months, two patients within 40 months, and one patient at 65 months following treatment.

DISCUSSION

Primary vaginal malignancy remains one of the rarest gynaecological cancers, accounting for only 1-2% of all female genital tract malignancies. The present study, conducted at a tertiary cancer centre in South India over a 10-year period, provides valuable insight into the demographic profile, treatment outcomes, and prognostic indicators of this uncommon disease.

The mean age at diagnosis in our cohort was 65.43 years, aligning with previous studies, such as that by Shah C et al., which reported a mean age of 65.7±14.3 years for vaginal cancer patients [8]. This underscores the fact that vaginal malignancy is predominantly a disease of older, postmenopausal women—93.9% of our patients were postmenopausal.

Squamous cell carcinoma was the most common histologic subtype, seen in 89.8% of patients, consistent with prior findings reported by Prameela CG et al., [9]. Less frequent histologies included malignant melanoma (6.1%) and adenocarcinoma (4.1%), reflecting the known rarity of non squamous variants in vaginal cancers. A systematic review in this cohort observed lower survival rates in Asian countries compared to developed countries [10]. A majority of patients in the present study presented with advanced-stage disease; only 10.2% were FIGO stage I, while 44.8% were stage III and 24.5% were stage IV. This late presentation highlights the often asymptomatic nature of early disease and possibly a lack of awareness and screening in the population.

Whelton J and Kottmeier HL showed a 5-year survival rate of 26.5% [11]. Huang J et al., in their study on survival and prognostic factors in primary vaginal malignancy, found that five-year Cause-specific Survival (CSS) rates were as follows: overall 57.8%, Stage I 76.4%, Stage II 61.9%, Stage III 53.3%, and Stage IV 22.5% [12]. In the present study, the five-year overall survival was 54.8%. For patients treated with curative intent, the five-year overall survival was 67.9%, while for palliative patients it was 25.4%. Interestingly, our two-year DFS for curative intent patients was 88.9%, which is significantly higher than the 50% reported by Pingley S et al., [13]. This may reflect differences in patient selection, radiation protocols, or supportive care over time, though further comparative studies are needed.

The findings reaffirm that radiotherapy, either alone or in combination with chemotherapy, remains the cornerstone of treatment, particularly in advanced stages, as supported by earlier studies by Perez CA et al., Prempree T et al., and Dixit S et al., [14-16]. Treatment decisions were largely influenced by disease stage and patient performance status. Among patients treated with curative intent, radiotherapy and chemoradiation were the mainstays, reflecting current global practice. Only one patient underwent surgery, indicating the limited role of radical surgery, which is generally reserved for early-stage disease involving the upper vagina or for cases where organ preservation is not a priority [17].

Limitation(s)

One limitation of present study is that it was conducted at a single tertiary care centre, which may not reflect treatment patterns, patient characteristics, or outcomes in other regions or Institutions. Additionally, only one patient underwent surgery in present cohort, making it difficult to compare outcomes across different treatment modalities (surgery vs. radiation vs. chemoradiation) in a meaningful way. The present study contributes significant insight into the clinical landscape of primary vaginal malignancies, which are exceedingly rare and account for only 1-2% of all gynaecological cancers. Unlike most existing literature that focuses on data from Western populations, the present retrospective analysis uniquely represents long-term survival outcomes and treatment responses from a South Indian tertiary care cancer centre over a 10-year period. With a mean follow-up of approximately 140 months, the present study offers one of the longest follow-up durations in regional literature, enhancing the reliability of its survival estimates. The inclusion of both curative and palliative cohorts, and the analysis of survival stratified by treatment intent and FIGO stage, further enrich the clinical understanding of this uncommon disease.

CONCLUSION(S)

Primary vaginal malignancy, although rare, remains a disease predominantly affecting postmenopausal women. In present study, squamous cell carcinoma was the most common histological subtype, and the posterior vaginal wall was the most frequently involved site. The five-year overall survival for all patients was 54.8%, with significantly better outcomes for those treated with curative intent (67.9%) compared to those receiving palliative care (25.4%). The five-year disease-free survival among curative patients was also notably high at 84.2%. These findings reinforce the importance of early diagnosis and curative treatment strategies, particularly radiation and chemoradiation, in improving outcomes. Given the scarcity of large-scale data on vaginal cancers, the present study adds valuable regional evidence to the global understanding of this rare malignancy and underscores the need for continued research and awareness.

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