# Outcome of Gynecological Cancers at Mansoura University Hospital: A prospective Study

Original Article

*Kareem Mahmoud Elkenawi[1], Reda Abd EL Hady Hemida[1], Hanan Ahmed Wahba[2] and Alhussein Ahmed Mohamed[1]*

*[1]Department of Obstetrics and Gynecology, [2]Department of Clinical Oncology and Nuclear Medicine, Mansoura University, Mansoura, Egypt*

## ABSTRACT

**Introduction:** Gynecological cancers contribute substantially to cancer-related morbidity and mortality. This study addresses the lack of comprehensive data on gynecologic malignancies, especially in less developed countries, focusing on Egypt. Understanding the incidence, presentation, and outcomes of these cancers is crucial for effective cancer control strategies.

**Objective:** This prospective cross-sectional study, conducted from May 2022 to April 2023 at Mansoura University Hospital, aimed to collect detailed information on gynecologic malignancies. The primary objective was to analyze the treatment outcomes of different types of gynecologic cancers in patients admitted to the Obstetrics and Gynecology department.

**Methods:** Patients aged 18 and above with histologically confirmed gynecological cancers were included. Data on demographics, medical history, clinical presentation, staging, histological types, primary treatment, and outcomes were collected. Follow-up involved radiological studies and tumor marker assessments at 3, 6, and 12-month intervals. Treatment outcomes were categorized as progressive, regressive, recurrent, cured, or deceased.

**Results:** Revealed 137 cases, with endometrial cancer being the most common (34.3%). Histopathologically, squamous cell carcinoma dominated cervical cancers, while high-grade serous carcinoma was prevalent in ovarian cancers. Most endometrial cancer cases presented at early stages (73.1% at Stage I). Most of the patients with cervical malignancy present with stage II disease and above, whereas most of the ovarian cancer cases present with disease in stage III and stage IV. Primary treatments varied, including surgery, chemotherapy, and radiotherapy. Cure rates were highest in GTN and endometrial cancer (90.5%, 51.3%, respectively) and lowest in cervical cancer (6.3%). Mortality rates were highest in cervical cancer (21.9%). Ovarian cancer had the highest recurrence rate (18.5%). Overall, 11.6% of patients were lost to follow-up.

**Conclusion:** This study provides valuable insights into the prevalence, presentation, and outcomes of gynecological cancers in Egypt. The findings emphasize the need for increased awareness, early detection, and improved cancer control measures, especially in developing countries. The data collected serve as a foundation for informed decision-making and the development of targeted interventions in gynecologic oncology.

**Key Words:** Developing nations, epidemiology, gynecological cancers, treatment outcomes.

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**Corresponding Author:** Kareem Mahmoud Elkenawi, Department of Obstetrics and Gynecology, Mansoura University, Mansoura, Egypt, **Tel.:** +2 010 0429 6942, **E-mail:** kkenawi94@hotmail.com

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## INTRODUCTION

Worldwide, cancer is a major cause of death and misery. Gynecological cancers like other cancers, have been associated with major tremendous strain on subjects, families and communities. According to GLOBOCAN 2020, total number of cases diagnosed with gynecological cancer estimates 604 000 new cases and 342 000 deaths globally, it is the fourth most commonly diagnosed cancer and the fourth greatest etiology of cancer mortality in females. A novel trend involves the shift of cancer burden from the developed to underdeveloped nations. Data available from various centers all over the world are indicative of massive difference in incidence, age and stage of presentation. While data on these issues is available from the developed world, composite data from the less developed nations is deficient. Quality data is of great importance for effective cancer control and is the basis on which policies and programs are planned[1].

Ovarian cancer is not only the most common gynecological cancer but also the most lethal. The overall poor survival is owing to lack of symptoms in the intial stages and the deep seated and relatively inaccessible location of ovaries, though in a lot of cases, it could be treated with the currently available therapy if diagnosed early[2]. The incidence of cervical cancer in the developed nations has decreased gradually owing to the well-established cervical screening programs and efficient vaccination. Unfortunately, such services are still lacking

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in the developing nations where it remains the main cause of death among females[3]. Endometrial cancer has been considered as the least challenging because of early detection and high cure rates. Vulvar and vaginal cancers are infrequent forms of genital malignancies. Gestational trophoblastic neoplasms (GTN) are one of the few curable tumors, even in case of advanced disease and widespread metastases[4].

A major problem in developing nations is the lack of precise population and health statistics. As a result, it isn't not possible to consistently estimate incidence rates of different malignancies. In these situations, reliance has to be placed on relative frequencies in hospitals as a measure of tumor incidence. The estimation of cancer burden is valuable to set up priorities for disease control[5].

In spite of the relatively high frequency of female genital malignancy in Egypt, there is still a lack of awareness on such subject. In order to attain such goal, this prospective study was conducted where we aimed to collect detailed data from our center on gynecologic malignancies. The aim of the study is to analyze the outcome of treatment of different types of gynecologic cancers who will be admitted to department of Obstetrics and Gynecology, Mansoura University Hospital.

## PATIENTS AND METHODS

This was a prospective cross sectional study conducted from 1/5/2022 to 30/4/2023 in Gynecologic oncology unit, Obstetrics & Gynecology department at Mansoura University Hospital. The study protocol was approved by the Mansoura faculty of Medicine Institutional Research Board. During this period, all patients above the age of 18 years old admitted to our Obstetrics & Gynecology department with histologically confirmed gynecological cancers were included. All relevant data regarding the ages, medical history, clinical presentation, staging, final histological type of cancer, primary treatment and outcome of different treatment modalities were collected. The management plan was established after multidisciplinary team (MDT) discussion that included colleagues from radiology, pathology and nuclear medicine department. Follow up of patients was done by radiological methods (US or CT and MRI) and with appropriate tumor markers. Follow up was carried out 3, 6, 12 months intervals. The primary objective of the study was to investigate the outcome of different treatment modalities and the primary outcomes were summarized as progressive, regressive, recurrent, cured and dead.

### *Regressive course*

Is used to describe a partial remission or partial response which is defined according to revised RECIST guidelines as at least a 30% decrease in the sum of diameters of lesion done by radiological follow up studies[6].

### *Progressive Disease*

At least a 20% increase in the sum of diameters of lesion.

### *Recurrence*

Detection of disease after completing treatment and after a period of disease free interval. This may be evaluated by radiologic imaging, lab testing, or biopsy which may be "Local recurrence", "Regional recurrence" or "Distant recurrence".

### *"Cured" or "Cancer free" or complete Response*

Disappearance of all lesions. It is difficult to establish an approved cancer-related definition of the word "cure". Several factors contribute to this reluctance. The likelihood of a late relapse has been considered a major concern. A cancer patient can be described as "cured" only when his or her life expectancy is the same as that of a sex- and age-matched normal subjects. In this study, the term cured will be used indicating complete response or no evidence of disease by our follow up studies[7].

Data for each case was meticulously entered into Excel spreadsheet.

### *Statistical analysis*

Data was analyzed using SPSS (statistical package for social sciences) version 22. Qualitative data was presented as number and percent, Quantitative data was tested for normality by Shapiro-Wilk test then described as mean and standard deviation for normal distribution of data and median and range for non-normal distribution. The appropriate statistical test was applied according to data type with the following suggested tests: Chi-Square for categorical variable, Spearman or Pearson correlation were utilized for correlation of continuous variables.

## RESULTS

Between May 2022 and April 2023, the total number of cases of invasive and pre-invasive lesions of female genital tract who were admitted and managed at Gynecologic oncology unit, department of Obstetrics & Gynecology department at Mansoura University Hospital was 137 cases. 47 endometrial cases (34.3%) were recorded which was the commonest followed by 37 cervical cases (27%). Patients with ovarian malignancies and GTN contribute to 27, 21 cases (19.7%, 15%) respectively. However, patients with vulvar and vaginal malignancies were rare comprising 5 cases (3.6%) of the total 137 cases.

Mean ages of endometrial, ovarian cancer patients were 62.4, 47 years respectively. While the mean ages for

the cervical and GTN cases were 48, 36 years respectively. The mean age of patients diagnosed with vulvar and vaginal cancers was 50.8 years.

According to histopathological type, of all the endometrial cancers, Endometrioid endometrial carcinoma (EEC) was the most common 65.8%; grade I (19.5%), grade II (31.7%), and grade III (14.6%). Non-endometrioid endometrial carcinoma (NEEC) contribute to 21.9% of endometrial cancer cases. Leiomyosarcoma was seen in only one patient (2.4%). Whereas endometrial hyperplasia with atypia was seen in 4 patients (9.7%) (Table 3).

Of all ovarian malignancies, high grade serous carcinoma (HGSC) was the most common histopathological type (44.4%). Other histopathological types include mucinous cystadenocarcinoma (7.4%), immature teratoma (7.4%), granulosa cell tumor (7.4%), carcinosarcoma (7.4%), undifferentiated and krukenberg tumor (3.7%). Borderline ovarian tumors were seen in 4 patients (14.8%).

Regarding cervical cancer, squamous cell carcinoma (SCC) was the most common type (67.6%). Adenocarcinoma was seen in 2 patients (6.3%). Carcinosarcoma was seen in 3 patients (8.1%). Undifferentiated carcinoma was seen in 2 patients (6.3%). 5 patients (13.5%) were diagnosed with cervical intraepithelial neoplasia (CIN).

As for the GTN, postmolar GTN represented 76.2% of all GTN cases. Invasive mole was found in 3 patients (14.3%) while choriocarcinoma was found in one patient (4.8%) and PSTT was found in another one patient (4.8%). In vulvar and vaginal cancers, SCC was diagnosed in 2 patients (40%). Adenoid cystic carcinoma, undifferentiated carcinoma, vaginal malignant melanoma were diagnosed equally (20%).

**Table 3:** staging of gynecological cancers

| Stage | Endometrial cancer | Ovarian cancer | Cervical cancer | Vulvar and vaginal cancers | GTN |
|---|---|---|---|---|---|
| I | 27 (73.1%) | 11 (40.7%) | 11 (34.4%) | 1 (20%) | 17 (81%) |
| 1A | 1A | 16 (43.1 %) | 8 (29.6%) | | |
| 1B | 1B | 10 (27 %) | 1 (3.7%) | 11 (34.4%) | 1 (20%) |
| 1C | IC | | 2 (7.4%) | | |
| II | | 1 (3.7%) | 11 (34.4%) | | |
| IIA | IIA | | | 2 (6.3%) | |
| IIB | IIB | | | 9 (28.1%) | |
| III | 7 (18.9%) | 12 (44.4%) | 9 (28.1%) | 2 (40%) | 4 (19%) |
| IV | 3 (8.1%) | 3 (11.1%) | 1 (3.1%) | 2 (40%) | |

Regarding primary treatment in endometrial cancer, 37 patients (90.2%) had an upfront surgery while 4 patients (9.7%) didn't have an upfront surgery. Of the 4 patients, one case (2.4%) received NACT and underwent interval debulking. Type of surgery was total abdominal hysterectomy, bilateral salpingoophrectomy (TAH+BSO), cytology, pelvic lymphadenectomy (PLND) ± paraaortic lymphadenectomy (PALND) in 26 cases (63%), TAH+BSO, cytology, omentectomy, PLND and PALND in 6 cases (14.6%) and simple extrafascial hysterectomy in 5 cases (12.1%).

In ovarian cancer group, 21 patients (77.7%) underwent upfront surgery. Primary optimal cytoreduction was successful in 11 patients (40.7%) whereas suboptimal debulking was recorded in 7 patients (25.9%). Fertility sparing surgery was done in 3 patients (11.1%). Whereas 6 patients (22.2%) had to receive primary systemic chemotherapy as primary optimal debulking was thought to be non-feasible in such patients. Out of those 6 patients, interval debulking was done in 2 patients (7.4%).

Regarding cervical cancer, Concurrent platinum-based chemoradiation (CCRT) was the primary treatment in 21 patients (56.8%). Hysterectomy was done in 10 patients (27%); type A hysterectomy (8.1%), type B radical hysterectomy (16.2%) and type C1 radical hysterectomy (8.1%). Radical trachelectomy and LEEP were done in one and three patients (2.7%, 8.1%) respectively.

In patients with vulvar and vaginal cancers, wide local excision with safety margin and inguinal lymphadenectomy was done in 3 patients (60%) while CCRT was the primary treatment in 2 patients (40%).

Regarding GTN, all cases were considered low risk according to WHO prognostic score. Methotrexate (MTX) was used as first line in all patients. 15 patients (71.4%) were cured while MTX resistance was reported in 6 cases (28.6%). After MTX resistance, Actinomycin D was used in 3 patients (14.3%) and EMA-CO was used in another 3 patients (14.3%). Of note, hysterectomy was done in 5 cases (23.8%); hysterectomy was done in 3 elderly parous cases instead of uterine evacuation and as an emergency hysterectomy due to intractable vaginal bleeding in 2 cases.

## DISCUSSION

Endometrial cancer being the commonest in our study is consistent with a study conducted by Almohammadi *et al*. in el Saudi Arabia[8]. However, this is inconsistent with Globocan cancer estimates for Egypt 2020 which states the ovarian cancer being the most common[9]. On the contrary to other studies from India and Africa, cervical cancer was reported to be the most frequent cancer[10].

In the endometrial cancer group, the mean age of patients was 62.4. This is somehow comparable to results of two studies from Nigeria where the mean age was 65.38 , 62.4 years[11]. In the ovarian cancer group, results showed that the mean age of patients was 47.07 years

These results are similar to results of Mostafa *et al* who evaluated Egyptian ovarian cancer cases where the median age was 47 years[12]. These results are also consistent with results of another study conducted in our locality by Nabil *et al* which showed the mean age was 45 years[13]. This is considered an age incidence peak about 1.5 decade below what is detected in Western populations[14]. The mean age of patients diagnosed with cervical cancer was 48.19. This result is similar to studies from Africa[15]. The mean age of patients diagnosed with vulvar and vaginal cancers was 50.8 years. This is similar to results of a large 10 year retrospective study from India where the mean age of patients was 52.5 years[16]. The mean age of GTN patients was 36.95 years which is comparable to a study from Japan where mean age was 34.2 years and higher than mean age from a study from Egypt which was 29 years[17].

Regarding endometrial cancer, the most common presentation was AUB (95%). These results are consistent with a study from India where AUB was the most common presentation[18]. Similar results were also seen in a study from Thailand[19]. A big dilemma with ovarian cancer is nonspecific symptoms which do not relate to genital tract, in addition, these are late symptoms when the disease is already advanced. Ovarian cancer is the most lethal gynaecological cancer often called silent killer owing to the absence of specific symptoms with poor prognosis[20]. Abdominal pain and distension were seen in 55.5%, 33.3% respectively in patients with ovarian cancer in the present study. These results are comparable to a study from a tertiary care hospital of Pakistan reporting abdominal pain (74.6%) and distension (76.0%) as the commonest presentation of cases with epithelial ovarian cancer[21]. The most frequent clinical presentations of patients diagnosed with cervical cancer in the present study was AUB (78.3%) which is similar to what is mentioned in literature. On the contrary, abnormal vaginal discharge was the most common presentation in two studies from Pakistan and India[22]. Regarding vulvar and vaginal cancers, all patients presented with pruritus vulvae. In addition to pruritus vulvae, 4 patients (80%) presented with vulvar growth or mass. Similarly, vulvar growth and pruritus vulvae were the most frequent presentations reported by a study from India[18]. While in a study by Jeevarajan *et al*., vulvar ulcer was the most frequent clinical presentation followed by pruritus[16].

According to histopathological type, regarding endometrial cancer, EEC was the most common. This is consistent with studies from Pakistan and India where EEC is the most common[22]. Similar results were also recorded in a retrospective study conducted in Egypt[23]. Of all ovarian malignancies, HGSC was the most common histopathological type (44.4%). In a study from Pakistan, epithelial ovarian tumors were the most predominant, followed by germ cell tumors and sex cord tumor[24]. Regarding cervical cancer, squamous cell carcinoma was the most common type (67.6%). Such results are in accordance with the observations of studies from Pakistan where SCC was the most common cervical cancer[25]. This was also the finding of other studies reported elsewhere[18]. In patients with vulvar and vaginal cancer, SCC was the most common (40%). Similarly, SCC was the most common type reported by studies elsewhere[26]. Regarding the types of GTN, postmolar GTN represented 76.2% of all GTN cases. choriocarcinoma was found in one patient (4.8%).On the contrary, choriocarcinoma was recorded in all the patients with GTN in a study from India[18]. In a study from Japan, GTN was diagnosed clinically and by histopathology in 81.5% and 18.5 % respectively in low risk GTN cases[27].

In the current study, majority of endometrial cancer patients presented at early stages. These result are comparable with results of two studies from India and Pakistan where most patients with endometrial cancer presented in early stages[22]. Regarding ovarian cancer, more than half of the patients presented with stage III and IV. In a study from India, no one with ovarian malignancy had stage I disease, whereas more than two thirds of the ovarian cancer cases presented with stage III and IV[18]. Mohyuddin *et al*. reported that almost all the patients with ovarian cancer presented in advanced stages (stage III and IV)[22]. while in cervical cancer patients, in the current study, 11 patients (34.4%) presented with stage I. While the rest presented with stage II and above. These results are comparable to a number of studies from Pakistan where most of cervical cancer patients presented with stage II and above[25]. Regarding GTN cases, 17 patients (81%) presented with stage I while 4 patients (17%) presented with stage III. All the patients were considered low risk. These results are comparable to a study from Egypt where the majority of patients were low risk and presented with stage I[17]. Similary, another study from Africa showed that all patients presented with stage I and 81% of all cases presented as low risk[28].

Regarding primary treatment, in the endometrial cancer group, nearly almost all patients had an upfront surgery. In a study from Thailand, 4.4% had to receive NACT. Half of all women (51.6%) underwent bilateral PLND. Only 8.4% underwent paraaortic lymphadenectomy[19]. The standard care of ovarian cancer patients is proper surgical staging with optimal cytoreduction and adjuvant chemotherapy. This significant subset of patients undergoing suboptimal debulking will not benefit from this procedure instead they will suffer the morbidity of such intervention. The alternative to primary surgery in patients with an unresectable tumor or poor performance status is neoadjuvant chemotherapy[29]. In the current study, 21 patients (77.7%) underwent upfront surgery. 6 patients (22.2%) had to receive primary systemic chemotherapy as primary optimal debulking was thought to be non-feasible in such patients. Out of those 6 patients, interval debulking was done in 2 patients (7.4%). These results are less than what was reported by Nabil *et al*. in another study from our

hospital where 93.6% of patients with ovarian cancer had underwent upfront debulking surgery[13]. However, Bristow *et al* reported in a meta-analysis that two-thirds of patients weren't candidates for optimal primary cytoreduction[30]. Similary, in the cohort done by Hegazi and his colleagues, most of the cases received neoadjuvant chemotherapy. This may be attributed to the large ratio of cases first diagnosed at advanced stages of the disease[31]. Regarding primary treatment in the cervical cancer group, more than half of the patients received CCRT as a primary treatment. CCRT is also the most common primary treatment offered to cervical cancer patients as reported by studies from India[10]. As for the GTN cases, MTX was used as first line in all patients. 15 patients (71.4%) were cured while MTX resistance was reported in 6 cases (28.6%). In another study from Egypt, 82.8% received first-line MTX and 17.2% received first-line Actinomycin D. MTX resistance was reported in 48.5%[17].

For the treatment outcome, highest cure rates were seen in GTN and endometrial cases (90.5%. 51.3% respectively). The highest mortality rates were seen in cervical cancer patients. No deaths have been documented within the GTN cases. The highest recurrence rate was seen in the ovarian cancer patients. 11.6% of total cancer patients were lost to follow up.

In a study from Egypt, the overall survival of endometrial cancer was 95%[32]. According to a meta-analysis to assess the 1, 3 and 5 year survival rate of ovarian cancer in twelve Asian countries, the mean 1-year survival in this study was estimated to be 73.65%[33]. In a study from India regarding cervical cancer treatment, complete response was observed in 75 % of cases, 15% partial response, 3% stable disease and 6.7% of patients showed a progressive course. Fifty percent of cases were lost in the follow up within 3 years of treatment fulfillment[34]. In the current study, regarding GTN cases, no patients died of disease. However in a study from Africa, 15.7% died of disease and reported a response rate comparable to the cure rate reported in the current study[28]. Mortality rates recorded in vulvar and vaginal cancer cases in our study were higher than the mortality rate recorded in a study from India where the estimated 5-year overall survival rate for all cases was 85.1%[16].

## *Study limitations*

The study was conducted in one tertiary care center with certain estimated capacity in a selected period of time which makes it difficult for the data to represent the whole Egyptian population. Further studies have to be conducted in the future on large number of cases. The incomplete data of some variables especially the follow up is another setback to our study. Lack of follow up can be a major contributing factor for treatment failure. Possible causes involve low education level and shortage of resources to attend on time. Longer duration of follow up is also needed. Since a paper-based health information system is still relatively used in this hospital, it is likely some cases may have been missed (Tables 1,2,4).

**Table 1:** Clinical data in the cases with different gynecological cancers

| Comorbidities | Endometrial cancer (N=41) | Ovarian cancer (N=27) | Cervical cancer (N=37) | Vulvar and vaginal cancer (N=5) |
|---|---|---|---|---|
| DM | 18 (43.9%) | 3 (11.1%) | 6 (16.2%) | 2 (40%) |
| HTN | 24 (58.5%) | 3 (11.1%) | 3 (8.1%) | 1 (20%) |
| Other comorbidities* | 11 (26.8%) | 1 (3.7%) | 6 (16.2%) | 1 (20%) |
| Positive family history* | 2 (4.8%) | 2 (4.8%) | 0 | 0 |

*other comorbidities for example hypothyroidism, ischemic heart diseases, bronchial asthma.
*Positive family history: A familial background indicating a history of breast, endometrial, and ovarian cancers.

**Table 2:** Clinical presentation of different gynecological cancers

| Presenting symptom | Endometrial cancer | Ovarian cancer | Cervical cancer | Vulvar and vaginal cancers |
|---|---|---|---|---|
| AUB | 39 (95%) | 2 (7.4%) | 29 (78.3%) | |
| Abdominal pain | | 15 (55.5%) | | |
| Abdominal mass/ distension | 2 (4.8%) | 9 (33.3%) | | |
| Vaginal discharge | | | 6 (16.2%) | 4 (80%) |
| Pruritus vulvae | | | | 5 (100%) |
| Accidently discovered | | 1 (3.7%) | 1 (2.7%) | |

**Table 4:** Outcome of different gynecological cancers

| Outcome (n= 32) | Endometrial cancer | Ovarian cancer | cervical cancer | Vulvar and vaginal cancers | GTN |
|---|---|---|---|---|---|
| Cured | 19 (51.3%) | 8 (29.6%) | 2 (6.3 %) | 1 (20%) | 19 (90.5%) |
| Dead | 6 (14.6%) | 3 (11.1%) | 7 (21.9 %) | 2 (40%) | |
| Progressive | | 2 (7.4%) | 7 (21.9 %) | 1 (20%) | |
| Recurrence | 5 (13.5%) | 5 (18.5%) | 1 (3.1%) | | |
| Regressive | | 5 (18.5%) | 12 (37.5%) | 1 (20%) | |
| Lost FU | 7 (18.9%) | 4 (14.8%) | 3 (9.4%) | | 2 (9.5%) |

## CONCLUSION

Gynecological cancers represent a major public health problem especially in low resource countries as they significantly contribute to cancer-related deaths. It can be concluded from this study that most of the patients with gynecological cancers in the developing nations present to a tertiary care hospital at a late stage. The majority of cervical cancer cases present with stage II disease and above, whereas most of the ovarian cancer cases present with stage III and stage IV. On the other hand, most uterine cancers presented at early stages. The best outcome was seen in GTN and endometrial cancer while the worst was seen in cervical cancer.

## CONFLICT OF INTERESTS

There are no conflicts of interest.

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