

# An Overview of Ovarian Tumours at B.P. Koirala Memorial Cancer Hospital, Nepal

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## ABSTRACT

**Introduction:** Ovarian cancer is the seventh most commonly diagnosed cancer among women in the world. This study was conducted with the aim to find out different histological types of ovarian tumours reported at B.P. Koirala Memorial Cancer Hospital (BPKMCH), Chitwan, Nepal.

**Methods:** This was a retrospective study carried out at the Department of Pathology of BPKMCH from January 1, 2018 to December 31, 2018. This study included the patients who were operated at BPKMCH or referred cases from elsewhere, but the specimen was processed and reported at BPKMCH. All the data were retrieved and analyzed from the records of Pathology Department.

**Results:** Altogether 87 cases of ovarian tumours were reported during the study period. Out of which, 31 cases were benign ovarian tumours whereas 56 cases were malignant ovarian tumours. Both benign and malignant ovarian tumours were most common in age group 41 to 50 years of age. Among benign ovarian tumours, 12 cases were serous cystadenoma, 7 cases mucinous cystadenoma, 6 cases mature cystic teratoma, 2 cases serous cyst adenofibroma, 2 cases benign Brenner tumour and 2 endometrioid cystadenoma. Among malignant ovarian tumours, 33 cases were serous cystadenocarcinoma, 11 cases mucinous cystadenocarcinoma, 2 cases immature teratoma, 3 cases were malignant sex cord stromal tumours (granulosa cell tumour), 2 cases dysgerminoma, 1 case yolk sac tumour, 1 case endometrioid carcinoma and 3 cases were metastatic adenocarcinoma.

**Conclusion:** Surface epithelial tumours were most common ovarian tumours in this study. Serous cystadenomas were most common benign ovarian tumours whereas serous cystadenocarcinomas were the most common malignant ovarian tumours.

**Keywords:** Ovarian tumour, histology, Nepal.

## Introduction

Ovarian cancer (OC) is the seventh most commonly diagnosed cancer among women in the world.<sup>1</sup> There were nearly 300,000 new cases in 2018. OC is one of the most common gynaecologic cancers that has the highest mortality rate. Ovarian cancer accounts for an estimated 239,000 new cases and 152,000 deaths worldwide annually.<sup>1</sup> A woman's lifetime risk of developing OC is 1 in 75, and her chance of dying of the disease is 1 in 1004. The disease typically

presents at late stage when the 5-year relative survival rate is only 29%. Few cases (15%) are diagnosed with localized tumor (stage 1) when the 5-year survival rate is 92%. Strikingly, the overall 5-year relative survival rate generally ranges between 30%–40% across the globe and has seen only very modest increases (2%–4%) since 1995.<sup>2</sup>

The comprehensive global cancer statistics from the International Agency for Research on Cancer indicate that gynecological cancers accounted for 19% of the

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5.1 million estimated new cancer cases, 2.9 million cancer deaths and 13 million 5-year prevalent cancer cases among women in the world in 2002. Cervical cancer accounted for 493 000 new cases and 273 000 deaths; uterine body cancer for 199 000 new cases and 50 000 deaths; ovarian cancer for 204,000 new cases and 125,000 deaths.<sup>3</sup>

Nearly all benign and malignant ovarian tumors originate from one of three cell types: epithelial cells, stromal cells, and germ cells. In developed countries, more than 90% of malignant ovarian tumors are epithelial in origin, 5%–6% of tumors constitute sex cord-stromal tumors (e.g., granulosa cell tumors, thecomas, etc.), and 2%–3% are germ cell tumors (e.g., teratomas, dysgerminomas, etc). Epidemiological research has clearly implicated hormonal and reproductive factors in the pathogenesis of OC. Brett et al. concluded to emphasize the established risk factors aside from highly penetrant gene mutations.<sup>1</sup> Increased and earlier use of oral contraceptives has very likely contributed to the declining trends observed in most developed countries while reduced parity and changes in diet and physical activity could play a role in the increasing trends observed in several countries with economic growth.

B.P. Koirala Memorial Cancer Hospital (BPKMCH) is a super-specialized Government National Cancer Centre in Nepal. This study was conducted with the aim to find out different histological types of ovarian tumours reported at BPKMCH, Chitwan, Nepal.

## Methods

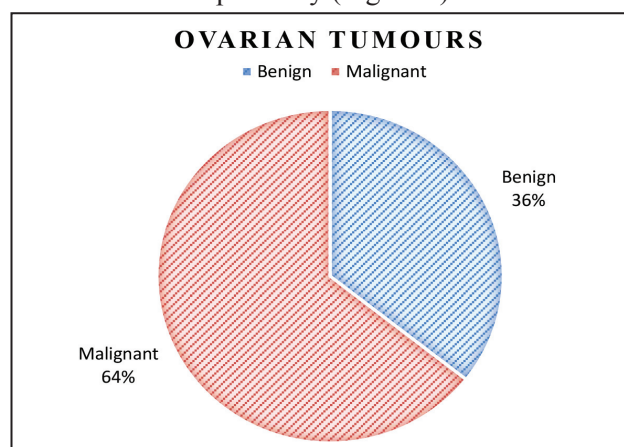
This was a retrospective study carried out at the Department of Pathology of BPKMCH effective from January 1, 2018 to December 31, 2018 over a period of one year. The study included the patients who were operated at BPKMCH or referred cases from elsewhere but the specimen was processed and reported at BPKMCH. However, patients with two different synchronous ovarian tumors and borderline ovarian tumours were excluded from the study. All the data were retrieved and analyzed from the records of Pathology Department of BPKMCH. Descriptive statistics were presented as frequency, percentage and diagrams.

## Results

Three cases had more than one type of ovarian tumours (one patient had mature cystic teratoma in one ovary and mucinous cystadenoma in another ovary, second case had adenofibroma in one ovary and mucinous cystadenoma in another ovary, third case had endometriosis in one ovary and mucinous cystadenoma in another ovary). Similarly, two cases

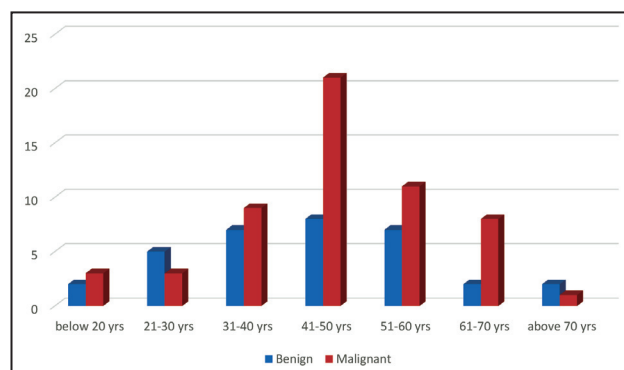
were borderline ovarian tumour (one patient had borderline serous neoplasm and another patient had borderline mucinous tumour), so these cases were excluded in the study.

In our study, altogether 87 cases of ovarian tumours have been reported effective from January 1, 2018 to December 31, 2018, over one year period. Among them 31 cases were benign ovarian tumours, whereas 56 cases were malignant ovarian tumours accounting 36% and 64% respectively (Figure 1).



**Figure 1: Frequency of Benign and Malignant ovarian tumours**

Both benign and malignant ovarian tumours were most common in 41-50 years age group (Figure 2). Among benign ovarian tumours, 12 cases were serous cystadenoma, 7 cases mucinous cystadenoma, 6 cases mature cystic teratoma, 2 cases serous cystadenofibroma, 2 cases benign Brenner tumour and 2 endometrioid cystadenoma (Table 1).



**Figure 2: Frequency of ovarian tumours in different age groups**

Among malignant ovarian tumours, 33 cases were serous cystadenocarcinoma, 11 cases mucinous cystadenocarcinoma, 2 cases immature teratoma, 3 cases were malignant sex cord stromal tumours (granulosa cell tumour), 2 cases dysgerminoma, 1 case yolk sac tumour, 1 case endometrioid carcinoma and 3 cases were metastatic adenocarcinoma (Table 1).

**Table 1: Frequency of Benign and Malignant ovarian tumours**

Types of ovarian tumours	Benign n (%)	Malignant n (%)	Total n (%)
Surface epithelial tumours	25 (28.7%)	47 (54.1%)	72 (82.8%)
Germ cell tumours	6 (6.87%)	4 (4.6%)	10 (11.5%)
Sex cord stromal tumour	-	3 (3.45%)	3 (3.45%)
Metastatic tumours	-	2 (2.3%)	2 (2.3%)
<b>Total</b>	<b>31 (35.6%)</b>	<b>56 (64.36%)</b>	<b>87 (100%)</b>

Among benign ovarian tumours, serous cystadenomas were the most common type of benign ovarian tumours followed by mucinous cystadenomas accounting 38.6% and 22.5% respectively (Table 2).

**Table 2: Frequency of benign tumours in one or both ovaries**

Diagnosis	Bilateral n (%)	Unilateral n (%)	Total n (%)
Serous cystadenoma		12 (38.6%)	12 (38.6%)
Mucinous cystadenoma		7 (22.5%)	7 (22.5%)
Mature cystic teratoma	3 (9.6%)	3 (9.6%)	6 (19.3%)
Serous cyst adenofibroma		2 (6.44%)	2 (6.44%)
Endometrioid cystadenoma	1 (3.22%)	1 (3.22%)	2 (6.44%)
Benign Brenner tumour		2 (6.44%)	2 (6.44%)
<b>Total</b>	<b>4 (12.88%)</b>	<b>27 (86.94%)</b>	<b>31(100%)</b>

Similarly, among malignant ovarian tumours serous cystadenocarcinomas were the most common type of malignant ovarian tumours followed by mucinous cystadenocarcinomas accounting 58.7% and 19.58% respectively (Table 3).

Both benign as well as malignant surface epithelial tumours were the most common ovarian tumours

accounting 82.8% among all histologic types. According to our study 62.3% malignant ovarian tumours were bilateral (in both ovaries) whereas only 37.38% malignant ovarian tumours were unilateral either in right or in left ovary. On the other hand, 86.94% benign ovarian tumours were unilateral whereas only 12.88% benign ovarian tumours were bilateral (Table 2 and 3).

**Table 3: Frequency of malignant tumours in one or both ovaries**

Diagnosis	Bilateral n (%)	Unilateral n (%)	Total n (%)
Serous cystadenocarcinoma	25 (44.5%)	8 (14.3%)	33 (58.7%)
Mucinous cystadenocarcinoma	4 (7.2%)	7 (12.5%)	11 (19.58%)
Immature teratoma	2 (3.56%)		2 (3.56%)
Yolk sac tumour		1 (1.78%)	1 (1.78%)
Dysgerminoma		2 (3.56%)	2 (3.56%)
Malignant sex cord stromal tumour (Granulosa cell tumour)		3 (5.34%)	3 (5.34%)
Endometrioid carcinoma	1 (1.78%)		1 (1.78%)
Metastatic carcinoma	3 (5.34%)		3 (5.34%)
<b>Total</b>	<b>35 (62.3%)</b>	<b>21 (37.38)</b>	<b>56 (100%)</b>

## Discussion

This study showed that 36% cases were benign ovarian tumours, whereas 64% cases were malignant ovarian tumours. This might be because the study was carried in a comprehensive National Cancer Centre in Nepal. Lalrinpui et. al. did retrospective study and followed up women 40 years and younger, operated between 2008 and 2012 for ovarian cancer. A hybrid of retrospective and prospective cohort design was used for descriptive as well as a survival analysis. The predominant histology in the study population was epithelial tumour (70%), and serous adenocarcinoma was the commonest tumour type. The overall survival rate was 87%, and progression free survival was 63%.<sup>4</sup>

Wasim et. al. conducted a consecutive case series study. All patients who on abdominal or bimanual examination and abdominal U/S were found to have ovarian cyst or tumour, and later underwent laparotomy were included. The study included 110 patients, of whom 80 (72%) had benign and the rest malignant disease. Mean age of patients with malignancy was 49.07+/-18.5 years and for benign 36.95+/-8.2 years ( $p= 0.0001$ ). Histopathology of malignant tumours showed serous cyst carcinoma in 46.7% and mucinous cyst carcinoma in 26% cases.<sup>5</sup> A hospital based retrospective study carried by Ghosh A, et al. found the serous cystadenoma the commonest surface epithelial tumours followed by mucinous cystadenoma.<sup>6</sup>

Ghartimagar et. al. did a retrospective study and concluded that surface epithelial tumors comprised 58% of all ovarian tumors. In both benign and malignant cases, serous tumor was the commonest followed by mucinous tumors.<sup>7</sup>

Jha and Karki found the surface epithelial tumors most common (52.2%) ovarian tumour followed by germ cell tumors (42.2%). Mature cystic teratoma was commonest benign tumor (48.2%). Serous adenocarcinoma was commonest malignant tumor (46.2%).<sup>8</sup>

Gupta et. al. concluded in their study that the benign serous cystadenoma being the most common type of benign epithelial ovarian tumour. Mature cystic teratoma was the main type of germ cell tumor. Almost one-third of the ovarian tumors were malignant with most common being serous carcinoma. More than half of the bilateral cases were malignant.<sup>2</sup>

Similar to other studies, our study also found that benign serous cystadenomas were the most common type of benign ovarian tumours followed by mucinous cystadenomas accounting 38.6% and

22.5% respectively.

In our study mature cystic teratoma was the main type of germ cell tumor and serous cystadenocarcinoma was the most common malignant tumour. Also, 62.3% malignant ovarian tumours were bilateral whereas only 37.38% malignant ovarian tumours were unilateral. On the other hand, 86.94% benign ovarian tumours were unilateral whereas only 12.88% benign ovarian tumours were bilateral. So bilateral ovarian tumours might be malignant whereas unilateral ovarian tumour might be benign unless proved otherwise.

Barber HR emphasized the early diagnosis being the most effective means of reducing the currently high mortality rate associated with ovarian cancer. Ovarian cancer should be ruled out in any woman 40 years of age or older who has persistent, unexplained GI symptoms. Ninety percent of all ovarian tumors are of epithelial origin. The earlier the diagnosis, the greater the chance for cure. With the combined use of all the available treatment methods, patients with ovarian cancer are now living longer and more comfortably.<sup>9</sup>

## Conclusion

This study showed that surface epithelial tumour was most common ovarian tumours. Serous cystadenoma was most common benign ovarian tumours whereas serous cystadenocarcinoma was the most common malignant ovarian tumours. Both benign and malignant ovarian tumours were most common in age group 41 to 50 years of age.

The results also emphasized the early diagnosis being the most effective means of reducing the currently high mortality rate associated with ovarian cancer. Ovarian cancer should be ruled out in any woman 40 years of age or older. Eighty three percent of all ovarian tumors were of epithelial origin. The earlier the diagnosis, the greater the chance for cure. With the combined use of all the available treatment methods, patients with ovarian cancer are now living longer and more comfortably.

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