

Histopathological Study of Fallopian Tube Carcinoma

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Abstract: **Background:** Primary fallopian tube carcinoma is a rare gynecologic malignancy and accounts for 0.14 to 1.8 % of all female genital malignancies. **Materials and Methods:** One hundred and eighty five fallopian tube specimens over a period of one year either from hysterectomy with salpingo-oophorectomy specimens, salpingo-oophorectomy specimens or salpingectomy specimens were reviewed thoroughly on the basis of gross and microscopic findings. **Results:** Out of 185 cases, seven cases showed features of malignancy. Out of seven cases, two cases were of primary fallopian tube carcinoma and five cases showed metastasis in fallopian tube. **Conclusion:** It is essential for the pathologist to section the fallopian tubes serially and submit all the representative tissue for microscopic examination so that the diagnosis of pathological entities is not missed. Routine histological examination of the fimbria provides the opportunity to detect these early malignant changes.

Keywords: Dysgerminoma, endometrioid carcinoma, fallopian tube, mucinous carcinoma, serous tubal intraepithelial carcinoma

1. Introduction

Primary fallopian tube carcinoma is a rare gynecologic malignancy and accounts for 0.14 to 1.8 % of all female genital malignancies.¹ The majority (88%) of PFTCs are adenocarcinomas, of which 44 % are serous adenocarcinoma type and 19 % are endometrioid type.² Recent evidence indicates that the distal fallopian tube is the principal site of early serous cancer in women with a hereditary risk for ovarian cancer, having BRCA1 or BRCA2 mutation. Moreover, the fimbria is involved by early cancer in a significant minority of pelvic serous carcinoma. Therefore, routine histological examination of the fimbria provides the opportunity to detect this early malignant changes.³

2. Materials and Methods

A one year prospective study was done from March 2015 to February 2016 at Pt.J.N.M.Medical College and Dr. B. R. A. M. Hospital, Raipur (C.G.). During this period, studies of 185 fallopian tubes cases were done. All the specimens of salpingectomy either done for TAH with BSO, unilateral salpingectomy or salpingo-oophorectomy were included in the study. Tubectomy specimens were excluded from the study. A minimum of three cross sections of each tube, from proximal, mid and distal portions should be taken for microscopic examination. The proximal fallopian tube is serially cross-sectioned at 2.0-3.0 mm intervals, and the distal fimbriated end is longitudinally sectioned for maximal exposure of the fimbrial epithelium. It is processed routinely to obtain paraffin sections of 4-5 microns size and then stained with Haematoxylin & Eosin. After this, microscopic features are studied. IHC was done for limited cases.

3. Results

Among carcinoma of fallopian tube, two cases of primary carcinoma of fallopian tube were diagnosed. One case was diagnosed in a 53 years old female and it was reported as

endometrioid adenocarcinoma. Another case was diagnosed in a 25 years old female and it was reported as serous tubal intraepithelial carcinoma (STIC) [Table 1]

Primary Endometrioid Adenocarcinoma

Specimen was received in one container labelled as hysterectomy with bilateral adnexa containing uterus with cervix along with bilateral ovaries and fallopian tube preserved in 10 % formalin. On gross examination, uterus with cervix measures 8 x 6 x 5 cms. Ectocervix appears unremarkable. On sectioning, the squamo-columnar junction is unremarkable. Endometrium measures 0.2 cm. Myometrium measures 2.3 cm. Two grey-white, well encapsulated masses were seen in myometrium each measuring 1.5 x 0.5 cms. On sectioning, whorled appearance was seen. Right ovary measures 2 x 2 x 1 cms in size. Cut section was unremarkable. **Right fallopian tube measures 6x 4x 3 cms in length. Cut sections showed serous fluid and a grey white lesion.** Left ovary measures 3x 2x 1 cms in size. Cut section was unremarkable. Left fallopian tube measures 7x5x3 cms in length. On cut section, it was unremarkable.

Histopathological examination revealed chronic cervicitis, endometrial glands were in proliferative phase, intramural leiomyoma, corpora albicans in both ovaries. **Right fallopian tube showed features of endometrioid adenocarcinoma. The tumour infiltrates the muscularis propria. Serosa was free from tumour. Lymphovascular invasion and perineural invasion was not seen.** Left fallopian tube showed no specific pathology and was free from the tumour.

Serous Tubal Intraepithelial Carcinoma (STIC)

One case of 25 years old female reported as metastasis of serous tubal intraepithelial lesion in fallopian tube. She presented with a complaint of pain in abdomen since 15 days and vomiting & loose motion since 10 days. She was a known case of Koch's abdomen and received antitubercular

treatment (ATT). USG abdomen showed a large well defined predominantly cystic mass lesion with internal echoes and internal vascularity measuring approximately 14 x 10 cm likely to be arising from left adnexa likely suggestive of malignant mass lesion. MRI pelvis showed a large well defined abdomino-pelvic cystic lesion suggestive of left tubo-ovarian mass. CA-125 levels were found to be in normal limits.

Specimen was received in two containers. First container was labelled as left oophorectomy specimen contain left ovary preserved in 10 % formalin. Left ovary measures 12 x 3 x 2 cm. On cut section, solid and cystic areas were seen. Cystic areas were filled with serous fluid. Left fallopian tube was of length 5 cms. On cut section, lumen was obliterated and thickened. Second container labelled as right oophorectomy contain right ovary with right fallopian tube preserved in 10 % formalin. Right ovary measures 5.5 x 3 x 2 cms in size. On cut section, solid and cystic areas were present. Right fallopian tube was of length 5 cms. On cut section, it was unremarkable.

Histopathological examination revealed **serous tubal intraepithelial carcinoma of left fallopian tube**. Both the ovaries and right fallopian tube showed no specific pathology.

IHC was also done. It was found positive for TP 53 and Ki -67.

Metastatic Tumours

Secondary metastatic deposits of the tumour in fallopian tube were seen in five cases. The metastasis to the fallopian tube was from ovarian primary in three (60 %) cases, endometrium primary in one (20 %) case, and GIT primary in one (20 %) case. Among ovarian neoplasms, two were dysgerminoma and one was mucinous carcinoma. Among uterus (endometrium), it was endometrioid carcinoma. Among GIT (krukenberg tumour), it was moderately differentiated mucinous intestinal type adenocarcinoma. IHC was done for endometrioid carcinoma and it was found positive for EMA.

Dysgerminoma

Two cases of metastasis of dysgerminoma in the fallopian tube was diagnosed, one in a 12 year old female and another in a 30 year old female.

In one case, a 12 years old female presented with complaint of swelling in abdomen since 20 days. USG abdomen showed a large heterogenous ill defined mass of size 15 x 14 x 14 cm at right adnexa which was extending to pelvic cavity, suggestive of right ovarian mass. CECT abdomen & pelvis showed a well defined irregular mass measuring 19.5 x 16 x 12.5 cm predominantly solid component and few cystic component with significant vascularity, suggestive of pelvic mass ? ovarian in origin. CA -125 (640 U/ml) and β HCG (429 mIU / ml) were found to be elevated. Alpha fetoprotein (AFP) was found to be in normal limits (3 ng/ml).

Peritoneal fluid for cytological examination showed reactive mesothelial cells, mature lymphocytes, against hemorrhagic

background. Negative for malignancy. Pleural fluid for cytological examination showed mature lymphocytes against hemorrhagic background. Negative for malignancy.

Specimen was received in one container labelled as excised pelvic mass with bilateral oophorectomy contain uterus with cervix with bilateral ovaries & fallopian tubes preserved in 10 % formalin. Left ovary measures 6 x 6 x 2 cm. On cut section, it was variegated with solid and cystic areas present. Left fallopian tube of length 4 cm was present. On cut section, it was unremarkable. Right ovary measures 4 x 2.5 x 1.5 cm. On cut section, it was unremarkable. Right fallopian tube was of length 4 cm. On cut section, it was unremarkable.

Histopathological examination revealed **dysgerminoma of left ovary. Left fallopian tube showed metastasis of dysgerminoma infiltrating the serous layer & muscle layer**. Right fallopian tube showed no specific pathology. Cervix, endometrium, myometrium & right ovary showed no specific pathology.

In another case, a 30 years old female presented with complaint of pain in abdomen since one month. Specimen was received in one container labelled as left ovarian mass contain left ovary with fallopian tube preserved in 10 % formalin. On cut section left ovary measures 12 x 10 x 5 cm. Outer surface was bosselated. Cut section was grey white to brownish with solid areas. Left fallopian tube of length 2 cm was present.

Histopathological examination revealed **dysgerminoma of left ovary. Left fallopian tube showed metastasis of dysgerminoma infiltrating the serous layer & muscle layer**.

Mucinous Carcinoma

One case of metastasis of mucinous carcinoma ovary in fallopian tube was diagnosed in a 35 years old female. USG abdomen showed a solid cystic lesion measuring 5x 5 x 3 cm noted in right pelvic region likely to be arising from right adnexa along with a large heterogenous lobulated mass lesion measuring 11 x 10 x 8 cms in right pelvic region with few cystic area likely to be arising from right adnexa. CA 125 levels were found to be elevated (94.10 U/ml).

Specimen was received in two containers. First container was labelled as specimen of right ovary containing right ovary along with right fallopian tube preserved in 10 % formalin. On gross examination, right ovary measures 20 x 16 x 10 cms in size. On cut section, solid and cystic areas were seen. Cyst was filled with mucinous material (approx 100 ml). Right fallopian tube was 4 cm in length. On cut section, it was unremarkable. Second container labelled as specimen of left ovary containing left ovary along with left fallopian tube preserved in 10 % formalin. On gross examination, left ovary measures 7 x 6 x 5 cms in size. On cut section, it was unremarkable. Left fallopian tube measures 4 cm in length. On cut section, it was unremarkable.

Histopathological examination revealed **mucinous carcinoma of right ovary. Right fallopian tube showed metastasis of mucinous carcinoma**. Left ovary and left

fallopian tube showed no specific pathology and was free from the tumour.

Endometrioid Adenocarcinoma

One case of metastasis of endometrioid carcinoma was diagnosed in fallopian tube in a 50 years old female. She presented with complaint of bleeding per vaginum since last one year.

Specimen was received in one container labelled as uterus with cervix with bilateral ovaries and tubes preserved in 10 % formalin. On gross examination, uterus with cervix measures 10 x 6 x 3 cms in size. Endometrial cavity was obliterated and filled with grey white mass which was reaching upto cervix. Endometrium was not identified and myometrium measures 1.5 cm. Left ovary measures 2 x 2 x 1 cm in size. Left fallopian tube measures 3 cm in length. Right ovary measures 2.5 x 1.5 x 1 cm in size. Right fallopian tube measures 4 cm in length. On cut section, both the ovaries and fallopian tubes were unremarkable.

Histopathological examination revealed chronic cervicitis, **endometrioid adenocarcinoma grade 3 of uterus corpus extending upto cervix and left fallopian tube**. Both the ovaries and right fallopian tube showed no specific pathology and were free from the tumour.

IHC was done. It was found positive for EMA.

Moderately Differentiated Mucinous Intestinal Type Adenocarcinoma

A 52 year old lady was operated for of Carcinoma stomach with krukenberg tumour. USG abdomen showed a large multiloculated lesion measuring 27x 23 cms in size with thick internal septations showing vascularity noted in abdominopelvic region likely adnexal in origin.

USG guided FNAC from bilateral adnexa mass was done. Moderately cellular smear showed tumour. The tumour cells were arranged in glands and cluster having moderate degree of nuclear pleomorphism with prominent nucleoli. Features were of malignancy possibly Adenocarcinoma.

Specimen was received in one container labelled as bilateral salpingo-oophorectomy containing two cystic ovarian mass with attached fallopian tube. On gross examination, both the ovarian mass was of diameter 10 cm each. Outer surface was smooth and grey white in colour. Cut surface showed multiloculated, multiple cyst filled with mucinous fluid. Both fallopian tubes were of length 4 cm each.

Histopathological examination revealed **metastasis of moderately differentiated mucinous intestinal type**

adenocarcinoma in both the ovaries. Left fallopian tube showed metastasis of moderately differentiated mucinous intestinal type adenocarcinoma while right fallopian tube showed no specific pathology and was free from the tumour.

4. Discussion

In present study, the incidence of primary fallopian tube carcinoma was higher as compared to other studies.^{4, 5, 6, 7}

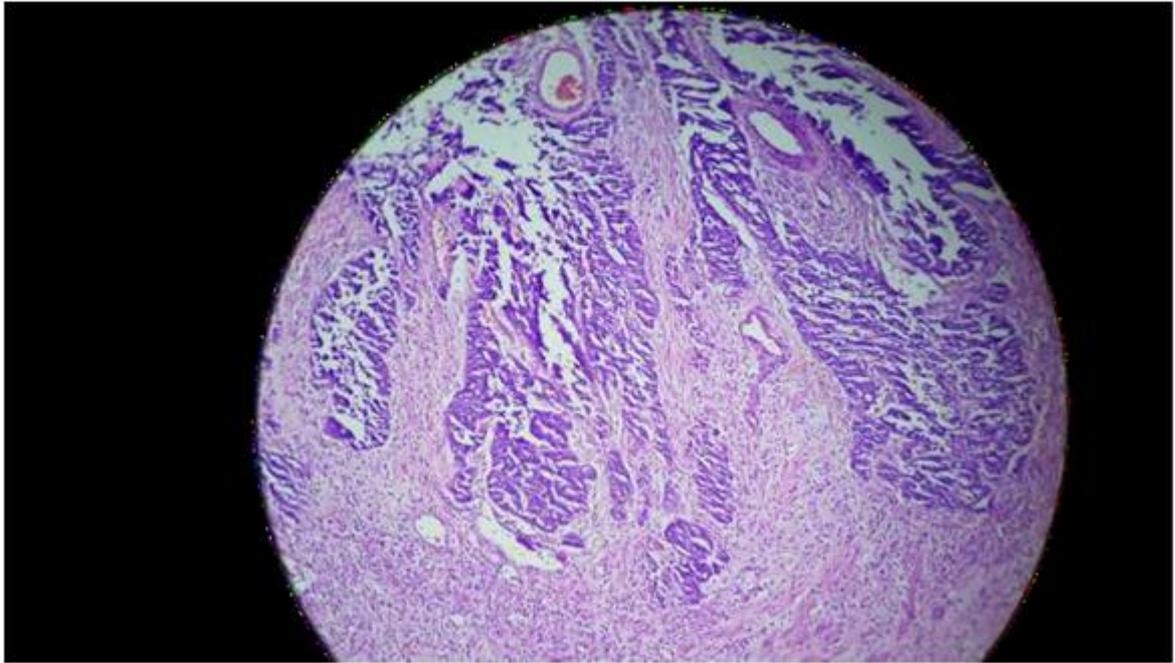
In present study, the incidence of metastatic tumours was higher as compared to other studies.^{4, 5}

5. Conclusion

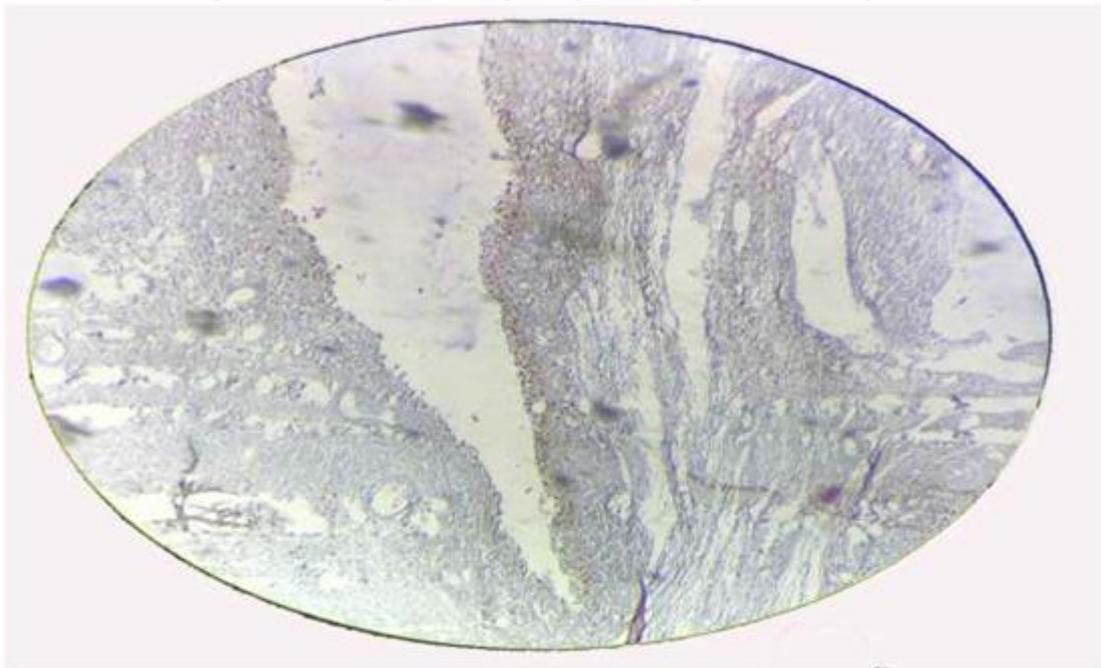
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References

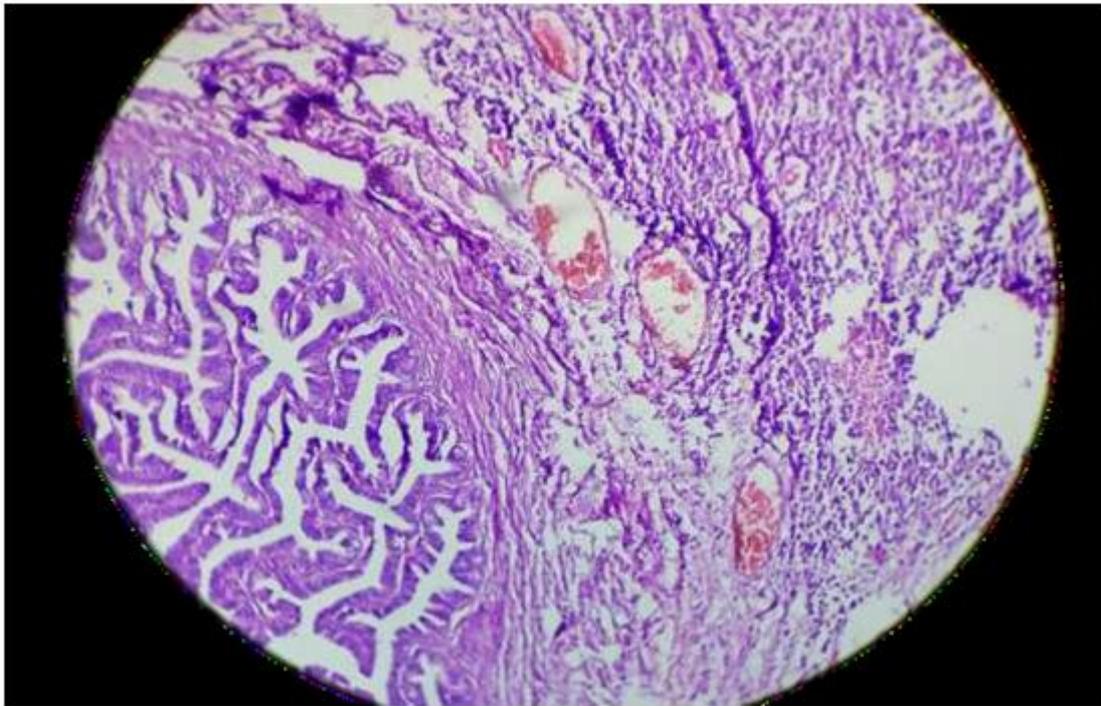
- [1] Riska A, Leminen A, Pukkala E. Sociodemographic determinants of incidence of primary fallopian tube carcinoma. Finland 1953-97. *Int J Cancer*.2003; 104:643-5
- [2] Ren Z, Zhnag Y, Yang H, Zhu L. Liquid based cytology aids in primary fallopian tube cancer diagnosis. *J Zhejiang Univ Sci B*.2009;10(8):635-8
- [3] Semmel DR, Folkins AK, Hirsch MS, Nucci MR and Crum CP. Intercepting early pelvic serous carcinoma by routine pathological examination of the fimbria. *Modern Pathol* 2009; 22:985-88.
- [4] Bagwan IN, Harke AB, Malpani M R, Deshmukh SD, Histopathological study of spectrum of lesions found in the Fallopian Tube, *J Obstet Gynecol Ind* Vol.54, No.4 :July/August 2004 Page 379-382.
- [5] Gon S, Basu A, Majumdar B, Das TK, Sengupta M, Ghosh D. Spectrum of histopathological lesions in the fallopian tubes. *Journal of Pathology of Nepal*. 2013 Mar 27;3(5):356-60.
- [6] Lakshmi K, Baleswari G, Mallikarjun C, Rao LB. HISTOPATHOLOGICAL STUDY OF SPECTRUM OF LESIONS IN THE FALLOPIAN TUBES. *Journal of Evolution of Medical and Dental Sciences*.2015;1(4):350-5.
- [7] Arora K.V, Sreenivasulu K, Janaki M, Harish V, Raja V. Study of histopathomorphological lesions of fallopian tube. *Infertility*.2015;2:0-32.



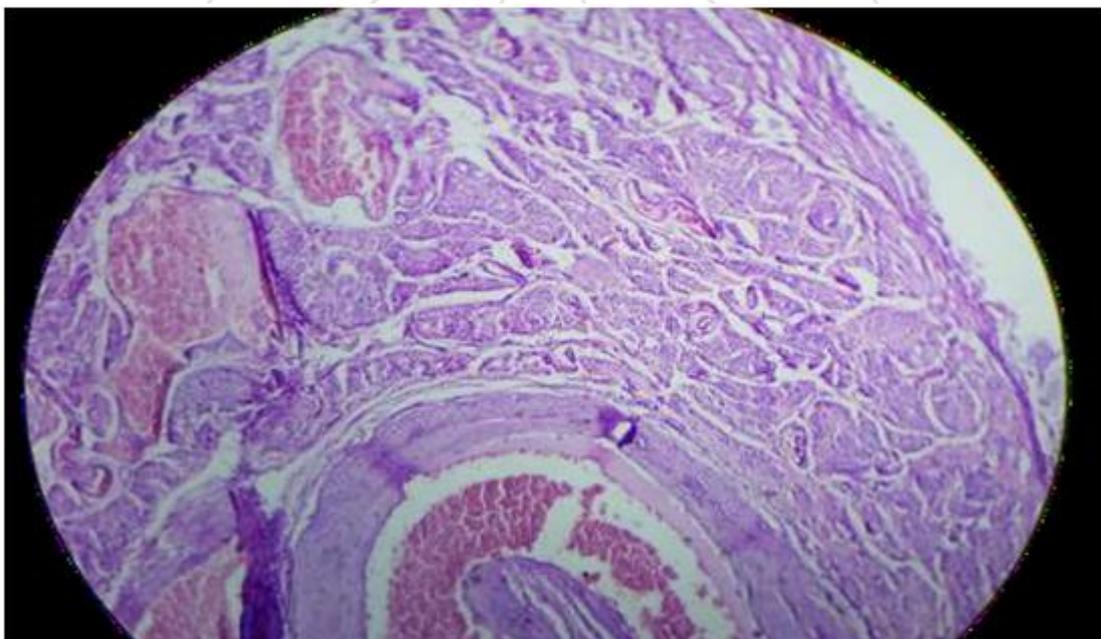
Photomicrograph of histopathology section of right fallopian tube showing primary endometrioid adenocarcinoma (H &E, x100)



Photomicrograph of IHC showing Ki-67 positivity in serous tubal intraepithelial carcinoma (H &E, x100)



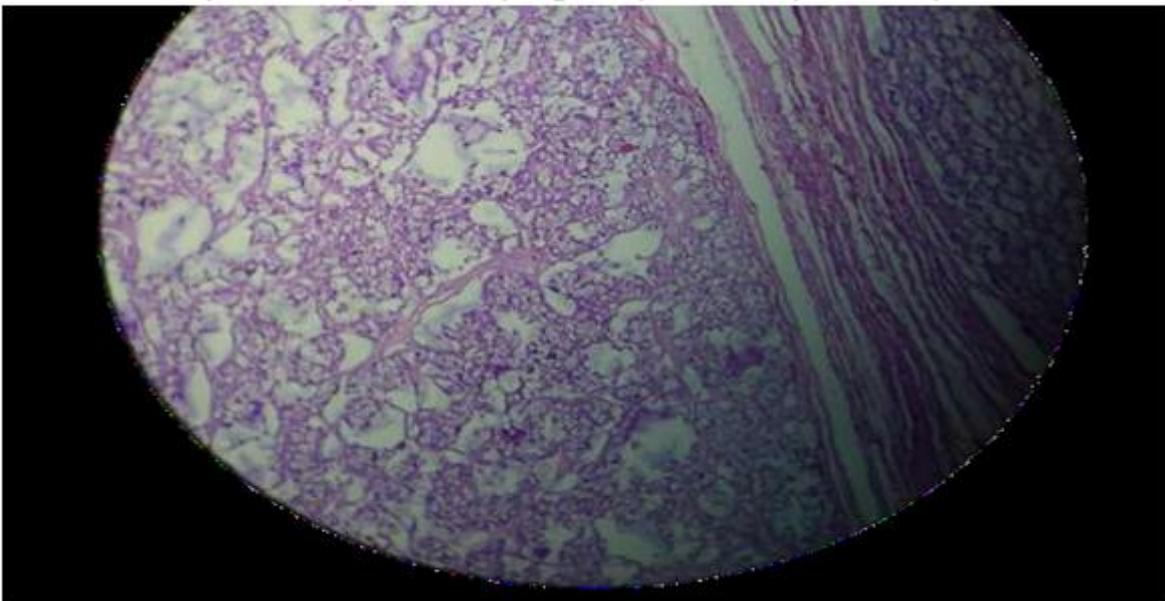
Photomicrograph of histopathology section of left fallopian tube showing metastasis of dysgerminoma (H &E, x100)



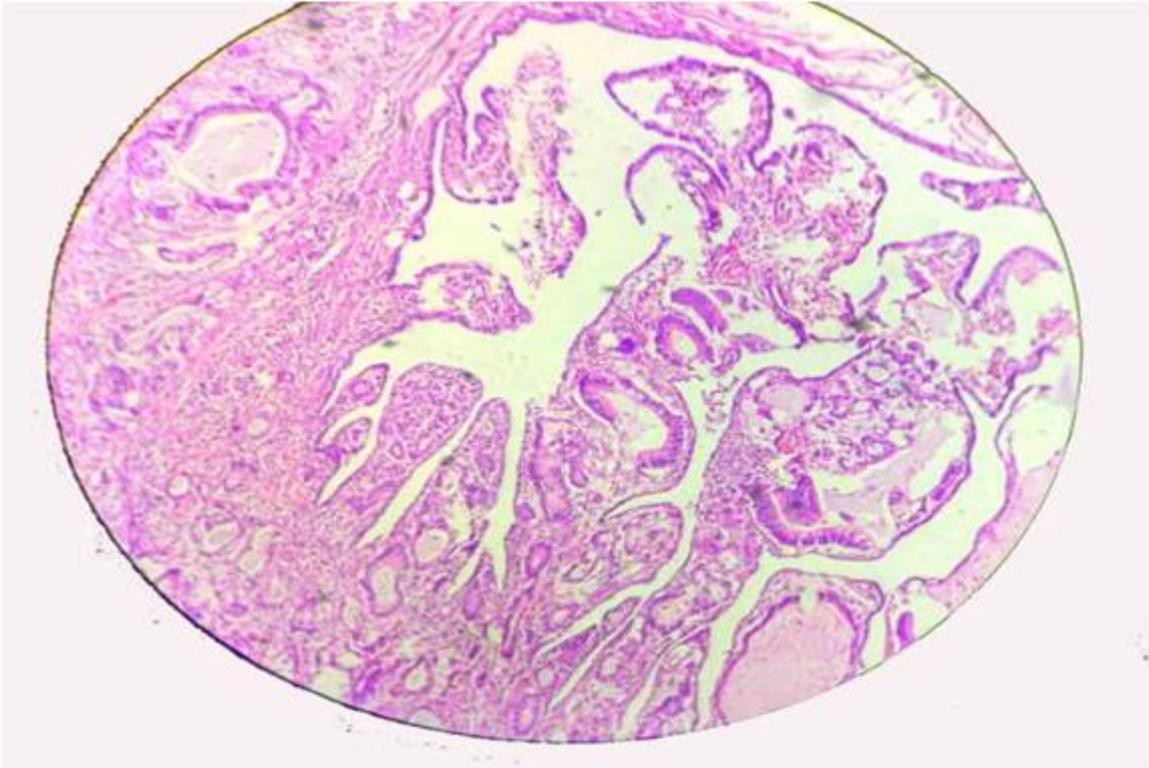
Photomicrograph of histopathology section of left fallopian tube showing endometrioid carcinoma of uterine corpus extending to left fallopian tube (H &E, x100)



Photomicrograph of IHC showing EMA positivity in endometrioid carcinoma of endometrium extending to fallopian tube (H &E, x100)



Photomicrograph of histopathology section of right fallopian tube showing metastasis of mucinous carcinoma (H &E, x100)



Photomicrograph of histopathology section of left fallopian tube showing metastasis of moderately differentiated mucinous intestinal type adenocarcinoma (H &E, x100)

