



STUDY OF SPECTRUM OF HISTOPATHOLOGICAL LESIONS OF THE FALLOPIAN TUBES IN SURGICALLY RESECTED SPECIMENS-A RETROSPECTIVE ANALYSIS OF 175 CASES

Medicine

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ABSTRACT

Background: Fallopian tubes are one of the most commonly received specimens in histopathology laboratory, but surprisingly very few studies have been undertaken in the past reporting tubal pathology. Wide spectrum of pathological lesions occur in fallopian tubes which includes both neoplastic and non-neoplastic conditions. In the recent years, there has been a newfound interest in fallopian tube pathology since the discovery that the fimbrial end of the tube can be the site of origin of high grade serous ovarian and peritoneal cancer. Therefore the importance of studying fallopian tubes in detail histopathologically.

Aims And Objective: To study and describe the spectrum of histopathological changes encountered in fallopian tubes. These includes both incidental as well as pathological lesions in surgically resected specimens.

Materials And Methods: It was a retrospective study conducted in a tertiary care center over a period of one and a half years. A total of 175 specimens of fallopian tubes either from Salpingectomy, Salpingo-oophorectomy, and hysterectomy with salpingo-oophorectomy were included. Tubal ligation specimens were excluded from the study.

Results: Out of the total 175 cases studied, 70 cases had some tubal pathology with tubal ectopic pregnancy comprising the major group (40 cases) followed by hydrosalpinx (15 cases), paratubal cyst (10 cases), hematosalpinx (3 cases) and malignancy (2 cases).

Amongst the malignancy cases, one was primary tubal malignancy, diagnosed as high-grade serous adenocarcinoma of primary tubal origin arising from serous tubal intraepithelial carcinoma while the other was metastatic deposits of carcinoma cervix to fallopian tube.

Conclusion: Even though the fallopian tubes exhibit unremarkable histopathology in majority of the specimens, they should be subjected to thorough sampling. This can help in the diagnosis of various lesions including the rare primary fallopian tube carcinoma and primary intraepithelial malignancy which can be missed clinically.

KEYWORDS

Tubal malignancy, Ectopic tubal pregnancy, Tubal pathology

INTRODUCTION

The fallopian tubes are paired hollow tubular structures, located at the superior aspect of the uterine cavity, from the uterine cornua to the ovaries. They are approximately 7 – 12 cms long. They play a major role in ovum pick up, fertilization and providing safe passage and nourishment to the fertilized ovum.^[1]

The fallopian tube is one of the commonly received and examined specimen in histopathology, resected either alone due to inherent pathological process, or as a part of hysterectomy and/or oophorectomy operation.^[2]

Wide spectrum of lesions are encountered in fallopian tubes, ranging from salpingitis, tubal ectopic pregnancy to carcinoma either primary or metastasis. Ectopic pregnancy is a condition in which the embryo is implanted outside the endometrial cavity^[3]. Majority of the ectopic pregnancies (90%) occur in fallopian tubes which are then referred to as tubal pregnancy.^[4]

Ectopic pregnancy is associated with risk factors such as pelvic inflammatory disease, due to tuberculosis, prior tubal surgery, use of assisted reproductive technique.^{[5] [6]} It has been observed that patients with a history of previous ectopic pregnancy are at much higher risk of having another one.^[4] The rate of ectopic pregnancy is about 1% to 2% in developed countries, but it is as high as 4% among those using assisted reproductive technology.^[3]

Inflammatory disease of the fallopian tube is known as salpingitis and is the major cause of secondary infertility. It forms a major group in most of the studies conducted to analyse the spectrum of histopathological lesions of the tube.

The occurrence of massive intraluminal hemorrhage in the lumen of fallopian tube leads to formation of hematosalpinx. It should be distinguished from ruptured ectopic pregnancy.

The end stage of purulent salpingitis leads to the development of

hydrosalpinx, in which purulent exudate has been reabsorbed and replaced by a transudate of plasma.^[6]

Walthard cell nests located on the tubal serosa are round collection of flat to cuboidal cells, sometimes associated with cystic changes. They are composed of transitional/ urothelial type of epithelium^[7] and are believed to be of mesothelial rather than Mullerian or wolffian duct origin. They can be easily mistaken for serosal implants.

Para tubal cysts also known as hydatid cyst of Morgagni, are generally found attached to the fimbrial end of the fallopian tube by a pedicle. They are uniloculated with smooth, thin, translucent walls and filled with a clear serous fluid. For the most part they are asymptomatic but may cause symptoms if they attain large size and undergo torsion.^[8]

Fallopian tubes are rare site for primary malignancy with an incidence of around 0.14-0.18% of all genital malignancies with an annual incidence of 3.6 per million women. Metastatic carcinoma of fallopian tube is more common compared to primary carcinoma and is an indicator of poor prognosis.^{[9] [10]}

In serous tubal intraepithelial carcinoma, focal replacement of fallopian tube epithelium by cells with malignant features. It is a precursor lesion to high grade pelvic serous carcinoma.

The present retrospective study aims to systematically categorize and study the various histopathological changes seen in surgically resected fallopian tubes and to identify the probable cause.

MATERIAL AND METHODS

The study was conducted retrospectively for a period of one and a half years in the Department of Pathology in a tertiary care hospital, from January 2019 to June 2020. Data was collected from department records and included age, clinical history, gross and microscopic findings.

A total of 175 specimens of fallopian tubes either from total abdominal

hysterectomy with bilateral salpingo-oophorectomy, salpingo-oophorectomy or salpingectomy were included.

Tubal ligation specimens were excluded from the study.

Grossly 3 sections were taken from each fallopian tube as a rule in each case, from proximal, middle and distal portion.

The Hematoxylin and Eosin-stained slides were retrieved from the records and reviewed in detail for microscopic findings.

The study included specimens of fallopian tubes resected in various gynecological conditions of cervix, uterus, ovaries and obstetric emergency like ectopic pregnancy.

The findings were recorded as per proforma, tabulated and statistically analysed.

RESULTS:

Out of 40, maximum number of tubal ectopic cases were reported in age group of 21- 30 years (24/40) followed by 31-40(16/40) (Table 1) Most common age group for presentation of hydrosalpinx was 41-50 years (Table 1).

Paratubal cyst were observed equally in age group of 31-40 and 41-50 years (Table 1).

Table 1: Age Wise Distribution Of Cases

Tubal Pathology	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years
Ectopic pregnancy	24	16			
Hydrosalp-inx			10	5	
Paratubal cyst	2	3	3	1	1
Hematosal-pinx	1		1	1	
Malignancy			1	1	

Clinically, ectopic pregnancy formed the major group of cases 58.5% (41 cases) followed by fibroid uterus 14.2% (10 cases) and menorrhagia 10% (7 cases). Cancer of the endometrium included a rare group 4.2% (3 cases) (Table 2)

Table 2. Distribution Of Cases According To Clinical Diagnosis

Clinical diagnosis	No of cases	Percentage
Ectopic pregnancy	41	58.5%
Fibroid uterus	10	14.2%
DUB	3	4.2%
AUB	1	1.4%
Carcinoma Endometrium	3	4.2%
Ovarian cyst	2	2.8%
Endometrial polyp	1	1.4%
Menorrhagia	7	10%
Uterovesical prolapse	2	2.8%
Total	70	

Most common surgery performed was unilateral salpingectomy 57.1% (40 cases) followed by total abdominal hysterectomy with bilateral salpingo-oophorectomy 38.5% (27 cases) (Table 3)

The most common reason for unilateral salpingectomy was ectopic pregnancy followed by ovarian cyst. Total abdominal hysterectomy with bilateral salpingo-oophorectomy was commonly done due to fibroid uterus followed by dysfunctional uterine bleeding.

Table 3. Distribution Of Cases According To Type Of Surgery

Type of Surgery	Total Number	Percentage
Unilateral Salpingectomy	40	57.1%
Total Abdominal Hysterectomy with bilateral salpingo-oophorectomy	27	38.5%
Total Abdominal Hysterectomy with unilateral salpingo-oophorectomy	2	2.8%
Unilateral Salpingo-oophorectomy	1	1.4%
Total	70	

Among total of 175 cases, most of the cases show unremarkable histology (105) 60%. Amongst the pathological conditions, majority of cases (40) were tubal ectopic pregnancy (22.85%) followed by hydrosalpinx 15 cases (8.5%). (Table 4).

The next major group was hydrosalpinx constituting 8.5 % (15 cases) (Table 4) It was an incidental finding in all cases which were operated for other gynecological conditions.

Paratubal cyst were reported in 5.7 % (10cases). Paratubal cysts are remnant of paramesonephic or mesonephric duct. They are benign cystic lesions and clinically insignificant. Grossly, they are smooth walled, translucent, unilocular and filled with a clear serous fluid. Microscopically cyst wall is lined by flattened to cuboidal epithelium. Hematosalpinx was noted in 1.7% (3 cases) (Table 4)

Table 4: Distribution Of Various Tubal Lesions According To Histopathology Findings.

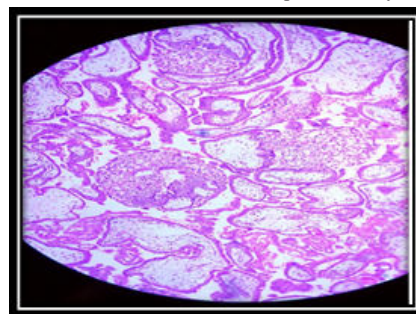
Tubal pathology	Number of cases	Occurrence
Ectopic pregnancy	40	22.3%
Hydrosalpinx	15	8.5%
Paratubal cyst	10	5.7%
Hematosalpinx	3	1.7%
Malignancy	2	1.14%
Total	70	

Microscopically chorionic villi (Figure 1) or trophoblastic tissue were identified in the wall of the tube along with areas of decidualization and hemorrhage.

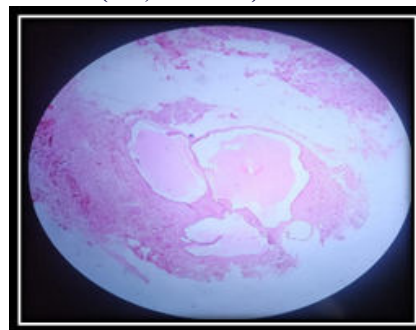
Microscopically dilated lumen of fallopian tube with flattened epithelial lining was noted (Figure 2).

Among two malignancy cases one was diagnosed as high-grade serous adenocarcinoma of primary tubal origin arising from serous tubal intraepithelial carcinoma in a 54-year-old woman. (Figure 3).

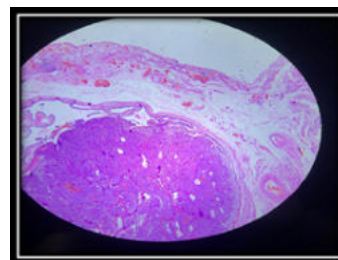
The second case was metastatic deposits in fallopian tube (Figure 4) from squamous cell carcinoma of cervix, reported in 50 years woman.



1: Tubal ectopic pregnancy-showing chorionic villi lined by trophoblastic tissue(X10, H &E stain)

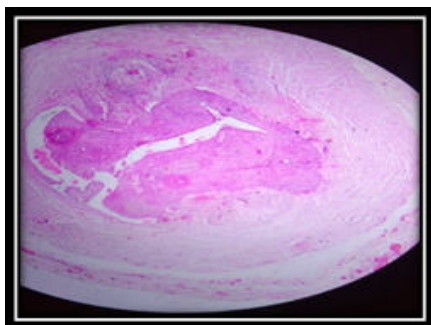


2: Hydrosalpinx X10, H&E stain -Dilated fallopian tube with flattened epithelium filled with fluid



3.High grade serous adenocarcinoma of primary tubal origin,

arising from Serous Tubal Intraepithelial Carcinoma (10X, H&E stain)



4. Metastatic deposits of squamous cell Carcinoma cervix to fallopian tube (10X, H&E stain)

DISCUSSION:

In the present study majority cases are in the age group of 21 to 30 years. (Table 4) These findings were similar to the study conducted by Mahajan et al in 22 cases (35%)^[11]

In our study, 40 % (70 cases) had some tubal pathology while 60 % (105 cases) of the fallopian tubes were reported as having unremarkable histomorphology. Patel et al in their study, observed 72.29 % of histomorphologically normal fallopian tubes.^[5] As majority of our specimens were unilateral salpingectomy or total abdominal hysterectomy where the surgery was performed for uterine pathology, unremarkable fallopian tube histology was noted.

In our case, ectopic pregnancy was the major clinical diagnosis 58.5% (41 cases). In the study conducted by Kujur et al, they observed carcinoma ovary as the commonest clinical diagnosis in majority of cases.^[12]

According to the study conducted by Jennifer L. Hunt et al. (2002), majority of the specimens (38.62%) were received as part of tubal ligation and total abdominal hysterectomy with bilateral salpingo-oophorectomy each followed by salpingectomy and unilateral salpingo-oophorectomy in 22.76% of the cases.^[2]

According to study conducted by Bhattacharya et al, fallopian tubes were received as a part of Total abdominal Hysterectomy with bilateral salpingo-oophorectomy in most of the cases (60%).

In present study, unilateral salpingectomy was the most performed surgical procedure (57.1%) cases followed by total abdominal hysterectomy with bilateral salpingo-oophorectomy (38.5%)^[13]. This is in accordance with the fact that ectopic pregnancy formed the major clinical diagnosis for salpingectomy in our study, where only the removal of the involved fallopian tube is warranted.

Most common histopathological finding in this study is tubal ectopic pregnancy. Frequency of ectopic pregnancy was 22.3% in our study, higher as compared to the study conducted by Mahajan et al (10.5%).^[11]

We reported a higher rate of occurrence of hydrosalpinx cases (8.5%) as compared to that observed by Patel et al (3.71%).^[5]

Lower frequency of paratubal cyst cases (5.7%) was noted as compared to study done by Kujur et al which reported 11.35% for the same.^[12] The cyst walls mostly display a tubal columnar epithelium involving both the ciliated and secretory cells, sometimes thrown into papillary folds consistent with the belief that they have Mullerian origin. However, some paratubal cysts have a flattened lining surrounded by a thin fibrous wall and are considered to be mesothelial in origin.^[13]

Bleeding into the fallopian tubes is defined as hematosalpinx. Frequency of hematosalpinx was reported 1.7% in present study which was similar to study conducted by Patel et al (1.7%).^[5]

According to study conducted by Mahajan et al, salpingitis /inflammation of the fallopian tube was most common tubal pathology (24 cases). In our study, salpingitis was not observed.^[11]

Bacterial infection is known to occur commonly in the fallopian tube, and its incidence is on the rise. It may be associated with a previous invasive procedure (such as curettage or the insertion of intrauterine devices^[14]) and may be associated with endometriosis^[15]. But in most cases it is caused by sexually transmitted ascending infection^[16]

The inflammation may lead to the fusion of tubal plicae and occlusion of the ostium. Obstruction of the fallopian tube lumen leads to infertility.

One each case of primary and metastatic tubal malignancy was reported in the present study where higher incidence of metastatic tubal malignancy was reported in the study done by Kujur et al (2.7%)^[12]

The primary tubal malignancy in our case was diagnosed as high-grade serous adenocarcinoma of primary tubal origin arising from serous tubal intraepithelial carcinoma in a 54 year old female.

The second case was of metastatic deposits of squamous cell carcinoma of cervix in unilateral fallopian tube in a 50 year old woman. Primary carcinoma of fallopian tube is very rare accounting for approximately 1 % of primary genital tract malignancy.^[17]

Risk factors associated with tubal malignancy are hormonal, BRCA mutation, reproductive age group.^[18]

High percentage of ovarian and primary peritoneal serous carcinoma arise from epithelium of tubal fimbria, is recent interesting topic of interest.^[19]

CONCLUSION

A wide spectrum of lesions were found in our study, most cases being non-neoplastic with neoplastic lesions forming the minor group. Even though neoplastic lesions of fallopian tubes are rare, detailed histopathological examination is necessary as they show interesting lesions for histopathologist and to exclude primary tubal intraepithelial carcinoma which is more often an incidental finding.

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