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Retrospective analysis of Spectrum of various histopathological lesions of fallopian tube specimens received at tertiary care hospital

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Abstract

Background: Salpingectomy specimen is one of the commonest surgical specimens received either as a part of hysterectomy or as tubal ligation. Spectrum of pathologies comprising of incidental presence of cell rests to inflammatory to both primary and secondary tumors are seen in the fallopian tube specimen.

Material and Methods: Retrospective study was conducted over a period of one year in Raipur Institute of medical sciences and research during the period from January 2021 to December 2021. The gross and microscopic findings were studied to evaluate histopathological features of various lesions.

Results: In our study total fallopian tubes of 1013 cases were evaluated. No pathology was identified in 85.15% cases. Chronic salpingitis, Walthard cell rests and Walthard cysts were the commonest findings. Two cases were of dysplasia and one case was of serous tubular intraepithelial carcinoma was found.

Conclusion: Fallopian tubes can present with spectrum of different pathological findings. Although the fallopian tubes are commonly found without any significant pathological findings in majority of the surgical

pathological specimens, they must be subjected for histopathological examination to evaluate various pathological lesions. Malignant lesions of the Fallopian Tube are uncommon but it has to be examined properly to exclude a precursor Tubal Pathology. This study has provided the data that may be valuable for surgical pathologists in identifying and characterizing common various histologic changes in surgically removed fallopian tubes.

Keywords: Salpingectomy, Histopathology, lesions

Introduction

The Fallopian tube or the oviduct, also known as the uterine tube, is a paired hollow muscular tube, one on either side of the uterus and lies at the upper margin of the broad ligament of the uterus. It was Gabrilio Fallopio who first described the Fallopian tube. His work on this organ was published posthumously in the year 1564[1]. They are sites of various interactions necessary for normal pregnancy [2]. It is a common specimen in a pathology laboratory and may be examined either alone as a salpingectomy specimen or as a part of a more complex specimen from a hysterectomy and/or oophorectomy operation [3]. Although fallopian tube is affected by a wide spectrum of diseases, ranging from inflammation thereby causing infertility to ectopics which if undetected may lead to maternal death to the primary and secondary malignancies accounting for 0.14-0.18 % of all genital malignancies [4,5] · Familiarity with the fallopian tube diseases is of utmost importance for accurate and timely diagnosis. Literature search reveals that there are only occasional studies documenting histologic changes in fallopian tube removed for all reasons. The aims and objectives of this study is to evaluate various histopathological lesions seen in surgically resected specimens of fallopian tube and to study the frequency of various pathological lesions of fallopian tube and their age distributions

Materials and Methods

The study was conducted in the Department of Pathology, Raipur Institute of Medical sciences. The study design was retrospective and data was collected from the department of Pathology, between the period of one year i.e. from January 2021 to December 2021. Data collected included age, clinical history, gross and microscopic findings. Hematoxylin and eosin-stained histopathology slides of these cases were retrieved from the department archives for this purpose. All the specimen of Salpingectomy either done for total abdominal hysterectomy with bilateral salpingo-oophorectomy, fallopian tube ligation with or without medical termination of pregnancy or Salpingo-oophorectomy were included in the study. Inclusion criteria included all cases with fallopian tube specimen. Exclusion criteria was tissue received in autolyzed condition. Routinely, at least 2 sections were taken from the fallopian tube if gross pathology is evident; otherwise, if the fallopian tube is apparently within normal limits, only one section is taken for processing. Hematoxylin & Eosin-stained slides were studied by at least two pathologists in abnormal cases. Statistical analysis was done by SPSS software.

Results

One thousand and six specimens of Fallopian tube consisting of varied gynecological lesions were studied thoroughly. Approximately 96.7 % of these were Tubal ligation specimens, 3.2% were Fallopian tubes of pan-hysterectomy specimens and isolated salpingectomy accounting for the remaining 0.1 % of the surgical specimens (Table 1).

Majority of the cases (n=463) belonged to 26-30 years age group, i.e. the period when females are likely to be sexually active. (Table 2)

Out of 1006 total specimens analyzed, 85.5% cases showed normal histological pattern. In rest 14.5 % of the specimens various pathologies were found. (Table 3)

Most common incidental finding was Walthard cell rests (Fig. 1). and Walthard cysts (Fig. 2). Comprising of 4.7% and 3.3% respectively while screening the tubal ligation cases only.

But the overall most common pathological condition found was Chronic salpingitis in 2.8% of cases followed by salpingitis Isthmica Nodosa (0.5%). Chronic salpingitis was characterized by a variable morphology ranging from blunted plicae with a mild lymphocytic infiltrate in the wall to markedly fibrotic lesions with thick-walled tubes, luminal narrowing and almost complete flattening of the epithelial lining (Fig. 3). Two cases of salpingitis isthmica nodosa was seen, characterized by bilateral nodular enlargement of the isthmic portion of the fallopian tubes grossly and by the presence of cystically dilated gland-like formations surrounded by hypertrophic muscle microscopically (Fig. 4). 11 cases of Hydrosalpinx forming as 1.1% of total cases. (Fig. 5). Ectopic tubal gestation, accounting for 01 cases (0.09 %), was also observed in the present study. One of the cases received as salpingectomy specimen, the patients were below 35 years of age. Chorionic villi or trophoblastic tissue were identified microscopically in the wall of the tube (Fig. 6).

In five cases there was presence of decidual tissue in the wall of the tube with accompanying hemorrhage. In all these five cases was D and C material showed retained products of conception. 11 cases (1.1%) of paratubal cysts were observed. They were seen as small round cysts, with papery thin walls and diameters ranging from 1.5cm to 4 cm, attached to the tube and mostly filled with clear watery fluid. Most were discovered incidentally during surgery. Microscopically the cysts were lined by flattened to cuboidal epithelium surrounded by thin fibrous walls(Fig. 7).One case of acute salpingitis was also seen.(Fig. 8).

Tubal endometriosis was seen as presence of endometrial glands with stroma in the wall. One (1%) such case was observed in females aged 38 and had bilateral tubal involvement.

There was a single case of a primary benign neoplasm of the fallopian tube in this study. It was diagnosed as adenofibroma.

1 case (0.09%) showed presence of serous intra epithelial neoplasm in the left tube of hysterectomy specimen. (Fig. 9).

Secondary involvement of the bilateral fallopian tubes by tumours was observed in one case. Case was a 59 year old female with endometrial carcinoma mixed endometrioid and serous variant. Nests of tumour cells were seen infiltrating the wall of the tube on the mucosal aspect (Fig. 10).

Table .1 Nature of specimen

Specimen type	Numbers	Percentage (%)
Tubal ligation	973	96.7
Pan Hysterectomy	32	3.2
Salpingectomy	01	0.1
Total	1006	100

Table 2: Age wise distribution of patients.

Age Group years	Number of cases (n)	Percentage %
21-25	350	34.79
26-30	463	46.02
31-35	134	13.32

36-40	29	2.88
41-45	10	0.99
46-50	13	1.29
51-55	6	0.60
56-60	1	0.10
TOTAL	1006	100

Most common age group was 26-30 years.

Mean age of patient = 27.7 years.

Table 3: Nature of microscopic findings/ Pathologies

Nature of Pathology	Number	UL	BL	Percentage
Normal tube histology	868	00	868	85.5
Decidual reaction	05	3	02	0.5
Acute salpingitis	01	01	00	0.1
Chronic Salpingitis	29	21	08	2.8
Acute on Chronic salpingitis	01	01	00	0.1
Walthard Cyst	33	03	30	3.3
Walthard Cell Nest	47	08	39	4.7
Paratubal cyst	11	03	08	1.1
Hydrosalpinx	11	02	09	1.1
Pyosalpinx	00	00	00	00
Tuerculosis	00	00	00	00
Hematosalpinx	00	00	00	00
Endometriosis	01	01	00	0.09
Tubal Torsions	00	00	00	00
Salpingitis Isthmica Nodosa	02	02	00	0.2
Ectopic Pregnancy	01	01	00	0.1
Dysplasia	01	01	00	0.09
Tumors Benign	00	01	00	0.09
Tumors Malignant	01	0	01	0.09
Focal Muscular Hyperplasia	01	01	00	0.1
Total findings*	1013			100

Discussion

In our study, majority of the fallopian tubes were with normal histology. In our study, we had 85.5% normal fallopian tube histopathology, whereas in other studies the range of normal histology was 66-72%. In our study the presence of predominant tubectomy specimens, might have been the reason for normal fallopian tube histology. (Table 4)[4-8].

Salphingitis associated with or without pelvic inflammatory disease is one of the most common serious infections of women in reproductive age group. It is commonly caused by ascending infection and can vary from asymptomatic to life threatening illnesses. We had 29 cases of chronic Salphingitis, one each case of acute salpingitis and acute on chronic salpingitis. No granulomatous salpingitis were noted in our study[3,5,9].

In India the incidence of ectopic pregnancy is 3.12 per 1000 pregnancies and fallopian tube is the commonest site for ectopic pregnancy. Other locations include ovary and abdominal cavity. We had only one case of ectopic pregnancy, suspected clinically and radiologically. On routine H and E sections there was presence of hemorrhage, tubal dilation with flattened mucosal lining, trophoblastic tissue, and edematous villi [5,9,10]. In comparison to other studies incidence of ectopic pregnancy is very less (0.1%) in our study.(Table 4)[4-8].

In our study incidence of salpingitis isthmica nodosa was 0.2 % which is at par with study conducted by Patel J et al [4]. In this acquired condition there is thickening of the tunica muscular is of the isthmic portion of the fallopian tube due to cystically dilated glands which can cause complete obliteration of the tubal lumen. When the condition is bilateral, patient often presents with primary infertility or recurrent ectopic pregnancies. Common differential diagnosis includes endometriosis and tuberculous salpingitis. We had two cases of unilateral salpingitis isthmica nodosa. One case was of a 45-year-old female, who was operated for a tubal ligation. Histomorphology showed cystically dilated glands lined

by ciliated columnar epithelium In the muscular layer [11].

Non neoplastic processes comprising of Walthard cell nests, Walthard cysts and Para tubal cysts though a common finding, do not have much clinical significance. Walthard cell nests are foci of round collections of cuboidal cells with the appearance of urothelium. Many studies have shown association between Brenner tumor and Walthard cell nests in 40% of the cases. No associated Brenner tumor was noticed in our study [12].

Benign tumor reported in our study was serous adenofibroma which is very rare. Grossly there was diffuse thickening of Fallopian tube. On cut section there was solid nodular thickening in the isthmic portion of Fallopian tube. On microscopy there was alteration in the plica architecture with presence of subepithelial stromal proliferation

Primary carcinomas of fallopian tube (PFTC) are very rare and accounts for 0.14-1.8% of female genital tract malignancies. The 55 years is median age of occurrence. There is no correlation of PFTC and age, race, pelvic inflammatory disease, infertility, endometriosis or smoking has been noted in any studies. BRCA-1 and BRCA-2 mutations are known to signify a high risk for PFTC [13,14]. The Latzkos triad of symptoms comprising of watery vaginal discharge, pain in lower abdomen and mass in pelvis, which is seen in 15% of the cases, was not seen in our cases. The rate of pre-diagnosis in PFTC varies from 0-10%. CA-125 elevation is known to occur in 80% of the cases which was not done in our case as clinically malignancy was not suspected. Grossly, our case was unilateral with the presentation as tubo-ovarian mass. Histopathology confirmed both as serous Intra epithelial fallopian tube neoplasia, [13].

One case of secondary involvement of Fallopian tube by endometrial carcinoma was observed in our study. Endometrial carcinoma type was mixed serous and endometrioid and was extending to cervix, bilateral fallopian tubes, bilateral ovaries and omentum. Metastases to the tube usually come from ovarian adenocarcinoma followed by endometrial or cervical adenocarcinoma[14]. Tubal metastasis usually indicates poor prognosis. The role of fallopian tube in origin of serous carcinomas of ovaries and the possibility of pre-invasive lesions in distal fallopian tube is under study [15-16]. Comparison with other studies is as shown in Table 4[4-8].

Table 4

Fallopian tube morphology	Present study	Patel J et al (4)	Bhagwan in et al (5)	Gon S et al (6)	Lakshmi K et al (7)	Mondal et al (8)
Sample size	1013	350	667	2575	840	106
Normal	85.5%	72.29%	66.52%	69%	69.67%	80.26%
Acute salpingitis	0.1%	2.57	2.62	0.58%	3.81	0.94%
Hydrosalphinx	1.1 %	3.71%	7.86%	0.69%	6.65%	NA
Paratubal cyst	1.1%	6%	4.90%	-	0.71%	NA
Endometriosis	0.09	0.57	0.15	0.54		0.94
Ectopic pregnancy	0.1%	6.86%	11.79%	13.5%	6.90%	9.4%
Benign tumors	0.09%	NA	00	0.03%	NA	2.82%
Tumors-Malignant	0.09%	NA	0.44%	0.23%	0.12	0.94%

NA: Not applicable (no data available for the particular histopathological feature for Comparision)

Conclusion

Although the fallopian tubes are unremarkable in majority of the gynecological specimens, it must be subjected for histopathological examination and examined thoroughly to demonstrate various pathological lesions. The major role of this organ is in understanding the issues related to female infertility. Also, the role of fimbrial end of fallopian tube as origin of serous carcinogenesis of ovaries and peritoneum is an emerging new concept. So, it is essential for the pathologist to section the fallopian tubes serially and submit all of the representative tissue for microscopic

examination so that the diagnosis of these pathological entities is not missed.

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Legend Figures

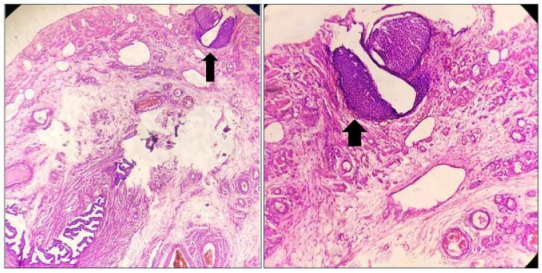

Fig.1. Walthard cell rest comprising of benign clusters of epithelial cells resembling transitional cells – Black arrow (10X H & E)

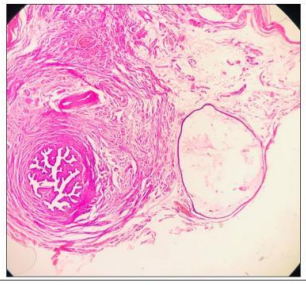

Fig.2 .Cystic Walthard Nests lined by benign epithelial cells resembling transitional cells – Black arrow (10X H & E)

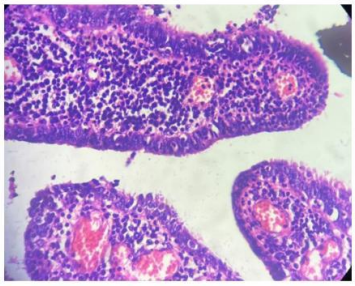

Fig.3. Chronic Salpingitis
Blunting of villi due to marked lymphoplasmacytic inflammatory infiltrate (40X H & E)

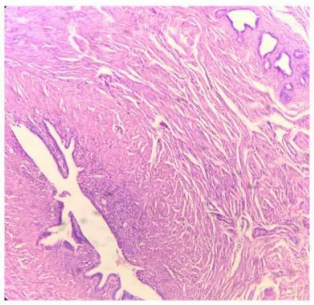

Fig.4. Salpingitis isthamica nodosa showing dilated glands trapped in the muscle layer (10X H & E)

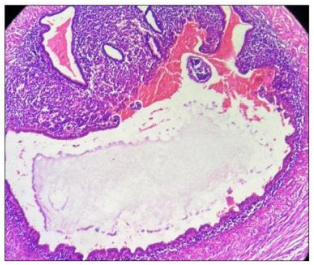

Fig.5 Chronic salpingitis with hydrosalpinx showing mucosal flattening (10X H & E)

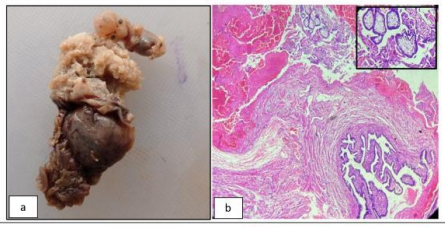

Fig.6. Left tubal Ectopic
a. Gross specimen 6 weeks fetus b. Fallopian tube with chorionic villi (10X H & E)

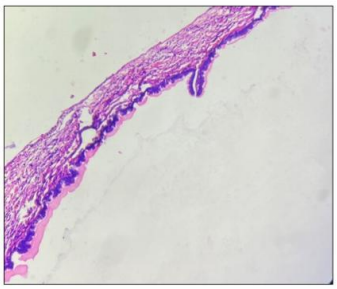

Fig.7. Paratubal cyst
Lined by low columnar, non ciliated epithelium resting on a well -developed basement membrane(10X H & E)

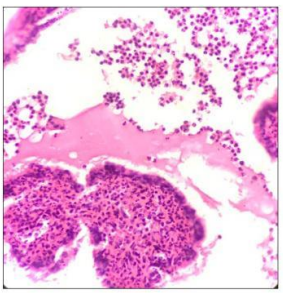

Fig.8. Acute Salpingitis showing marked acute inflammatory infiltrate in lumen & submucosa (40X H & E)

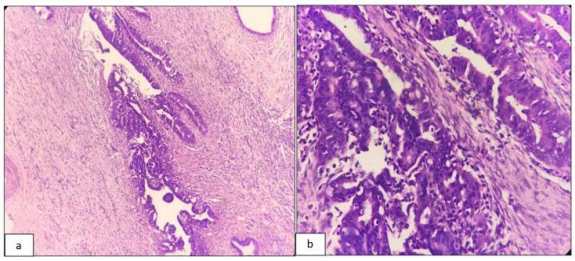

Fig.9a & 9b. Serous tubal intraepithelial carcinoma (a.10X H & E b.40X H & E)

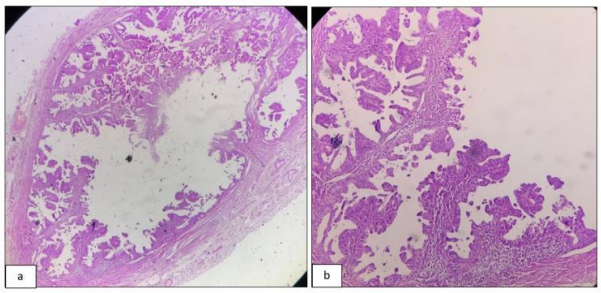

Fig.10a & 10b. Papillary cystadenocarcinoma (a.04X H & E b.10X H & E)