Spectrum of lesions encountered in fallopian tube histopathology; Retrospective Analysis: Our experience

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Abstract

Background: One of the commonest surgical specimens received along with uterus is the fallopian tube. Numerous pathologies, both systemic and local, both primary and secondary tumors are seen in the fallopian tube specimen.
Materials and Methods: Retrospective study was conducted over a period of four years and analysis of clinical data along with gross and microscopy was done. Incidence and prevalence of various lesions were calculated.
Results: No pathology was identified in 90.18% of the cases. Amongst abnormal findings, hydrosalphinx and paratubal cysts were common findings. Two primary fallopian tumors and one secondary from the ovary involving fallopian tube were also noted in the study.
Conclusion: Even though uncommon, fallopian tube can present with various pathologies. All fallopian tube specimens' needs to be closely evaluated histopathologically as recent studies point towards fallopian tube being the seeding site for serous malignant ovarian tumors.

Keywords: Fallopian tube, Histopathology, Tumors.

Introduction

The fallopian tube is amongst the commonest surgical specimens received in the histopathological laboratory and very few studies are seen in literature discussing the spectrum of histopathological lesions in the fallopian tube[(1)]. It is one of the commonest causes of secondary infertility secondary to inflammation and tumors are rarely seen here. Ectopic even though uncommon especially with routine ultrasound is occasionally seen, which if undetected could cause maternal death[(2,3)].

The fallopian tube primary malignancy is extremely rare and accounts for less than 0.14-0.18% of all genital malignancies with an annual incidence of 3.6 per million women. Contrastingly, metastatic carcinoma to fallopian tubes appears to be more common. However, tubal metastasis generally indicates poor prognosis. The fallopian tube malignancy poses a diagnostic challenge as it is difficult to distinguish between primary ovarian and primary endometrial carcinoma with primary fallopian tube carcinoma[(4,5)].

This study analysed all the fallopian tubes removed for various reasons in various surgical procedures as there is a lack of data to describe various histopathological findings in the practice of surgical pathology. The frequency of clinical conditions, surgery done and histopathological lesions were calculated in this study.

Materials and Methods

This retrospective study was carried out at BGS Global Institute of Medical sciences, Bangalore and included all fallopian tube specimens, sent separately or in association with uterus/ovary to the department of Pathology.

Data was taken from the department registers over a period of four years (Jan 2012-Dec 2015). Data collected included age, clinical history, gross and microscopic findings. If data was inadequate in the registers, request forms, H&E stained histopathology slides were taken and re-evaluated.

Inclusion criteria included all cases with fallopian tube specimen. Cases not including fallopian tube or other lesions with fallopian tube metastasis were excluded from the study. Statistical analysis: Incidence and prevalence were calculated.

Results

Clinically, post reproductive tubectomy formed majority of the cases(40.42%) (Table 1). Other common cases included DUB (26.46%), fibroid (18.71%), etc. Rare cases included cancers particularly of other locations like ovary, endometrium and fallopian tube.

Most common surgery was hysterectomy with bilateral salphingo-ophorectomy (BLSO) (58.41%) followed by tubectomy (40.43%) for tubal ligation (Table 2). Unilateral salphingo-ophorectomy was commonly due to ovarian cysts followed by ectopic pregnancies. Hysterectomy with BLSO was commonly due to DUB followed by uterine fibroid causes.

Grossly majority of the fallopian tubes were unremarkable. The average length of the tube, when received in Toto was 4 cm (3-6 cm). In tubectomy specimens, average length was 0.75 cm (0.5-1.5 cm). Majority of the fallopian tubes were unremarkable grossly, showing tortuosity or hydro-salphinx to be the common findings. Other common lesions grossly were paratubal cysts (4.2%). The average diameter was less

than 0.5 cm. In cases like ectopic pregnancy and tumors, the increase was easily appreciated.

Out of the 3270 cases analyzed, normal histology was 90.18 percentage of cases (Table 3). Hydro-salphinx (4.37%) (Fig 1) was the commonest pathological lesion followed by paratubal cysts (4.2%), Walthard nests (Fig. 2 & 3), ectopic pregnancy (Fig. 4 & 5) and salphingitis isthmic nodosa (Fig. 6).

In relation to fallopian tubes, three malignancies were noted. Two primary and one secondary. Amongst primary, one case was unilateral, while the other case was bilateral. One was seen in 43 year old (Fig. 7 & 8), while the other case was 48 year old female. Both were papillary serous carcinomas. Bilateral papillary serous carcinoma showed foci of intratubular epithelial neoplasia on both sides. One case of secondary from right ovary involving right fallopian tube (Fig. 9a & 9b) was noted in 52 year old female and it was histologically diagnosed as serous cystadenocarcinoma of ovary with metastasis to right fallopian tube.

Table 1: Distribution of cases according to clinical diagnosis

Clinical diagnosis	No. of cases	Incidence in percentage
DUB	865	26.46
Fibroid	612	18.71
Ectopic pregnancy	8	0.25
To mass	18	0.56
Uterus prolapse	52	1.6
Ovarian cyst/ cancer	112	3.42
Tubectomy	1322	40.42
Carcinoma of endometrium	6	0.18
Carcinoma of cervix	58	1.77
Chronic cervicitis	211	6.45
Cervical dysplasia	5	0.15
Others-Anemia	1	0.030
Total	**3270**	**100**

Table 2: Types of surgery performed

Type of surgery	Total numbers	Percentage
Total abdominal hysterectomy with salphingo-oophorectomy	1910	58.41
Unilateral salphingo-oophorectomy	30	0.92
Unilateral salphingectomy	8	0.24
Tubal ligation	1322	40.43

Table 3: Distribution of various tubal lesions in the present study:

Pathology	Fallopian tube morphology	No. of cases	Incidence in percentage
No significant pathology		2949	90.18
Abnormal findings-Inflammatory		318	9.73
	Salphingitis		
	Acute	-	
	Chronic	1	0.03
	Acute on chronic	-	
	Hydrosalphinx	143	4.37
	Pyosalphinx	-	
	Tuberculosis	-	
	Hematosalphinx	-	
	Salphingitis isthmic nodosa	1	0.03
	Ectopic pregnancy	8	0.24
	Endometriosis	-	
	Paratubal cyst	137	4.2
	Walthard nests	24	0.74
	Tubal torsion	4	0.12
Abnormal findings- Tumors		3	0.09
Benign	-	-	-
Malignant		3	0.09
	Primary	2	0.06
	Secondary	1	0.03

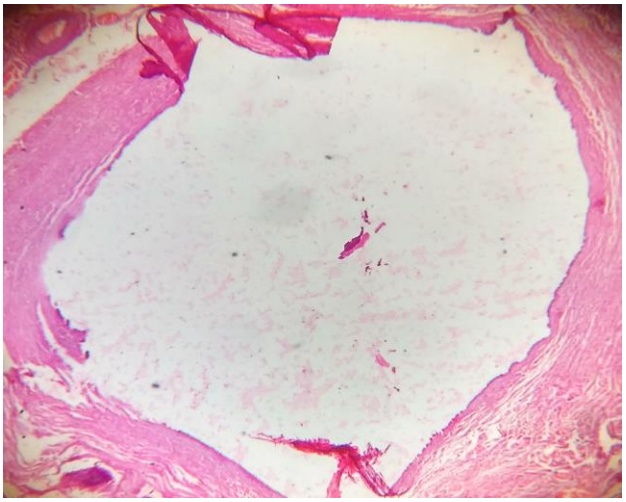

Fig. 1: Hydrosalphinx-Dilated fallopian tube with flattened papillae (H & E, 10x)

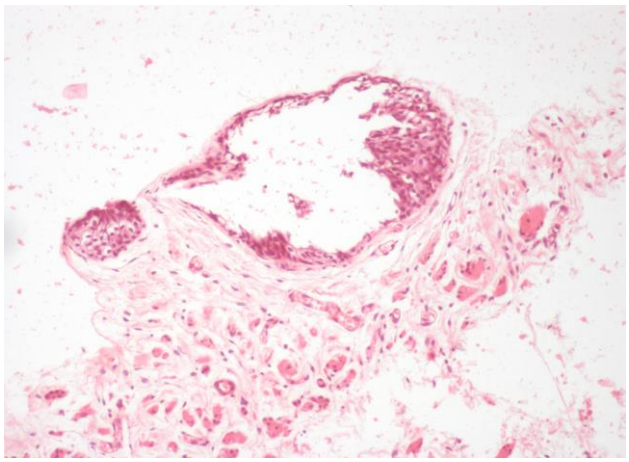

Fig. 2: Walthards solid and cystic nests (H & E, 10x)

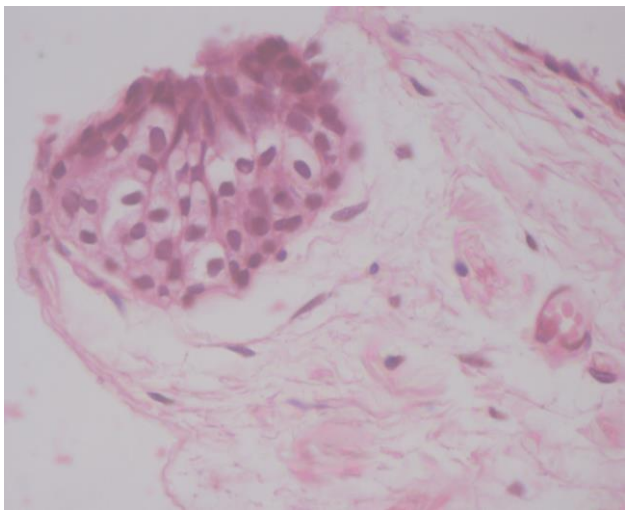

Fig. 3: Walthards solid nests (H & E 40x)

Fig. 4: Gross specimen of tubal pregnancy

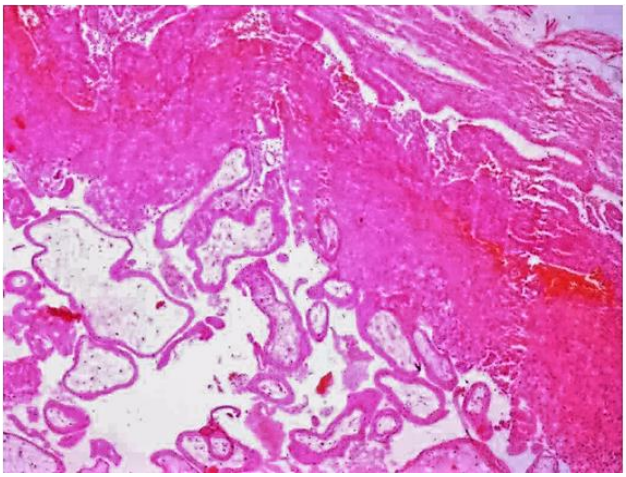

Fig. 5: Tubal wall with villous structures in ectopic pregnancy (400x H & E)

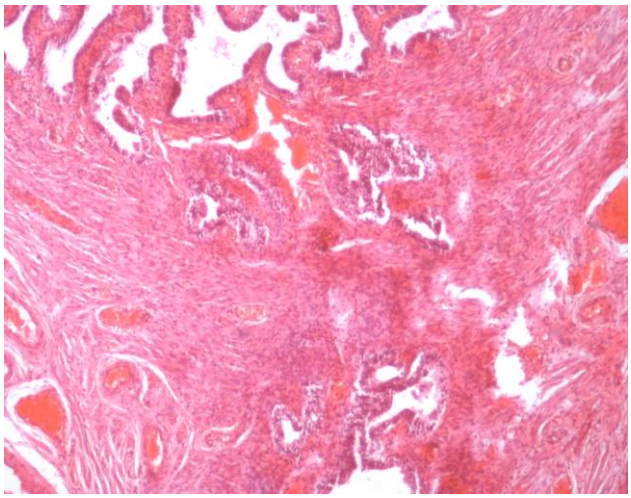

Fig. 6: Fallopian tube wall with salphingitis isthimica nodosa. Glands in muscularis in communication with lining mucosa (H & E, 10x)

Fig. 7: Gross specimen of primary fallopian tube carcinoma

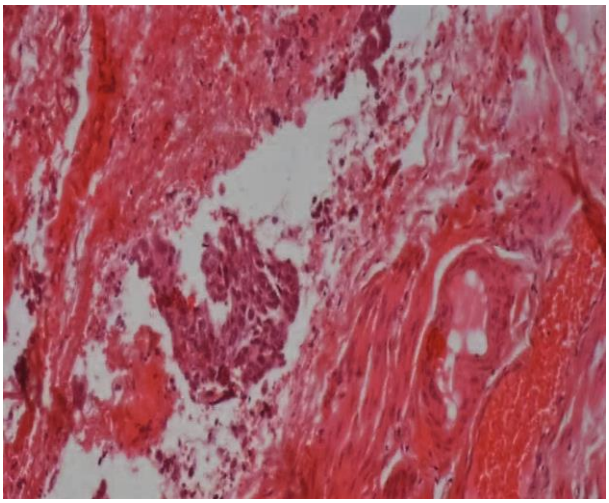

Fig. 9a: Tumor deposits in the wall of fallopian tube (400x H & E)

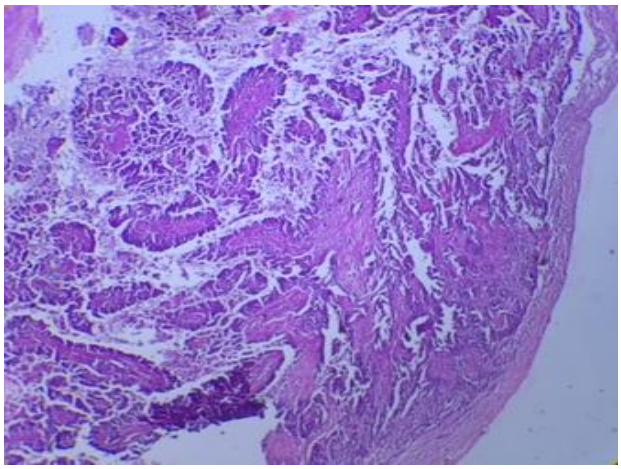

Fig. 8: Primary fallopian tube carcinoma histopathology (400x H & E)

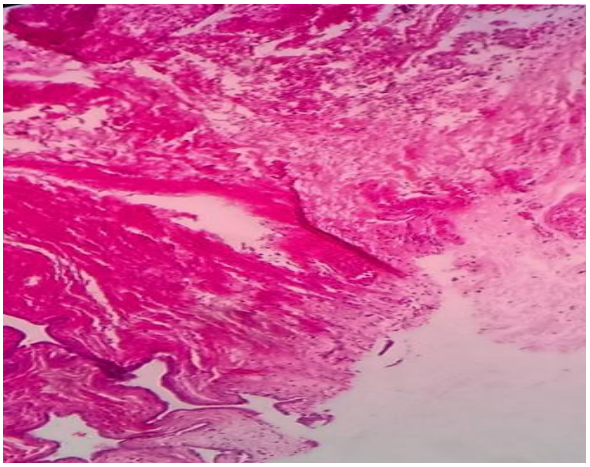

Fig. 9b: Fallopian tube epithelium with tumor deposits at the 1'o clock position (10x H & E)

Discussion

In our study, majority of the fallopian tubes were within normal limits. Compared to other studies, we had 90.18% normal fallopian tube histopathology, whereas other studies were in the range of 66-72%. In our study, due to predominant tubectomy specimens or surgery for uterine causes, more normal fallopian tube histopathology could have been found (Table 4)[2-5].

Salphingitis is inflammation of salphinx and is one of the most common serious infections of women in reproductive age group. Commonly due to ascending infection and can vary from asymptomatic to life threatening illnesses. We had one case of chronic salphingitis. No granulomatous or acute salphingitis were noted in our study[1,3,6].

The incidence of ectopic pregnancy in india 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 8 cases of ectopic pregnancy, suspected clinically and radiologically. Histological findings seen were hemorrhage, tubal dilation, trophoblastic tissue, and edematous villi[3,6,7]. In our study, compared to other studies, ectopic pregnancy incidence was very less (0.24%) (Table 4)[2-5].

Acquired Nodular thickening of the tunica muscular is of the isthmic portion of the fallopian tube enclosing cystically dilated glands is seen in salphingitis isthmica nodosa and could cause complete obliteration of the tubal lumen. When bilateral, patient often presents with primary infertility or recurrent ectopic pregnancies. Common differential diagnosis include endometriosis and tuberculous salphingitis. We had one case of unilateral salphingitis isthmica nodosa in a 45 year old female, who was operated for a large fibroid with degenerative changes like hyaline change and hydropic degeneration. Cystically dilated glands lined by ciliated columnar epithelium surrounded by muscular layer were noted[8,9,10].

Walt hard cell nests are foci of benign epithelial collection containing elliptical nuclei with prominent nuclear grooves. Due to presence of transitional cell metaplasia, anatomical proximity, similar immunohisto-chemistry profile and cilia presence, tubal origin of Brenner tumor is strongly suspected. Many studies have shown Brenner tumor to be associated with walthard cell

nests in 40% of the cases. In our study, no associated Brenner tumor was noticed[11,12].

Primary fallopian tube carcinoma (PFTC) is very rare and accounts for 0.14-1.8% of female genital malignancies. The possible risk factors could be hormonal, reproductive and genetics with median occurrence at the age of 55 years. No correlation with PFTC and age, race, pelvic inflammatory disease, infertility, endometriosis or smoking has been noted. BRCA-1 and BRCA-2 mutations are known to signify a high risk for PFTC[13,14]. The Latzkos triad of symptoms, which is seen in 15% of the cases, was not seen in both of our cases. One case was suspected preoperatively while another one was thought of as an ovarian tumor. The rate of pre-diagnosis in PFTC varies from 0-10%. CA-125 was elevated in both our cases, as is known to occur in 80% of the cases. Grossly, one case was bilateral, whereas the other case was unilateral with involvement of the uterus. Histopathology confirmed both as serous fallopian tube carcinoma, which is the most common histopathological type[13]. One case of metastasis involvement secondary to serous carcinoma of ovary was noted. The role of fallopian tube in origin of serous carcinomas and the possibility of pre-invasive lesions in distal fallopian tube is under study[14-16]. Comparison with other studies is as shown in Table 4[2-5].

Table 4: Tubal lesions in comparison with other studies:

Fallopian tube morphology	Present study	Patel J et al [2]	Bhagwan in et al [3]	Gon S et al [4]	Lakshmi K et al [5]
Normal	90.18%	72.29%	66.52%	69%	69.67%
Hydrosalphinx	4.37%	3.71%	7.86%	0.69%	6.65%
Paratubal cyst	4.2%	6%	4.90%	-	0.71%
Ectopic pregnancy	0.24%	6.86%	11.79%	13.5%	6.90%
Tumors-Malignant	0.09%	-	0.44%	0.23%	0.12%

Conclusion

Fallopian tubes are one of the most common specimens presenting to the histopathology section. In our study, around 10% of the fallopian tube specimens showed pathology grossly or microscopically and 0.09% of them were malignant tumors and this makes it essential for a pathologist to subject all fallopian tubes to histopathology. Malignancies even though uncommon are occasionally seen and gross and microscopy are equally important in evaluation of all tubo-ovarian masses.

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