Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/xsjhtg55

EVALUATION OF HISTOPATHOLOGICAL SPECTRUM OF LESIONS IN FALLOPIAN TUBES - A CROSS SECTIONAL STUDY

Dr.S.Radhika[1], Dr.A.Vijaya Jyothi[2], Dr.B.Nagaraja[3], Dr.V.Poojitha Ram[4*], Dr.E.K.Krishna Chaitanya[5], Dr.Md.Khader Faheem[6]

[1]Post graduate, Dept. of Pathology, S.V.Medical College, Tirupati.
[2,6]Associate Professor, Dept. of Pathology, Govt. Medical College, Kadapa.
[3]Professor, Dept. of Pathology, Sri Balaji Medical College Hospital & Research Institute, Renigunta
[4*,5]Assistant Professor, Dept. of Pathology, S.V.Medical College, Tirupati

***Corresponding Author:** Dr.V.Poojitha Ram
*Email: rjkf38@gmail.com

Abstract

Introduction: Fallopian tubes are complex structure from ovary to endometrial cavity. The significance of pathologic changes in fallopian tube can lead to infertility, secondary sterility and maternal death. Though primary malignancy is rare, metastatic carcinoma are common and poor in prognosis. So it is essential to evaluate various histomorphology of fallopian tube.
Aim: To evaluate the spectrum of lesions in fallopian tube. Study designed as Cross sectional for a period of 6 months in the Department of Pathology.
Materials and methods: Total 212 Fallopian tube section are evaluated and categorized in the spectrum as inflammatory, benign and malignant.
Results: Out of 212 fallopian tube section, 36%-unremarkable, 18%-hydrosalphinx, 18%-congested and edematous, 10%-paratubalcyst, 8%-ectopic and some conditions in minor percentage.
Conclusion: Most of the sections are unremarkable and beningn. But we should keep in mind that minimal infection and inflammation can end in infertility. The next possibility is Precursor Lesion like STIC can cause malignancy in future. So it is essential to examine fallopian tube thoroughly.

Keywords: Histopathology, spectrum, Fallopian tube lesions.

INTRODUCTION:

The fallopian tubes are essential components of the female reproductive system, serving as conduits for gamete transport and sites for fertilization. Despite their critical physiological role, they are frequently removed during hysterectomies and adnexal surgeries, often without specific clinical suspicion of tubal pathology [1].

Histopathological examination of the fallopian tubes, even when grossly unremarkable, can reveal a wide array of lesions. These include hydrosalpinx, acute and chronic salpingitis, ectopic pregnancy, paratubal cysts, endometriosis, Walthard cell nests, and salpingitis isthmica nodosa [2,3]. While most of these are benign and asymptomatic, some may have significant clinical implications, especially in reproductive-age women and in the context of infertility or chronic pelvic pain [4].

Ectopic if undetected in ultrasound cause maternal death. Though primary malignancy is rare in tube metastatic carcinoma of tube appears to be common and poor in prognosis [7].

In recent years, the role of the fallopian tube in the pathogenesis of pelvic serous carcinomas has come into sharp focus. Studies have identified serous tubal intraepithelial carcinoma (STIC) as a precursor lesion to high-grade serous carcinoma, particularly in women with BRCA mutations [5]. This has led to the development of specialized histological protocols, such as the SEE-FIM (Sectioning and Extensively Examining the FIMbriated end) protocol, which increases the detection of early malignancies in the tubal epithelium[5,6].

Despite this, in routine practice, fallopian tubes are often underexamined or reported as "unremarkable" unless there is overt pathology. This oversight can lead to missed diagnoses, particularly of early or subtle lesions. Therefore, a thorough histopathological evaluation is essential, even in cases where the tubes appear normal on gross examination [3].

This study helps to find out and enumerate the spectrum of lesions of fallopian tube which clinically affect the we'll being as well as fertility of women ranging from inflammatory lesions,congenital anamolies, benign and malignant lesions . Most of these lesions goes unnoticed due to limited Number of studies in this arena . This study helps to evaluate the magnitude of fallopian tube lesion in our set up.

AIM OF THE STUDY:

- To evaluate the spectrum of lesions in fallopian tube.

OBJECTIVES OF THE STUDY:

- To enumerate the various histomorphology of lesions of fallopian tube.
- To find out distribution of lesion in various age groups.
- To evaluate various tubal lesions with respect to type of surgery performed.

MATERIALS AND METHODS:

The present study is designed as cross sectional study for a period of 6 months from January 2024 to June 2024 in the department of pathology, SVRRGGH, Tirupati.

INCLUSION CRITERIA:

Fallopian tube specimens received in the department of Pathology, S.V.Medical College ,Tirupati. Patients who are willing to give written informed consent**.**

EXCLUSION CRITERIA:

Specimen not received in formalin.

STUDY METHODS:

Surgically resected specimens of fallopian tube received at pathology department will be taken up, fixed in 10%formalin and processed .After performing gross examination ,multiple sections each measuring 4micron in thickness shall be obtained and stained with H&E stain and microscopic features of lesion will be studied and will be evaluated according to the type of lesion. (inflammatory/benign /malignant

DATA ANALYSIS: The collected data will be entered in MS excel spreadsheet. All categorical variables will be represented in the form of rates and percentages.

RESULTS

A total of 212 fallopian tube specimens were examined histopathologically over a period of six months. The distribution of findings is presented in terms of age, clinical diagnosis, type of surgery performed, and histomorphological spectrum.The majority of the lesions were found in the 41–50 years age group, accounting for 99 cases (46.7%), followed by 31–40 years (63 cases, 29.7%), 51–60 years (23 cases, 10.8%), 21–30 years (17 cases, 8%), and 61–70 years (10 cases, 4.8%).

Table 1: Age wise distribution of lesion

SI.No.	Lesions	21-30	31-40	41-50	51-60	61-70
1	Normal	1	22	41	11	1,
2	Hydrosalpinx	0	13	21	4	1
3	Congestion	3	9	17	1	4
4	Paratubal cyst	3	4	11	4	3
5	Ectopic	7	9	0	0	0
6	Acute salpingitis	1	1	3	1	0
7	Chronic salpingitis	0	1	1	2	1
8	Hematosalpinx	1	1	0	0	0
9	Pyosalpinx	0	0	1	0	0
10	Walt hard cell nests	1	1	3	0	0
11	Endometriosis	0	1	1	0	0
12	Salpingitis isthmic nodosa	0	1	0	0	0
13	Total	17	63	99	23	10

Out of the 212 cases, the most common clinical indication was abnormal uterine bleeding (AUB), comprising 100 cases (47.17%), followed by fibroid uterus (33 cases, 15.57%), ovarian cysts (26 cases, 12.26%), ectopic pregnancy (20 cases, 9.43%), postmenopausal bleeding (17 cases, 8.2%), prolapse (9 cases, 4.25%), and pelvic inflammatory disease (7 cases, 3.3%).

Table 2: Distribution of cases according to clinical diagnosis

Clinical diagnosis	Number of cases	% of cases
AUB	100	47.17%
Fibroid	33	15.57%
Ectopic	20	9.43%
Ovarian cyst	26	12.26%
Post menopausal bleeding	17	8.2%
Prolapse	9	4.25%
PID	7	3.3%
Total	212	100%

The most common surgical procedure was total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH + BSO), which accounted for 155 cases (73.11%). This was followed by tubectomy (33 cases, 15.57%) and salpingo-oophorectomy (24 cases, 11.33%).

Table 3: Types of surgery performed

Surgery	Number of cases	% of cases
TAH+BSO	155	73.11%
Salpingo oophorectomy	24	11.33%
Tubectomy	33	15.57%
Total	212	100%

Of the 212 fallopian tubes studied, 136 cases (64.1%) showed identifiable pathology, while 76 cases (35.8%) were histologically unremarkable. No cases of benign or malignant tumors, including serous tubal intraepithelial carcinoma (STIC), were identified in the study.

Table 4: Distribution of various tubal lesions in the study

Pathology	Fallopian tube morphology	Number of cases	% of cases
No significant pathology		76	35.8%
Inflammatory	Acute salpingitis	6	2.8%
	Chronic salpingitis	5	2.3%
	Ectopic Pregnancy	16	7.55%;

	Hydrosalpinx	39	18.4%
	Hematosalpinx	2	1%
	Paratubal cyst	25	11.8%
	Pyosalpinx	1	0.5%
	Walthard cell nests	5	2.35%
	Congestion	34	16%
	Endometriosis	2	1%
	Salpingitis isthmic nodosa	1	0.5%
Tumors	Benign	0	0%
	STIC	0	0%
	Malignant	0	0%

DISCUSSION

This study highlights the diverse spectrum of histopathological lesions of the fallopian tube encountered during routine surgical procedures. Among the 212 cases evaluated, a significant 64% revealed identifiable pathology, reflecting the clinical relevance of thorough histopathological examination even in non-tubal gynecologic surgeries. Age-wise distribution showed that the majority of lesions occurred in the 41–50 years age group, correlating with the age when most women undergo surgical intervention for abnormal uterine bleeding or fibroids. This trend is consistent with other Indian studies which reported peak tubal pathology in the fourth and fifth decades[8,13].This pattern aligns with the findings of Bagwan et al.[9], Manjunatha et al.[7], and Pallani et al.[10], who also reported peak incidences in the fourth to fifth decades of life. This trend is likely due to increased surgical interventions in perimenopausal women for uterine pathologies such as AUB and fibroids.

In our study, abnormal uterine bleeding (AUB) was the most common clinical indication for surgery, accounting for 47.17% of cases, followed by fibroid uterus (15.57%) and ovarian cysts (12.26%). These findings are in close agreement with the studies by Manjunatha et al.[7] and Singh et al.[11], who also noted AUB as the predominant clinical diagnosis.

The high percentage (73.11%) of TAH+BSO procedures in this cohort highlights that tubal pathology is often secondary to uterine disease rather than primary fallopian tube pathology. However, the incidental discovery of potentially clinically significant lesions justifies the histopathological evaluation of all excised tubal specimens.The result of the present study is consistent with the results of Bagwan et al.[9] (68%) and Manjunatha et al.[7] (72%). This reflects the fact that fallopian tubes are often incidentally removed during surgeries for uterine disorders.

Figure 1(H&E,40x): Acute salphingitis showing neutrophils in the tube wall

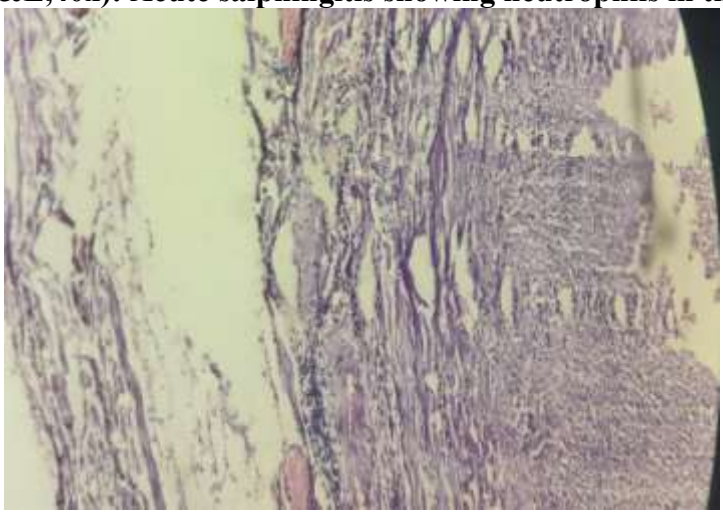


Figure 2(H&E,40x): Ectopic pregnancy showing tubal wall with villi and trophoblastic tissue

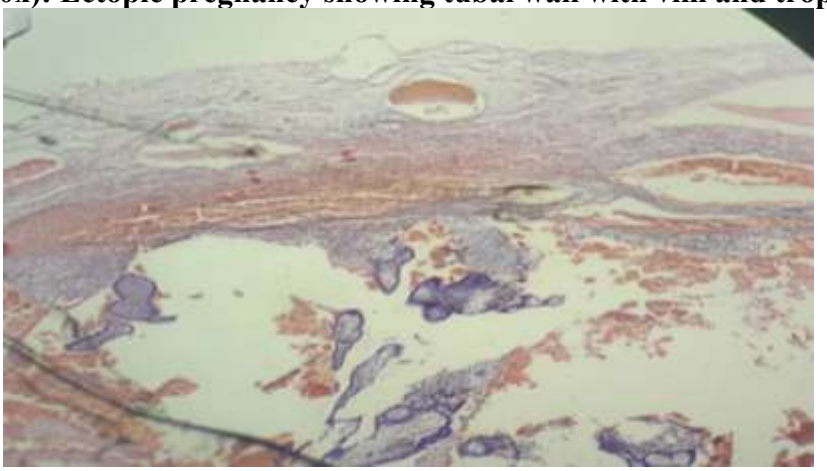


Figure 3(H&E,40x): Paratubal cysts

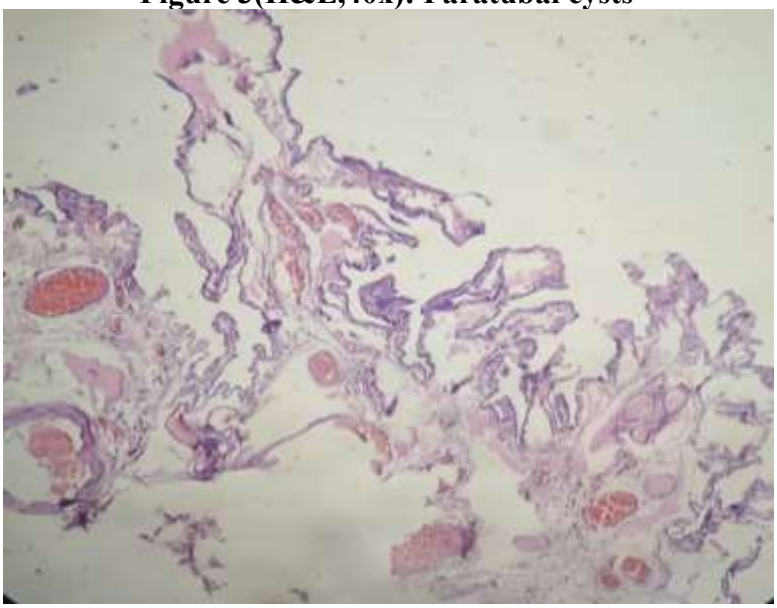


Figure 4(H&E,40x): Endometriosis showing endometrial glands with surrounding strom in fallopian tube

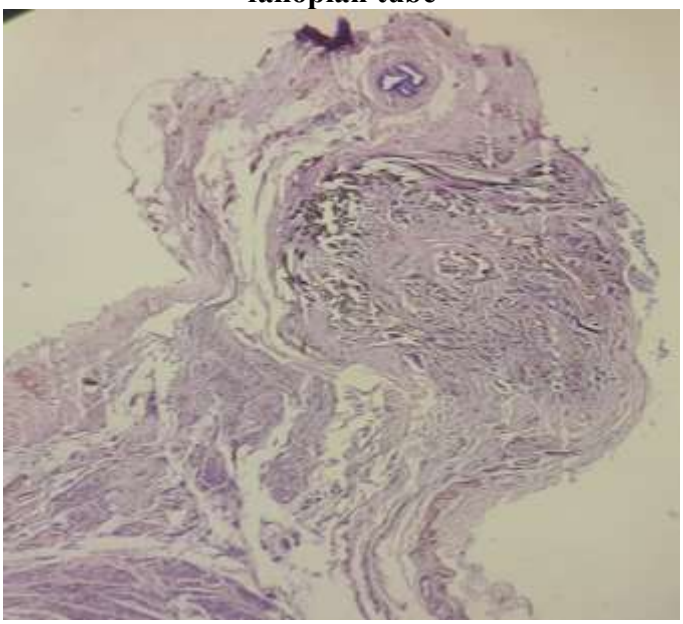


Figure 5(H&E,40x): Hydrosalpinx showing dilated fallopian tube with flattening of plicae

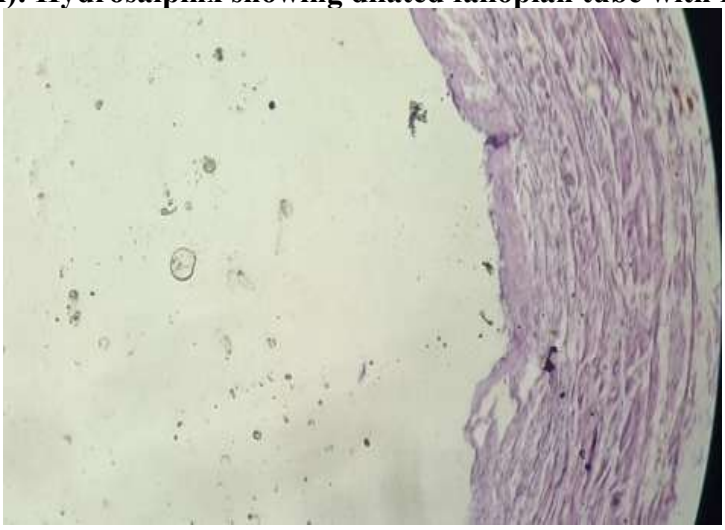


Figure 6(H&E,40x): Hematosalpinx showing bleeding into fallopian tube

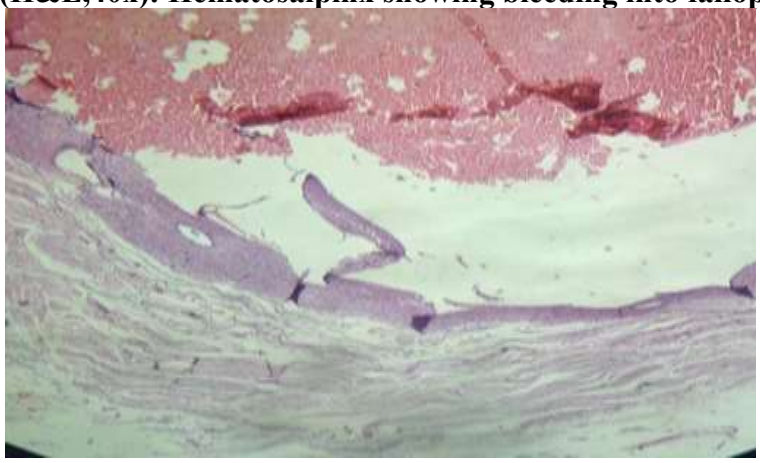


Figure 7(H&E,40x): Congestion

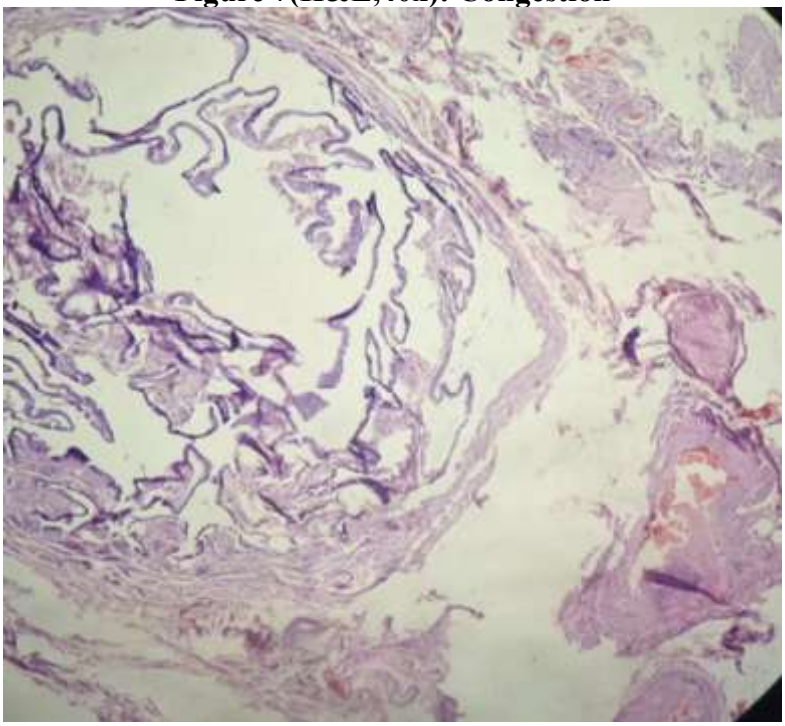


Figure 8(H&E,40x): Parafimbrial cyst

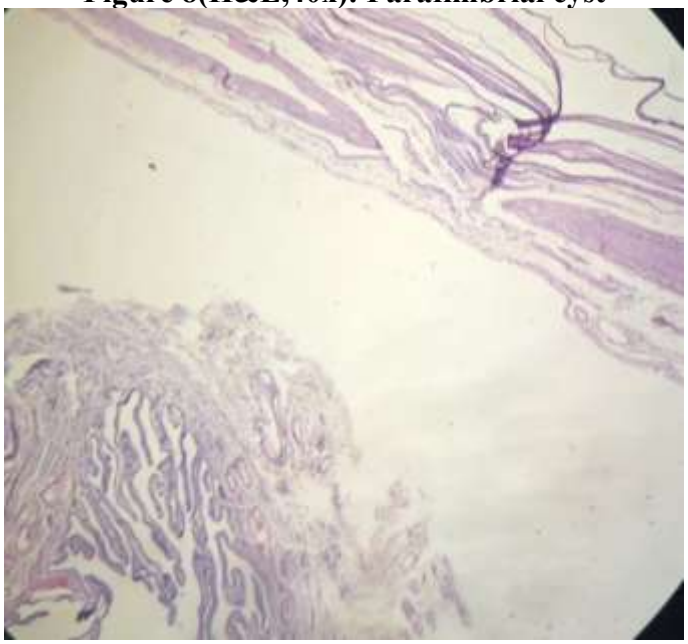


Figure 9(H&E,40x): Salpingitis isthmic nodosa showing glands in muscularis

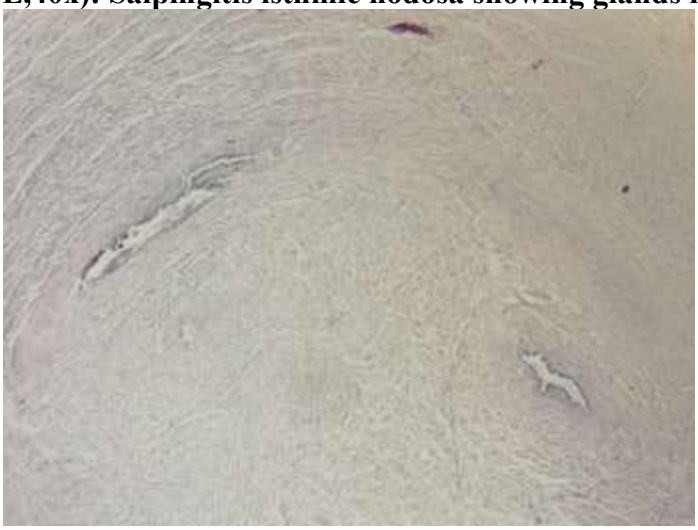


Figure 10(H&E,40x): Tubal plicae edema with mucinous metaplasia and hyperplasia with congestion

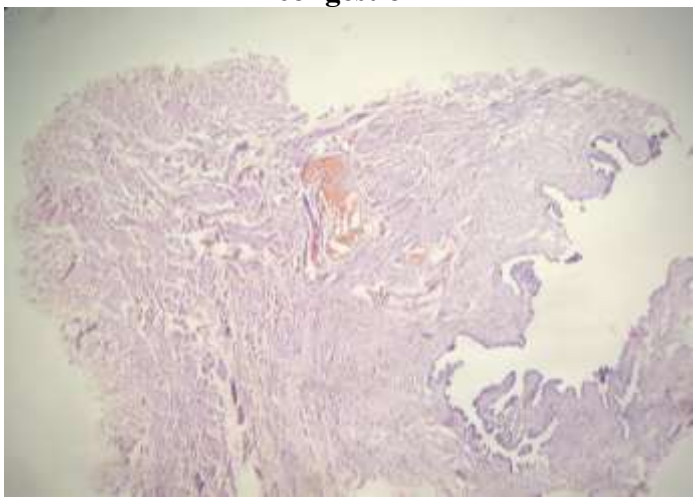
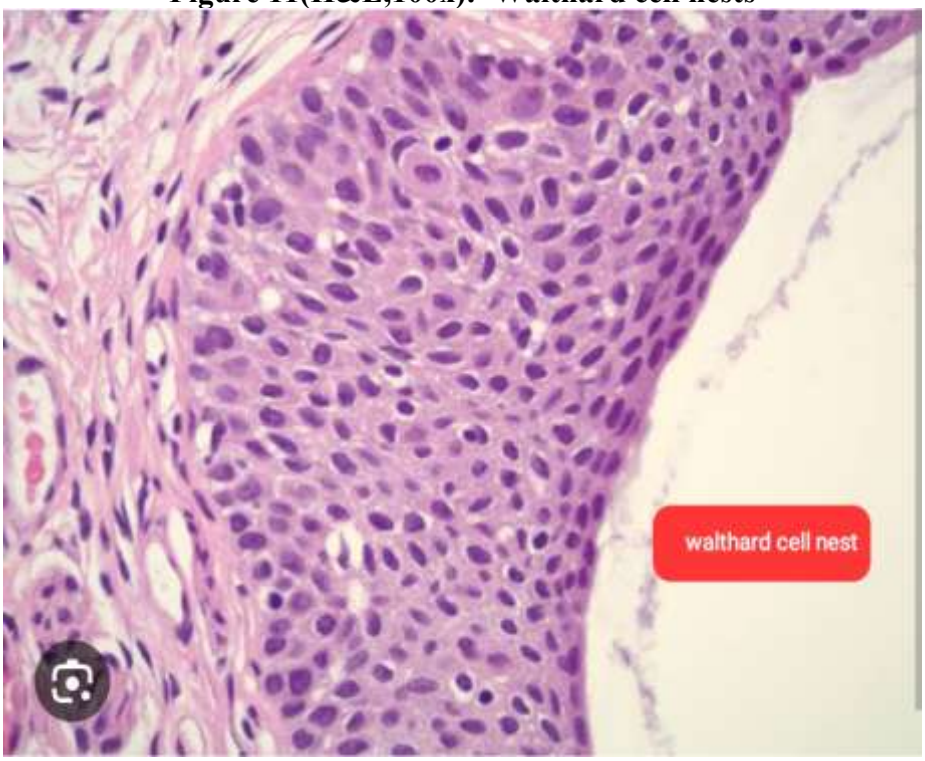


Figure 11(H&E,100x): Walthard cell nests



The most common lesions identified were inflammatory in nature, including hydrosalpinx (18.4%), congestion (16%), and ectopic pregnancies (7.55%). These findings are consistent with the work of Bagwan et al.[9], who reported a high incidence of inflammatory conditions and benign cystic lesions in their series of 200 cases, with hydrosalpinx being noted in 14.5% and paratubal cysts in 10% of cases.These findings align with previous literature indicating that chronic and acute tubal inflammations contribute substantially to female infertility and gynecologic morbidity, particularly in women undergoing hysterectomy for AUB or fibroid uterus[7,9]. Hydrosalpinx results from chronic salpingitis and presents with tubal dilatation and fluid accumulation, often asymptomatic until evaluated histologically[9].Hydrosalpinx (18.4%): Comparable to findings in studies by Manjunatha et al.[7] (20%) and Pallani et al.[10] (17.5%).Congestion (16%): Slightly higher than Pallani et al.[10] who reported 12%. Acute and chronic salpingitis together accounted for 5.1% of lesions. Acute salpingitis is frequently due to ascending infections in reproductive-age women, characterized microscopically by neutrophilic infiltration and mucosal damage[12]. Chronic salpingitis, with its hallmark of lymphocytic infiltrates and blunted mucosal folds, is a known cause of tubal factor infertility[12]. Ectopic pregnancy, seen in 7.55% of cases, remains a life-threatening condition if undetected, especially in patients not diagnosed pre-operatively. Microscopy typically revealed dilated tubes with hemorrhage, trophoblastic tissue, and edematous villi consistent with previous descriptions in literature[7].Ectopic pregnancies (7.55%): Comparable to Manjunatha et al.[7] (8%) and Pallani et al.[10] (10%).

Benign cystic lesions like paratubal cysts were seen in 11.8% of cases. These cysts are typically incidental findings, lined by flat to cuboidal epithelium, and are considered non-significant unless large or symptomatic[3].Paratubal cysts (11.8%): Closely aligned with Bagwan et al.[9] (10%) and Pallani et al. (15%). The presence of Walthard cell nests in 2.35% of cases, though incidental, has been associated with transitional cell metaplasia and occasionally mucinous tumors, necessitating awareness during histological evaluation[10].

Rare findings included endometriosis (1%), hematosalpinx (1%), pyosalpinx (0.5%), and salpingitis isthmica nodosa (0.5%), underlining the variability in tubal pathology. Other lesions included acute salpingitis (2.8%), chronic salpingitis (2.3%), Walthard cell nests (2.35%), and endometriosis (1%). These results show similar trends to the findings of Borgohain et al.[13] and Singh et al[11]., although minor variations may be due to regional demographic differences and diagnostic protocols.

Although no malignant lesions or serous tubal intraepithelial carcinomas (STIC) were noted, the need for thorough fimbrial end sampling is emphasized in patients with high-risk profiles, as recommended by recent guidelines[11].Importantly, no cases of malignancy or STIC were observed in the present study, in contrast to Singh et al[11]. who reported a 2% incidence using the SEE-FIM protocol, which highlights the need for more detailed sampling techniques in at-risk populations. Notably, a significant number of cases (35.8%) showed no remarkable pathology, underscoring the importance of routine examination to rule out subclinical or precursor lesions.

Table 5: Comparison of Fallopian Tube Lesion Frequencies across Studies

	Present study	**Shridevi et al[8]**	**Patil et al[13]**	**Manjunatha et al[7]**	**Singh et al[11]**	**Borgohin et al[13]**
Normal	36%	49%	74%	90%	50%	5%
Hydrosalpinx	18%	9%		4.5%	1%	9%
Paratubal cyst	10%	10%		4%	4%	
Ectopic	8%	3%	2.6%	0.5%	1.5%	3%
Hematosalpinx	1%	5%	5%		6.6%	0.5%
Chronic salphingitis	2.3%	12%		0.03%	4%	77%
Others	24.7%	12%	18.4%	0.97%	32.9%	5.5%

CONCLUSION

Most of the sections were unremarkable and benign. But we should keep in mind that minimal infection and inflammation can end in infertility. The next possibility is precursor lesions like STIC can cause ovarian and peritoneal malignancy in future. So it is essential to examine fallopian tube thoroughly. Careful microscopic examination remains crucial for identifying inflammatory sequelae and precursor lesions that could influence patient management and follow-up.

Conflicts of Interest: None.

REFERENCES :

1. Manjunatha YR, Ramachandra V, Manjunatha HK. Histopathological Spectrum of Lesions in Fallopian Tube - A Study of 100 Cases. Indian J Pathol Oncol. 2017;4(1):73-77.
2. Bagwan IN, Harke AB, Malpani MR, Deshmukh SD. Histopathological Study of Fallopian Tube Lesions in Salpingectomy Specimens. J Obstet Gynecol India. 2006;56(3):232-234.
3. Pallani A, Shetty PK, Shivarama U. A Histopathological Study of Fallopian Tubes in Various Gynaecological Disorders. Ann Pathol Lab Med. 2020;7(1)\:A6-A11.
4. Bhat RV, Deo MV, Udiaver S, Shetty P. Spectrum of Lesions in Fallopian Tubes: A Histopathological Study. J Evid Based Med Health. 2017;4(92):5538-5541.
5. Singh N, Gilks CB, Wilkinson N, McCluggage WG. Mapping of Serous Tubal Intraepithelial Carcinoma: Implications for Pathogenesis and Staging of Pelvic Serous Carcinoma. Histopathology. 2014;65(5):605-612.
6. Medeiros F, Muto MG, Lee Y, Elvin JA, Callahan MJ, Feltmate CM, et al. The Tubal Fimbria is a Preferred Site for Early Adenocarcinoma in Women with Familial Ovarian Cancer Syndrome. Am J Surg Pathol. 2006;30(2):230-236.
7. Manjunatha H K,Lingegowda JB,Muddegowda PH,Ramkumar KR,Mohan B,Gopal N.spectrum of lesions encountered in fallopian tube histopathology;Retrospective Analysis:our experience.Archives of Cytology and Histopathology Research.2016 July -september;1(2):45-49.
8. Shridevi SH,Jayalaxmi YK,Shashikala,Deepti P.A Prospective Study of Tumor and Tumor Like Lesions of Fallopian Tube.Indian Journal of Pathology and Practice.2017 January - March;6(1):7-12.

9. Bagwan IN,Harke AB,Malpani MR,Deshmukh SD.Histopathological Study of Spectrum of Lesions Encountered in the Fallopian Tube.J Obslet Gynecol Ind.2004 July/August;54(4):379-382.
10. Pallani M,Hari Krishnan V.Spectrum of Lesions in the Fallopian Tube-A Histopathological Study.Journal of Pharmaceutical Research International.2021 December;33(57B):297-301.
11. Singh N,Dhal I,Mohanapriya A,Saxena S.Histomorphological Spectrum of Incidentally Detected Fallopian Tube Lesions in Patient Operated for Various Clinical Conditions and Detection of Precursor Lesion by Applying Sectioning and Extensively Examining the Fimbriated End Sampling Protocol.Oncology Journal of India.2021 September - December;5(3):85-91.
12. Borgohain M,Gogoi G,Rahman M,Rashmi R,Naonil G.A Histopathological Study of Fallopian Tube Lesions in a Tertiary Care Centre.International Journal of Contemporary Medical Research.2020 May;7(5);E5-E8.
13. Patil AS, Jadhav RM, Narkhede P.Histopathological study of lesions of female genital tract in rural maharastra.J Diagn Pathol Oncol.2018;4(3):160-167.