

Histomorphology of surgically removed fallopian tubes

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Abstract

Background: Fallopian tubes are common surgical specimen in pathology laboratory and there have been only few studies documenting the variable presentations of fallopian tube pathology, which prompted the present study. **Material and Methods:** A two year prospective study of specimens of fallopian tubes was done Formalin-fixed, paraffin-embedded tissue sections were stained with hematoxylin and Eosin. **Results:** Inflammatory lesions of tubes comprised maximum number of cases followed by ectopic pregnancies. No primary neoplastic lesion was found in the study. Serial sections of fallopian tubes and section from representative areas are essential for a pathologist so that the diagnosis of these pathological entities is not missed. **Conclusion:** Most of the fallopian tube lesions were identified incidentally. Knowledge of the general frequency of these variations in general surgical pathology practice can be valuable to pathologists.

Key Words: Fallopian tubes, Histomorphology, lesion.

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Introduction

The fallopian tubes bear the name of Gabriele Fallopio, an Italian physician and surgeon[1]. Fallopian tubes are complex structures that represent more than just conduits from ovary to endometrium. Any compromise bears an effect on fertility or may lead to ectopic pregnancy[2]. It is a common histologic specimen in pathology laboratory[3]. There have been only few studies documenting the variable presentations of fallopian tube pathology, which prompted the present study.

Material and methods

This is a two years study performed in Department of Pathology, Karnataka Institute of Medical Sciences, Hubballi from August 2015 to July 2017.

Fallopian tubes from patients undergoing salpingectomy alone, salpingoophorectomy or hysterectomy with salpingoophorectomy were included in the study.

All specimens were formalin fixed and subjected to thorough gross examination. A minimum of three bits were taken from each tube. One bit each from isthmus, ampulla and fimbrial end were taken. These tissue bits were processed routinely and stained with Hematoxylin and Eosin and studied microscopically.

Tubectomy as a family planning measure and paratubal cysts were excluded from the study.

Results

Six hundred and fifty four specimens consisting of varied gynecological lesions were studied thoroughly. These fallopian tubes were obtained from 406 patients. In majority of cases, the clinical

diagnosis was uterine fibroid (144/406) or dysfunctional uterine bleeding (102/406) (Table I).

Maximum number of cases belonged to the age group of 40 - 49 years, followed closely by 30 - 39 years of age group (Table II). The youngest patient was 8 year female who underwent unilateral salpingo-ophorectomy for yolk-sac tumor and the eldest patient was 71 years old who underwent total abdominal hysterectomy with bilateral salpingo-ophorectomy with lymphnode dissection for ovarian serous carcinoma.

Some tubal pathological lesion was seen in 34.40% of the cases (225/654). In the remaining cases, both the fallopian tubes were grossly and microscopically unremarkable (Table III). It is evident that the inflammatory condition of the tube (salpingitis and hydrosalpinx) constituted a major group with an incidence of 22.62% (148/654).

The next major group was tubal ectopic pregnancies with an incidence of 6.72% (44/654).

Malignant lesions of tube were found in 6 cases, 4 of which were secondary metastatic lesions from serous carcinoma ovary and one each from poorly differentiated mucinous carcinoma ovary and endometrial carcinoma respectively.

Table I: Distribution of cases according to the clinical diagnosis

Clinical Diagnosis	No. of Cases	Incidence (%)
DUB	102	25.11
Fibroid	144	35.46
Ectopic pregnancy	44	10.83
Tubo-ovarian mass	90	22.2
Prolapse of uterus	10	2.46
Carcinoma cervix	8	1.97
Others	8	1.97
Total	406	100.00

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Table II: Age distribution of various findings in fallopian tubes.

Microscopic finding	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Unremarkable	1	5	9	53	15	22	24	2
Acute salpingitis	-	-	-	1	3	-	-	-
Chronic salpingitis	-	1	3	10	13	5	-	-
Ectopic pregnancy	-	1	31	12	-	-	-	-
Tuberculous salpingitis	-	-	1	1	1	-	-	-
Foreign body granulomatous salpingitis	-	-	-	2	2	-	-	-
Hydrosalpinx	-	1	1	14	40	16	3	1
Hematosalpinx	-	-	1	2	10	3	-	-
Salpingitis Isthmica Nodosa	-	-	-	-	1	-	-	-
Endometriosis	-	-	1	-	3	1	-	-
Metastatic tumor deposits	-	-	-	-	1	-	3	1

Table III: Various microscopic findings in fallopian tubes

Microscopic features	No. of tubes	Incidence (%)
Unremarkable	429	65.60
Acute salpingitis	5	0.76
Chronic salpingitis	35	5.35
Ectopic pregnancy	44	6.72
Tuberculous salpingitis	4	0.61
Foreign body granulomatous salpingitis	4	0.61
Hydrosalpinx	100	15.29
Hematosalpinx	20	3.05
Salpingitis Isthmica Nodosa	1	0.15
Endometriosis	6	0.91
Metastatic tumor deposits	6	0.91
Total	654	100

Discussion

The fallopian tubes were normal in 65.6% of cases while the remaining showed some tubal pathology. Inflammatory conditions of the tube formed the major group of pathological lesions in the present study constituting 148 (22.62%) tubes which included acute salpingitis, chronic salpingitis, hydrosalpinx, foreign body granuloma (suture granuloma) and tuberculous salpingitis which is similar to the previous study by Bagwan et al in whom the inflammatory condition of tube formed the major group with an incidence of 18.05%[4].

The present study also correlated well with other studies by K.V Satish et al, Kasa Lakshmi et al and Manjunatha et al in whom the inflammatory condition of the tube formed the most common pathological lesion with an incidence of 36.77%, 14.76% and 4.4% respectively[5-7].

Tuberculous salpingitis was seen in 4 out of 654 tubes (0.61%). One patient had bilateral tubal involvement by tuberculosis; she was a 23 year old lady who was diagnosed with Human Immunodeficiency Virus (HIV) infection. Tuberculosis is the most common opportunistic infection among HIV-infected individuals[8-10].

Concomitant involvement of the endometrium has been documented in 80% of cases of tuberculous salpingitis[11]. The other 2 patients had synchronous involvement of endometrium by tuberculosis. One of them even had ovarian involvement (Fig 6A).

Salpingitis isthmica nodosa was seen in only one case (Fig 9). Endometriosis was seen in 6 cases (Fig 8). Both the conditions were diagnosed incidentally.

The next major group was formed by tubal ectopic pregnancies, constituting 6.72 % (44/654) of tubal pathology (Fig 7). The commonest outcome of tubal rupture was seen in 52% of the cases. Most of them had inflammatory etiology. One of them had tuberculous salpingitis. Tubal ectopic was more common in right side (65.9%) than the left side.

No primary malignant neoplasms of tube were observed in the present study, but there were 6 cases with secondary involvement of fallopian tube.

Metastatic carcinoma deposits in fallopian tube accounts for 80-90% of all malignant tubal neoplasm, ovary being the most common primary site in 60% of cases[2]. 6 (0.91%) tubes out of 654 tubes studied had tubal metastasis. In studies done by Bagwan et al, Gon S et al and Mahajan et al the incidence of tubal metastases was 0.29%, 0.23% and 1% which correlates with present study[3,4,7].

An incidental diagnosis of walthard's cell nest was made in 8 (1.22%) tubes (Fig 11). Many studies have shown Brenner tumor to be associated with walthard's cell nests in 40% of cases[14-16]. In present study, no associated Brenner tumor was noted.

Figures

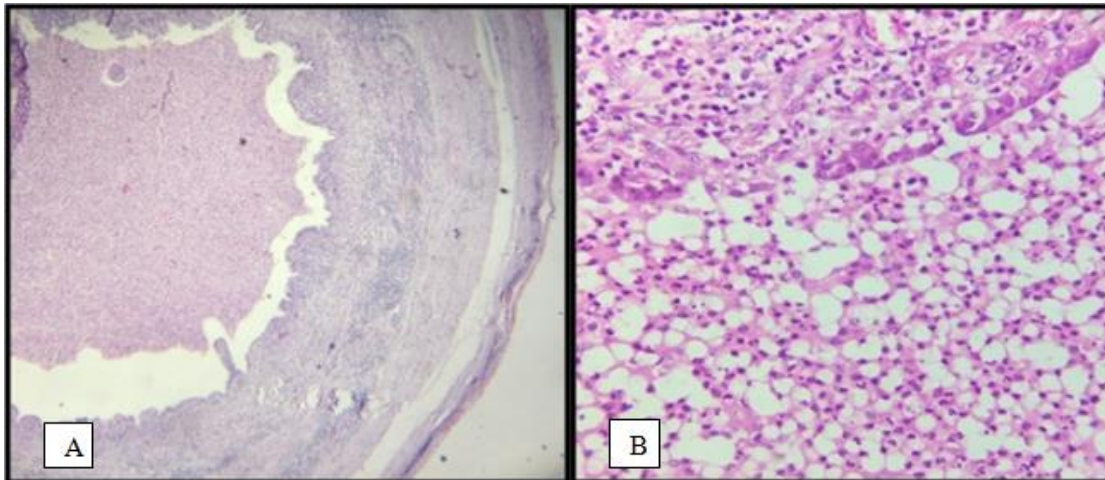


Figure1: A. Photomicrograph of acute salpingitis showing lumen filled with pus (H&E stain- 10x). B. Photomicrograph of acute salpingitis showing plicae distended with neutrophils (H&E stain- 40X)

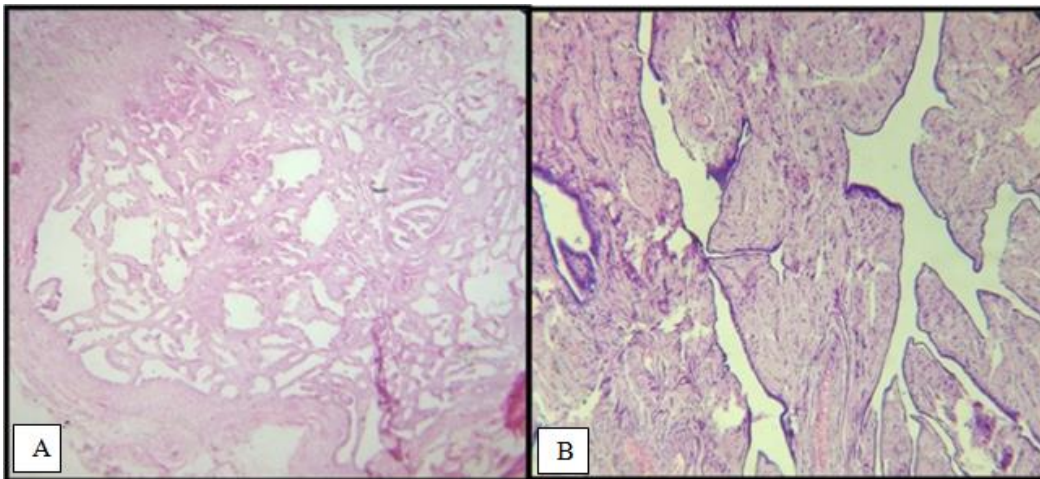


Figure2: A. Photomicrograph of chronic salpingitis showing plical fusion (H&E stain- 4x). B. Photomicrograph of chronic salpingitis showing broad and flattened plicae infiltrated by chronic inflammatory cells (H&E stain- 10x).

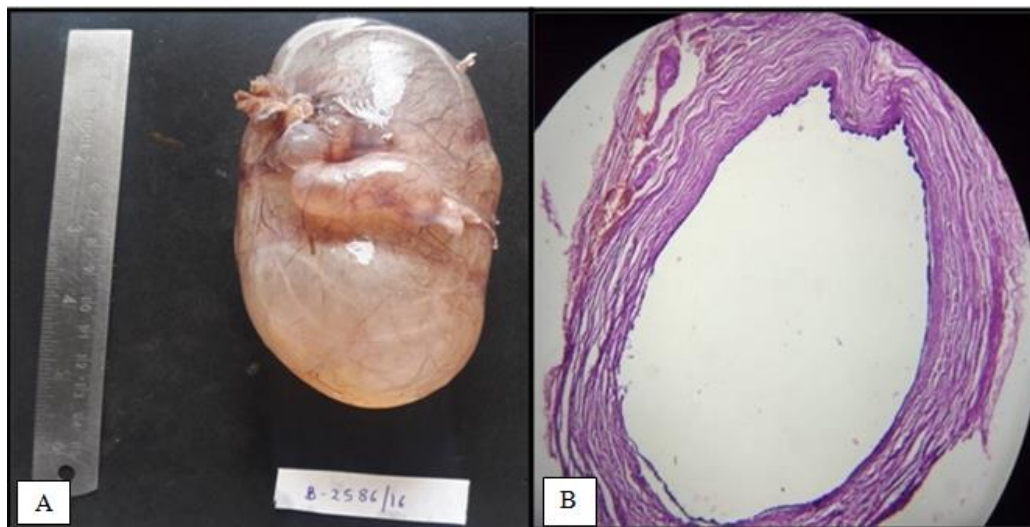


Figure 3: A. Gross photograph of hydrosalpinx showing markedly dilated tube. B. Photomicrograph of hydrosalpinx showing fallopian tube with dilated and flattened plicae (H&E stain-10x).

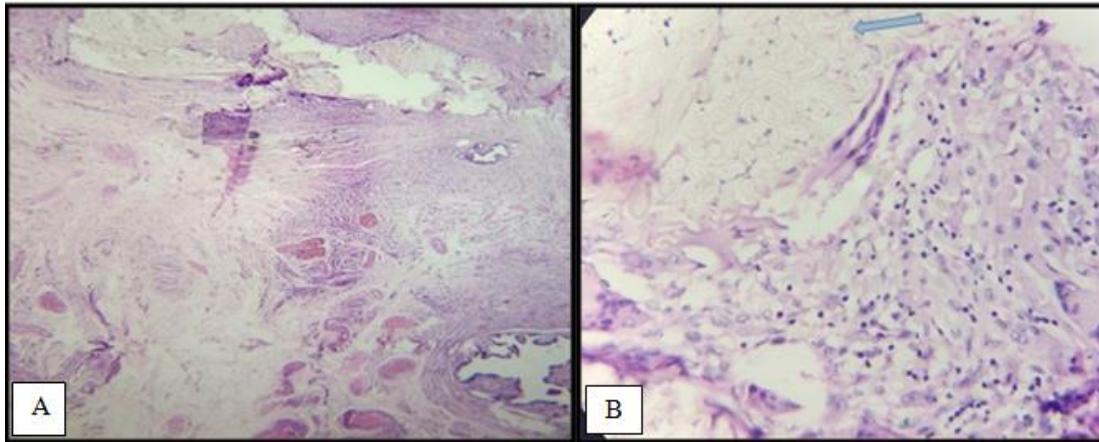


Figure 4: A. Photomicrograph of foreign body granuloma showing the suture material in wall of tube, tubal lumen can be made out in the right lower corner (H&E stain – 10x). B. High power view showing refractile suture material (arrow) surrounded by histiocytes and foreign body type of giant cells (H&E stain- 40x).

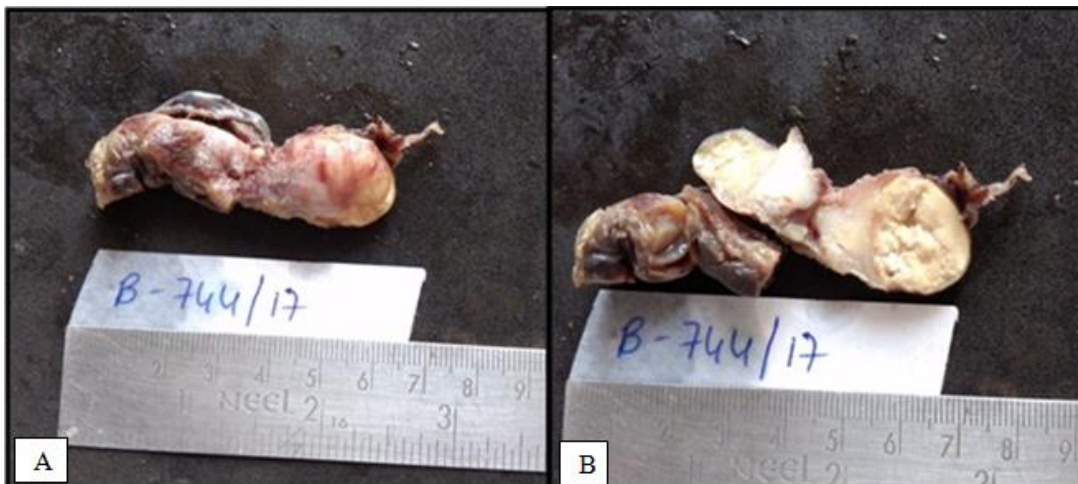


Figure 5: A. Gross photograph of tuberculous salpingitis showing distended fallopian tube. B. Cut surface showing tubal lumen filled with cheesy material.

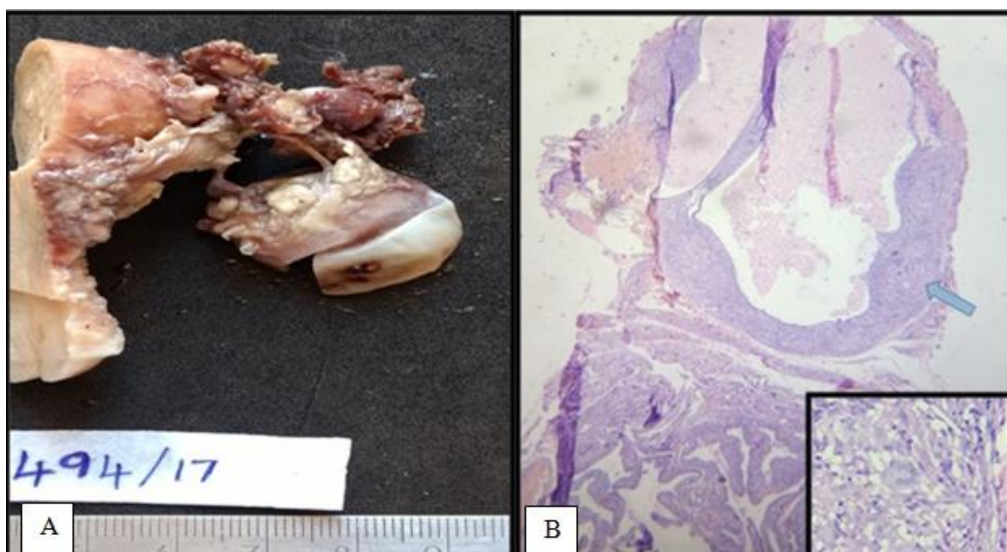


Figure 6: A. Gross photograph showing multiple tubercles on fallopian tube and ovarian surface. B. Photomicrograph of tuberculous salpingitis showing caseating tubercle on the serosa of fallopian tube (H&E stain-10x). Inset: Granuloma (arrow)

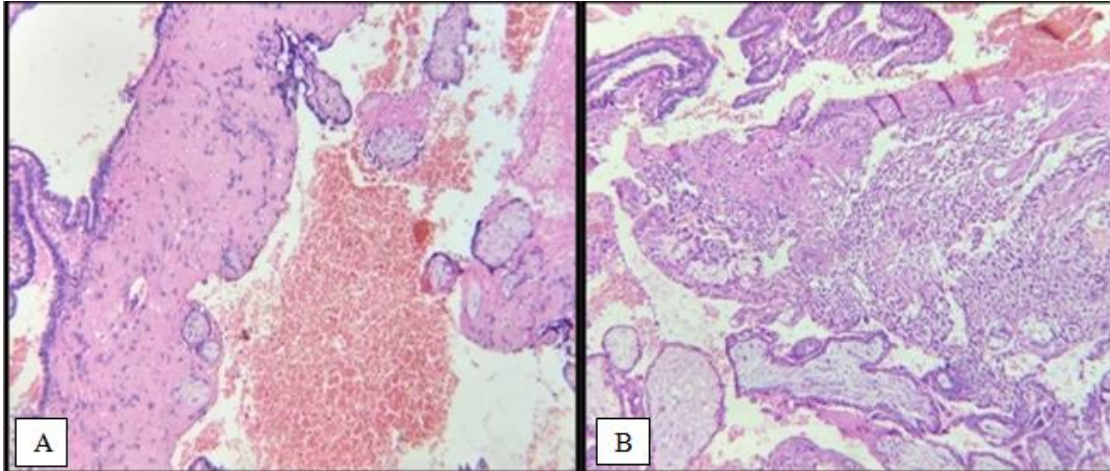


Figure 7: A. Photomicrograph of tubal ectopic pregnancy showing chorionic villi and hemorrhage within the tubal wall (H&E stain - 10x). B. Photomicrograph of tubal ectopic pregnancy showing chorionic villi with trophoblastic cells in the wall (H&E stain -10x).

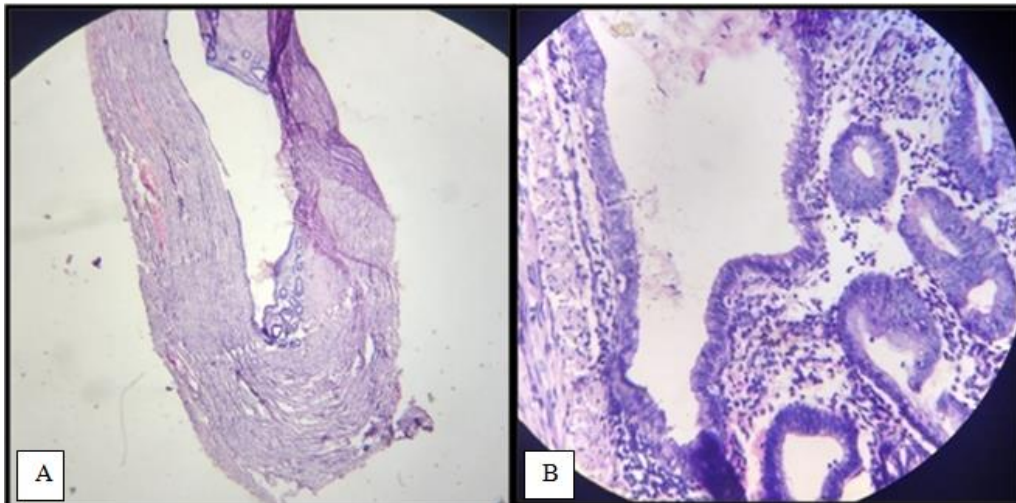


Figure 8: A. Photomicrograph of tubal endometriosis showing endometrial glands and stroma beneath the tubal epithelium (H&E stain - 4x). B. High power view shows endometrial glands with stroma (H&E stain - 40x).

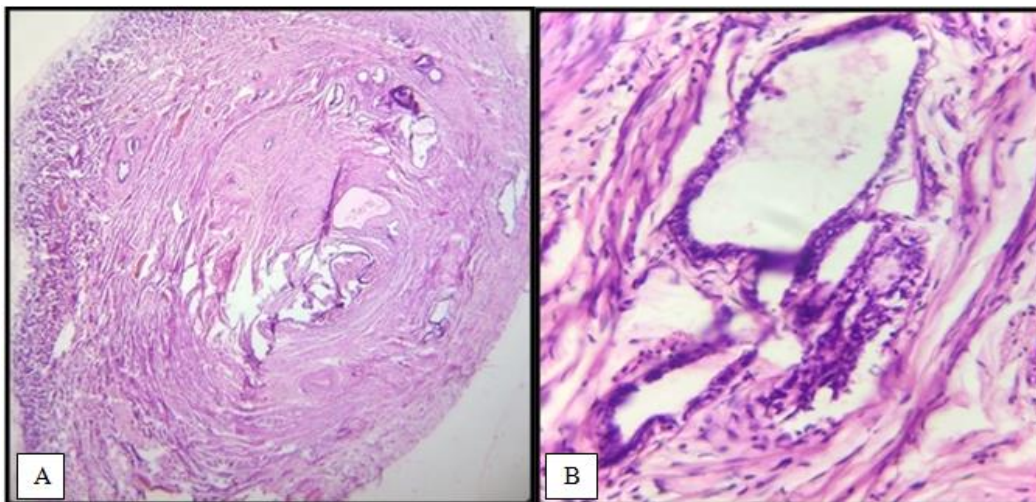


Figure 9: A. Photomicrograph of salpingitis isthmica nodosa showing cystically dilated glands within the tubal wall (H&E stain - 4x). B. Photomicrograph of salpingitis isthmica nodosa showing cystically dilated glands lined by tubal epithelium resting directly on the tubal muscular layer without any intervening stroma (H&E stain - 40x).

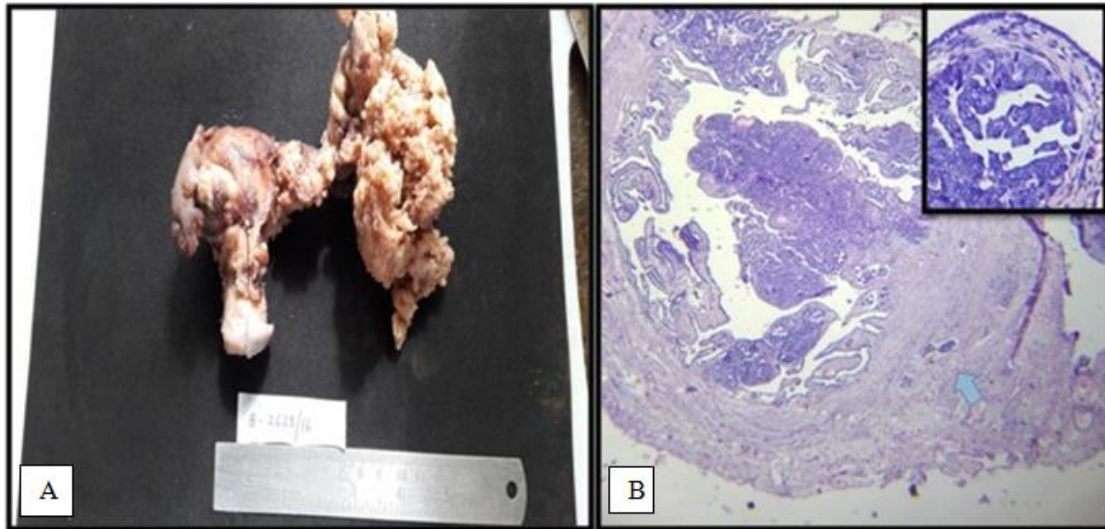


Figure 10: A. Gross photograph showing tubal involvement by serous adenocarcinoma ovary. B. Photomicrograph showing neoplastic cells within the plicae beneath the flattened tubal epithelium (inset) and also within the tubal wall (arrow) (H&E stain -10x).

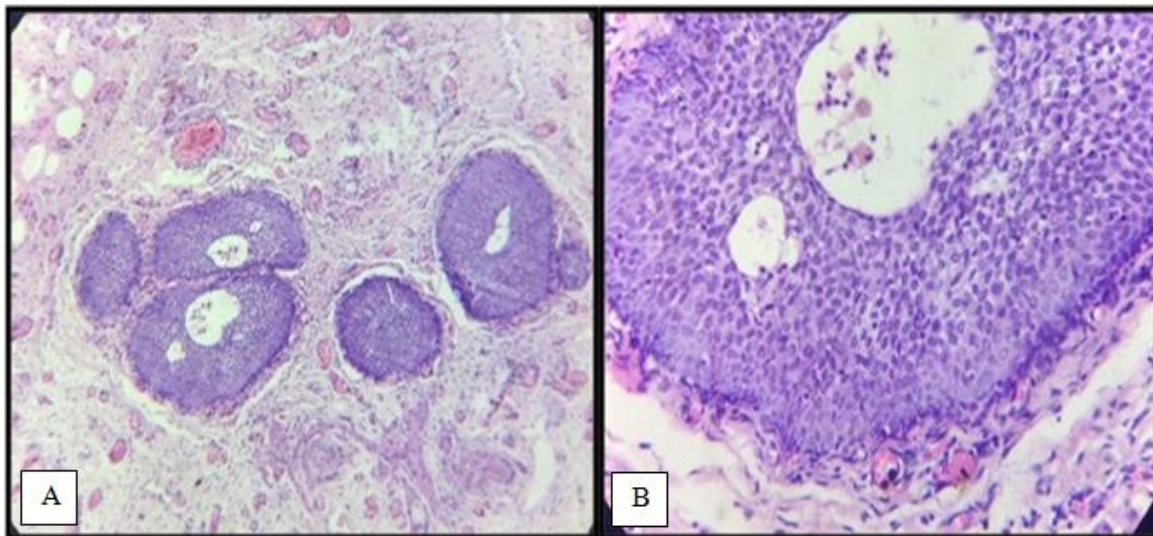


Figure 11: A. Photomicrograph showing Walthard's cell nest (H&E stain-10x). B. High power view showing nest composed of transitional epithelium (H&E stain-40x).

Conclusion

Majority of the fallopian tubes were unremarkable and only less than half of them had some pathology which was identified incidentally. Thus we conclude this discussion on the premise that fallopian tubes in each gynaecologic specimen received for histopathology, must be examined thoroughly and histological patterns of tubal pathology must be well recognized because this small organ has taken centre stage not only in issues related to female fertility but also increasingly as the site of origin of high grade serous cancers of the ovary and peritoneum. Both these conditions are curable if the predisposing or the precursor tubal pathology is detected and treated in time.

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