Research Article

Histopathology of fallopian tubes: a study in the age group of 35 – 50 years in a metropolis of Eastern India

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Abstract

Introduction: Diseases of fallopian tubes are not very commonly described in world literature. However they very commonly form surgical specimen in various treatment modalities of females. Hence it appears prudent enough to shed some light on diseases of fallopian tubes through histological study. The aim and objectives of this study therefore was to identify the various types of diseases of fallopian tubes based on histology. **Materials and methods:** 106 cases with 204 fallopian tubes from females in the age group of 35 – 50 years were selected for the study and examined under the light microscope after staining with H & E. The findings were then documented for analysis and discussion. The study was conducted in a medical college of Kolkata. **Results:** The majority of cases presented with menorrhagia. TAH with BSO was the most common operative procedure performed to collect specimen. Histology revealed normal tubes in most of the cases. The findings were displayed in tabular form and relevant discussion was included. **Conclusion(s):** The findings of the present study are similar to those of other authors. Differences can be attributed to smaller sample size and population characteristics.

Keywords: Fallopian tubes, H & E staining, Histopathology, Menorrhagia, TAH with BSO.

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Introduction

The fallopian tubes bear the name of Gabriele Falloppio, a 16th century Italian physician and surgeon who was expert in anatomy, physiology and pharmacology [1]. Fallopian tubes are complex structures that represent more than conduits from ovary to endometrial cavity. It sucks the ovum from pelvic cavity after rupture of the mature Graafian follicle from ovary. Fertilisation also takes place in fallopian tube at its ampullary part. The fertilised ovum is then transported to uterus for further development. Fallopian tube has four parts beginning from the uterine end: intramural, isthmus, ampulla and fimbria. Each part has its own distinct feature and function. Any change in the structure of fallopian tube can hamper this physiological function and lead to infertility. Also the cyclic hormonal changes in child bearing age group of female lead to changes in histology of fallopian tube and any abnormality there leads to infertility with its complications [2]. Extensive review of the worldwide web and relevant texts revealed scant data about these diseases of fallopian tubes. Many questions are unanswered.

This lacuna prompted us to vigorously pursue and shed some light on the topic, specially in this part of India. Therefore the aim and objectives of the present study was to identify the various diseases of fallopian tubes by studying their histopathology. Bagwan et al [3], Gon et al [4] and Patel & Iyer [5], to name a few studied similarly the diseases of fallopian tubes. Their findings served as references with which we compared ours with and enabled us to discuss the problem effectively.

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Materials and Methods

The study was conducted in the Department(s) of Anatomy, Gynaecolgy and Obstetrics and Pathology of R G Kar Medical College and Hospital, Kolkata. 106 patients were selected for the study. Detailed history along with uterine tube biopsies were taken from every specimen. The following criteria were strictly adhered to:

Inclusion criteria:
a) Patients in the age group of 35 – 50 years
a) Hysterectomy with salpingo-oophorectomy
c) Salpingectomy
d) Tubal ligation with or without MTP

Exclusion criteria:
a) Patient refusal
b) Anatomically distorted fallopian tube (ruptured tubal pregnancy)
c) Patients with HBV, HCV and HIV infections.

Study period: One year

Study Design: Random selection

Parameters studied: Histology of mucosa, muscle and serosa of different parts (intramural, isthmus, ampulla and fimbria) of fallopian tube.

Tools of study: History sheet, light microscope, instruments required for biopsy, chemicals required for tissue processing, instruments & chemicals for block preparation, rotary microtome, instruments for slide preparation and chemicals for staining

Study technique: A separate sheet for each patient was filled up containing the following details: registration number, name and age and address, parity, menstrual history, significant past history, findings on general and, gynaecological examinations. Height of the uterus was noted and pervaginal examination was also done. Routine investigations of blood and urine were done. Blood was also tested for VDRL, HBSAG, HIV, HCV as well as CA 125 antigen. USG of the abdomen was also done. Gross examination of the specimen (uterus, tubes and ovaries) was done post-operatively and length of each fallopian tube was noted. Each fallopian tube was inspected for sterilization clip, rupture, cyst, nodule, tumor and dilatation. In case of tumour colour, size, consistency, haemorrhage, necrosis and serosal involvement were ascertained. Luminal occlusion, presence of pus, placental tissue or haemorrhage were also searched for. The size of cysts, their relation with the fallopian tubes, locularity and nature of the fluid were noted. Signs of tubal pregnancy were also noted. Fallopian tubes were then sectioned at 3-5 mm intervals and fixed in neutral buffered formalin [6]. Blocks were prepared subsequently with paraffin wax following standard protocol [7]. Serial sections from the blocks were obtained by rotary microtome [8] mounted on slides and stained with Haematoxylin & Eosin [9]. Those slides were then observed under light microscope.

Results

Maximum number of cases presented with menorrhagia (48, 45.28%) whereas dysmenorrhoea had the least number of cases (8, 07.55%). Menometrorrhagia and amenorrhoea presented with 37 (34.91%) and 13 (12.26%) cases respectively. **Table I** effectively displays this distribution. Fallopian tubes were maximally derived from cases which underwent TAH with BSO (86, 81.13%) whereas the least were derived from cases of tubal ligation (3, 02.83%). MTP with ligation and salpingectomy yielded 9 (08.49%) and 8 (07.55%) fallopian tubes respectively. These are evident from **Table II**. Light microscopic findings were categorised into seven types. 85 cases (80.269%) presented with normal tubes. Non-specific salpingitis was present in 5 cases (4.70%). Ectopic pregnancy was present in 9.40% of cases in this study A dermoid cyst in left fallopian tube was discovered in 3 cases (2.82%). 1 case each (0.94%) was found in acute salpingitis, endometriosis and metaplasia.

Table I: Classification of patients according to their chief complaint(s).

Sr No	Chief complaint	Number of patients	Percentage
1	Menorrhagia	48	45.28
2	Menometrorrhagia	37	34.91
3	Amenorrhoea	13	12.26
4	Dysmenorrhoea	08	07.55

Table II: Source of fallopian tube (s)

Sl No	Name of operation	Number of patients	Number of Fallopian tubes	Percentage according to patients	Percentage according to tubes
1	TAH with BSO*	86	172	81.13	84.31
2	MTP† with ligation	09	018	08.49	08.82
3	Salpingectomy	08	008	07.55	03.92
4	Tubal ligation	03	006	02.83	02.95

* Total Abdominal Hysterectomy with Bilateral Salpingo-oophorectomy
† Medical termination of pregnancy

Table III: Histopathology of fallopian tube(s).

Sl No	Histopathology	Number of patients	Percentage
1	Normal tubes	85	80.26
2	Ectopic pregnancy	10	09.40
3	Non specific salpingitis	05	04.70
4	Dermoid cyst	03	02.82
5	Acute salpingitis	01	00.94
6	Endometriosis	01	00.94
7	Metaplasia	01	00.94

Table IV: Comparison of histopathology between various studies

Sl No	Histopathology	Present Study	Bagwan et al	Gon et al	Patel et al
1	Normal tubes	80.26	66.52	69.00	72.29
2	Ectopic pregnancy	09.40	11.79	13.50	06.86
3	Non specific salpingitis	04.70	NA‡	NA‡	NA‡
4	Dermoid cyst	02.82	00.00	00.30	NA‡
5	Acute salpingitis	00.94	02.62	00.05	02.57
6	Endometriosis	00.94	00.15	00.54	00.57
7	Metaplasia/ malignancy	00.94	00.14	00.23	NA‡

‡ Not applicable (no data available for the particular histopatholigical feature for comparision)

Discussion

Menorrhagia was the most common complaint (45.28%) in patients selected for the study **(Table I)**. Bagwan et al [3] and Patel & Iyer [5] reported vaginal bleeding as the predominant complaint in their studies. They however did not specify its nature. The present study laying stress on the chief complaint of patients tried to find out the incidences of such problems presented by patients.

Majority of the specimen were collected from patients undergoing TAH with BSO (**Table II**). The scenario was similar in the studies by Bagwan et al [3] and Gon et al [4]. TAH with BSO is the most effective and definitive treatment for menorrhagia [10]. Most of our cases presented with menorrhagia and that explains the highest percentage of specimen collected from patients undergoing TAH with BSO.

Bagwan et al [3] observed normal uterine tubes in 66.52% of cases whereas Gon et al [4] and Patel & Iyer [5] found normal tubes in 69% and 72.29% of cases. In the present study it was 80.26%. The high incidence of normal cases in our study may be due to a relative paucity of cases compared to other studies: Bagwan et al [3] studied 687, Gon et al [4] 28,455 and Patel & Iyer [5] 350 cases. Moreover 45.28% of cases complained of menorrhagia which mostly presents with normal histopathological findings. Ectopic pregnancy was

present in 11.79%, 13.5% and 6.86% of cases studied by Bagwan et al [3], Gon et al and Patel [4] & Iyer [5] respectively whereas it was present in 9.40% of cases in this study. This finding lies within the range (6.86% to 11.79%) reported by previous authors. Decidual reaction of stroma, trophoblastic cells and products of conception were suggestive of ectopic pregnancy [4]. Non-specific salpingitis was observed in 4.70% cases in this study. The latter was 2.17% as observed by Gon et al in the form of chronic non specific salpingitis in clinical ectopic pregnancy [4]. We observed ectopic pregnancy in patients who presented with amenorrhoea and underwent salpingectomy for tubal involvement and haemorrhage. Dermoid cyst was present in 3 cases (2.82%) in our study. Bagwan et al [3] did not observe any benign tumour. Gon et al however observed 1 such case (0.03%) [4]. Bagwan et al found 33.48% of tubes involved by pathological lesions where inflammatory condition of the tubes constituted the major group (18.05%) [3]. Acute salpingitis was present in 2.62%, 0.58% and 2.57% of cases by Bagwan et al [3], Gon et al [4] and Patel & Iyer [5] respectively. It was 0.94% in the present study. Salpingitis or inflammation of the tubes is predominant in sexually active females and leads to infertility and ectopic pregmnancy [4]. Therefore it is not surprising that the incidence(s) of salpingitis follow that of ectopic pregnancy in the present study. Endometriosis was present in 0.94%, 0.15%, 0.54% and 0.57% of cases in the present study and by Bagwan et al [3], Gon et al [4] and Patel & Iyer [5] respectively. Endometriosis presents clinically with dysmenorrhoea. Incidences of both dysmenorrhoea and endometriosis present with lower values in the present study. It was diagnosed by noting the presence of endometrial tissue in the tubes [4]. While no overtly malignant case was identified, our study presented with a single case of metaplasia (0.94%) which may transform to cancer if the influences that induce metaplastic transformation persist [11]. Bagwan et al [3] and Gon et al [4] reported malignancy in 0.44% and 0.23% of cases respectively. Primary fallopian tube cancer is the rare of all gnaecological cancers [12]. Singhal P et al observed that primary carcinoma of fallopian tube is a rare tumour and the mean age of diagnosis was 56 years [13]. Soundara Reghavan S et al analysed 9000 gynaecological malignancies, outof which only 9 cases of tubal carcinoma were found in a period of 20 year studied in JIPMER Hospital Pondicherry India [14]. **Table III** represents our findings.

Conclusion

A general trend is evident among the findings of various authors regarding the incidences of various histopathological findings (**Table IV**). The highest incidence was for normal tubes. Ectopic pregnancy came a distant second. Metaplasia/ malignancy was last in the series. The other features presented with varying incidences but all of those were towards the lower part of the range. These differences can be attributed to variations in population and geographical factors. Larger multicentric studies are essential for resolving these issues.

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