



ROLE OF HISTOPATHOLOGY IN DIAGNOSIS OF VARIOUS FEMALE GENITAL TRACT LESIONS: A 1 YEAR STUDY AT TERTIARY CARE CENTER OF SAURASHTRA

Histopathology

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ABSTRACT

Background: Diseases of the female genital tract are extremely common in clinical and pathology practice and include complications of pregnancy, inflammations, tumours and hormone induced effects. Female genital tract lesions are among the most common conditions causing females to seek medical care and are associated with a high gynaecological and reproductive morbidity. Prompt and precise diagnosis of female genital tract lesions is essential for effective and complete therapy and prevent further lifelong complications. It is therefore desirable to study spectrum of lesions of female genital tract to streamline effective methods for its management and diagnosis. **Aims and Objectives:** 1. To study the histopathological spectrum of female genital track lesions at a tertiary health care centre of Saurashtra. 2. To correlate the age of presentation and clinical features with which the patient presents the disease. **Inclusion Criteria:** Received all the specimens from gynecology department, with proper labelling and indications. **Exclusion Criteria:** Extensively autolysed specimen or poorly preserved specimen. **Result:** A total of 616 specimens of female genital tract lesions were observed in the present study. Approximately 70% of the cases belonged to 31-59 years of age group. When the clinical presentation of the cases was cross tabulated, it was observed that most of cases were presented with complain of AUB (48.86%). We received maximum specimen of D&C (47.73%). There was a predominance of non-neoplastic lesions i.e., 363 (58.9%) in the study group. However, the neoplastic lesions 253 (41.07%). **Conclusion:** Female genital tract is source of various lesions and histopathology remains the primary diagnostic modality. Leiomyoma and adenomyosis remain the leading cause of morbidity in uterus among Tertiary care centre of Saurashtra. Lesions of ovary and fallopian tube are equally important and should undergo histopathological evaluation. Frequency of malignant lesions is increasing day by day. diagnosis and hence for ensuring optimal management. A yearly audit should be conducted in every institute to collect data and to analyse the pattern of indications and types of histopathological lesions and pattern of diseases.

KEYWORDS

AUB, D&C, Neoplastic lesions, non neoplastic lesions, Histopathology

INTRODUCTION:

Diseases of the female genital tract are extremely common in clinical and pathology practice and include complications of pregnancy, inflammations, tumours and hormone induced effects.¹ Female genital tract lesions are among the most common conditions causing females to seek medical care and are associated with a high gynaecological and reproductive morbidity. Prompt and precise diagnosis of female genital tract lesions is essential for effective and complete therapy and prevent further lifelong complications. It is therefore desirable to study spectrum of lesions of female genital tract to streamline effective methods for its management and diagnosis.²

Anatomy of female genital tract is complex. The female genital tract (FGT) encompasses variety of organs and epithelial surfaces. The external genital organs include the mons pubis, labia majora, labia minora, Bartholin's gland and clitoris. The internal genital organs form a pathway called genital tract. This pathway consists of the vagina, cervix, uterus, fallopian tubes and ovaries.²

There is a worldwide variation in the distribution of various neoplasms of FGT. On a global basis, out of the eight ranking cancers in females, the cancers of the female reproductive system rank as follows: 2nd cervix of the uterus, 7th ovary and 8th body of the uterus (1st breast, 3rd colon/rectum, 4th stomach, 5th lung and, 6th oral cavity)³. Almost 80% of the new cases of cervical cancer occur in the developing countries⁴. On the other hand, ovarian and endometrial cancers are the leading forms of female genital tract malignancies in the developed world⁵. These international differences appear largely due to exogenous factors rather than due to inherited differences between populations. The cause is mainly due to different lifestyles, environmental, social, cultural and economic factors. However, many of the female reproductive system malignancies remain silent killers because women are mostly unaware of the signs and symptoms associated with these tumors⁶. They usually come into medical attention only when they become larger in size or reach the advanced stages of the disease. Additionally, the incidence and pattern of non-neoplastic and neoplastic lesions of the female genital tract vary according to different age groups and from region to region. Hence, the present study conducted to obtain the histopathological spectrum of various lesions of the female genital tract in a tertiary care population

and to evaluate the incidence of these neoplastic and nonneoplastic lesions.

Aims and Objectives:

1. To study the histopathological spectrum of female genital track lesions at a tertiary health care centre.
2. To correlate the age of presentation and clinical features with which the patient presents the disease.

Inclusion Criteria:

Received all the specimens from gynecology department, with proper labelling and indications.

Exclusion Criteria:

Extensively autolysed specimen or poorly preserved specimen.

MATERIAL AND METHODS

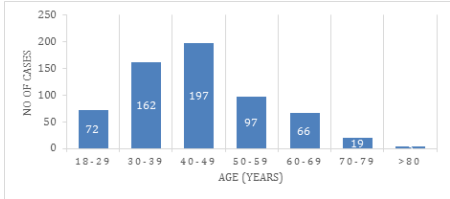
It was a retrospective study conducted in the Department of Pathology at Shree M.P. Shah Government Medical College, Jamnagar, from July 2023 – June 2024. 616 specimens were collected at the respective department and referred to Pathology Department for histopathology. Brief essential clinical history, Physical examination and other report of necessary investigations were recorded from the patient's case paper. Following the receipt of surgical specimens in 10% neutral buffered formalin at the Department of Pathology, a detailed gross examination including size, shape, consistency, colour and external surface were recorded. Additional cuts were made depending on the size of the specimen and cut section morphology was recorded. Then the specimens were allowed to fix in 10% neutral buffered formalin for 24-48 hours. Multiple parallel sections through each half about 1 cm apart were made and each surface was carefully examined. The tissue bits from representative areas were taken for histopathological examination and paraffin blocks were prepared. The number of blocks prepared depended upon the size and morphology of tumours. Multiple sections of 5 microns thickness were cut and routinely stained with haematoxylin and eosin stain. A detailed microscopic histopathological examination pertaining to endometrial glandular and stromal changes, myometrial, tubal and ovarian findings were noted to arrive at final diagnosis. All findings were cumulatively considered and included for further appropriate diagnosis.

Statistical Analysis:

The collected data was compiled, tabulated and analysed using statistical software SPSS, version-22. Descriptive statistics were computed with percentages.

RESULTS:

A total of 616 specimens of female genital tract lesions were observed in the present study. Graph 1 illustrates the bar diagram showing the age-wise distribution of cases in the study group. The age group of the females ranged more than 18 to 80->80 years. Approximately 70% of the cases belonged to 31-59 years of age group.



Graph 1: Bar diagram showing the age -wise distribution of cases. (N-616)

When the clinical presentation of the cases was cross tabulated, it was observed that most of cases were presented with complain of AUB (48.86%) followed by Abdominal pain (23.37%) and whitish discharge (16.2%). (Table 1)

Table 1: Clinical Presentation of patients (N-616)

Sr. No.	Clinical Presentation	No. of cases	Percentage (%)
1	AUB	301	48.86%
2	Dysmenorrhea	20	3.26%
3	Something coming out per vagina	14	2.27%
4	Abdominal pain	144	23.37%
5	Retention of urine	01	0.16%
6	Whitish Discharge	100	16.2%
7	Infertility	28	4.54%
8	Amenorrhoea	05	0.81%
9	Follow up	03	0.48%

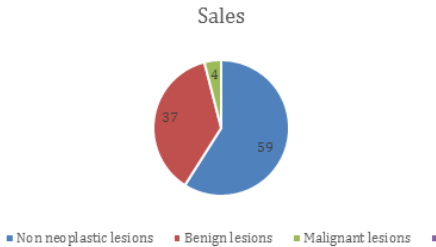
We received maximum specimen of D&C (47.73%) Followed by Cervical biopsy (22.4%), Ovarian cyst (5.84%), myomectomy specimen (5.52%) and Hysterectomy (4.87%) specimens. Table 2(N-616)

Table 2: Type of specimens

Sr. No.	Type of Specimen	No. of Specimen Received	Percentage %
1	Hysterectomy	30	4.87%
2	Hysterectomy with bilateral Salpingo-oophorectomy	12	1.95%
3	Dilatation & Curettage	294	47.73%
4	Fibroid	34	5.52%
5	Evacuation & Curettage	06	0.97%
6	Cervical Biopsy	138	22.4%
7	Endometrial Polyp	10	1.62%
8	Endocervical Polyp	01	0.16%
9	Ovary	18	2.92%
10	Ovarian Cyst	36	5.84%
11	Fallopian tube with Ectopic Pregnancy	22	3.57%
12	Bartholin Cyst	01	0.16%
13	Placenta Previa	03	0.49%
14	Endometrial Biopsy	07	1.14%
15	Product of Conception	05	0.81%

Figure 2 shows the types of female genital tract lesions among the study participants. There was a predominance of non-neoplastic lesions i.e., 363 (58.9%) in the study group. However, the neoplastic lesions 253 (41.07%). Regarding the distribution of neoplastic lesions of female genital tract among the patients, the benign lesions constituted the majority 228 (37.01%) while there were 25 (4.06%) malignant lesions. Maximum i.e., 48.74% (116 out of 228) benign lesions were found in the uterus. Malignant lesions of endometrium and ovary respectively are (3.16%) and (2.76%) each. In cervix,

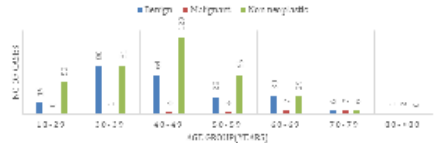
malignant neoplasms are 10(3.93%) and the benign are 20 (7.9%). (Graph 2)



Graph :2 Pie chart showing distribution of type of lesions in the study group. (N=616)

Age distribution of non-neoplastic and neoplastic lesions of patients was also studied. The age group was divided into 10-year interval and most patient fall into 40-49-year age group. This group formed 49.3% of all patients while 50-59-year age group was second most common age group with 20 patients (14.3%). The youngest patient was 19 years and oldest was 73 years (Table 2).

Age-group wise distribution of benign and malignant lesions show with increase in age cases of malignant lesions increase compare to benign and non-neoplastic lesions. (Graph 3)



Graph 3: Bar diagram showing the Age-group wise distribution of benign, malignant and non-neoplastic lesions.

The lesions were classified into uterine, endometrial, cervical, tubal and ovarian lesions. Out of total 406 cases, 58 cases showed leiomyoma and adenomyosis as uterine pathology. The leiomyoma was sub classified into sub mucosal, intramural, subserosal or multiple locations. Out of 58 cases, 44(10.67%) cases showed leiomyoma as pathology. The most common leiomyoma was intramural (17 cases-4.13%) followed by sub mucosal (10 cases-2.42%). In 11 cases, leiomyoma was present in multiple locations (2.67%). Grossly, leiomyoma were well circumscribed masses showing solid whorled cut section. (Figure 1,2,3) Microscopically, it showed well circumscribed tumours consisting of oval to spindle shaped cells having elongated blunt ended nuclei and moderate amount of eosinophilic cytoplasm arranged in interlacing fascicles and bundles (Figure 4). Some leiomyoma showed secondary changes like hyaline degeneration and myxoid degeneration (Figure 5). If the endometrial glands and stroma are seen embedded beyond one low power field from Endo myometrial junction, then it was considered as adenomyosis. Grossly, uterus showed trabeculated myometrium with increased average myometrial thickness. Microscopically deeper myometrium showed islands of endometrial glands and stroma surrounded by hyperplastic smooth muscle bundles (Figure 6). 14 cases of adenomyosis were noted which constituted 2.67% of total specimens. In endometrium, most common findings were proliferative phase endometrium 114 cases (27.67%) (Figure 7), secretory phase endometrium 67 cases (16.26%) (Figure 8), menstrual phase endometrium 08 cases (1.94%) (Figure 9), biphasic endometrium 60 cases (14.56%) (Figure 10), atrophic endometrium 23 cases (5.58%) (Figure 11). In 11 cases, endometrium showed presence of polyp (2.67%). The polyps are pedunculated or non-pedunculated benign proliferations in endometrial cavity which may mimic carcinoma due to bleeding caused by them. Grossly, polypoid masses ranging from 1 cm to 6 cm in diameter were noted in endometrial cavity with dilatation of endometrial lumen. Those diagnosed as Leiomyomata's polyp were not included in this category but were included under sub mucous leiomyoma. Microscopically they showed polypoid mass lined by flattened surface endometrium (Figure 12). The core of polyp showed endometrial glands and oedematous stroma along with many thick-walled blood vessels. Sparse mononuclear cell infiltration is also seen in many polyps. 38 cases showed endometrial hyperplasia without atypia (9.22%) (Figure 13). Grossly it appears as thickened endometrium (Lusch endometrium). Microscopically it showed back-

to-back arrangements of endometrial glands with dense compact stroma, increased glands to stroma ratio and gland in gland appearance. 09 cases (2.18%) of abnormal uterine bleeding showed endometrial hyperplasia with atypia on microscopy. Few glands appeared in proliferative phase while few showed irregular, dilated glands filled with secretions in lumen and cytological atypia. 4 case (1.21%) was diagnosed as endometrial carcinoma in elderly postmenopausal women complaining of postmenopausal bleeding. Grossly, endometrium was thickened. Microscopically endometrial glands were seen with cytological and architectural dysplasia and invasion (Figure 14). Papillary fronds lined by columnar cells having hyperchromatic nuclei and eosinophilic cytoplasm were seen. In 1 case, endometrium was obliterated by extension of cervical squamous cell carcinoma and in 1 case of leiomyosarcoma was also observed. (Table 3)



Figure1 : Cut section of Fibroid Whorl pattern



Figure2 : Uterus with intramural fibroid



Figure3: Uterus with multiple fibroids

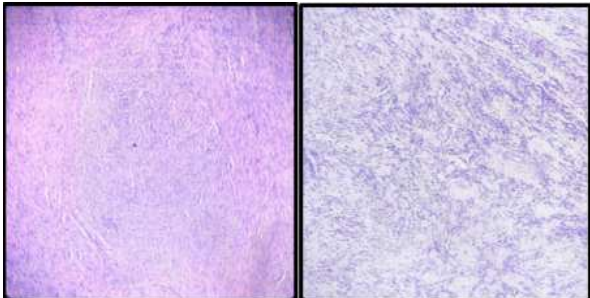


Figure 4 :Leiomyoma (Fibroid)
Figure 5 :Leiomyoma (Fibroid) with Secondary changes

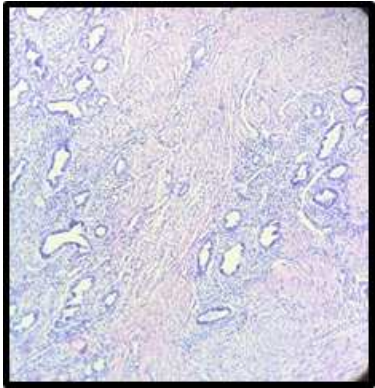


Figure 6: Adenomyosis

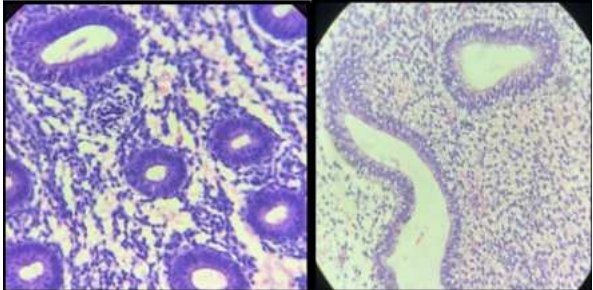


Figure 7: Proliferative Phase

Figure 8: Secretory Phase

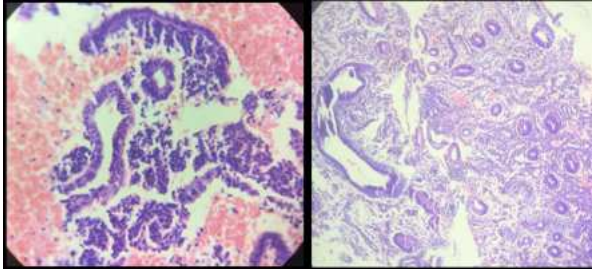


Figure 9 : Menstrual Phase

Figure 10: Biphasic Endometrium

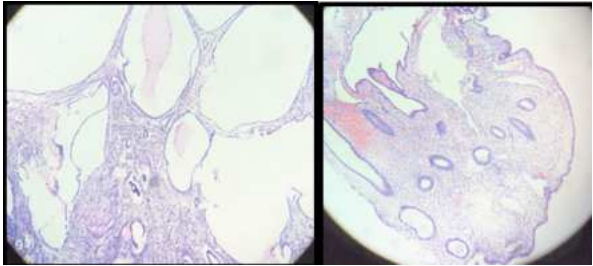


Figure 11: Atrophic Endometrium

Figure 12: Endometrial Polyp

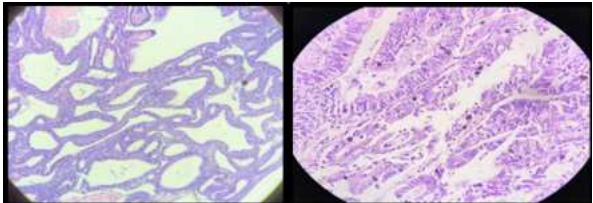


Figure 13: Endometrial Hyperplasia

Figure 14: Endometroid Adenocarcinoma Type II

Table:3 Histopathological Diagnosis Of Various Lesions Of Uterus (n-412)

Sr. No.	Diagnosis	No. of cases	Percentage (%)
1.	Endometrium Proliferative Phase	114	27.67%

		Secretory Phase	67	16.26%
		Menstrual Phase	08	1.94%
		Biphasic endometrium	60	14.56%
		Atrophic Endometrium	23	5.58%
		Endometrial hyperplasia without atypia	38	9.22%
		Endometrial hyperplasia with atypia	09	2.18%
		Polyp	11	2.67%
		Decidual Changes	05	1.21%
		Metastasis from Squamous cell carcinoma of cervix	02	0.48%
		Endometrioid Adenocarcinoma Type I	04	0.97%
		Serous Adenocarcinoma Type II	01	0.24%
		Endometritis	13	3.16%
2.	Myometrium	Intramural Leiomyoma (Fibroid)	17	4.13%
		Adenomyosis	14	3.39%
		Leiomyosarcoma	01	0.24%
3.	Leiomyoma	Subserosal	06	1.45%
		Submucosal	10	2.42%
		Multiple	11	2.67%

Chronic cervicitis was found in 107 out of 182 cases (58.79%). Chronic cervicitis was found overlapping with other lesions of cervix. Other than cervicitis, the cervical pathology was found commonly in cases of uterus with prolapse. In prolapse uterus, cervix is seen as hypertrophic grossly and microscopic finding include hyperkeratosis, acanthosis, squamous metaplasia and chronic cervicitis. The prolapse uterus was frequently associated with bulky uterus or adenomyosis. The cervical changes consistent with prolapse were found in 17 cases. 02 cases of cervical polyp were seen which constituted 1.09% of cases. It is not uncommon to find invasive cervical carcinoma or in situ carcinoma in hysterectomy and cervical biopsy specimens. We found 10 cases with invasive carcinoma (Figure 15) and In situ carcinoma in 14 cases (7.69%). (Table 4)

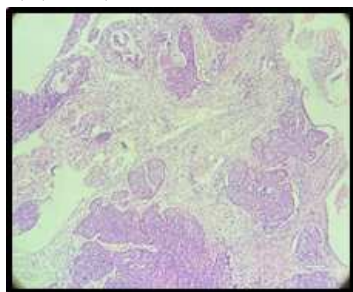


Figure 15: Cervical squamous cell carcinoma

Table:4 Histopathological Diagnosis Of Various Lesions Of Cervix And Vagina (n-182)

Sr.no.	Diagnosis	No. of cases	Percentage (%)
1	Cervicitis	107	58.79%
2	Endocervical polyp	02	1.09%
3	Bartholin cyst	01	0.56%
4	Hyperplastic Epithelium	08	4.39%
5	CIN	14	7.69%
6	Squamous cell carcinoma	10	5.49%
7	No specific lesion	40	21.98%

In fallopian tube, the most common lesion was pyosalpinx (4 cases). In these cases, the fallopian tube was seen dilated with thinned out wall and lumen were filled with pus material. 3 cases of hematosalpinx and 21 cases of ectopic gestation were seen. In ectopic gestation, many chorionic villi with decidual tissue and foetal parts were noted in fallopian tube.

The most common lesion in ovary was cystic lesions (Table 5). These include simple cysts (23.07%), corpus luteum cyst (10.25%), chocolate cyst (8.97%), cystic teratoma (2.56%) and cyst adenomas (3.84%). The simple cysts are lined by single layer of flattened

cuboidal epithelium. These cysts may be of mesonephric or paramesonephric origin but their differentiation is of no clinical significance. The corpus luteum cyst is >3 cm in size and is lined by inner granulosa cells and outer layer of theca cells. The chocolate cyst of ovary is actually endometriosis in ovary. There is cyst formation due to accumulation of shredded endometrial tissue from endometriotic glands which appear as chocolatey thick fluid. The cyst adenomas are benign cystic tumours of ovary lined by serous or mucinous columnar epithelium. Total 78 ovarian specimens are received. Among which simple serous cysts was the commonest cystic lesion as well as commonest of all ovarian lesions (23.07%) followed by 8 cases of Haemorrhagic corpus luteal cyst (10.25%), Chocolate cyst 7 cases (8.97%), mucinous cystadenoma 06 case (7.69%) and serous cystadenoma 2 cases (2.56%). Out of total 2 (2.56%) cases of Teratoma, 1 (1.28%) was monodermal and 1 (1.28%) was mature cystic teratoma (Figure 18,19). The torsion of ovary is usually present with acute abdomen in young patients. We diagnosed 2 (2.56%) cases of torsion of ovary. The gross examination revealed ovary with almost normal size, blackish discoloration of external surface and cut surface showing haemorrhages. Microscopically it showed extensive haemorrhagic necrosis along with dense inflammation and congested and dilated blood vessels. 2 cases (2.56%) of benign Brenner tumour of ovary were also noted. Dysgerminoma of ovary, Collision tumour, Mucinous cystadenocarcinoma and yolk sac tumour each has 1-1 cases.



Figure 16 Mucinous Cystadenoma of Ovary Gross



Figure 17 Mucinous Cystadenoma of Ovary microscopy



Figure 18 : Mature Cystic Teratoma

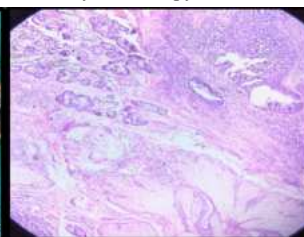


Figure 19: Mature Cystic Teratoma Microscopy

Table:5 Histopathological Diagnosis Of Various Lesions Of Ovary (n-78)

Sr no.	Diagnosis	No. of cases	Percentage (%)
1	Simple serous cyst	18	23.07%
2	Haemorrhagic corpus luteal cyst	08	10.25%
3	Chocolate cyst	07	8.97%
4	Monodermal teratoma	01	1.28%
5	Mature cystic teratoma	01	1.28%
6	Mucinous cystadenoma	06	7.69%
7	Serous cystadenoma	02	2.56%
8	Torsion of ovary	02	2.56%
9	Benign Brenner tumour	02	2.56%
10	No specific lesion	14	17.94%
11	Mucinous Cystadenocarcinoma	01	1.28%
12	Serous cystadenocarcinoma	02	2.56%
13	Dysgerminoma	01	1.28%
14	Collision tumour	01	1.28%
15	Yolk sac tumour	01	1.28%
16	Mixed Germ cell tumour	01	1.28%

DISCUSSION:

In the present study, majority of the patients were in the age group of 31-59 years with a mean age of about 42 years. This is similar to the study by Yogesh Neena and Bhaskar Honey where the maximum number of cases were found in the age group between 45 and 55 years 7 with mean age of 45 years.

The histopathological spectrum related to uterus showed normal proliferative phase endometrium (27.67%) in maximum cases. The most common pathology of uterine lesions was leiomyoma (10.67%) followed by adenomyosis (3.39%) and endometrial polyp (2.67%). Leiomyomas are benign neoplasms composed of smooth muscle with variable amount of connective tissue. Infact, the commonest tumour occurring in the female genital tract in our study was leiomyoma comprising of more than 50% (110 out of 201) of the total neoplastic lesions which is in concordance to several studies where leiomyoma was^{3,5,6,7,9,10} the most common histopathological presentation. Also, most common age for Leiomyoma in the present study was 40 to 50 years^{11,12} which is similar to studies done by Kumar Net al and Lahori Me.

Regarding the cervical pathology, chronic nonspecific cervicitis was the commonest Histopathology diagnosis (58.79%). Carcinoma of cervix was seen in 5.49% cases. Similar findings were also obtained in the study by Talukder SI et al where the most common histopathological lesion was chronic cervicitis (87.80%) while squamous cell carcinoma of cervix 13 was found in 2.44% of cases. Several other studies have also stated that chronic non-specific cervicitis was the most frequent non neoplastic cervical lesion which occurred in all the age groups of women studied^{8,14}. According to our study, although there was a predominance of non-neoplastic lesions (58.92%) but the proportion of neoplastic lesions was as high as 41.07% which was much higher than the studies by Sood et al¹⁵ (27.88%) and Gaikwad SL et al (29.78%). This may be due to regional variations. Amongst the neoplastic lesions in our study, 90.11% were found to be benign while 9.88% were malignant lesions which is almost same as Khandekar S and Kumar N et al studies where benign lesions constituted 82.13% and 86.18% while malignant lesions were 17.87% and 13.82% respectively^{5,11}. Regarding the spectrum of neoplastic lesions of different parts of the female genital tract, maximum benign lesions were seen in uterine corpus. Leiomyoma (19.29%) was reported as the commonest benign lesion. Simple serous cyst was most common benign lesion in ovary (23.07%). Carcinoma cervix was the commonest malignancy (40%) in our study. Comparison of the incidences of the most common malignancies of different parts/organs of female genital tract reported in various studies in the Indian literature is shown in Table 6. Overall, the most common benign lesion of FGT was Leiomyoma while commonest malignant lesion was Carcinoma cervix (SCC). The differences in the pattern of gynaecological malignancies across the studies may be attributed to varied ethnicity, regional differences, family history, genetic, parity, usage of oral contraceptive pills and hormone replacement therapy etc.

Table 6: Comparison of the incidence of commonest malignancies of different parts of FGT across various studies.

Studies	Uterus		Cervix		Ovary	
	Benign	Malignant	Benign	Malignant	Benign	Malignant
Saurav singh, Gore Charusheel a (Maharashtra) ¹⁸	Leiomyoma (55%)	Endometrial cancer (2.4%)	Endocervical polyp (2%)	Squamous cell Carcinoma (6.4%)	Simple serous cystadenoma (18.4%)	Papillary serous cystadenocarcinoma (1%)
Khandekar S et al (Maharashtra) ⁵	Leiomyoma (51.2%)	Endometrial cancer (3.38%)	Papillary variant (1.93%)	Squamous cell Carcinoma (6.28%)	Serous cystadenoma (8.21%)	Serous cystadenocarcinoma (1.45%)
Kumar N et al (Uttar Pradesh) ¹¹	Leiomyoma (64.9%)	Endometrial cancer (2.65%)	-	Squamous cell Carcinoma (5.30%)	Serous cystadenoma (9.93%)	Mucinous cystadenocarcinoma (1.99%)
Sood et al (Haryana) ¹⁵	Leiomyoma (44.82%)	Endometrial cancer (4.82%)	Endocervical polyp (9.65%)	Squamous cell Carcinoma (4.82%)	Serous cystadenoma (3.44%)	Mucinous cystadenocarcinoma (0.68%)
Paul SN et al (Jharkhand) ¹⁷	Leiomyoma (64.0%)	-	Leiomyoma (1%)	Squamous cell Carcinoma (7.0%)	Mature cystic teratomas (13.0%)	Immature teratoma (1%)

Present Study (Saurashtra-Gujrat)	Leiomyoma (37.93%)	Endometrial Adenocarcinoma (%)	CIN (7.49%)	Squamous cell carcinoma (5.49%)	Simple Serous cyst (23.07%)	Mucinous cystadenocarcinoma (7.69%)
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CONCLUSION:

Female genital tract is source of various lesions and histopathology remains the primary diagnostic modality. Leiomyoma and adenomyosis remain the leading cause of morbidity in uterus among Tertiary care centre of Saurashtra. Lesions of ovary and fallopian tube are equally important and should undergo histopathological evaluation. Frequency of malignant lesions is increasing day by day. diagnosis and hence for ensuring optimal management. A yearly audit should be conducted in every institute to collect data and to analyse the pattern of indications and types of histopathological lesions and pattern of diseases. More community-oriented screening programs including PAP smear and health education might help in reduction of morbidity and mortality from gynaecological lesions and associated malignancies.

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