

## Original Research Article

## Histopathologic Spectrum of Neoplasms of the Uterine Corpus in a Tertiary Care Hospital

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## Abstract

*Context:* Tumors of the uterine corpus represent the second most common site for malignancy among the female genital system. These neoplasms are classified into epithelial, mesenchymal, mixed epithelial and mesenchymal, lymphoid, myeloid and secondary tumors. *Aims:* 1. To study the spectrum of lesions of the uterine corpus. 2. To study the incidence of benign and malignant tumors of uterine corpus. 3. To study the age preference among various types of benign and malignant tumors of the uterine corpus. *Materials and methods:* A prospective study was done in the Department of Pathology, NRI Medical College from June 2018 to July 2019. All the specimens received were fixed in 10% formalin and routinely processed. Sections were made from paraffin-embedded blocks and stained with hemotoxylin and eosin. *Statistical analysis used:* Percentages. *Results:* In 439 hysterectomy cases, 190 cases had uterine corpus neoplasms, of which 155 (81.57%) were benign neoplasms, and 35 (18.42%) were malignant. In the benign neoplasms, 153 were leiomyomata, and two were adenomyomata with commonest age group at presentation being 4<sup>th</sup> decade. In the malignant neoplasms, the most common tumor was well-differentiated endometrioid carcinoma with 5<sup>th</sup> decade being the commonest age group of presentation. Four cases of malignancy within an endometrial polyp were noted along with some rare malignancies like clear cell carcinoma (2.85%), serous carcinoma (5.71%), leiomyosarcoma (5.71%), high-grade endometrial stromal sarcoma (2.85%), carcinosarcoma (5.71%) and adenosarcoma (2.85%). *Conclusions:* In our study, benign pathologies were more common than their malignant counterparts in the uterine corpus. In benign neoplasms leiomyoma was the most common and in malignant neoplasms well-differentiated endometrioid carcinoma predominated.

**Keywords:** Hysterectomy; Uterine corpus; Leiomyomata; Endometrioid carcinoma.

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## Introduction

Uterus, a vital female reproductive organ, is subjected to many benign and malignant diseases. Even though many medical and conservative surgical treatment options are existing, hysterectomy still is the most commonly performed major gynecological procedure worldwide. Histopathologic analysis of the hysterectomy specimens is mandatory for diagnostic and therapeutic purposes.<sup>1</sup>

The tumors of uterine corpus represent the second most common site for malignancy among the female genital system. These neoplasms classified into epithelial, mesenchymal, mixed epithelial and mesenchymal, lymphoid, myeloid, miscellaneous and secondary tumors.<sup>2</sup>

Leiomyomata are the most common benign uterine neoplasms in women of reproductive age group. Leiomyomas synonymously called fibromyomas or myomas are the commonly encountered benign neoplasms in women of reproductive age group accounting for 5–20%. Leiomyomas need hormonal milieu for their growth and maintenance as evidenced by molecular studies that leiomyomata exhibit more estrogen receptors than normal myometrium. They are usually asymptomatic, however depending on their size, location and hormonal effects they exhibit varied clinical manifestations.<sup>3</sup>

Endometrial cancer is the third most common cause of death among gynecological cancers, with an increasing incidence rate. Ninety-seven percent of all tumors of uterine corpus arise from the glands of the endometrium and are known as endometrioid adenocarcinoma. The remaining 3% of uterine cancers are sarcomas.<sup>4</sup>

## Aims and Objectives

1. To study the spectrum of lesions of the uterine corpus.
2. To study the incidence of benign and malignant tumors of uterine corpus.
3. To study the age preference among various types of benign and malignant tumors of the uterine corpus.

## Materials and Methods

A prospective study conducted in the Department of Pathology, NRI Medical College, Chinakakani, from June 2018 to July 2019. The ethical clearance was obtained from the Institutional Ethics Committee.

*Inclusion criteria:* Hysterectomy specimens

*Exclusion criteria:* Endometrial biopsies

*Dilatation and curettage specimens:* All the specimens received were fixed in 10% formalin and routinely processed. Sections were made from paraffin-embedded blocks and stained with hematoxylin and eosin.

## Results

The total number of hysterectomy specimens from June 2018 to July 2019 was 439. Among the 439 cases, 190 (43.28%) hysterectomy specimens had uterine corpus neoplasms. Among the 190 hysterectomy specimens with uterine corpus neoplasms, 155 (81.57%) cases were benign, and 35 (18.42%) cases were malignant.

Out of 155 benign neoplasms in the present study, a majority of 153 cases (98.70%) were

**Table 1:** Incidence of benign lesions in uterine corpus

| Type       | No. of cases | Percentage (%) |
|------------|--------------|----------------|
| Leiomyomas | 153          | 98.70          |
| Adenomyoma | 02           | 1.29           |
| Total      | 155          | 100.00         |

**Table 2:** Variants of leiomyomata

| Leiomyoma variants    | No. of cases | Percentage (%) |
|-----------------------|--------------|----------------|
| Symplastic leiomyoma  | 1            | 0.65           |
| Epithelioid leiomyoma | 1            | 0.65           |
| Fibroleiomyoma        | 2            | 1.30           |
| Cellular leiomyomata  | 10           | 6.53           |

leiomyomata (Fig. 1A), and two cases (1.29%) were adenomyomata (Table 1).

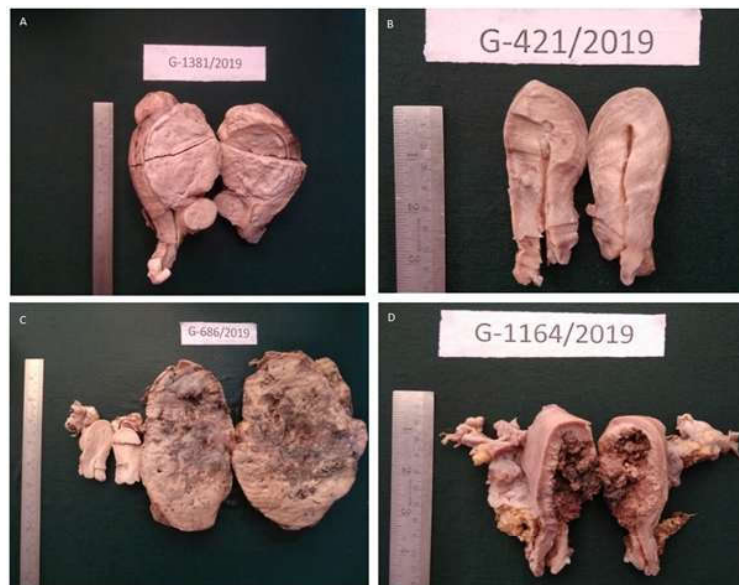
In the present study, secondary changes in leiomyomata and a few variants of leiomyomata were noted. Out of 153 cases of leiomyomata, 55 cases showed secondary changes which included 41 (26.79%) cases of hyaline change, six (3.92%) cases of calcifications in leiomyoma, five (3.26%) cases of myxoid change in leiomyomas, two (1.30%) cases of cystic change, one (0.65%) case of hemorrhage in leiomyoma while a majority of 98 (64.05%) cases did not show any secondary changes. Also, the present study did not show secondary changes like red degeneration, hydropic change and lipomatous changes.

Variants of leiomyomata in the present study included ten (6.53%) cases of cellular leiomyomata,

one (0.65%) case of symplastic leiomyoma, one (0.65%) case of epithelioid leiomyoma and two (1.30%) cases of fibroleiomyomata (Table 2).

Among 155 benign neoplasms, maximum number of cases 94 (60.64%) were between 41–50 years age group, four cases (2.58%) were between 21–30 years age group, 42 cases (27.09%) were between 31–40 years age group, 11 cases (7.09%) were between 51–60 years, four cases (2.58%) were between 61–70 years and no benign neoplasms were seen in cases who were above 70 years.

Among 35 cases of malignant neoplasms, maximum number of cases 12 (34.28%) were between age group of 51–60 years, two cases (5.71%) were present between 31–40 years, four cases (11.42%) were between age group of 41–50 years, ten cases (28.57%) were between age group of



**Fig. 1:** Gross pictures of (A) Leiomyoma – circumscribed, whorled. (B) An endometrial polyp in the uterine fundus of size 1x1 cm. (C) Endometrial stromal sarcoma – large tumor attached to the serosal aspect of the uterus. (D) Endometrioid carcinoma – ulceroproliferative growth occupying entire uterine cavity.

**Table 3:** Age incidence in uterine corpus neoplasms

| Age group | Benign        | Malignant    |
|-----------|---------------|--------------|
| 21–30     | 4 (2.58%)     | 0            |
| 31–40     | 42 (27.09%)   | 2 (5.71%)    |
| 41–50     | 94 (60.64%)   | 4 (11.42%)   |
| 51–60     | 11 (7.09%)    | 12 (34.28%)  |
| 61–70     | 4 (2.58%)     | 10 (28.57%)  |
| 71–80     | 0             | 6 (17.14%)   |
| >80       | 0             | 1 (2.85%)    |
| Total     | 155 (100.00%) | 35 (100.00%) |

61–70 years, six cases (17.14%) were between age group of 71–80 years, one case was above 80 years age, and in this present study no malignant neoplasms were found in cases less than 30 years of age (Table 3).

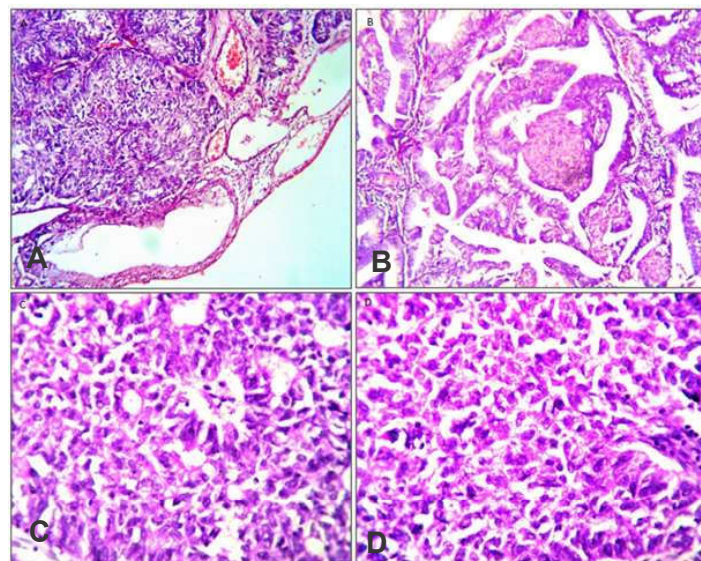
Among the benign neoplasms, the most common lesion (153 cases) was leiomyoma with the commonest age group at a presentation being 4<sup>th</sup> decade. Among the malignant neoplasms, the most common tumor was well-differentiated endometrioid carcinoma with 5<sup>th</sup> decade as the most common age group at presentation. Four cases of malignancy within an endometrial polyp (Fig. 1B & 2A) were noted. Rare malignancies like clear cell carcinoma (2.85%), serous carcinoma (5.71%), leiomyosarcoma (5.71%), high-grade endometrial

stromal sarcoma (2.85%), carcinosarcoma (5.71%) and adenosarcoma (2.85%) were also noted in this study.

Out of 190 hysterectomy cases, 35 cases showed malignant neoplasms which included 22 cases of endometrioid carcinoma (Fig. 1D), out of which 18 cases (51.42%) were of well-differentiated endometrioid carcinoma (Fig. 2B), two cases each of moderately differentiated endometrioid carcinomas (Fig. 2C) and poorly differentiated carcinomas (Fig. 2D). This study also included two cases each of serous carcinomas (Fig. 3A & B), leiomyosarcomas (Fig. 4A & B) and carcinosarcomas (Fig. 4D), one case each of clear cell carcinoma (Fig. 3C & D), adenosarcoma and high-grade endometrial stromal sarcoma (Fig. 1C & 4C) three cases of endometrioid

**Table 4:** Incidence of malignant neoplasms in uterine corpus

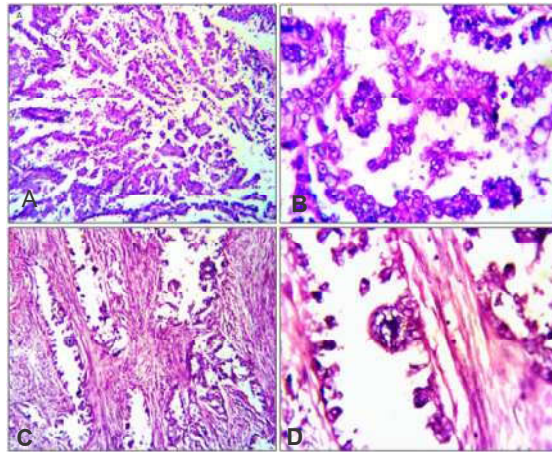
| Types  | No. of cases | Percentage (%) |
|--|--------------|----------------|
| Well-differentiated endometrioid carcinoma       | 18           | 51.42          |
| Moderately differentiated endometrioid carcinoma | 2            | 5.71           |
| Poorly differentiated endometrioid carcinoma     | 2            | 5.71           |
| Clear cell carcinoma                             | 1            | 2.85           |
| Serous carcinoma                                 | 2            | 5.71           |
| Endometrial polyp with endometrioid carcinoma    | 3            | 8.57           |
| Endometrial polyp with carcinosarcoma            | 1            | 2.85           |
| Carcinosarcoma                                   | 2            | 5.71           |
| Leiomyosarcoma                                   | 2            | 5.71           |
| Adenosarcoma                                     | 1            | 2.85           |
| Highgrade endometrial stromal sarcoma            | 1            | 2.85           |
| Total  | 35           | 100.00         |



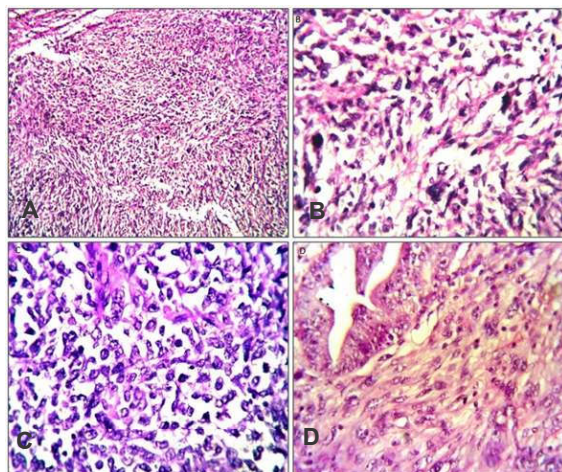
**Fig. 2:** (A) H&E 100X – Endometrial polyp showing endometrioid carcinoma. (B) H&E 400X – Well-differentiated endometrioid carcinoma with squamoid differentiation. (C) H&E 400X – Moderately differentiated endometrioid carcinoma. (D) H&E 400X – Poorly differentiated endometrioid carcinoma.

**Table 5:** Comparison of variants and secondary changes in leiomyomata

| Variants and Secondary changes | Mangala Gowri et al. <sup>3</sup> | Kempula Geethamala et al. <sup>7</sup> | Present study |
|--------------------------------|-----------------------------------|--|---------------|
| Hyalinization                  | 44 (16.9)                         | 160 (19.51)                            | 41            |
| Cellular leiomyomas            | —                                 | 01 (0.120)                             | 10            |
| Symplastic leiomyomas          | —                                 | —                                      | 01            |
| Calcifications                 | 01 (0.4)                          | 08 (0.98)                              | 06            |
| Myxoid change                  | 04 (1.6)                          | 33 (4.03)                              | 05            |
| Epithelioid leiomyoma          | —                                 | —                                      | 01            |
| Fibroleiomyomas                | —                                 | —                                      | 02            |
| Cystic change                  | 09 (3.5)                          | 41 (5.0)                               | 02            |
| Hemorrhage                     | 02 (0.8)                          | 18 (2.2)                               | 01            |
| Red degeneration               | 01 (0.4)                          | 02 (0.25)                              | —             |
| Lipomatous                     | —                                 | 05 (0.60)                              | —             |
| Sarcomatous change             | —                                 | 01 (0.12)                              | —             |
| Absent                         | 198 (76.4)                        | 551 (67.19)                            | 84            |
| Total                          | 259 (100.00)                      | 820 (100.00)                           | 153(100.00)   |



**Fig. 3:** (A) Serous carcinoma 100x. (B) Serous carcinoma 400X showing complex glandular and papillary patterns with nuclear atypia and prominent nucleoli. (C) Clear cell carcinoma 100X. (D) Clear cell carcinoma 400X showing hobnail shaped cells with clear cytoplasm arranged in papillary, tubulocystic patterns.



**Fig. 4:** (A) Leiomyosarcoma 100X. (B) Leiomyosarcoma 400X in which the tumor composed of highly atypical spindle cells forming intersecting fascicles. Spindle cells show nuclear atypia and brisk mitotic activity. (C) High grade endometrial stromal sarcoma 400X showing diffuse growth of uniform small cells with scant cytoplasm, round to oval nuclei and inconspicuous nucleoli. (D) Carcinosarcoma 400X- showing high-grade carcinoma and sarcoma components.

carcinoma within an endometrial polyp (Fig. 1B & 2A) and one case of carcinosarcoma within an endometrial polyp (Table 4).

## Discussion

Hysterectomy is the most common gynecological surgery done in the females worldwide as it provides a definitive cure to a wide range of gynecological diseases, both benign and malignant. The indications to perform this surgery should always be justified, and the pathology should be proved histopathologically because hysterectomy is a major surgery which has physical, economic, emotional, sexual and medical significance to women. Histopathological analysis and review are mandatory to evaluate the appropriateness of the hysterectomy.<sup>5</sup>

In the present study, out of 190 hysterectomy cases, 155 cases were benign. Among benign, the most common lesion was leiomyoma with the commonest age group at presentation was between 41 and 50 years. The same was observed in the studies done by Ticku et al.<sup>1</sup> and Kanwardeep et al.<sup>6</sup>, whose total number of cases were 376 and 373, respectively.

The present study varies from the Mangala Gowri et al.<sup>3</sup> study, where the most common age group at presentation was between 31 and 50 years, but like in the present study, the most common benign neoplasm was leiomyoma with a total of 259 hysterectomies.

In Mangala Gowri et al.<sup>3</sup> study, out of 259 cases, 61 cases showed secondary changes, of which included, 44 cases of hyalinization, one case of calcification, four cases of myxoid change, nine cases of cystic change, two cases of hemorrhage, one case of red degeneration while 198 cases did not show any secondary changes.

In Kempula Geethamala et al.<sup>7</sup> study, out of 820 cases, 269 cases showed secondary changes, of which 160 cases showed hyalinization change, eight cases showed calcifications, 33 cases showed myxoid change, 41 cases showed cystic change, 18 cases showed hemorrhage, two cases showed red degeneration, five cases showed lipomatous change, one case showed sarcomatous change and one case of cellular leiomyoma was seen while 551 cases did not show any secondary changes (Table 5).

In the present study out of 190 hysterectomy cases, 35 cases were malignant with the most common age group at presentation was between 50 and 60 years with endometrioid carcinoma

being the most common malignant neoplasms. Similar results observed in Imrana Tanvir et al.<sup>4</sup> study, in which out of 52 cases, the most common malignant neoplasm was endometrioid carcinoma with the most common age group at presentation being 51–60 years. Present study varies from Cameselle-Teijeiro et al.<sup>2</sup> study, in which out of 429 cases, commonest age group at presentation was 61–70 years. But the most common malignant neoplasm being endometrioid carcinoma same as in the present study. In Bohiltea et al.<sup>10</sup> study, out of 826 cases most common neoplasm was endometrioid carcinoma with the most common age group at presentation being 60–65 years.

In the present study, 13.15% of cases were endometrial carcinomas which included well-differentiated, moderately differentiated and poorly differentiated endometrioid carcinomas. Present study also included three cases of endometrial carcinomas which were identified within the endometrial polyp as an incidental finding. In comparison studies done by Nayak et al.<sup>8</sup> and Harshal et al.<sup>11</sup>, the incidence of endometrial carcinomas was 1.2% and 1.3% respectively which was less, whereas in the studies done by Ticku et al.<sup>1</sup> and Anand S Patil et al.<sup>9</sup> the percentage of endometrial carcinomas was very less compared to the present study, accounting to 0.5% and 0.8% respectively.

In the present study, four cases showed endometrial polyp with malignancy, whereas in Ticku et al.<sup>1</sup> study only one case of malignancy in a polyp was observed.

In the present study, 0.45% of cases showed leiomyosarcoma which was similar to the studies done by Deepthi Verma et al.<sup>5</sup> study (0.66%) and Harshal A Patil et al.<sup>11</sup> study (0.7%).

In the present study, one case (0.22%) of endometrial stromal sarcoma was observed which was similar to the study done by Ticku et al.<sup>1</sup> (0.50%) who observed two cases of endometrial stromal sarcoma in their study.

## Conclusion

In our study, benign pathologies are more common than their malignant counterparts in the uterine corpus. Most common neoplasm of uterine corpus is leiomyoma, commonest age group at presentation being 4<sup>th</sup> decade. Among the malignant, most common tumor was well-differentiated endometrioid carcinoma with 5<sup>th</sup> decade as the most common age group at

presentation. This study showed quite a few lesions which were seen as pure incidental findings like malignancy within an endometrial polyp along with some rare malignancies. Therefore, it should be obligatory that every hysterectomy specimen, even if it appears to be normal should be subjected to detailed histopathological examination.

### **Key messages**

It should be obligatory that every hysterectomy specimen, even if it grossly appears to be normal, should be subjected to detailed histopathological examination so as to guarantee a better postoperative management.

Prior publication: Nil

Support: Nil

Conflicts of interest: Nil

Permissions: Nil

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