Histopathological Spectrum of Uterine Leiomyoma and Various Associated Pathologies in Hysterectomy Specimens in Tertiary Care Hospital

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INTRODUCTION

Uterus is the vital reproductory organ of female which is hormone responsive.¹ Myometrium is the thick, smooth muscle coat of the uterus underneath the endometrium and is covered by the peritoneum derived serosa.² Among diverse benign lesions of Myometrium, leiomyoma is the commonest visceral neoplasm affecting females in reproductive age group.³ They are the chief cause for hysterectomy all over the globe; followed by adenomyosis, leiomyosarcoma, endometrial stromal tumors, secondary tumors and vascular lesions etc.⁴ They are noted clinically in 20-30% of women over 30 years of age, and are found in as many as 75% of uteri when a systematic search is conducted.⁵,⁶ Other synonymously used terms for leiomyoma are fibroid, fibromyoma and myoma. Their absence before menarche, common occurrence in reproductive age group and regression after menopause suggest their estrogen dependence.⁷ The histopathological features of fibroid as a benign uterine pathology shows great variability as regards to clinical presentation, site, number and presence of degenerative changes.⁸,⁹ They can present with pain, abnormal uterine bleeding, mass per vagina and infertility due to irregular uterine contour. Sometime they can lead to spontaneous abortion, premature rupture of membranes, dystocia, and PPH.³ According to desire for conception they are managed by medical control of symptoms to surgical intervention in the form of myometomy in younger patients and hysterectomy in elderly patients.¹⁰ Grossly they are seen as spherical firm bulging mass or masses (size variation is from barely visible nodules to large mass that fill the pelvis) with grey white whorled cut surface. Microscopic examination is quite characteristic with anastomosing fascicles of uniform smooth muscle cells. Degenerative or secondary changes such as hyaline degeneration, cystic degeneration, myxoid change, fatty change, calcification and metaplasia can be associated. After menopause or delivery, leiomyomas can undergo atrophy with significant shrinkage and fibrosis. Pregnancy, use of oral contraceptives and tumour vessel thrombosis is associated with red degeneration.¹¹,¹² A growing research issue of interest is to correlate the uterine fibroid histological category to the patient’s age, number and clinical features that may aid in clarification of the

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pathophysiological course of this disease. Current study aimed to find out the histopathological evaluation of leiomyoma with degenerative changes and associated pathologies.

**MATERIAL AND METHODS**

A retrospective study conducted in the department of pathology from the period of January 2018 – October 2019 at Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh. One hundred and twenty patients diagnosed as Leiomyoma on histopathological examination of hysterectomy specimen were included in the study. The required data were obtained from histopathological requisition forms microscopically diagnosed as Leiomyoma.

The hysterectomy specimens were properly labelled, numbered and fixed in 10% buffered formalin. The gross specimens were examined for the location, number, degenerative changes in leiomyoma and associated pathologies. Representative sections were taken which were processed in automated tissue processor and embedded in paraffin wax. The blocks were sectioned and stained routinely with haematoxylin and eosin, examined under light microscope and the results were obtained and finally diagnosed as Leiomyoma.

**Inclusion criteria**

- Age group: 31-70 years
- Gross Specimen: Hysterectomy specimen
- Microscopic diagnosis: Leiomyoma

**Exclusion Criteria**

- Age < 30 years

**RESULTS**

In this study, a total of one hundred and twenty cases of uterine leiomyoma were examined. Age of the patients ranged from 30-70 years and majority were in the age group of 41-50 years, accounted 59.16% cases followed by patients in the age group of 31-40 years accounted as 26.66%.

**Clinical manifestation**

In present study, majority of the patients were presented with menorrhagia constituted 30% cases, followed by dysmenorrhea seen in 19.16% cases.

In our study the most common pre-operative diagnosis was Fibroid reported in 65.83% followed by abnormal uterine bleeding and Utero-vaginal prolapse seen in 25.0% and 9.17% cases respectively. (Table 1)

**Surgical intervention**

Total abdominal hysterectomy with bilateral salpingo-oophorectomy was the commonest surgery done in the patients of uterine leiomyoma accounted as 63.33% cases followed by abdominal hysterectomy in 15% cases. (Table 2)

**Location and number of leiomyoma in uterus**

In our study, Intramural leiomyoma were accounted commonest in 81 cases (67.50%) followed by subserosal leiomyoma in 13 cases (10.83%) and submucosal leiomyoma in 15 cases (12.50%). (Table 3)
in 5 cases (4.16%). In our study out of 120 cases of leiomyoma, 99 cases (82.50%) were of solitary leiomyoma and 21 cases (17.50%) showed leiomyomata.

**Size of leiomyoma**
In our study, on gross examination, size of Intramural leiomyoma varied from few millimetre to 9.7x7.5x5.3 centimetres, subserosal leiomyoma were found to have size varied from few millimetre to 6.5x5.3x4.2 centimetres and submucosal leiomyoma varied from few millimetre to 3.9x2.0x1.5 centimetres (fig-1).

**Various degenerative changes seen in uterine leiomyoma**
In this present study of 120 cases of leiomyoma, under microscopic examination; 22 cases (18.33%) showed degenerative changes (fig-2). Among these, 15 cases (12.50%) had hyaline degeneration constituted commonest degenerative change observed in this study (Fig.3). 4 cases(3.33%) of leiomyoma were found to have myxoid degeneration, 2 cases(1.66%) had cystic degeneration and 1 case showed calcific degeneration.

**Histopathological pattern of endometrium in uterine leiomyoma**
In this study of 120 cases of uterine leiomyoma 74 cases (61.66%) showed proliferative phase of endometrium constituted the most common pattern followed by secretory endometrium observed in 10 cases(8.33%), atrophic endometrium in 28 cases(23.33%), disordered proliferative endometrium was seen in 5 cases(4.16%) and endometrial hyperplasia observed in 3 cases(2.50%). (Table 3)

**Uterine pathologies associated with leiomyoma**
Predominant pathologies associated with uterine leiomyoma were chronic cervicitis and adenomyosis accounted in 70.83% and 11.66% cases respectively. Neoplastic lesions of ovary, associated with uterine leiomyoma were observed in 6.66% cases and out of which malignancy was seen in 2.50% cases. (Table 4)

**DISCUSSION**
Uterine leiomyoma is the most common benign smooth muscle tumour of the uterus. It is believed that upto 70% of women have uterine leiomyoma at some stage of their life with high incidence in reproductive age. In our study age group of the patients ranged from 31-70 years and majority of the patients were in the range of 41-50 years (59.16%) which is in concordance with other studies done by Gupta et al (51.40%)

... Rather et al (47.20%)

... Gowri et al (49%)

... Lahori et al (49.30%)

... Manjula et al (35.40%)

... Lahori et al (37.97%). In our study, menorrhagia and dysmenorrhoea were the commonest presenting chief complaints of the patients accounted 30.0% and 19.16% respectively. Menorrhagia was also the presenting complaint in many other studies done by Sarfraz et al (68%)

... Karthikyan et al (62.50%)

... Rather et al (35.40%)

... Gowri et al (49.30%)

... Manjula et al (35.40%)

... Lahori et al (37.97%). In the present study Fibroid uterus was the commonest pre-operative diagnosis in 79 cases (65.83%) followed by abnormal uterine bleeding in 30 patients (25.0%) which is consistent with the analysed data reported by Vaidya et al (42.96%)

... Siwatch et al (39%)

... Lahori et al (44%)

... while Gupta et al (34.06%) found that utero-vaginal prolapse was the commonest chief complaint reported in 40.0%. Hysterectomy is the most common major gynaecological surgery performed in the world for diseases like leiomyoma,
adenomyosis, prolapse and dysfunctional uterine bleeding. In our study the most common hysterectomy procedure was total abdominal hysterectomy with bilateral salpingo-oophorectomy accounted in 63.33% cases followed by total abdominal hysterectomy in 15% cases. The finding is consistent with similar studies done by Sushama et al and VijayaGaut et al who observed that the commonest route of hysterectomy was abdominal in 66.07% of cases and 97.50% of cases respectively.

In the present study, out of 120 cases of uterine leiomyoma 99 cases (82.50%) were of solitary leiomyoma and 21 cases (17.50%) were of multiple leiomyoma. Results are similar with various other studies done by Gowri et al (71% and 29%)15, Lahori et al (46.90% and 43.04%)16 and Sushama et al (80.95% and 19.50%).17 While in other studies done by Sarfarz et al (39.13% and 60.87%)18 and Abraham and saldaha (42.5% and 57.5%)19 who observed that multiple leiomyoma were commonest presentation. Among 120 hysterectomy specimens 81 cases (67.50%) were found to have intramural leiomyoma followed by subserosal leiomyoma (10.83%) and submucosal leiomyoma (4.16%). Intramural leiomyoma was also the commonest type followed by subserosal and submucosal leiomyoma in the studies done by Gowri et al (48%)15, Abraham and Saldanha (61.50%)20, Lahori et al (57.43%)21 and Sushama et al (51.20%).22

In the present study, degenerative changes were observed in 22 leiomyoma (18.33%). Among these 12.50% showed hyaline change which constituted the most common degenerative change observed in our study followed by myxoid (3.33%), cystic (1.66%) and calcific (0.83%). These results are similar to various studies. Gowri et al described hyaline change as a most common degenerative change in 16.90% followed by cystic, myxoid, calcific and red degeneration as a least common change. Abraham and Salanha also found hyaline change as most common change in 49% cases followed by myxoid, calcific, hydropic change and red degeneration as least common change. Sushama et al discovered hyaline change(7.14%) as a most common change followed by calcific change(1.8%) followed by myxoid (1.2%) and hydropic change (0.6%). Study done by Lahori et al also discovered hyaline and myxoid change (6.33%) as most common change followed by calcific (3.80%), cystic (3.8%), red degeneration (2.53%) as a least common change in their study. In the present study of 120 cases of uterine leiomyoma, proliferative endometrium was the most common endometrial pattern associated with leiomyoma which is seen in 64(53.33%) cases followed by secretory pattern and atrophic pattern observed in 28(23.33%) and 10(8.33%) cases respectively. Gowri et al described proliferative endometrium in 46.30% cases followed by secretory endometrium in 13.90% cases followed by atrophic endometrium in 7.70% cases. Study done by Sushma et al also showed proliferative endometrium to be the most common in 63.10% cases, secretory endometrium in 26.2% cases and atrophic endometrium in 7.73% cases. These findings were in accordance with our study.

Among the uterine pathologies associated with leiomyoma; chronic cervicitis was the most common pathology in our study accounted in 70.83% cases similar to the study done by Taludkaret al.23 Associated neoplastic lesions were observed in 6.66% patients in our study, among them 4.16% are benign comprised of ovarian cystadenoma(2.50%) and mature cystic teratoma(1.66%); malignant lesions were reported in 2.50% cases and comprised of ovarian cyst-adenocarcinoma (1.66%) and Brenner tumour (0.80%) which is in accordance with the study done by Sushama et al.17 Gowri et al observed granulosa cell tumor of ovary in 0.4% cases and ovarian cyst-adenocarcinoma in 1.6% patients.

**CONCLUSION**

Uterine leiomyoma is a benign tumour of smooth muscle commonly seen in perimenopausal females presented with menorrhagia, dysmenorrhea and pain abdomen. The treatment options comprising of hysterectomy, myomectomy or drug therapy, depending on various factors like parity, size, symptomatology etc. Intramural leiomyoma is the most common location. Various degenerative changes occur in leiomyoma among which hyaline degeneration is the most common. Associated proliferative endometrial phase, adenomyosis and cystic ovaries suggest hyperestrogenic state. Occasional cases are associated with neoplastic pathology. Hence histopathological diagnosis is the mainstay to identify the spectrum of uterine leiomyoma with various associated pathologies.

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