Original Article

Uterine Leiomyoma

Histopathological Study of Uterine Leiomyoma in Hysterectomy Specimens at a Tertiary Care Hospital of Sindh

Inayatullah Memon, Ghulam Abbas Soomro, Shahzad Ali Jiskani and Qandeel Abbas Soomro

ABSTRACT

Objective: Analyze histopathological changes within uterine leiomyomas in hysterectomy specimens and associated pathologies including variant uterine leiomyomas.
Study Design: Observational study.
Place and Duration of Study: This study was conducted at the Departments of Pathology and Gynecology/Obstetrics, Indus Medical College, Tando Muhammad Khan from July 2019 to February 2020.
Materials and Methods: Clinically diagnosed uterine leiomyomas hysterectomy specimens were subjected to gross and microscopic histopathological (H&E) examination with relevant clinical data. 337 specimens were examined during study period. Findings were noted in a pre – structured proforma. Data was analyzed on SPSS 21.0 (IBM, Incorporation, USA) at 95% CI ($P \leq 0.05$) and Microsoft Excel sheet.
Results: Mean age was 41.78±3.21 years. Age group 40 – 49.9 years comprised 54.89% of total cases. Intramural, sub –mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. Leiomyoma variants of cellular type was noted in 13 (3.85%), epithelioid 5 (1.48%), symplastic 6(1.78%), neurilemma – like 3(0.89%), lipo – and angioleiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (0.59%), hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively.
Conclusion: The present study reports majorities of leiomyomas were intramural (54.3%) and leiomyomas variants were found in 35 (10.38%) of specimen, thus making the histopathological examination mandatory.
Key Words: Uterine leiomyoma, Variant leiomyoma, Histopathology, Sindh.

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INTRODUCTION

Uterus is vital female reproductive organ next to the ovary. Inner lining is endometrium and middle is smooth muscle layer called myometrium. Both are hormone sensitive layers. Uterus is a site of various benign and malignant growths.[1] Most common benign tumor of uterus is the Leiomyoma (fibroids). Leiomyoma is a smooth muscle cell myometrium derived tumor. It is noted in 20 – 30% of women over 30 years of age. As much as 75% of uterine Leiomyoma has been reported in hysterectomy specimens.[1,2] Leiomyoma is uterine tumor of reproductive age detected in middle aged female around peri–menopausal period.[3] Pathogenesis of leiomyoma is influenced by hormonal milieu. Occurrence is noted with increased estrogen and progesterone receptor expression in myometrium. Increased growth in size is often noted in pregnant uterus and estrogen therapy.[4,5] For the same reasons, shrinkage of leiomyoma is observed after menopause. Severity of symptoms often depends on the location, size and number of lesions. Leiomyoma are often asymptomatic and common complaints are; abdominal mass, pain and uterine bleeding, depending on the size and location of lesions. Uterine leiomyomas are often complicated by infertility, spontaneous abortions, premature membrane rupture, dystocia and postpartum bleeding.[6] Leiomyomas are often diagnosed by sonography imaging technique. In young reproductive age females, they are treated by myomectomy and by hysterectomy in older age and menopause women.[7,8] Grossly leiomyomas appear as firm, spherical masses, and uncommonly multiple lesions. Cut section shows gray white color with whorled trabeculae. Microscopic examination shows whorled anastomosing fascicles of smooth muscle cells showing elongated nuclei, fine chromatin and indistinct cell outlines. Hyaline and mucoid degeneration, hydropic changes and dystrophic calcification are common degenerative manifestations. Leiomyomas may be sub – mucosal, intramural or extra

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– mural / sub-serosal in anatomical location within uterus. Features mimicking malignancy may be evident such as mitotic index and cell atypia compared to surrounding cell architecture. Adenomyosis not un-commonly co – exist the leiomyomas in the uterine specimen with reported incidence of 15 – 57%.[7-9] The present study was conducted to analyze the histopathological features of uterine leiomyomas and its variants in hysterectomy specimens at our tertiary care hospital.

MATERIALS AND METHODS

The present observational study was conducted at the Departments of Pathology and Gynecology/Obstetrics, Indus Medical College, Tando Muhammad Khan from July 2019 February 2020. Clinically diagnosed uterine leiomyoma hysterectomy specimens, labeled properly and with brief clinical history, with or without adnexa were accepted and subjected to examination for study protocol. Hysterectomy specimens were fixed in 10% neutral buffered formalin for a period of 24-48 hours. Uterus, cervix uteri and adnexa were examined grossly. Gross examination of uterine tubes and ovaries were conducted for any pathological lesion. A leiomyoma was defined as well circumscribed gray – tan appearing lesion with whorled appearance. Minimum 2 sections of cervix uteri, and one of each endomyometrium, uterine tubes and ovaries were taken. Anatomical location of leiomyoma, number, and secondary changes were examined. Multiple sections were taken from the leiomyoma site, were processed and paraffin blocks were made. The blocks were cut by a microtome to get 4-6µ thick tissue sections. Tissue sections were stained with Hematoxylin and Eosin (H & E) staining, processed, examined by light microscopy by a senior Consultant Pathologist and results were noted in a proforma. Histopathological findings were double re-checked by a senior Consultant Pathologist. Secondary changes, leiomyoma variant, coagulative necrosis, cellularity, mitosis, and nuclear atypia were examined keenly. Adenomyosis was defined as extension of endometrial gland at least one low power field away from the endometrial – myometrial junction. Findings were noted in a pre – structured proforma with medical record number. Findings were kept confidential and confidentiality was strictly maintained. Only research conducting professionals were allowed to read the findings. Research variables were entered in a Microsoft Excel sheet. Data was copied to SPSS 21.0 (IBM, Incorporation USA) for statistical analysis. Microsoft Excel sheet was used for graphs. Categorical variable output was cross tabulated as frequency and % and analyzed by Chi-square test. Numerical data (age) was analyzed by Student`s t-test and results presented as mean and standard deviation. Statistical significance was taken at 95% CI ($P \leq 0.05$).

RESULTS

Age (mean±SD) of 337 cases was 41.78±3.21 years. Most common age category was 5th decade (40.0 – 49.9 years) noted in 185 (54.89%), 4th decade in 185(35.31%), 3rd decade in 11 (3.24%), 6th decade in 15 (4.45%) and ≥6th decade in 7(2.07%) cases respectively (Graph 1). Table 1 shows the frequency distribution of hysterectomy as vaginal, total abdominal, total abdominal+ bilateral salpingo – oophorectomy, total abdominal+ unilateral salpingo – oophorectomy and radical hysterectomy were noted in 12 (3.56%), 221 (65.57%), 28 (8.30%), 71 (21.06%) and 5 (1.8%) respectively. Intramural, sub –mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. Table 3 shows the frequency distribution of endometrial patterns in histopathology. Uterine histopathology leiomyoma associated conditions are shown in table 4. Frequency of various lesions was noted as; chronic endometritis 113 (33.53%), chronic cervicitis 173 (51.33%), adenomyosis 7(2.07%), endometrial polyps in 3 (0.89%), cervical polyps in 11(3.26%), ovarian serous cystadenoma, mature cystadenoma and cystadenocarcinoma were noted in 5 (1.48%), 6 (1.78%) and 3(0.89%) respectively, endometriosis in 13 (3.85%) and carcinoma cervix in 3 (0.89%) cases. Variants and abnormal types of leiomyoma are shown in table 5. Leiomyoma such as cellular was noted in 13 (3.85%), Epithelioid 5 (1.48%), Symplastic 6(1.78%), Neurilemma – like 3(0.89%), lipo – & angio – leiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (%0.59), hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively.

Table No.1: Types of Hysterectomy

Type	No.	%	X^2-value	P
Vaginal hysterectomy	12	3.56	134.8	0.0001
Total abdominal hysterectomy	221	65.57		
Total abdominal hysterectomy + Bilateral salpingo-oophorectomy	28	8.30		
Total abdominal hysterectomy + Unilateral salpingo-oophorectomy	71	21.06		
Radical hysterectomy	5	1.48		
Total	337	100		

Table No.2: Location of Leiomyoma

Location	No.	%	X^2-value	P
Intramural	183	54.3	131.0	0.001
Sub mucosal	65	19.2		
Sub serosal	71	21		
>1 location	18	5.3		
Total	337	100		

Table No.3: Frequency distribution of Endometrial patterns

Endometrial patterns	No.	%
Proliferative phase	189	3.24
Secretory phase	125	54.89
Atrophic endometrium	13	35.31
Simple hyperplasia	7	4.45
Disordered Proliferative endometrium	3	4.45
Total	337	100

Table No.4: Uterine Pathologies associated with leiomyoma

Lesions	No.	%
Chronic endometritis	113	33.53
Chronic cervicitis	173	51.33
Adenomyosis	7	2.07
Endometrial polyp	3	0.89
Cervical polyp	11	3.26
Ovarian serous cystadenoma	5	1.48
Ovarian mature cystic teratoma	6	1.78
Ovarian cystadenocarcinoma	3	0.89
Endometriosis	13	3.85
Carcinoma cervix	3	0.89
Total	337	100

Table No.5: Variants & Abnormal types of leiomyoma (n=337)

Lesions	No.	%
Cellular leiomyoma	13	3.85
Epithelioid leiomyoma	5	1.48
Symplastic leiomyoma	6	1.78
Neurilemma (palisade) like	3	0.89
Lipoleiomyoma	1	0.29
Angioleiomyoma	1	0.29
Dissecting Leiomyoma	2	0.59
Hyaline globules	3	0.89
Active leiomyoma (mitotic)	1	0.29
Total	35	10.38

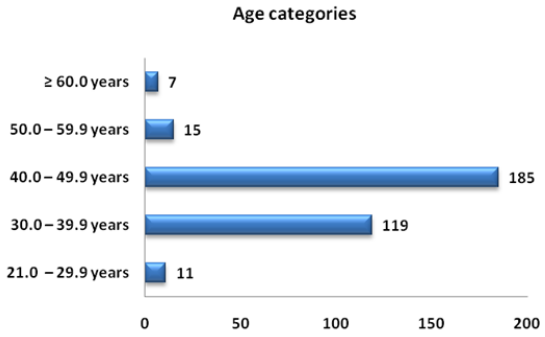

Figure No.1: Bar Graph Showing Age Categories

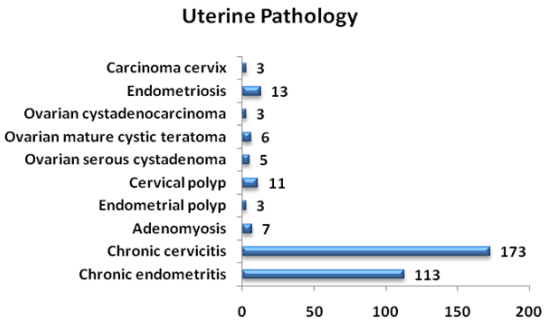

Figure No.2: Frequency of Uterine Pathology

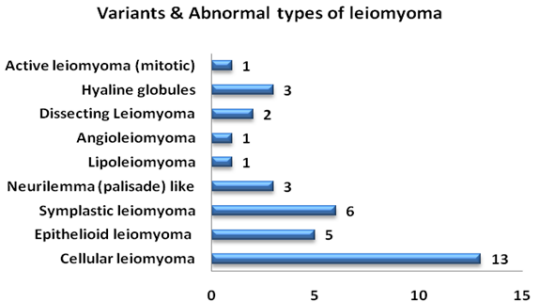

Figure No.3: Variants and abnormal types of leiomyoma

DISCUSSION

The present one is the first hospital based clinicopathological study that analyzed the uterine leiomyoma and associated pathologies in uterine specimen received from Department of Gynecology and Obstetrics and analyzed at the Department of Pathology of Indus Medical College Hospital. Our hospital caters hundreds of gynecological patients a month. Leiomyoma in uterine specimen is a common pathology with or without associated abnormal finding. Leiomyomas are benign tumors of uterine myometrium of reproductive age group. We found mean age of 41.78±3.21 years in 337 cases. This shows the common presenting age was the reproductive age group. Most common age category was 40.0 – 49.9 years noted in 185 (54.89%), 4th decade in 185(35.31%), 3rd decade in 11 (3.24%), 6th decade in 15 (4.45%) and ≥6th decade in 7(2.07%) cases respectively. The findings are in agreement with previous studies.[10-12] We found 54.89%

women of perimenopause age group i.e.; 40.0 – 49.9 years. The findings are in a line with previous studies.[13-15] An incidence of 46.5 to 61.84% has been reported by above studies that is consistent finding. A recent study[13] has reported incidence of 54.53% in the perimenopause age group, the findings are in agreement with the present study. However, the age ranged from 22-80 years that is inconsistent finding. This might be because of different study population. Vaginal and abdominal hysterectomies were found in 12 (3.56%) and 221 (65.57%) of cases. The findings are in keeping with previous studies of.[13-15] Geethamala et al mentioned 80.24% abdominal hysterectomies and 19.76% vaginal hysterectomies. Total abdominal with bilateral salpingo – oophorectomy, total abdominal with unilateral salpingo – oophorectomy and radical hysterectomy were noted in 28 (8.30%), 71 (21.06%) and 5 (1.8%) respectively, in present study. The findings are supported by previous studies.[13,15-17] However, a recent study[13] revealed 66.23% specimen included utero-cervix with bilateral adnexa, 22.45% utero-cervix only and 1.32% utero-cervix with unilateral adnexa. Frequency of specimen of present study is different from above study; possible reason could be different study populations. Intramural, sub – mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. The findings are supported by previous studies.[13,18-20] Intramural leiomyoma was noted in 183 (54.3%) that is close to a recent study[13] that noted intramural fibroids in 80.25%. Submucosal and subserosal leiomyoma were observed in 65(19.2%) and 71(21.0%) cases that is inconsistent to a recent study[13] that mentioned in 4.27% and 24.34% cases. However, comparable results were reported by Geethamala et al[14] and Lahori et al[18]. The present study noted chronic endometritis 113 (33.53%), chronic cervicitis 173 (51.33%), adenomyosis 7(2.07%), endometrial polyps in 3 (0.89%), cervical polyps in 11(3.26%), ovarian serous cystadenoma, mature cystadenoma and cystadenocarcinoma were noted in 5 (1.48%), 6 (1.78%) and 3(0.89%) respectively, endometriosis in 13 (3.85%) and carcinoma cervix in 3 (0.89%) cases. Dual pathology of adenomyosis and leiomyomas was noted in 7(2.07%) of specimen that is consistent with a study[13] reported as 2.07% but contrary to Geethamala et al[14] observed in 29.1%, Gowri et al[21] noted in 29% and Kaur et al[22] noted in 27.69%, Lahori et al in 19.23%[18] and Kulkarni et al in 16%.[23] Low incidence of co – existent adenomyosis and leiomyoma of present study possibly may be because of small sample size. In present study, the cellular leiomyoma was observed in 13 (3.85%), symplastic leiomyoma in 6(1.78%), epithelioid leiomyoma in 5 (1.48%), neurilemma – like leiomyoma in 3(0.89%), lipo – and angio – leiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (%0.59), leiomyoma with hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively. Finding of cellular leiomyoma is consistent with literature as its incidence is usually <5%.[13,24,25] A recent study[13] has reported cellular leiomyoma in 1.13% cases and symplastic leiomyoma in 0.44% that is inconsistent finding but literature shows its incidence range is 0.03 – 0.2%.[26] The evidence based findings of uterine leiomyoma and variant leiomyoma in context of published literature shows the significance of histopathology. Each hysterectomy specimen must be examined by histopathology in proper clinical context to exclude rare pathologies of grave consequences.

CONCLUSION

The present study reports majorities of leiomyomas were intramural (54.3%) and noted in perimenopause aged women. Variants and abnormal types of leiomyomas were observed in 35 (10.38%) of specimen including cellular, epithelioid, symplastic, neurilemma – like, lipoleiomyoma, angioleiomyoma, dissecting leiomyoma, and mitotically active leiomyomas. It is recommended each uterine specimen should be analyzed by histopathological examination to rule out incidental grave pathology.

Author's Contribution:

Concept & Design of Study:	Inayatullah Memon
Drafting:	Ghulam Abbas Soomro, Shahzad Ali Jiskani
Data Analysis:	Qandeel Abbas Soomro
Revisiting Critically:	Inayatullah Memon
Final Approval of version:	Inayatullah Memon

Conflict of Interest: The study has no conflict of interest to declare by any author.

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