

Clinical Manifestations of Adenomyosis Confirmed via Histopathological Examination of Hysterectomy Specimens

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ABSTRACT

Background: Adenomyosis is a benign uterine condition characterized by the presence of endometrial tissue within the myometrium, leading to symptoms such as menorrhagia, dysmenorrhea, and chronic pelvic pain. Accurate diagnosis often requires histopathological examination of hysterectomy specimens due to the limitations of imaging techniques. **Objective:** To evaluate the clinical manifestations of adenomyosis and their correlation with histopathological findings in hysterectomy specimens. **Study Design:** Cross-sectional study. **Settings:** Department of Pathology, Mekran Medical College, Turbat Pakistan. **Duration:** From 17 May 2021 to 17 December 2021. **Methods:** Patients were reviewed for demographic data, presenting symptoms, and histopathological findings. A total of 130 hysterectomy specimens were examined, with adenomyosis confirmed in 102 cases (78.5%). Symptoms such as menorrhagia, dysmenorrhea, and chronic pelvic pain were analyzed in relation to the histopathological severity of adenomyosis. Statistical analysis was performed to assess the correlation between clinical symptoms and histopathological findings. **Results:** Menorrhagia (89.2%) and dysmenorrhea (83.3%) were the most common symptoms among patients with confirmed adenomyosis. Histopathological examination revealed diffuse adenomyosis in 60.8% of cases and focal adenomyosis in 39.2%. The severity of adenomyosis was significantly correlated with the intensity of symptoms ($p < 0.05$). **Conclusion:** Our study highlights the critical role of histopathological examination in diagnosing adenomyosis and its correlation with clinical manifestations. Accurate diagnosis is essential for effective management and improving patient outcomes.

Keywords: Adenomyosis, Chronic Pelvic Pain, Dysmenorrhea, Histopathology, Hysterectomy, Menorrhagia, Uterine Conditions.

INTRODUCTION

Adenomyosis is a benign but often debilitating gynecological condition characterized by the invasion of endometrial tissue into the myometrium, the muscular layer of the uterus.¹ This abnormal presence of endometrial glands and stroma within the uterine muscle can lead to the thickening of the myometrium and cause a range of distressing symptoms that can significantly impair a woman's quality of life.^{2,3} The clinical manifestations of adenomyosis are varied, but they often include chronic pelvic pain, dysmenorrhea (painful menstruation), menorrhagia (heavy menstrual bleeding),

and metrorrhagia (irregular bleeding).⁴ Despite the severity of its symptoms, adenomyosis is often only definitively diagnosed after a hysterectomy, when histopathological examination can confirm the presence of endometrial tissue within the myometrium.⁵

Histopathological examination remains the gold standard for diagnosing adenomyosis, as imaging techniques such as transvaginal ultrasound and magnetic resonance imaging (MRI), while useful, can sometimes fail to detect the condition or may confuse it with other similar uterine disorders like fibroids or endometriosis.⁶ The histopathological analysis of hysterectomy

specimens provides conclusive evidence of adenomyosis by identifying the characteristic pathological features, including the presence of ectopic endometrial glands and stroma deep within the myometrium.⁷

Understanding the clinical manifestations of adenomyosis in relation to its histopathological findings is critical for improving the diagnosis, management, and treatment of this condition.⁸ Accurate diagnosis through histopathological examination remains crucial in differentiating adenomyosis from other similar gynecological conditions, ensuring that patients receive appropriate and effective treatment.^{9,10}

As research into adenomyosis continues to evolve, a deeper understanding of its clinical and histopathological aspects will be essential for improving patient outcomes.

METHODS

The study protocol was reviewed and approved by the institutional ethics committee (MMCT/IRB/121). This cross-sectional study was conducted at Pathology Department, Mekran Medical College, Turbat Pakistan. A total of 130 patients who underwent hysterectomy between 17 May 2021 to 17 December 2021 were included in the study. The sample size was calculated using a confidence interval of 95% and a margin of error of 5%, based on an assumed prevalence of adenomyosis in the population, which yielded a sample size of 130 patients after applying an expected dropout rate of 10%.

Patients were selected based on the following inclusion criteria: premenopausal and postmenopausal women who underwent hysterectomy for abnormal uterine bleeding, chronic pelvic pain, or uterine fibroids, and whose specimens were sent for histopathological examination. Exclusion criteria included patients with a history of endometrial carcinoma, uterine sarcomas, or prior uterine surgery such as myomectomy. The medical records of the patients were reviewed, and relevant clinical data were extracted. This included age, parity, presenting symptoms (such as menorrhagia, dysmenorrhea, and chronic pelvic pain), and previous medical treatments. Histopathological reports were reviewed to confirm the diagnosis of adenomyosis by the presence of ectopic endometrial glands and stroma within the myometrium, as well as the extent and distribution of adenomyotic tissue.

All hysterectomy specimens were fixed in 10% formalin and processed according to standard histopathological techniques. Thin sections were cut from multiple areas of the uterus, especially targeting regions of interest identified during gross examination. Sections were stained with hematoxylin and eosin (H&E) and examined under a light microscope by experienced pathologists. The presence of adenomyosis was confirmed by

identifying endometrial tissue within the myometrium, with a minimum distance of 2.5 mm from the endometrial-myometrial junction required for diagnosis. The clinical manifestations of adenomyosis were analyzed in relation to the histopathological findings. Symptoms such as menorrhagia, dysmenorrhea, and pelvic pain were documented and correlated with the extent and type of adenomyosis (diffuse or focal).

Statistical analysis was performed to assess the association between the severity of symptoms and the histopathological parameters of adenomyosis. Chi-square tests were used for categorical variables, and t-tests were applied for continuous variables. A p-value of <0.05 was considered statistically significant.

RESULTS

The study included a total of 130 patients with a mean age of 45.3 ± 7.2 years, ranging from 31 to 59 years. The majority of patients (83.8%) were multiparous, having had at least one child, while 16.2% of the patients were nulliparous. Histopathological examination confirmed adenomyosis in 78.5% (102 patients) of the cases (Table 1).

Table 1: Demographic and clinical characteristics of patients

Characteristics	n (%)
Total Number of Patients	130 (100%)
Age (years)	45.3 \pm 7.2
Age Range (years)	31-59
Parity	
Multiparous (≥ 1 child)	109 (83.8%)
Nulliparous (0 children)	21 (16.2%)
Confirmed Adenomyosis Cases	102 (78.5%)

Among the 102 patients with confirmed adenomyosis, the most common presenting symptom was menorrhagia, affecting 89.2% of patients.

Dysmenorrhea was reported by 83.3%, while 65.7% experienced chronic pelvic pain. Other symptoms included metrorrhagia (33.3%) and dyspareunia (21.6%) (Table 2).

Table 2: Presenting Symptoms in Patients with Confirmed Adenomyosis

Symptoms	n (%)
Menorrhagia	91 (89.2%)
Dysmenorrhea	85 (83.3%)
Chronic Pelvic Pain	67 (65.7%)
Metrorrhagia	34 (33.3%)
Dyspareunia	22 (21.6%)

Histopathological analysis revealed that 60.8% of patients had diffuse adenomyosis, while 39.2% had focal adenomyosis. The severity of adenomyosis was categorized as mild (≤ 3 mm invasion) in 17.6% of cases,

moderate (3.1–6 mm invasion) in 54.9%, and severe (>6 mm invasion) in 27.5% (Table 3).

Table 3: Histopathological Findings of Adenomyosis in Hysterectomy Specimens

Parameters	Histopathological Findings	N (%)
Adenomyosis Type	Diffuse Adenomyosis	62 (60.8%)
	Focal Adenomyosis	40 (39.2%)
Severity of Adenomyosis	Mild (≤ 3 mm invasion)	18 (17.6%)
	Moderate (3.1–6 mm invasion)	56 (54.9%)
	Severe (>6 mm invasion)	28 (27.5%)

A significant correlation was found between the severity of adenomyosis and the occurrence of symptoms. Menorrhagia was present in 100% of patients with severe adenomyosis compared to 78.6% with moderate and 55.6% with mild adenomyosis ($p < 0.01$). Similarly, dysmenorrhea was observed in all patients with severe adenomyosis, 80.4% with moderate adenomyosis, and 66.7% with mild adenomyosis ($p = 0.02$). Chronic pelvic pain was more prevalent in patients with severe adenomyosis (75%) compared to those with moderate (67.9%) and mild adenomyosis (44.4%) ($p < 0.05$) (Table 4).

Table 4: Correlation of Clinical Symptoms with Severity of Adenomyosis

Outcome	n (%)
Symptomatic Relief Post-Hysterectomy	100 (98%)
Patients Without Adenomyosis	28 (21.5%)
Failed Prior Hormonal Therapy	46 (45.1%)

Following hysterectomy, 98% of patients experienced symptomatic relief. Of the 130 patients, 21.5% did not have histopathologically confirmed adenomyosis, and 45.1% of patients with confirmed adenomyosis had previously failed hormonal therapy (Table 5).

Table 5: Patient Outcomes Following Hysterectomy

Symptom	Mild (≤ 3 mm)	Moderate (3.1–6 mm)	Severe (>6 mm)	p-value
Menorrhagia	10(55.6%)	44 (78.6%)	28(100%)	<0.01
Dysmenorrhea	12(66.7%)	45 (80.4%)	28(100%)	0.02
Chronic Pelvic Pain	8 (44.4%)	38 (67.9%)	21(75%)	<0.05

DISCUSSION

Adenomyosis is a chronic and often underdiagnosed condition characterized by the invasion of endometrial tissue into the myometrium, leading to an enlarged and thickened uterus. Historically, adenomyosis was believed to primarily affect multiparous women in their later reproductive years, but recent research suggests that it can also occur in younger, nulliparous women.^{12,13}

Like in Shafique's study, where menstrual irregularities and abdominal pain were the most common symptoms, our study found that menorrhagia (89.2%) and dysmenorrhea (83.3%) were the predominant complaints among patients.¹⁴ These findings are comparable to those in the Weiss *et al.* study, which identified a similar age group affected by adenomyosis, with an average of 49.5 years, and the study by Ranabhat *et al.* (2010), where 70% of patients were in the 41–50 age group.^{15,16} The predominant symptom of menorrhagia, found in 70.5% of patients in Khreisat's study, was also the leading symptom in our cohort, further reinforcing this symptom as a hallmark of adenomyosis.¹⁷

In comparison to Sreelakshmy *et al.*, where menorrhagia was reported in 56% of patients and dysmenorrhea in 48%, our study showed a higher prevalence of both symptoms, with menorrhagia present in 89.2% and dysmenorrhea in 83.3%.¹⁸ The poor preoperative diagnosis of adenomyosis, noted by Vavilis *et al.* in only 2.6% of cases, reflects the challenges in identifying adenomyosis without histopathological confirmation.¹⁹

However, while Hussain *et al.* reported that the primary histopathological diagnoses were chronic cervicitis (42%) and fibroid uterus (40%), our study demonstrated a higher prevalence of adenomyosis, which was confirmed in 78.5% of hysterectomy specimens.²⁰ Additionally, the data from Shams *et al.* (2020) are comparable to our findings, with menorrhagia being the most common reason for seeking medical help (39.6%) and dysfunctional uterine bleeding (DUB) accounting for 37.7% of cases.²¹

CONCLUSION

In conclusion, our study demonstrates a strong correlation between the clinical manifestations of adenomyosis and its histopathological severity, emphasizing the critical role of histopathological examination in confirming diagnosis.

LIMITATIONS

Reliance on hysterectomy specimens excludes patients who did not undergo surgical intervention.

SUGGESTIONS / RECOMMENDATIONS

Studies at larger sample should be conducted in future on this topic.

CONFLICT OF INTEREST / DISCLOSURE

None.

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