Adenomyosis and co-existing Pathologies in Hysterectomy Specimen: Four Year Experience at the National Institute of Health, Islamabad
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Objectives: To determine the frequency of adenomyosis and co-existing pathologies in the received hysterectomy specimens and to correlate the findings with the clinical diagnosis.

Study Design: A descriptive study carried out for four years from January 1994 to December 1997. All received hysterectomy specimens were histologically diagnosed and data analysed. The clinical information of specimen which showed adenomyosis and other co-existing pathologies was collected from the request Proformas as well as from the clinicians.

Methodology & Results: One thousand one hundred and ninety one (1191) hysterectomy specimens were received in the Histopathology Department of the National Institute of Health (NIH), Islamabad, during the period from January 1994 to December 1997. Adenomyosis was found in 645 of the 1191 (54.16%) specimen. The other co-existing pathologies in these hysterectomy specimen were chronic cervicitis in 447 (69.30%) specimen and fibroids in 218 specimens (33.8%) specimen. Chronic nonspecific endometritis was seen in 104 (16.12%), endometrial polyps in 50 (7.75%) and endometrial tuberculosis was found in 4 (0.62%) specimen.

Conclusion: In this study the occurrence of adenomyosis was seen in age group ranging from 31-50 years, which is comparable to some studies and contrary to some others. However the clinical symptoms and parity did correlate to most of the studies.

Keywords: Hysterectomy, Adenomyosis, Dysfunctional Uterine Bleeding.

Introduction
Adenomyosis is a non-neoplastic condition, characterized by benign invasion of the myometrium by the endometrium. Nests of endometrial stroma, glands, or both are found deep in the myometrium interposed between the muscle bundles. The aberrant presence of endometrial tissue induces reactive hypertrophy of the myometrium, resulting in an enlarged, globular uterus, often with a thickened uterine wall (1).

The common symptoms include dysmenorrhea, menorrhagia, and abnormal uterine bleeding. The clinicians commonly use the term dysfunctional uterine bleeding (DUB). The aetiology, diagnosis and treatment are still not fully established. However multiparity and previous surgeries involving the uterus viz fibroid removal or Caesarean sections have been implicated as the risk factors. Adenomyosis may be asymptomatic and it may be an incidental pathologic finding. When involvement of the myometrium is extensive, pain and abnormal uterine bleeding usually in the form of menorrhagia are likely. Because of its being a cause of abnormal uterine bleeding, adenomyosis merits important considerations as the symptoms may mimic uterine malignancies.
Adenomyosis was first described by Rokitansky in 1860 (12) i.e. the presence of endometrial glands and stroma deep within the myometrium as “cystosarcoma adenoides uterinum”. Von Recklinghausen published studies on “adenomyomata and cystadenomata of the uterus and the tubal wall” in 1896, describing the same phenomenon (17). In 1908, Cullen classified two histological types “adenomyoma” a tumour like isolated area of hypertrophied myometrium containing stroma and glandular elements of the endometrium, and “diffuse adenomyoma”, a distribution of both elements throughout wide areas of the myometrium (5). Frankl in 1925, first used the term ‘adenomyosis uteri’ (7).

It was in 1972 that adenomyosis was defined as “the benign invasion of endometrium into the myometrium, producing a diffusely enlarged uterus which microscopically exhibits ectopic non-neoplastic, endometrial glands and stroma surrounded by the hypertrophic and hyperplastic myometrium” (3).

Some authors suggest that the myometrium is vulnerable to invasion by endometrial hyperplasia. While others postulate that the myometrium is vulnerable to invasion by endometrial glands because of the absence of a basement membrane (16). Although adenomyosis and uterine leiomyomas are common conditions, the extent to which either is associated with certain types of malignancies remains uncertain.

**Materials & Methods**

Hysterectomy specimen of the patients included in this study had undergone surgery at various hospitals of Islamabad and Rawalpindi mostly and their samples were sent to the Histopathology Department of the National Institute of Health, Islamabad for histopathological diagnosis. In order to correlate the association of the complaints with the pathological findings, the available history of the patients was gathered from the request forms and their treating gynaecologists were also contacted for getting presenting signs, symptoms and preoperative diagnosis of these patients.

The specimens received were grossly examined as per standard procedure and then re-immersed in fresh 10% formal saline for fixation. After fixation, at least three to four representative sections were taken from the uterine corpus, fundus and cervix and also from ovaries and fallopian tubes if these were included in the received specimen. The sections were particularly taken from the hypertrophied/thickened areas of the uterine wall.

Tissues were serially dehydrated in ascending grades of ethanol, cleared in xylene and embedded in paraffin wax. The tissue blocks were prepared by Tissue Tek system and sectioned at a thickness of 3-5 μm using a rotary microtome (Damon Inc., Massachusetts, USA). The sections were affixed to clean glass slides and stained with haematoxylin-eosin (H&E) for histopathological diagnosis.

Adenomyosis was diagnosed if endometrial glands and stroma foci were found at more than one low power field depth from the endo-myometrial junction (18,19). This diagnostic criteria is comparable to the Hendrickson and Kempson 1980 criteria i.e. the presence of endometrial glands and stroma at more than one third to one fourth of the total thickness of the endometrial-myometrial junction (8).

**Results**

**Associated Pathologies in cases of Adenomyosis.**

Out of one thousand one hundred and ninety one (1191) hysterectomy specimens received 645 (54.16%) had adenomyosis according to the aforementioned criteria. The analysis of other co-existing pathologies with adenomyosis is shown in the given table. Of these, chronic cervicitis was found in 447 specimen (69.3%), fibroids in 218 specimens (33.8%, this included solitary leiomyomas in 121 (18.76%) and multiple in 97 i.e. 15.04% specimen), endometrial polyp in 50 (7.75%), endometrial hyperplasia in 9 (1.4%), and endometrial tuberculosis in 4 specimen i.e. 0.62%.

In these 645 cases of adenomyosis, it was found that 210 cases (32.5%) had proliferative phase of endometrium and 192 (29.7%) had various stages of secretory phases, while 51 cases (7.9%) had atrophic appearances.

The predominant pre-operative symptoms were grouped under dysfunctional uterine bleeding in more than 80% cases which included menorrhagia and dysmenorrhoea while the remaining cases gave history of mass abdomen, prolapse and postmenopausal bleeding.

**Discussion**

Adenomyosis is a relatively frequent finding in series of hysterectomies performed for menorrhagia and dysmenorrhoea (6) and same was the case in the patients in this study and thus being the leading cause of hysterectomies performed. There are not enough studies in Pakistan to determine the incidence of adenomyosis and preoperative
diagnosis of this condition is difficult to confirm. Therefore the only diagnostic and therapeutic modality is hysterectomy. The present study conducted at NIH Islamabad aimed at deliberating more about this condition in Pakistani population. The frequency of 54.16% of adenomyosis in this study is comparable to a 4-year (1986-1989) study carried out at the Agha Khan University Medical Centre, Karachi in which adenomyosis was found in 237 of the 419 (56.5%) specimen studied by Shaikh & Khan (13). While in another study carried out by Ali in 2005 at Saidu Medical College Swat, adenomyosis was found in 20.6% of the specimen studied (18).

Most of our patients i.e. 61.70% having adenomyosis presented in the fourth and fifth decades of life and a high percentage of fibroids (both solitary and multiple) were also found in the same age group of adenomyosis patients i.e. 33.8%. This percentage is also comparable to the Agha Khan University Medical Centre study in which 32.9% fibroids were found in their study patients with adenomyosis (13). Endometrial hyperplasia in this study however was much less i.e. 1.40% (table I) as compared to 12.2% in Agha Khan study.

Chronic cervicitis is quite common in parous women and in this study it was 69.30%. Endometrial tuberculosis was found in only 4 patients (0.62%). Such a large number of hysterectomies being performed in our clinical setups, is so because it serves both the diagnostic as well as therapeutic purposes, but this is the time when more and more use of newer diagnostic imaging should be encouraged as imaging is now playing an important role for the establishment of the correct preoperative diagnosis which is critical to avoid unnecessary intervention (15). Moreover the recent research on myometrial biopsies should enable the clinician to arrive at a definite preoperative diagnosis and offer the patients treatment tailored to their needs.

The demonstration of androgen receptors in adenomyotic foci has raised the possibility of non-surgical intervention (1). These findings have renewed interest in adenomyosis as a clinical entity which may also be diagnosed non-surgically and treated medically avoiding hysterectomies in a number of patients and thereby avoiding the risks of morbidity, mortality, psychological disturbances and associated financial pressures. This is important in a developing country with limited resources such as Pakistan where prevalence of adenomyosis seems to be high and women are generally reluctant to have hysterectomy done (13).

Until recently, the only certain diagnoses have been made by histopathologists on uteri removed after surgery. Imaging is now playing an important role because establishment of the correct preoperative diagnosis is critical to avoid unnecessary intervention (15).

A French study compared the accuracy of transabdominal (TAUS) and transvaginal sonography (TVUS) and magnetic resonance imaging (MRI) for the diagnosis of adenomyosis, and to correlate imaging with histological findings. Histological prevalence of adenomyosis and leiomyomas was observed as 33.0 and 47.5% respectively. Adenomyotic uteri were accompanied by additional pelvic disorders in 82.5% of cases. Sensitivity, specificity, and positive and negative predictive values of TAUS and TVUS were 32.5 and 65.0%, 95.0 and 97.5%, 76.4 and 92.8%, and 73.8 and 88.8% respectively. It was concluded that TVUS is as efficient as MRI for the diagnosis of adenomyosis in women without leiomyoma, while MRI could be recommended for women with associated leiomyoma (2). Our findings are in agreement with the French study, with a high prevalence of associated pathologies.

In developing countries like Pakistan, this condition is difficult to confirm preoperatively because of relatively less use of imaging techniques and thus hysterectomy remains the diagnostic and therapeutic modality.

![Figure-1: Endometrial glands interposed between the smooth muscles of myometrium](image-url)
Figure-2: Both endometrial gland and stroma in between the smooth muscles

### TABLE: Co-existing Pathologies in cases of Adenomyosis (n=645)

<table>
<thead>
<tr>
<th>PATHOLOGY</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic cervicitis</td>
<td>447</td>
<td>69.30%</td>
</tr>
<tr>
<td>Uterine Leiomyomata (both solitary &amp; multiple)</td>
<td>218</td>
<td>33.8%</td>
</tr>
<tr>
<td>Chronic Non Specific Endometritis</td>
<td>104</td>
<td>16.12%</td>
</tr>
<tr>
<td>Endometrial Polypi</td>
<td>50</td>
<td>7.75%</td>
</tr>
<tr>
<td>Endometrial Hyperplasia</td>
<td>9</td>
<td>1.40%</td>
</tr>
<tr>
<td>Endometrial Tuberculosis</td>
<td>4</td>
<td>0.62%</td>
</tr>
</tbody>
</table>

### Conclusion

Adenomyosis was found to be most common in the age group of 30 to 50 years and the commonest cause of dysfunctional uterine bleeding, fibroids being the next common cause. Hysterectomy should be considered as a therapeutic modality rather than as a sole diagnostic means. Therefore preoperative diagnosis by making use of imaging techniques need to be encouraged in order to minimize the effects of operative interventions. More studies are required to know the prevalence and possible causes of adenomyosis in Pakistani population.

### References

5. Cullen TS. Adenomyoma of the Uterus. 1908; W. B. Saunders, Philadelphia, PA., U. S. A.