ADENOMYOSIS UTERI

A Critical Study with an Analysis of the Five Years Cases

by

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Introduction

It was our impression that incidence of adenomyosis is very low in our hospital. We thought that we met with only an occasional case of adenomyosis. The present study was undertaken to confirm or contradict our impression. In our country, except for an article by Lazarus, we could not find many articles on this subject which was also responsible for our impression. Purandare has analysed cases of adenomyosis some 25-30 years ago.

Material and Methods

This is an analysis of cases of adenomyosis admitted in K.E.M. Hospital, Bombay, from 1954 to 1958 (five years). It includes cases diagnosed after hysterectomies (mostly generalised type) as well as cases where uterii were conserved but only adenomyotic tissue was removed (localised type). The detailed clinical history is recorded and histological sections studied and confirmed. An attempt is made to correlate various clinical signs and interpret these in the light of the present studies.

Awarded Sir Kasanji Ranchhodji Prize for the best analysis of cases for the year 1959.

Incidence

There were 38 cases of adenomyosis from 1954-1958. Five hundred and seventy hysterectomies were performed during the same period. All uteri removed were subjected to histological examination. Adenomyosis was found in 33 cases. In 5 cases of localised adenomyosis, the uterus was not removed but only the adenomyotic tissue was removed. Thus the incidence of adenomyosis among all hysterectomies is 6% approximately. This incidence is much lower than that quoted in western literature. Crossen records the incidence among hysterectomies as 20-30%, Hunter quotes as 27.8% and Benson et al. 21.4%. However it is not unusual to come across low incidence even in western literature. Drefuss finds the incidence as 8.1% among all uteri removed. Brines et al. encountered the incidence of 10.7% among all uteri removed. We believe that too much reliance on the incidence cannot be placed because histological criteria for the diagnosis are not standardised. A very slight invasion of myometrium by endometrial tissue may be considered as normal by one and pathological by another. As there is no layer of submucosa between endome-

trium and myometrium, it becomes difficult at times to know where the endometrium ends and myometrium begins. We believe that the comparison of incidence will be of help only when the criteria for histological diagnosis of adenomyosis are standardised.

TABLE I

Year	No. of cases
1954	10
1955	6
1956	5
1957	6
1958	11
Total ..	38

Community

It is difficult to draw conclusions as regards incidence in various communities. This is because our hospital is situated in predominantly Maharashtrian locality. We would like to point to one fact that looking to the attendance of Christian patients, 6 cases out of 38 is a fairly high incidence.

TABLE II

	No. of cases
Maharashtrian	24
Christian	6
Sindhi	4
Gujarati	3
Muslim	1
Total ..	38

Age

There is general agreement that adenomyosis is more common in later years of life. Cullen, Westman, Jeffecoate, Drefuss, Brines, Siegler etc. believe that it is more common in the 5th decade of life. Our series also shows higher incidence after 40 years. There are 25 cases above the age of 40 years, which comes to more than 60% of the total cases.

TABLE III

Age in years	No. of cases
25 to 29	1
30 to 34	3
35 to 39	9
40 to 44	12
45 to 49	8
50 and above	5

The youngest patient in our series was 26 years and the oldest 55 years.

There is one pitfall in judging the age incidence. We must take into consideration the duration of the symptoms before the patient comes for treatment. It is likely that some patients may rush in for treatment very early whereas others may delay for some years. And thus, though the disease may have originated at the same time in these cases, the age incidence may be labelled differently because they came for treatment at different times. Moreover, it is difficult to find out the actual onset of disease in asymptomatic cases, as some cases have come with a different complaint and the uterus removed, when adenomyosis is an incidental finding.

Relation to Menstrual Cycle

TABLE IV

	No. of cases	
Abnormal uterine bleeding ..	26	68%
Normal cycle ..	10	
Menopausal ..	2	
Dysmenorrhoea ..	15	

By abnormal uterine bleeding we include all cases with excessive

periods, prolonged periods or bleeding apart from the periods. Thirty-one patients complained of menorrhagia but on detailed history only 26 had abnormal uterine bleeding. Other workers have also reported high incidence of abnormal uterine bleeding, viz. Spatt 53%, Novak 36%, Hunter 77% and Yates 51%. The incidence of dysmenorrhoea in sterility cases was high. Out of 9 cases with sterility, 6 cases had dysmenorrhoea (66%). It is difficult to evaluate whether the painful periods have any organic basis or whether it is psychological.

Parity

TABLE V

	No. of cases
Nullipara	3
Para I	5
Para II to IV	10
Para V and above	20

Though sterility is a fairly common association with adenomyosis, adenomyosis does not appear to be the cause of sterility. We had 9 cases of sterility (25%) out of which 3 had primary sterility and 6 had secondary sterility. More than half were multiparas in my series. Hunter and Benson et al. also believe that adenomyosis is common in multiparas.

Time Interval after Last Delivery

TABLE VI

1 to 4 years	5 cases
5 to 10 years	17 cases
11 years or more ..	16 cases

Some workers believe that prolonged action of oestrogens uninterrupted by progesterone is responsible for the development of adenomyosis. About 42% of the patients in this series had their last delivery more than 10 years ago.

Symptoms

The above analysis shows that above the age of 40 years, menorrhagia is a more frequent symptom of adenomyosis. Twenty out of 25 cases had menorrhagia, whereas only 6 cases out of 13 cases under the age of 40 years had menorrhagia. Another fact that emerges from the above analysis is that dysmenorrhoea is a more common feature in women under the age of 40 years. Nine cases out of 13 under the age of 40 had dysmenorrhoea, whereas only 6 cases out of 25 above the age of 40 years had dysmenorrhoea. It is the general belief that symptoms in cases of adenomyosis are usually due to associated lesions and not due to adenomyosis per se. Hunter believes that adeno-

TABLE VII

		25 cases above 40 years	13 cases under 40 years
Menorrhagia ..	26 cases	20 cases	6 cases
Dysmenorrhoea ..	15 „	6 „	9 „
Sterility ..	9 „	Nil	9 „
Lump in abdomen ..	3 „	2 „	1 „

myosis without associated lesions also can cause symptoms. Our analysis is in agreement with Hunter, because in our series associated lesions were present in only 7 cases. This does not include 10 cases of prolapse because prolapse usually does not cause menorrhagia or dysmenorrhoea.

Physical Signs

TABLE VIII

	No. of cases
Slightly enlarged uterus ..	16
Moderately enlarged uterus	5
About 3 months size uterus	3
Prolapse of the uterus ..	10
Retroverted uterus ..	16
Bilateral cystic masses ..	4
Restricted mobility of the uterus	7

The size of the uterus was normal or less than normal in 14 cases. It is not necessary to get a bulky uterus in all cases of adenomyosis. Symptoms are more important in the diagnosis of adenomyosis. It is worth recording that in 63% of the cases the uterus was enlarged in size.

Clinical Diagnosis

TABLE IX

	No. of cases
Metropathia	19
Adenomyosis	8
Prolapse uterus	7
Fibroid uterus	3
Malignancy uterus	1

As it is seen from the symptomatology that abnormal uterine bleeding is a fairly common feature, it is not surprising that metropathia was diagnosed in about 50% of the cases. The clinical diagnosis of adenomyosis was entertained in about 21% of the cases in our series. We had 10 cases of prolapse in our series. Out of these, adenomyosis or metropathia was suspected in 5 cases because of symptoms. The other five cases of prolapse had no other symptoms other than prolapse and so clinical diagnosis of prolapse was made. But the histological report on these uteri removed primarily for prolapse showed adenomyosis. These are the asymptomatic cases of adenomyosis.

Associated Lesions

TABLE X

	No. of cases
Salpingo-oophoritis ..	4
Fibroid uterus	3
Ovarian cyst	1
Prolapse uterus	10
Malignancy	Nil

We are surprised at the low incidence of fibroids in association with adenomyosis. Only 8% in our series had fibroids of uterus. Other workers have quoted a very high incidence. (Crossen 60-70%, Novak 62.5%, Drefuss 40%, Benson et al. 56.6% and Spatt 40%). We have no explanation for this low incidence of fibroids. About 27% of the cases had prolapse. In Hunter's series, 28% of cases had prolapse. There was no case of associated malignancy in our series.

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Treatment

Hysterectomies	33 cases	Abdominal	— 12 cases
		Vaginal	— 21 cases
Conservative	5 cases		

The conservative treatment in five cases was as follows:

1 Left salpingo-oophorectomy with adenomyomectomy and right salpingostomy.
2 Excision of adenomyosis on posterior wall with bilateral implantation of tubes.
3 Excision of fibroid with adenomyomectomy and bilateral implantation of tubes.
4 Left oophorectomy with excision of adenomyosis of the posterior wall.
5 Fundectomy with implantation of tubes.

There is a general agreement that ideal treatment of adenomyosis in women nearing menopause or in menopause is hysterectomy. The route of operation is decided by the size of the uterus, mobility of the uterus and associated adnexal pathology. In the present series 21 uteri could be removed per vaginam. However, abdominal route is preferable if uterus is more than 3 months' size of pregnancy, or there is associated pelvic pathology.

In younger age group during the child-bearing period and especially when the patient has come with sterility, every effort must be made to save the uterus. It is advisable to preserve the menstrual and child-bearing function in young women as far as possible. Of the five patients on whom conservative treatment was carried out, Cases 2, 3 and 5 came for follow-up. Hystero-salpingography done recently showed that all the three patients have blocked tubes. That means the patency of the tubes could not be maintained in spite of keeping polyethelene tube for 3 months. None of the 3 patients seen have conceived. However, their symptoms are relieved.

Discussion

Adenomyosis is recognised as a definite entity only for the last 50 years. Rokintansky and Von Recklinhausen described this condition as early as 1882. Cullen is given the credit of establishing a sound basis for the clinical and histological diagnosis of adenomyosis (1908). Adenomyosis was named differently at various times, depending upon the existing concept about its origin. Thus it has been named as Adenomyoma, Adenomyomatosis, Internal and External Uterine Endometriosis, Von Recklinhausen's disease, Adenometritis, Adenomyometritis. These various terms are sufficient to reflect on the chaotic condition that prevailed about the origin and histology of adenomyosis. There is a general agreement that this entity should be known as adenomyosis.

In spite of Cullen's classical monogram on adenomyoma and his description of adenomyoma, it was considered as a rare entity and even solitary cases of adenomyosis were reported (Abel, Frank and Robins). Cullen was the only person to report

a large series of 70 cases of adenomyoma in 1914. It is only recently that adenomyosis is recognised more frequently and fairly large series are published (Hunter, Spatt, Drefuss, Brines, Yates, Benson and Sneeden etc.).

The text-book definition of adenomyosis reads, "Benign invasion of endometrium into the uterine musculature associated with diffuse overgrowth of the latter" (Novak). This entity is unique in the sense that at no place in the body histopathology do we come across a condition where there is benign invasion of mucosa into the muscle layer. Partly the explanation lies in embryology and histology. The uterus is made up of three layers, serous layer, muscle layer and the mucous membrane or endometrium. There is no submucous layer between muscle layer and the endometrium. In the majority of the tubular organs in the body there is a submucous layer which protects against invasion by mucosa into the muscle layer. Embryologically the entire uterus is developed from mesoderm. Thus all layers of uterus have common origin of development. Thus the primitive cell from the mesoderm develops either in the direction of epithelium, muscle cell or connective tissue. As there is less stability towards cell types, there is greater tendency for transition from one cell type to another.

Cullen's theory of endometrial invasion into the muscle is generally accepted for the development of adenomyosis. Endometrium of the uterine cavity, because of some unknown growth stimulus, flows down like streams of lava between the muscle bundles (Novak). No definite cause has been attributed to the development; it is believed that oestrogens may be responsible for this condition. The common association of endometrial hyperplasia and fibroids with adenomyosis lends support to the belief. It has been argued that the incidence of adenomyosis is higher in those communities where there are delayed marriages and voluntary sterility. This gives a chance for continuous action of oestrogens without interruption due to pregnancy. Oestrogens alone do not seem to be the cause, because, if it was so, oestrogen levels in blood are much higher during pregnancy than in a non-pregnant state. And so if only higher oestrogen levels in blood were responsible the incidence of adenomyosis should not be high in those communities which have delayed marriages or voluntary sterility. Thus it appears that progesterone has some protective influence and it is the action of oestrogens, uninhibited by progesterone that is responsible for development of adenomyosis. During pregnancy though oestrogen level in blood is higher there is a corresponding rise in progesterone level in blood. The above hypothesis finds its answer in recent reports published where the production of the state of pseudo-pregnancy by giving oestrogens and progesterone in quantities normally found in pregnancy, alleviates the symptoms due to endometriosis (Kistner).

The ectopic endometrium is believed to be slightly different from the normally situated endometrium. The adenomyotic glands closely

resemble the glands found in stratum basalis of normal endometrium. So the adenomyotic glands do not participate to a great extent in cyclic hormonal changes. It is believed that the basal layer does not respond to progesterone stimulus but responds to oestrogens. Thus the adenomyotic glands do not undergo progestational change. Novak believes that occasionally the aberrant endometrium exhibits the cyclic functional responsiveness of normal endometrium but more often it is of an immature, unripe variety. Novak further observes that in an occasional case, the invading endometrium shows not only the cyclic changes of menstruation but also decidual changes of pregnancy. Kistner has come forward with conflicting reports when he mentions that the alleviation of symptoms by a state of pseudo-pregnancy in case of endometriosis is due to decidual transformation of the lesions of the endometriosis. Decidual transformation cannot occur unless the ectopic endometrium responds to progestational stimulus.

There are conflicting reports as regards changes in normally situated endometrium in cases of adenomyosis. Some workers believe that endometrium shows normal picture corresponding to that period of menstrual cycle (Drefuss, Hunter etc.). Others believe that anovulatory endometrium is found in the majority of cases of adenomyosis (Spatt, Von Numers etc.).

After finding adenomyosis in uteri removed for some other lesion, with no symptoms pertaining to adenomyosis, some workers have started doubting whether adenomyosis should at all be considered as pathological. Meyer and Kitair found that a moderate degree of adenomyosis was almost a rule in women approaching menopause. Brines and Blair consider adenomyosis as a minor physiological deviation from normal.

Though there is ectopic endometrium in adenomyosis as well as in endometriosis, Brines et al. believe that these are two distinct anatomical entities with different symptomatology and age incidence. Adenomyosis occurs late in life or in middle life. Endometriosis occurs in a younger age group. The origin of ectopic endometrium is different in these two conditions. Secondly, the impulse responsible for endometrial growth propensity, affects the uterine musculature as well in adenomyosis, whereas in pelvic endometriosis only endometrium is usually concerned.

Radiological diagnosis has been studied by Goldberger et al. According to them uterus in adenomyosis gives a peculiar irregular outline to the uterine wall in hysterosalpingography.

There is a general agreement about the treatment of adenomyosis. When there is a generalized type of adenomyosis where the whole uterus is involved and if the patient is nearing menopause or past that age as is usually the case in generalized lesions, the treatment of choice is hysterectomy. In younger age group, with localised lesion, the aim should be to preserve the uterus, as was done in five of our cases. Radium insertion has been given a trial and given up because in younger patients it unnecessarily destroys ovarian

function and in the aged it may mask the malignancy of the genital tract.

Some observations of Dr. Lazarus

Lazarus has analysed 26 cases of Adenomyosis Uterii. She does not mention the year of collection of these cases and so her series is not strictly comparable with our series. Out of her 26 cases, 10 cases had menorrhagia and 9 cases complained of dysmenorrhoea. She believes that early marriage does not preclude the incidence of adenomyosis or endometriosis. Fibroids were common accompaniment of adenomyosis in her series (21 cases had fibroids). She suggests that rupture uterus, uterine inertia, post-partum haemorrhage and frequent abortions may be the result of adenomyosis.

Conclusions

(1) The incidence of adenomyosis among all hysterectomies is 6%.

(2) The incidence of adenomyosis is higher in women after 40 years.

(3) Menorrhagia is an important symptom of adenomyosis in older age group and dysmenorrhoea is an important symptom in younger age group.

(4) Sterility was found in 25% of the cases.

(5) Cases of adenomyosis with sterility have higher incidence of dysmenorrhoea.

(6) Adenomyosis is more common in multiparas.

(7) More than 42% of cases had their last delivery before more than 10 years.

(8) The uterus was of normal size in 37% of cases.

(9) In 50% of the cases the clinical diagnosis was metropathia. Adenomyosis was clinically diagnosed in only 21% of cases.

(10) Only 8% of the series had associated fibroids. 27% of the cases had prolapse of uterus.

(11) Hysterectomy was done on 33 cases and conservative treatment in five cases.

Summary

(1) Thirty-eight cases of adenomyosis from 1954-1958 are analysed.

(2) The history and the clinical findings are critically scrutinised.

(3) The significance of various symptoms and clinical features is discussed at length.

(4) The origin of adenomyosis is briefly discussed.

(5) Diagnosis and management are also discussed.

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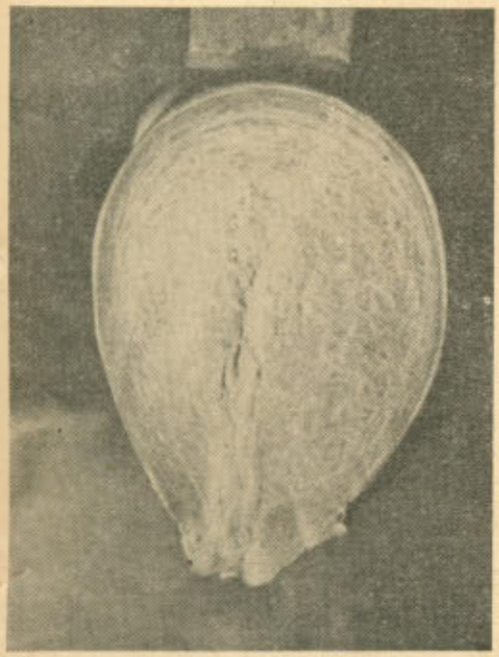

Fig. 1
A case of generalized adenomyosis.

Fig. 2
Low power view of adenomyosis.