

Correlation between Clinico-pathological and Ultrasonographical Findings in Hysterectomy

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ABSTRACT

Introduction: Hysterectomy is the most commonly performed gynaecological surgery throughout the world. Total abdominal hysterectomy is the procedure of choice in conditions other than uterovaginal prolapse. Menorrhagia is the most common clinical symptom which is seen in the pre and the perimenopausal age group. All perimenopausal women with persistent abnormal uterine bleeding should be evaluated for the presence of endometrial hyperplasia or carcinoma by ultrasound or biopsy.

Objectives: To identify the most common pathology in hysterectomy specimens

To correlate the clinical diagnosis and ultrasonographical findings with histopathological diagnosis.

Materials and Methods: Ours was a retrospective study analysis of hysterectomy cases, over a period of one year from Jan 2010 to Dec 2010 in the Department of Pathology, Vinayaka Mission's Kirubananda Variyar Medical College. The patients also underwent pelvic and transvaginal ultrasonography. Ninety eight percent of the hysterectomies were done for benign indications.

Results: The total number of hysterectomy specimens received were 234. The peak age of the patients was 31–40 years. A high incidence of the disease was seen in multiparous. In our study, 171 patients underwent pelvic ultrasound and transvaginal ultrasound, especially those who were in the peri and postmenopausal age group. Ultrasound detected 100% malignancy, 95% fibroids and 80% in adenomyosis. The commonest indication for transabdominal hysterectomy was fibroids in 30.7% of the cases. The most common pathology which was identified was leiomyoma followed by adenomyosis.

Conclusion: This study confirmed that benign diseases were more common in hysterectomy specimens than in their malignant counterparts. Out of the clinical diagnosis, ultrasonographical findings and histopathological diagnosis, histopathological diagnosis was found to be the gold standard to ensure the final diagnosis as the management of the malignant disease varied in the benign and malignant diseases.

Key Words: Hysterectomy, Menorrhagia, Dysfunctional uterine bleeding, Adenomyosis

INTRODUCTION

Hysterectomy is the commonest gynaecological surgery all over world [1]. The abdominal removal of the uterus is called 'total abdominal hysterectomy' while the removal of the uterus by the vaginal route is termed as 'vaginal hysterectomy'. The supracervical removal of the uterus is termed as 'subtotal hysterectomy' [2]. As compared to a higher frequency of hysterectomy (10–20%) in other countries, a lower rate (4–6%) has been reported in India. It was first performed in 1507 by Berengarius of Bolonga through the vaginal route. But the credit for first vaginal hysterectomy was given to Langen, back in 1813. The first total abdominal hysterectomy with bilateral salpingo-oophorectomy was done by Clay in 1844 [3].

The bleeding in post-menopausal women is abnormal and it is the most common presenting symptom for endometrial cancer. Menorrhagia is cyclical bleeding at regular intervals, which is excessive in amount (> 80 ml) [4] or duration.

Most of the abnormal uterine bleeding is caused by hormone imbalance and it can be indicative of diseases including polyps, myomas, endometrial hyperplasia and cancers of the cervix and endometrium.

DUB, fibroid uterus and adenomyosis are the common hyperoestrogenic conditions where the endometrium is in the proliferative phase and if untreated, it may lead to endometrial carcinoma.

The first step in the evaluation of post-menopausal bleeding may be a pelvic ultrasonography (USG), a transvaginal ultrasound (TVUS) or an endometrial biopsy. Although TVUS is the least sensitive and specific for the diagnosis of cancer, it is more sensitive than biopsy for the detection of other abnormalities such as polyps and fibroids, which are the most common causes of bleeding. It is also the least invasive method and it produces little or no discomfort for most of the patients. Endometrial cancer causes endometrial thickening, which appears as a thickened hyperechoic stripe in the TVUS images. The thickness of the endometrial stripe can be measured accurately and it has been estimated that 96% of the post-menopausal women with endometrial cancer will have an endometrial stripe which is greater than 4 mm. Fibroids can be hypoechoic, isoechoic (same echogenicity as the myometrium), or hyperechoic. In comparison, the characteristics of adenomyosis include ill-defined regions of mixed textural changes, asymmetric myometrial thickening, streaky shadowing posteriorly and no calcifications. Myometrial cysts, often in a subendometrial location and usually less than 3 mm in diameter, are commonly associated with adenomyosis. These cysts represent dilated endometrial glands that come and go during the menstrual cycle.

The route of hysterectomy is determined by the skill, experience and the preference of the operating gynaecologist [5]. Total abdominal hysterectomy is the procedure of choice in conditions other than uterovaginal prolapse [8].

The importance of histopathological examination is seen, especially in patients with genital cancer, where the adjuvant treatment is dependent upon the grade and extent of the invasion of the disease. The diagnosis of adenomyosis is established only by histopathological examination, while DUB is a diagnosis of exclusion. Some of the patients may be suspected of having a malignancy on pre-operative assessment eg., those with postmenopausal bleeding and histopathological examination may aid in ruling out this suspicion.

MATERIALS AND METHODS

The retrospective study analysis of the hysterectomy cases over a period of one year from Jan 2010 to Dec 2010 was reviewed in the Department of Pathology, Vinayaka Mission's Kirubananda Variyar Medical College. Ninety eight percent of the hysterectomies were done for benign and two percent of them were done for malignant indications. The surgical specimens were fixed in 10% formalin, they were paraffin embedded and the blocks were sectioned and stained with routine hematoxylin and eosin stain. The patient's age, parity, clinical presentation, ultrasonography findings and mode of surgeries were reviewed, analyzed and correlated.

RESULTS

A total of 234 hysterectomy specimens were analyzed between January 2010 and December 2010. A correlation between age, parity, clinical indications, USG findings, mode of surgery and histopathological examination was done. The age range of the patients was 26–70 years, with a mean of 45 years [Table/Fig-1]. Of these 234 cases, most of the cases were in the 41-50 years age group (40.5%), which is the most common age group for contracting various diseases [Table/Fig-1]. A high incidence of diseases was seen with a parity of 3.

| Age | Number of cases | Percentage |
|-------|-----------------|------------|
| 21–30 | 5 | 2.1 |
| 31–40 | 89 | 38.0 |
| 41–50 | 95 | 40.5 |
| 51–60 | 37 | 15.8 |
| 61–70 | 8 | 3.4 |

[Table/Fig-1]: Age distribution

The commonest indication for hysterectomy was uterovaginal prolapse in 31.6% of the cases, followed by fibroid in 30.3% cases and dysfunctional uterine bleeding (DUB) in 29% cases.

The various indications for hysterectomy are shown in [Table/Fig-2].

| Indication | Numbers | Percentage |
|--------------------|---------|------------|
| Prolapse | 74 | 31.6 |
| Fibroid | 71 | 30.3 |
| DUB | 68 | 29.0 |
| Adenomyosis | 8 | 3.4 |
| Ovarian cyst/Tumor | 12 | 5.1 |
| Other malignancies | 1 | 0.4 |

[Table/Fig-2]: Indications of Hysterectomy

In our study, 134 patients underwent pelvic ultrasound and 37 patients underwent transvaginal ultrasound, especially those in the peri and postmenopausal age group. An endometrial thickness of more than 8mm was seen in the DUB cases, which was correlated (80%) with the histopathological examination. USG was not done

in 63 cases due to third degree uterovaginal prolapse and other reasons.

The most common type of hysterectomy done was total abdominal hysterectomy with bilateral salpingo-oophorectomy, followed by vaginal hysterectomy. The most common age group for total abdominal hysterectomy with bilateral salpingo-oophorectomy and vaginal hysterectomy was 41-50 years, as shown in (Table-3). Pelvic exenteration was only seen in the 31-40 years age group.

| Surgery | 21–30 | 31–40 | 41–50 | 51–60 | >60 | No of Cases |
|--------------------------------------|-------|-------|-------|-------|-----|-------------|
| Hysterectomy with RSO | 2 | 6 | 3 | | | 11 |
| Hysterectomy with LSO | – | 4 | – | 1 | | 5 |
| Transabdominal Hysterectomy | 1 | 22 | 11 | 2 | | 36 |
| Transabdominal Hysterectomy with BSO | 2 | 37 | 53 | 8 | | 100 |
| Vaginal Hysterectomy | | 18 | 30 | 25 | 7 | 80 |
| Subtotal /Radical Hysterectomy | | | 1 | | | 1 |
| Pelvic Exenteration | | 1 | | | | 1 |

[Table/Fig-3:] Type of Hysterectomy in different age groups

Transabdominal Hysterectomy(TAH) Transabdominal Hysterectomy with bilateral salpingo-oophorectomy. (TAH with BSO) Right salpingo-oophorectomy(RSO) Left salpingo-oophorectomy(LSO).

The histopathological confirmation of the pre-operative diagnosis from the clinical findings and ultrasonography was 100% for malignancy, 26.4% for uterovaginal prolapse, 23% for fibroids and 13% for adenomyosis. A majority of the cases (29%) which were pre-operatively diagnosed as DUB were found to have adenomyosis [Table/Fig-4].

| Histopathological diagnosis | Numbers | Percentage |
|--|---------|------------|
| Fibroid | 56 | 22.9 |
| Adenomyosis | 39 | 12.9 |
| Atrophic endometrium | 33 | 26.4 |
| Endometrial hyperplasia, Irregular endometrium | 31 | 9.0 |
| Combined leiomyoma & Adenomyosis | 19 | 7.7 |
| Proliferative/Secretory endometrium/ | 26 | 8.2 |
| Ovarian cyst/Tumor | 12 | 4.3 |
| Endometrial hyperplasia & Adenomyosis | 9 | 3.0 |
| Endometrial polyp | 4 | 1.7 |
| Endometrial carcinoma | 2 | 0.8 |
| Other malignancies | 1 | 0.4 |
| cervical intraepithelial neoplasia (CIN) | 2 | 0.8 |

[Table/Fig-4]: Confirmation of Preoperative diagnosis by Histopathology

The most common pathology identified was leiomyoma followed by adenomyosis.

The leiomyomas ranged in numbers from 1–6. A single leiomyoma was seen in 60 cases. Multiple leiomyomas were seen in 15 out of the 75 cases. Of the maximum leiomyomas, 59 were found to be intramural. Adenomyosis alone was seen in 39 cases (12.9%) and in combination with leiomyomas in 19 cases (7.7%).

The hysterectomies which were done for uterovaginal prolapse showed atrophic endometria and adenomyosis on histopathological examination. Other less frequent lesions which were identified were irregular endometria, endometrial hyperplasia, endometrial polyps and endometrial carcinoma. Some of the specimens showed

more than one lesion in the body of the uterus, which included the coexistence of leiomyoma and adenomyosis and endometrial hyperplasia and adenomyosis. The pathological examination confirmed the clinical diagnosis in all the cases of abnormal uterine bleeding due to leiomyoma, adenomyosis and endometrial carcinoma.

DISCUSSION

The clinical presentation and the indications for abdominal or vaginal hysterectomy vary from benign to the malignant diseases. Hysterectomy is a successful surgery, as it provides a definitive cure to many diseases which involve uterus as well as the adnexae, eg., fibroids, DUB, adenomyosis, endometriosis, pelvic inflammatory disease, uterovaginal prolapse and malignancy.

The mean age at hysterectomy in this study was 45 years. A majority of the diseases was seen with a parity of 3. In a study in Nepal, the mean age of the women who underwent hysterectomy was 46.3 years [6]. All of them were older than 40 years of age. A majority of the women were parous, with a mean parity of 5. Lee NC found a mean parity of 3.1 [7]. This difference can be explained on the basis of the lower use of contraceptive methods in our country as compared to that in the western countries.

The commonest presenting symptom in the study population was menorrhagia. It is well known that the perimenopausal age group and high parity are associated with these symptoms. This was also observed by Shergill SK. Abnormal menstrual flow was the commonest complaint which was seen in 66% of the cases [8].

The indications for hysterectomy in our study were consistent with those in other studies. In our study, the commonest indication was prolapse (31.6%), followed by fibroids (30.7%). The commonest indication was fibroid (34%), followed by DUB (26%) in the study by Shergill SK [8]. Jha R found that leiomyoma was the indication in 24.9%, ovarian tumour in 14.9% and DUB in 7.7% of the cases [5]. Similar results have been reported by Pokras and Hufnagel [9]. Clarke A reported the commonest indication to be DUB (58%), followed by fibroids (23.2%) [10].

The diagnosis of adenomyosis on the basis of the clinical findings is usually different [11]. Transabdominal sonography does not allow a reliable diagnosis of adenomyosis or its consistent differentiation from leiomyomas. Even TVS has limitations in tissue characterization. MRI is more helpful in diagnosing adenomyosis but it is expensive. Uterine ultrasound, especially transvaginal ultrasonography (TVUS), can give information about suspected structural problems including fibroid tumours [12,13]. It has been classically indicated that a physical examination indicates anatomical gynaecological abnormalities, especially that of the ovaries, where other methods provide poor information [13].

The endometrial stripe assessment on TVUS can provide information about the ovulatory stage of the endometrium that has a 93% correlation with the histological diagnosis [19]. An endometrial thickness measurement of less than 4 to 7 mm is rarely associated with cancer and endometrial sampling may not be necessary in such patients [14].

In our study, 134 patients underwent pelvic ultrasound and only 37 patients underwent transvaginal ultrasound to find the endometrial thickness. An endometrial thickness of more than 8mm in postmenopausal women should be considered as suspicious of DUB.

The commonest mode of surgical approach in a majority of the cases in this study was abdominal hysterectomy. Abdominal hyst-

erectomy allows a better visualization of the abdominal cavity during the surgery. Abdominal surgery may be the best choice for hysterectomies done to remove cancer, because it allows a better visualization of the nearby structures. The abdominal route is associated with a longer hospital stay, increased complications and higher costs. Vaginal hysterectomy is associated with a shorter hospital stay and it allows the fastest recovery and healing times. Since vaginal hysterectomy carries a lesser risk and complications, this route is encouraged, especially if the disease is confined to the uterus and if the uterine weight is less than 280gm [15]. Chrysiopoulos et al studied 3410 total hysterectomies over a period of 16 years and the abdominal approach was preferred in 85.33% and the vaginal route in 14.67% of the patients [16].

On reviewing the histopathology reports, leiomyoma was found to be the most common diagnosis in our study, followed by adenomyosis. Sobande AA also found that fibroids were the most common pathology which was seen in 25.8% of the hysterectomy specimens followed by adenomyosis (22.7%) [17].

Leiomyoma is the commonest uterine tumour and it is considered that all the neoplasms of the uterus are almost leiomyomas [16]. Uterine leiomyomata, commonly known as fibroids are benign smooth muscle tumours of the uterus. They have been identified as one of the leading causes of hospitalization for gynaecological disorders and hysterectomy in the USA [16].

In our study, the pre-operative diagnoses of endometrial hyperplasia and endometrial cancer were found on diagnostic curettage. A 100% confirmation rate of these diseases was expected. In Lee NC's study, endometrial hyperplasia was confirmed in 95% and cervical intraepithelial neoplasia in 89% of the cases [7].

In our study, on the 243 women, 88.8% of the pre-operative diagnoses were confirmed by histopathology. Lee NC found that of the 1283 women whom they studied, 80% of the pre-operative diagnoses were confirmed in the potentially confirmable group [7]. Miller studied 246 hysterectomy specimens and found that clinical diagnoses were confirmed in 50% of the cases [18].

CONCLUSION

In our study, the most common pathology identified among the hysterectomy specimens was leiomyoma. The clinical and pathological correlation was 99% in the cases of leiomyoma and it was 100% in malignancy. Pelvic and transvaginal ultrasound were found to be very useful for the preoperative diagnosis of the diseases. An increased incidence of endometrial hyperplasia was seen in the age group of 40 years or more. Patients with endometrial hyperplasia must be carefully followed up because there are possibilities for its progression to endometrial carcinoma. Histopathology is mandatory for ensuring a correct diagnosis and thus the management varies with malignant disease.

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