Histopathological Analysis of 422 Nononcological Hysterectomies in a University Hospital

Üniversite Hastanesinde Benign Nedenlerle Histerektomi Yapılan 422 Olgunun Histopatolojik Analizi

Histerektomilerin Histopatolojik İncelemesi / Histopathologic Analysis of Hysterectomies

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Özet

Amaç: Bu çalışmanın amacı histerektomi endikasyonları, histerektomi yöntemleri ve histerektomi yapılan hastaların preoperatif klinik tanısı ile histerektomi piyeslerinin histopatolojik bulgularının karşılaştırılmasıdır. Gereç ve Yöntem: Üniversitemizde 2011-2014 yılları arasında histerektomi yapılan 422 hastanın kayıtları ve histerektomi piyeslerinin histopatolojik bulguları retrospektif olarak incelendi. Operasyondan önce malignite tanısı alanlar çalışma dışı bırakıldı. Preoperatif klinik tanı ve postoperatif histopatolojik bulguların korelasyonunu değerlendirmek için Cohen kappa istatistik yöntemi kullanıldı, κ 0,4 ve üzeri değerler uyumluluğu gösterdi. Bulgular: Hastaların ortalama yaşı 51,5 ± 8 idi. 378 Hastaya (%85,5) abdominal histerektomi, 55 hastaya (%12,4) vajinal histerektomi, 9 hastaya (%2) laparoskopik asiste vajinal histerektomi uygulanmıştı. En sık histerektomi endikasyonu anormal uterin kanama (%28,8) idi. Histerektomi öncesi hastaların % 75'ine endometrium örneklemesi yapılabilmişti, en sık bulgu sekretuar veya proliferatif endometriumdu. Histerektomi piyeslerinde en sık saptanan histopatolojik bulgu leiomiyom (%43,7) olup bunu leiomiyom ile adenomiyozis birlikteliği (%17,4) takip etmişti. Prolapsus ön tanısıyla opere olan hastaların %49,3'ünün piyesinde nonspesifik bulgu mevcuttu (kappa=0,407). Tartışma: Preoperatif klinik tanının histopatoloji sonuçlarıyla korelasyonu anormal uterin kanama, myom, ağrı ön tanılarıyla opere edilen hastalarda zayıf iken, adneksial kitle ön tansıyla opere edilen hastalarda güçlü idi.

Anahtar Kelimeler

Histerektomi; Histopatolojik Korelasyon; Uterin Leiomiyom

Abstract

Aim: The aim of the study was to evaluate the surgical indications, routes of surgery and the correlation between preoperative diagnosis and histopathological examination of hysterectomy specimens. Material and Method: Medical records and histopathological findings were reviewed and analyzed retrospectively, in 422 consecutive women who underwent hysterectomy over a two-year period from 2011 to 2014. Those with confirmed malignancy before operation were excluded. Cohen kappa statistics were used to measure agreement between preoperative clinical and postoperative histopathological diagnosis which was found to be fair with **κ value being 0.4. Results:** The mean age of our patients was 51.5 ± 8 years. The abdominal route was used in 378 cases (85.5%), the vaginal route in 55 patients (12.4%) and the laparoscopic-assisted vaginal hysterectomy in 9 cases (2%). Abnormal uterine bleeding (28.9 %) was the most common indication for hysterectomy. The histopathology of the endometrium prior to hysterectomy was reported in 75% of the cases and the most common finding was a secretory or proliferative endometrium. Leiomyomatous uterus was the most frequently encountered pathology (43.7%) followed by coexistence of leiomyoma and adenomyosis (17.4%) in hysterectomy specimens. Hysterectomy specimens may be unremarkable histopathologically, most of which are vaginal hysterectomies done for uterine prolapsed (kappa=0,407). Discussion: The correlation between the preoperative clinical and the pathological diagnosis were poor in cases with abdominal pain, abnormal uterine bleeding and fibroids. But there was a high correlation in cases with adnexial mass.

Keywords

Hysterectomy; Histopathological Correlation; Uterine Leiomyoma

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Introduction

Hysterectomy is widely performed all over the world to manage benign gynecological disorders including fibroids, adenomyosis, benign endometrial hyperplasia, ovarian cysts, uterine prolapsus, pelvic inflammatory disease or malignancy of reproductive organs [1]. The main purpose of hysterectomy is to relieve symptoms and improve quality of life deteriorated by symptoms such as abnormal menstrual bleeding, dysmenorrhea, chronic pelvic pain, bowel and urinary symptoms or uterine prolapsed [2]. Nowadays, the world focuses on successful, effective, safe and cost-effective, minimally invasive treatment options for benign gynecological disorders alternative to hysterectomy such as uterine artery embolization, levonorgestrel releasing intrauterine system or thermal ablation [3]. They can be offered especially as an option to women wishing to conserve their reproductive function. Despite the development of minimally invasive procedures especially for uterine fibroids, hysterectomy is still regarded as the definitive treatment for most pelvic pathologies because of their restricted availability, poor knowledge and high cost [4-7].

Fibroids and adenomyosis are the two most common indications for hysterectomy [8]. The final histopathology results of the hysterectomy specimens of women with leiomyomas revealed the coexistence with adenomyosis ranging from 15 to 57% [9,10].

All hysterectomy specimens should be carefully examined postoperatively even if the histopathological evaluation of endometrium is done preoperatively. Because preoperative histopathological evaluation of endometrium obtained by dilation and curettage (D&C) reduces the risk of unexpected malignancy but does not completely rule out the absence of malignancy in final histopathological evaluation of the hysterectomy specimens [11].

The purposes of our present study are to evaluate the indications of hysterectomy for benign gynecological disorders performed in a university hospital and to compare the correlation between preoperative clinical diagnosis and the final histopathology results of the hysterectomy specimens.

Material and Method

This retrospective study was based on the analysis of the medical records of all patients that underwent hysterectomy due to a history of fibroids, abnormal uterine bleeding, benign endometrial hyperplasia, chronic pelvic pain, ovarian cysts, postmenopausal bleeding, and uterine prolapsus. It was conducted at Bezmialem Vakif University, Istanbul, Turkey between November 2011 and December 2014. 486 women were included in the present study. Hysterectomies performed due to gynecologic malignancy were excluded. After exclusion of 44 patients with malignancies, a total of 442 cases were included in the current study for analysis during the 3- year study period.

The demographic data including age at surgery (years), parity, a history of previous miscarriage, a history of previous Cesarean section, smoking, menopausal status, the preoperative clinical diagnosis, indications for hysterectomy, the histopathology of the endometrium obtained by D&C when available and the final histopathology results of the hysterectomy specimens were all retrieved from the medical records and/or the centralized computer system by the authors. Patients with more than 1 year since the last menstrual period were considered to be menopausal.

Analyses were done using the statistical package for the Social Sciences, version 21 (SPSS, Chicago, IL). Data were reported as mean ± SD, range and percentage. Cohen kappa statistics were used for measurement of agreement between preoperative clinical diagnosis and postoperative histopathological diagnosis of the hysterectomy specimens which was found to be fair with value being 0.4.

Results

Of 422 women, 378 (85.5%) hysterectomies were abdominally performed, 55 (12.4%) hysterectomies were vaginally performed and 9 (2%) were performed via the laparoscopic-assisted vaginal hysterectomy. Hysterectomies were performed alone in 116 women and with salpingooophorectomy in 326 women. Of all women, the demographic and gynecologic characteristics of the patients including age at surgery (years), parity, a history of previous miscarriage, a history of previous Cesarean section, smoking and menopausal status were shown in Table 1. The

Table 1. Demographic and gynecologic characteristics of the cases

Age at surgery (years)	Number of cases	Percentage (%)
<39	6	1.4
40–49	207	46.8
50–59	152	34.4
>60	77	17.4
Parity		
0	18	4.1
1 or more	424	95.9
History spontaneous miscarriage		
0	314	71
1 or more	128	29
History Cesarean section		
0	358	81
1 or more	84	19
Smoking	58	13.1
Menopausal status		
Premenopausal	283	64
Postmenopausal	159	36

mean age at hysterectomy was 51.5 ± 8.2 years and the majority of women who underwent hysterectomy were in their fourth and fifth decades (81.2%). Most women were multiparous (n=424, 95.9%) and premenopausal (n=283, 64%). The indications of hysterectomy consisted of abnormal uterine bleeding, fibroids, uterine prolapse, abdominal pain, postmenopausal bleeding, and others (cervical pathologies, endometrial hyperplasia, e.g.). Abnormal uterine bleeding was the most common indication for hysterectomy accounting for 28.9% of the cases.

Of 335 cases (75%) preoperatively underwent D&C for endometrial sampling, the results of preoperative histopathological evaluation of the endometrium obtained by D&C were presented in Table 2. According to the results of preoperative histopathological evaluation of the endometrium, secretory and proliferative endometrium reported in 116 cases (34.6%) was

Table 2. Histopathology of the endometrium (335 cases)

Parameter	Number of cases	Percentage (%)
Secretory or proliferative endometrium	116	34.6
Endometrial polyp	62	18.5
Simple endometrial hyperplasia	45	13.4
Complex endometrial hyperplasia	5	1.4
Atypical endometrial hyperplasia (simple and complex)	12	3.5
Nonspecific pathology	44	13.1
Disordered proliferative endometrium	19	5.6
Insufficient tissue	17	5
Hormone imbalance effect	11	3.2
Others	4	1.1

the most common finding. The endometrial hyperplasia was found in 62 cases (18.5%). 5 of these patients, 3 of which had complex atypical hyperplasia, 1 complex non-atypical hyperplasia and 1 simple hyperplasia in the preoperative assessments had malignant disease in the final histopathological analysis of hysterectomy specimens.

According to the final histopathological results of the hysterectomy specimens, fibroids (47.5%) were the most common postoperative diagnosis and fibroids coexisting with adenomyosis (17.4%) were reported to be the second most common finding. The results of final histopathological evaluation of hysterectomy specimens including fibroids (n=210, 47.5%; 15 cases with a combination of fibroids and endometrial hyperplasia and 14 cases of fibroids and endometrial polyp), fibroids coexisting with adenomyosis (n=77, 17.4%; 4 cases with a combination of fibroids, adenomyosis and endometrial hyperplasia and 6 cases mixed of fibroids, adenomyosis and endometrial polyp), adenomyosis (n=45, 10.1%), endometrial hyperplasia (n=14, 3.2%), no specific pathology (n=65, 14.7%), endometrial polyp (n=9, 2%) and malignancy (n=9, 2%) were shown in Table 3. Of 9 cases with malignancy reported at final histopathological evaluation of hysterectomy specimens, 5 cases were found to have endometrial cancer, 1 case was found to have stromal sarcoma and 3 cases were found to have ovarian cancer.

Table 3. Final histopathology after surgery

Parameter	Number of cases	Percentage (%)
Fibroids *	210	47.5
Fibroids + adenomyosis**	77	17.4
Adenomyosis	45	10.1
Endometrial hyperplasia	14	3.2
No specific pathology	65	14.7
Endometrial polyp	9	2
Malignancy	9	2
Others	13	2.9

*15 cases with a combination of fibroids and endometrial hyperplasia and 14 cases of fibroids and endometrial polyp

**4 cases with a combination of fibroids, adenomyosis and endometrial hyperplasia and 6 cases mixed of fibroids, adenomyosis and endometrial polyp

Of all cases with malignancy in final histopathological evaluation of the hysterectomy specimens, the results of preoperative histopathological evaluation of the endometrium were reported as benign and all of them had an early stage cancer with well- differentiated. 3 cases of ovarian cancer underwent hysterectomy because of heavy menstrual loss and adnexal mass and the final histopathological evaluation of those hysterectomy specimens were found to have early stage of teratocarcinoma (moderately-differentiated squamous cell carcinoma arising in a mature cystic teratoma) and granulose cell tumor and Sertoli Leydig cell tumor. Of 442 women, 44 (9.9%) had ovarian tumors concomitantly including endometrioma (31.8%), serous cystadenoma (20.4%), teratoma (15.9%), mucinous cystadenoma (11.3%), fibrotechoma (11.3%) and Brenner's tumor (2.3%) (Table 4).

Table 4. The distribution of ovarian tumor detected in cases underwent hysterectomy

Total ovarian neoplasms (44)	
Benign ovarian tumors (41) %	
Endometrioma	14 (31.8)
Serous cystadenoma	9 (20.4)
Unilateral	8
Bilateral	1
Teratoma	7 (15.9)
Mucinous cystadenoma	5 (11.3)
Unilateral	3
Bilateral	2
Fibrothecoma	5 (11.3)
Brenner tumor	1 (2.3)
Malignant ovarian tumors (3) %	
Sertoli leydig cell tumor	1 (2.3)
Granulosa cell tumor	1 (2.3)
Teratocarcinoma	1 (2.3)

The most common indication for surgery was abnormal uterine bleeding (AUB) (n = 128). In 95.9% of women with the preoperative clinical diagnosis of abnormal uterine bleeding, a definite organic pathology was demonstrated in the final histopathology results of the hysterectomy specimens.

When the correlation between the preoperative clinical diagnosis and the final histopathological evaluation of hysterectomy specimens was evaluate: The final histopathology report confirmed the diagnosis with a positive correlation of 63% (Kappa=0.28) in 57 cases who underwent hysterectomy because of fibroids. 69% of cases with adnexal mass in preoperative clinical diagnosis had ovarian pathology in the final postoperative histopathological evaluation (Kappa=0.497). Hysterectomy was performed in 73 cases because of uterine prolapse. A pathology was found in 37 cases (50.6%) and fibroids (n=20, 27.3%) were the most common finding. Nonspecific pathology was reported in 49.3% of all cases (Kappa=0.407). After exclusion of cases with endometrial cancer by D&C in patients with a history of postmenopausal bleeding, 13 (30.9%) cases were found to have fibroids, 7 cases (16.6%) had no pathology and one case (2.3%) had endometrial cancer despite no pathological finding in the preoperative histopathological evaluation of the endometrium.

The Kappa analysis for our data demonstrated that there was no agreement between the preoperative clinical diagnosis and final histopathological evaluation of hysterectomy specimens (Kappa = 0.074). Furthermore, if analysis was stratified by preoperative diagnosis, there was only a good compliance in case

of adnexial mass (Kappa=0.497). In cases underwent hysterectomy because of uterine prolapse in the preoperative clinical diagnosis, no specific pathology was highly reported in the final histopathological evaluation of hysterectomy specimens (Kappa=0.407).

Discussion

Hysterectomy is widely performed in gynecological surgery and provides definitive cure to many benign and malign gynecological diseases although Broder et al. suggested that indications for non-oncological and nonemergency hysterectomy were found to be inappropriate [12,13]. This study focused on the correlation between preoperative clinical diagnosis and the final histopathology results of the hysterectomy specimens. The evaluation of correlation between preoperative clinical diagnosis and the final histopathology results of the hysterectomy specimens provide a contribution for determination of the appropriateness of surgery, preference of conservative therapy, avoiding unnecessary procedures and careful evaluation of indications because as other surgical procedure, hysterectomy is associated with risk factors. Furthermore, there is still a debate about sexual, physical, economical, emotional and medical results of hysterectomy.

There are few studies in the literature to compare the correlation between preoperative clinical diagnosis and the final histopathology results of the hysterectomy specimens. Moreover, their results are not concordant with each other and there is no agreement in the literature in terms of the correlation between both of them. In the light of our results, the Kappa analysis for our data revealed that there was no agreement between the preoperative clinical diagnosis and the final histopathological evaluation. However, in our study, 95.4% of cases who underwent hysterectomy because of abnormal uterine bleeding (the most common symptom of hysterectomy in preoperative clinical diagnosis) had a definite organic pathology in the final results of the hysterectomy specimens. Similarly, Gupta et al. [14] demonstrated that 100% of cases that underwent hysterectomy due to dysfunctional uterine bleeding had an abnormality in the final histopathology results of the hysterectomy specimens.

According to the literature, leiomyoma was reported as the most common indication for hysterectomy [15-17]. In our study, on the other hand, leiomyoma was the second most common indication for hysterectomy, but was the most common result of hysterectomy specimens postoperatively. The preoperative clinical diagnosis of leiomyoma was confirmed with the postoperative histopathological specimens in 63% of the cases. In spite of that, adenomyosis which is the third most common finding followed by fibroids and fibroids coexisting with adenomyosis was totally missed out. This can be explained by the fact that the diagnosis of adenomyosis could not be made preoperatively and it was generally based on the histopathological examination of uterus. Similarly Atılgan et al. [18] reported that the most common finding in the postoperative histopathological specimens was fibroids (40.1%) following by endometrial hyperplasia (38.2%) and adenomyosis (25.4%) in 358 hysterectomy cases.

Most of the hysterectomies were performed through an abdominal route in concordance with a Canadian study (abdominal 78%, vaginal 14%, and laparoscopic 5.9%) [15]. In a study from Turkey including 1484 patients underwent hysterectomy, Yılmaz et al. [19] reported that of all cases, 1072 (72,2%) hysterectomies were abdominally performed, 319 (21.4%) hysterectomies were vaginally performed and 93 (6.2%) were performed via the laparoscopic-assisted vaginal hysterectomy. However, another retrospective analysed hysterectomy cases for two years study from Turkey reported to 93,6% the ratio of abdominal hysterectomies and 6,4% the ratio of vaginal hysterectomies [20]. Despite the presence of minimally invasive surgical options for hysterectomy such as laparoscopic hysterectomy and robotic surgery abdominal route is commonly performed because of limitations of these techniques including the lack of experience, high cost and limited availability [3].

A retrospective study found that the correlation between clinical diagnosis and the pathological diagnosis were poor in cases with abdominal pain or dysfunctional uterine bleeding while there was a high positive correlation of 88% (Kappa=0.37) in cases with fibroid regarding the evaluation of 137 cases [21]. In a study including 1283 cases, Lee et al. [22] showed that 80% of the preoperative clinical diagnoses were confirmed, while Miller et al. [16] indicated that only 50% of the preoperative clinical diagnosis were confirmed in the evaluation of 246 hysterectomy specimens. Another study including 373 cases with non-oncological hysterectomies showed that leiomyoma was the most common finding followed by adenomyosis. Preoperative diagnosis of leiomyoma cases was confirmed with histopathology in almost 50% of hysterectomies whereas the preoperative diagnosis of adenomyosis was completely missed out similar to the results of our study [17].

The final histopathological evaluation of hysterectomy specimens of 5 cases were reported as malignancy of endometrium while the results of preoperative histopathological evaluation of the endometrium were reported as benign. 5 cases of early stage endometrial cancer have a history of hyperplasia in preoperative histopathological evaluation of the endometrium. Only one case with postmenopausal bleeding with preoperative benign histopathology of the endometrium was reported as malignant. A study also found that 5% of cases with preoperative benign histopathology of the endometrium had a malignancy in the final histopathological evaluation of hysterectomy specimens and endometrial hyperplasia was the most common finding in cases with postmenopausal bleeding [21]. Therefore, due to ethical, legal, diagnostic and therapeutic significance, all hysterectomy specimens should be histopathologically evaluated, especially in cases with hyperplasia in preoperative evaluation of the endometrium.

In cases with the preoperative clinical diagnosis of uterine prolapse, there is no specific pathology in final histopathological evaluation of hysterectomy specimens. In literature, the incidentally detection rate of malignancy was found as 0.22% in pre or postmenopausal patients who underwent hysterectomy because of uterine prolapsed [23]. Although a study reported that fibroids coexisting with endometriosis were 10% [24], this rate was 4.5% in our results. This may be the caused by the early age of marriage and childbearing in the present study. There was a good agreement between adnexial mass in the

preoperative clinical diagnosis and the ovarian cyst in the final histopathological evaluation.

In conclusion, although abnormal uterine bleeding was the most common symptom of hysterectomy and fibroids were the most common finding of hysterectomy specimens, the correlation between the preoperative clinical and the pathological diagnosis was poor in cases with abdominal pain, abnormal uterine bleeding and fibroids. But there was a high correlation in cases with adnexial mass. Therefore, the final histopathological evaluation of hysterectomy specimens should be done in all hysterectomy cases. The results of our study may help to reduce inappropriate indications for hysterectomy and increase the tendency towards a conservative approach.

Conflict of interest

The authors declare no conflict of interest related to this work.

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