Agreement of histopathological findings of uterine curettage and hysterectomy specimens in women with abnormal uterine bleeding

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ABSTRACT

الأهداف: لفحص الأهمية التشخيصية للتوسيع والكشط D&C في مريضة تعاني من نزيف الرحم غير طبيعي (AUB) عن طريق إجراء الفحص النسيجي لأنسجة بطانة الرحم من قبل D&C واستئصال الرحم.

الطريقة: أجريت هذه الدراسة بأثر رجعي باستخدام السجلات الطبية ل 163 امرأة أدخلوا جناح الولادة وأمراض النساء بمستشفى أمير المؤمنين في سمنان، إيران خلال الفترة من 2010م إلى 2015م وذلك لإجراء كشط تشخيصي بسبب نزيف الرحم غير الطبيعي والذي خضع لاستئصال الرحم. استخرجنا نتائج خصائص المرضى والنتائج التشخيصية للكشط واستئصال الرحم، وتم حساب قيم الحساسية والنوعية والقيم التنبؤية الإيجابية والسلبية للكحت.

النتائج: كان متوسط ± الانحراف المعياري للمرضى 49.8 ± 7.8 سنوات. وبلغت الحساسية D&C في تشخيص أمراض بطانة الرحم 49.1%، والنوعية 84.5%، والقيم التنبؤية الإيجابية 60.5%، والسلبية 77.5%. وكانت الحساسية D&C في تشخيص مختلف تضخم بطانة الرحم 62.5%، اختلال بطانة الرحم التكاثري 36.8%، وسرطان الرحم 83.3%. من بين 6 مريضات بالأورام الحميدة لبطانة الرحم تم استئصال الرحم لديهم، لم يتم تشخيص أي مريضة من قبل كحت.

الخاتمة: سجل توسيع والكشط حساسية مقبولة في تشخيص سرطان بطانة الرحم، وحساسية منخفضة في تشخيص تضخم بطانة الرحم، وحساسية منخفضة جداً في تشخيص اختلال بطانة الرحم التكاثري والأورام الحميدة.

Objectives: To examined the diagnostic value of dilatation and curettage (D&C) in patients with abnormal uterine bleeding (AUB) by conducting a histopathological examination of endometrial tissues by D&C and hysterectomy.

Methods: In this retrospective study, the medical records of 163 women who had been hospitalized in the Obstetrics and Gynecology Ward, Amir-al-Momenin Hospital, Semnan, Iran between 2010 and 2015 for diagnostic curettage due to AUB and who had undergone hysterectomy were investigated. The patients' characteristics and histopathologic results of curettage and hysterectomy were extracted, and sensitivity and specificity and positive and negative predictive values of curettage were calculated.

Results: The mean ± standard deviation age of the patients was 49.8±7.8 years. The sensitivity values of D&C in the diagnosis of endometrial pathologies was 49.1%, specificity 84.5%, positive 60.5%, and negative predictive 77.5%. The sensitivities of D&C in the diagnosis of various endometrial hyperplasia was 62.5%, disordered proliferative endometrium 36.8%, and endometrial cancer 83.3%. Of 6 patients with endometrial polyps on performing hysterectomy, no patient was diagnosed by curettage.

Conclusions: Dilatation and curettage has acceptable sensitivity in the diagnosis of endometrial cancer, low sensitivity in the diagnosis of endometrial hyperplasia, and very low sensitivity in the diagnosis of disordered proliferative endometrium and endometrial polyps.

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Abnormal uterine bleeding (AUB) is the most common gynecologic symptom and complaint in gynecological outpatients and occurs in all age groups in women.[1] It is often physiologic and has no obvious consequences, except distress in patients.[2] Approximately 9-14% of AUB cases in women occur between puberty and menopause, which has a major impact on women's quality of life and imposes significant diagnosis-treatment requirements and an economic burden on the health system and health care resources. The results of a national study in America showed that menstrual disorders, including AUB, were the reason for the referral of approximately 20 million people (19.1% of patients) to family doctors for gynecologic problems during the 2 years of the study and 25% of gynecologic surgeries were performed due to AUB.[1] Abnormal uterine bleeding is a symptom and not a disease; it is one of the most common complaints in gynecologic patients. More than 70% of gynecologic consultations in menopausal and postmenopausal women are related to AUB. Abnormal uterine bleeding can occur in various forms such as menorrhagia, polymenorrhea, metrorrahgia, or menometrorrhagia.[3] There are various techniques for evaluating the causes of AUB. These include minimally invasive and invasive procedures such as endometrial curettage biopsies,[4] ultrasonography, endometrial biopsy, hysteroscopy endometrial biopsy, and dilatation and curettage (D&C).[5,6] Among these techniques, uterine D&C is the most effective for investigating endometrial lesions and is sensitive and safe for evaluating AUB.[5] In recent years, the diagnostic value of D&C has been evaluated. In a study,[7] no significant differences have been observed in the histology of endometrial tissues in diagnostic D&C and hysterectomy. However, more severe histopathologies have been observed in hysterectomy samples than in endometrial curettage samples,[8] or the consistency of the endometrial tissue histopathology between D&C and hysterectomy was low. This was particularly in cases of endometrial hyperplasia without atypia.[9] Endometrial curettage has also been unable to be used to diagnose malignancies in postmenopausal women.[10] In this study, the diagnostic value of D&C in patients with AUB was studied by conducting a histopathological examination of endometrial tissues by D&C and hysterectomy.

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Methods. In this retrospective study, the medical records of 163 women who were referred to the Obstetrics and Gynecology Ward of Amir-al-Momenin Hospital, Semnan, Iran between 2010 and 2015 were studied. These records were of women referred for diagnostic curettage and women who had undergone hysterectomy for treatment (as the gold standard) due to AUB resistant to medical therapy, or AUB in combination with an endometrial thickness of more than 12 mm on performing transvaginal ultrasound and where focal lesions had not been the cause of AUB.

After approval of the project by the Ethics Committee of Semnan University of Medical Sciences and Research (according to the principles of the Helsinki Declaration) and in coordination with the hospital medical records, the required information was extracted from the records.

Cases where the diagnostic method was not D&C prior to hysterectomy and those where D&C of a patient was not due to AUB were excluded. Women with AUB resistant to drug therapy, or those with AUB and an endometrial thickness of more than 12 mm and who underwent both curettage and hysterectomy were included. Exclusion criteria were an uncertain diagnosis following a histopathological evaluation by curettage or hysterectomy, those who underwent a histopathological evaluation by a different pathologist, and those who underwent transvaginal ultrasound by different sonographers. In this study, any type of hyperplasia, disordered proliferative endometrium, malignancy, and endometrial polyps was considered as pathology or disease, and other cases were considered as normal.

Statistical analysis. Collected data were entered into the Statistical Package for Social Sciences (SPSS. Inc., Chicago, IL, USA) version 19 software and analyzed by calculating the frequency, central tendency, and dispersion indices as well as sensitivity and specificity and positive and negative predictive value of D&C.

Results. The mean ± standard deviation (SD) of age of 163 patients with AUB was 49.8±7.8 years (35-82 years). The mean ± SD of the number of pregnancies was 3.7±1.7. The highest number of pregnancies was 9, and only 3 of the 163 (1.8%) patients did not have a history of pregnancy. The mean±SD parity was 3.29±1.53,

Table 1 - Distribution of characteristics in patients with abnormal uterine bleeding.

Characteristics	n	%
Age (year)		
<40	7	(4.3)
40-49	90	(55.2)
50-59	53	(32.5)
≥60	13	(8.0)
Bleeding pattern		
Menometrorrhagia	90	(55.2)
Hypermenorrhea	24	(14.7)
Menorrhagia	22	(13.5)
Polymenorrhea	16	(9.8)
Others	11	(6.7)
Duration between dilatation and curettage & hysterectomy (month)		
≤1	31	(19.0)
2-6	73	(44.8)
>6	59	(36.2)
Parity		
<3	45	(27.6)
≥3	118	(72.4)
Duration of bleeding (month)		
<6	72	(44.2)
6-12	46	(28.2)
12-24	11	(6.7)
>24	34	(20.9)
Contraceptive method		
Natural	52	(31.9)
Tubectomy	47	(28.8)
Vasectomy	21	(12.9)
Oral contraceptive	10	(6.1)
Others	33	(20.3)
Type of hysterectomy		
Total	137	(84.0)
Sub total	23	(14.1)
Radical	3	(1.8)
Menopause		
Yes	43	(26.4)
No	120	(73.6)

and the highest parity was 9. Moreover, the mean±SD number of abortions was 0.46±0.63 (minimum number of abortion = 0 and maximum = 2), and 38.7% of the women had at least one abortion. The most common bleeding pattern was menometrorrhagia (55.2%), which was followed by hypermenorrhea (14.7%).

The duration of bleeding in 44.2% of the patients was less than 6 months. The most common method of prevention was withdrawal (31.9%), followed by tubal ligation (28.8%), and 26.4% of the patients were postmenopausal. The individual characteristics of the patients are given in **Table 1**.

Hysterectomy results in patients were disordered proliferative endometrium (11.7%), hyperplasia (8%), malignancy (7.4%), and endometrial polyps (4.3%). The most common hysterectomy findings in Semnan were proliferative endometrium (14.7%) and secretory endometrium (12.9%). The distribution of the results of hysterectomy pathology and D&C is given in **Table 2**. Of 58 normal patients, the pathology result of curettage in 81% of them was normal, and in 8.6%, the results were abnormal for adenomatous hyperplasia, or simple cystic hyperplasia (**Table 2**).

According to **Tables 2 & 3**, sensitivity of D&C in the diagnosis of histopathology findings of endometrial tissues was 49.1%, and specificity 84.5% and positive predictive values 60.5% and negative predictive values 77.5%. Of 4 patients with adenomatous hyperplasia, the pathology result of curettage was not correctly reported in any of them. Moreover, in 159 other patients whose hysterectomy pathology result was not adenomatous hyperplasia, the pathology result of D&C in 99.4% of them was also not adenomatous hyperplasia. In 9 patients with simple cystic hyperplasia, the pathology result of D&C was correctly reported in 77.8% of them, and in 154 patients, the hysterectomy pathology result was not simple cystic hyperplasia. In 90.3% of the patients, the pathology result of D&C was not simple cystic hyperplasia. In 3 patients with complex atypical endometrial hyperplasia, the D&C result was correctly reported. In other 160 patients, whose hysterectomy pathology result was not complex atypical endometrial hyperplasia, the pathology result of D&C in 97.75% of them was not complex atypical endometrial hyperplasia. Overall, the sensitivity of D&C in the diagnosis of hyperplasia was 62.5% (**Table 2**).

Of 19 patients with disordered proliferative endometrium, the pathology result of D&C in 36.8% of them was correctly reported. In 144 patients whose hysterectomy pathology result was not disordered proliferative endometrium, the specificity of D&C was 95.1% (**Table 2**).

Of 12 patients with malignancy, the pathology result of D&C in 83.3% of them was correctly reported. Moreover, in the other 151 patients whose hysterectomy pathology result was not malignancy, the pathology result of D&C was also not malignancy (**Table 2**). In 7 patients with endometrial polyps, the pathology result of D&C was not an endometrial polyp in any of the patients. Moreover, in the remaining 156 patients whose hysterectomy pathology results were not an endometrial polyp, in 98.7% of them, the pathology result of D&C was also not an endometrial polyp (**Table 2**).

Table 2 - Histological findings in dilatation and curettage and hysterectomy.

Dilatation and curettage findings	Hysterectomy findings											Total
	Normal pattern	Endometrial polyps	Adenomatous hyperplasia	Simple cystic hyperplasia	Atypical complex	Atrophic endometrium	Disordered proliferative endometrium	Proliferative endometrium	Secretory endometrium	Malignancy	Atypical complex + malignancy	
Normal pattern	47	6	2	-	-	5	4	10	4	-	-	**78**
Endometrial polyps	-	-	-	-	-	-	-	-	2	-	-	**2**
Adenomatous hyperplasia	1	-	-	-	-	-	-	-	-	-	-	**1**
Simple cystic hyperplasia	4	-	2	7	-	2	4	3	-	-	-	**22**
Atypical complex	-	-	-	-	3	-	-	-	-	2	-	**4**
Atrophic endometrium	-	-	-	-	-	-	2	-	-	-	-	**2**
Disordered proliferative endometrium	-	-	-	2	-	-	7	1	4	-	-	**14**
Proliferative endometrium	4	1	-	-	-	-	-	10	7	-	-	**22**
Secretory endometrium	2	-	-	-	-	-	2	-	4	-	-	**8**
Malignancy	-	-	-	-	-	-	-	-	-	9	-	**9**
Atypical complex+ malignancy	-	-	-	-	-	-	-	-	-	-	1	**1**
Total	**58**	**7**	**4**	**9**	**3**	**7**	**19**	**24**	**21**	**11**	**1**	**163**

Table 3 - Agreement between dilatation-curettage and hysterectomy findings.

Dilatation-curettage findings	Hysterectomy Findings	
	+*	-
+*	26	17
-	27	93

*hyperplasia, disordered proliferative endometrium, endometrial polyps and malignancy assigned. + = positive, - = negative

Discussion. A new aspect of his study was the determination of the diagnostic value of curettage in diagnostic disordered proliferative endometrium, and an important aspect of the study was to find a high diagnostic rate for endometrial cancer by curettage. The results showed that the sensitivity of D&C in the diagnosis of endometrial pathologies was 49.1%, specificity was 84.5%, positive predictive value was 60.5%, and negative predictive value was 77.5%. In a retrospective study conducted by Bettocchi et al[11] on 397 patients with AUB, in 62.5% of the patients, in whom D&C failed to diagnose the pathology, the pathology was later identified on performing hysterectomy. The sensitivity of D&C was 46%, specificity was 100%, positive predictive value was 100%, and negative predictive value was 7.1%.

The other result of this study is that the sensitivity of D&C in the diagnosis of hyperplasia was generally 62.5%. The sensitivity of D&C in the extraction of adenomatous hyperplasia was zero; it was 77.8% in simple cystic hyperplasia and 100% in complex endometrial atypical hyperplasia. In a study by Obeidat[12] on 55 patients with AUB, 47.3% had simple hyperplasia, 43.6% had mixed hyperplasia, and 9.1% had complex atypical hyperplasia on performing curettage. The consistency rate among histopathology findings in curettage and hysterectomy samples was 45.5%. On

performing hysterectomy, none of the 26 patients with simple hyperplasia had endometrial cancer, but one patient was diagnosed with cancer and hyperplasia simultaneously. It was concluded that the pathology of simple hyperplasia by curettage was consistent with the pathology obtained from hysterectomy, but in case of mixed hyperplasia with atypia, it seems that curettage has a lower diagnostic value.

In the present study, it was found that the pathology obtained from endometrial curettage on simple and complex cystic hyperplasia with atypia is consistent with the pathology obtained from hysterectomy, but in patients with adenomatous hyperplasia, it seems that curettage has a lower diagnostic value. Moreover, in general, the diagnosis of endometrial hyperplasia by curettage has low sensitivity (62.5%).

In a study by Jesadapatrakul et al[9] on 46 patients with endometrial hyperplasia, the general consistency rate of curettage and hysterectomy was 41.3%. The consistency rate in patients with atypical endometrial hyperplasia was 62.5% and in patients with non-atypical endometrial hyperplasia was 30%. In addition, 17.4% of patients with endometrial hyperplasia had endometrial carcinoma. In general, the consistency rate of endometrial samples in curettage and hysterectomy samples was moderate, and the consistency rate in patients with endometrial hyperplasia without atypia was lower.[9] In the study by Saygili[13] on 42 menopausal women with AUB, preoperative D&C endometrial pathology findings were positively correlated with postoperative hysterectomy pathology findings. However, as the real pathology gets worse, D&C seems to under diagnose. In patients with mixed hyperplasia with or without atypia, a second D&C or hysteroscopy evaluation may be recommended.[13] In our study, the sensitivity of D&C for complex endometrial atypical hyperplasia was 100%, that for simple cystic hyperplasia was 77.8%, and that for simple adenomatous hyperplasia was zero. Two patients with endometrial hyperplasia had endometrial carcinoma. In general, the sensitivity of D&C in the diagnosis of endometrial hyperplasia was low, and it was zero in the diagnosis of adenomatous endometrial hyperplasia.

In the present study, the sensitivity of D&C in diagnosing complex endometrial atypical hyperplasia was 100%. In the study by Kleebkaow et al,[8] only 32 patients were diagnosed with endometrial hyperplasia from the hysterectomy samples of 79 patients with a preoperative diagnosis of endometrial hyperplasia. The consistency rate of preoperative and postoperative hysterectomy findings was statistically significant. Histopathologic findings in 5 patients (6.3%) after surgery were more severe than those in the preoperative diagnosis. It was concluded that re-curettage, or other diagnostic methods are better conducted in women with recurrent bleeding. No reports were found regarding the diagnostic value of uterine D&C regarding disordered proliferative endometrium in searching the resources. In the present study, the sensitivity of D&C in the diagnosis of malignancy was 83.3%. Moreover, of 151 patients where the hysterectomy pathology result was not malignancy, in all of them (100%), the pathology result of D&C was not malignancy.

In a study by Kurt et al[14] on 58 patients with atypical endometrial hyperplasia, the results showed that although endometrial cancer was not diagnosed in any patient with atypical endometrial hyperplasia before hysterectomy, well-differentiated endometrium adenocarcinoma was identified in 44.7% of the patients. Our results also showed that while endometrial cancer was not diagnosed in any patient with adenomatous hyperplasia and simple cystic hyperplasia, endometrial carcinoma was diagnosed in 2 patients with a preoperative diagnosis of complex atypical hyperplasia. In the present study, no patient with an endometrial polyp was diagnosed by D&C. According to Radwan et al,[15] the gold standard method in the diagnosis of endometrial polyps is hysteroscopy, which is a diagnostic and treatment method. The other effective method is sonohysterography, which is a safe method with high sensitivity and specificity, and its diagnostic value is approximately equal to that of hysteroscopy. Therefore, diagnostic curettage is not an appropriate method for the diagnosis of endometrial polyps according to the findings of our study and the study by Radwan et al.[15] In a retrospective study on 83 patients who underwent D&C and then hysterectomy, Hemida et al[7] did not find a significant difference between the histology of endometrial tissue before surgery and the histology of hysterectomy samples (p=0.41). The agreement between histopathological findings was not significantly affected by the time gap between D&C and hysterectomy. The concordance rate between D&C and hysterectomy was 79.5%.[7] In a study on 79 patients with a preoperative diagnosis of endometrial hyperplasia for determining the consistency of histopathologic findings before and

after hysterectomy, Kleebkaow et al[8] studied endometrial samples obtained from curettage and hysterectomy. The consistency rate of endometrial hyperplasia by both methods was 40.5%. The consistency of findings before and after surgery was not statistically significant (Kappa = 0.011). Histopathologic findings in 6.3% of the patients after surgery showed more severe histology. They concluded that for endometrial hyperplasia diagnosed by curettage, the diagnosis could be confirmed, although 6.3% of the subjects had more severe histology after hysterectomy.[8]

The most common hysterectomy finding in the present study was proliferative endometrium (14.7%), which was followed by secretory endometrium (12.9%). In the study by Soleimani et al[16] on 591 patients with AUB, the most common finding was proliferative endometrium (22.8%) and secretory endometrium (17.4%). In the study by Saygili,[13] the most common finding before and after D&C and hysterectomy was irregular proliferative endometrium (38%).

Study limitations. Low sample size to determine the diagnostic value of D&C in each endometrial pathology. Using larger samples, one can obtain results that are more precise in this regard. The evaluation of all endometrial pathologies, particularly endometrial cancer and disordered proliferative endometrium, was one of the important strengths in the present study.

In conclusion, D&C has acceptable sensitivity in the diagnosis of endometrial cancer, low sensitivity in the diagnosis of endometrial hyperplasia, and very low sensitivity in the diagnosis of disordered proliferative endometrium and endometrial polyps. Further studies with more samples in endometrial pathology are recommended to achieve more accurate results for each pathology.

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