



ORIGINAL ARTICLE

Accuracy of Transvaginal Ultrasonography for Detecting Intrauterine Lesions at a Taiwan Medical Center: A Correlation with Ultrasound and Hysteroscopic Histopathology



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KEY WORDS

endometrial lesion,
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Background: Transvaginal ultrasound (TVUS) can detect intrauterine benign focal pathological mass lesions such as polyps and measure endometrial thickness (ET) in patients with or without abnormal uterine bleeding (AUB). Our study assessed TVUS images for evaluating and measuring benign focal intrauterine lesions.

Patients and methods: This study retrospectively analyzed symptoms, ultrasound findings, and final histopathological reports for 184 women who underwent operative hysteroscopy in 2011 at a single medical center in Taiwan. Patients were chosen if their TVUS images showed benign focal intrauterine pathological masses.

Conflicts of interest: All contributing authors declare no conflicts of interest.

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Results: Sonographic reports corresponding with hysteroscopic pathologic examinations were reported in 184 patients. There were 36 patients with positive sonographic reports that did not correlate with their pathologic examination results. Another 36 patients, however, had negative sonographic reports but positive pathologic examination results, with a sensitivity of 72.9% and positive predictive value of 72.9%. An ET cut-off value above 9 mm had a poorer sensitivity (74.4%) for detecting focal benign intrauterine lesions and an ET cut-off value above 8 mm had a higher sensitivity of 86.5% for detecting focal benign intrauterine lesions. In the AUB status group, calculated Chi-square test (χ^2) results showed that the intrauterine benign focal lesion detection rate did not change statistically even after controlling ET.

Conclusion: TVUS had a sensitivity of 72.9% for diagnosing focal lesions. An ET \geq 8 mm had a lower sensitivity for diagnosing benign intrauterine focal lesions. In our retrospective study group, AUB was not a good predictor for diagnosing focal intrauterine lesions even after treating ET as a fixed variance.

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Introduction

Endometrial lesions, especially polyps, are increasing being discovered more often than was the case previously because of the widespread use of transvaginal ultrasound (TVUS). Owing to technical improvements in ultrasound technique, easy access and visualization of endometrium is quite common [1,2]. Menorrhagia, postmenopausal bleeding, intermenstrual bleeding, and infertility are related to endometrial lesions such as polyps [1]. Previous studies have reported that the prevalence of uterine polyps increased with age [3,4], and that complex hyperplasia and endometrial polyps appear more infrequently than endometrial polyps alone [5–7]. However, very limited information is available on the frequency of polyps in the general population [1,2,8]. The relationship between measurement of endometrial thickness (ET) and intrauterine pathology, especially in polyps, has not been documented thus far [9–11]. This study aimed to assess the diagnostic value of TVUS for measuring ET with or without abnormal uterine bleeding (AUB) and for detecting intrauterine benign focal pathology after hysteroscopy.

Patients and methods

This retrospective study was conducted at Changhua Christian Hospital, a medical center in Changhua, Taiwan. Between January 2011 and December 2011, a total of 272 women had hysteroscopic removal of foreign body or received polyp procedures, correlating with the Taiwan health insurance system operation code 80422 B.

We reviewed chart records and excluded patients who only underwent operations for missing intrauterine devices and cervical polyps; patients without either detailed sonography data or final pathology examinations were also excluded. A total of 191 patients were enrolled in our study, and all had been referred for this operative procedure because of either increased ET with or without AUB or a highly suspected endometrial polyp on TVUS. In addition, we excluded patients with uterine tumors and endometrial malignancies. Results of the histopathological analysis ($n = 184$) are presented in [Table 1](#).

Ultrasonographic examinations were performed using 5–7.5-MHz transvaginal probes (Voluson 730 Expert/Pro; GE

HealthCare, Kretztechnik AG, Zipf, Austria) and sonography systems (Philips HD 11XE; Royal Philips Electronics, Amsterdam, the Netherlands). Four sonographers performed the TVUS examinations; the youngest one had 5 years of gynecologic ultrasound experience and the oldest had 20 years of gynecologic ultrasound experience. While performing the TVUS procedure, an image of the thickest part of the Anterior-posterior (AP) bilayer ET was taken in the sagittal view and the ET echogenicity was noted. Lesions were measured or marked on suspected polyps or intrauterine benign focal lesions when there were different echogenicities.

All patients received hysteroscopy using a bipolar (Johnson & Johnson, New Brunswick, NJ, USA) or unipolar (KARL STORZ, Tuttlingen, Germany) resectoscopes under general anesthesia. The operator was aware of the TVUS findings. The location and numbers of intrauterine projections were noted. Focal lesions were resected into one or several pieces to pass through the cervical canal. All histopathological specimens were sent for examination and classified according to the World Health Organization criteria [12] using the histological report gold standard.

Statistical analysis

The sensitivity and positive predictive value (PPV) were calculated, providing information on post-test probability. Confidence intervals were calculated with 95% intervals and the Chi-square test (χ^2) was used for univariate analysis. A value of $p < 0.05$ was considered statistically significant. Statistical analysis was performed using the SPSS software package (version 18.0; SPSS, Chicago, IL, USA).

Table 1 Histological classification of uterine abnormalities in our study group.

Histological diagnosis	Number	Percentage	Cumulative percent
Functional endometrium	48	26.1	26.1
Polyp/polypoid change	3	1.6	27.7
Polyp	130	70.7	98.4
Hyperplasia	3	1.6	100.0
Total	184	100.0	

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