

**THE ROLE OF 3D ULTRASONOGRAPHY AND  
DOPPLER STUDIES IN CORRELATION WITH  
HYSTEROSCOPY AND HISTOPATHOLOGY IN  
DIAGNOSIS OF ABNORMAL UTERINE BLEEDING  
IN PREMENOPAUSAL WOMEN**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"قُلِ اللَّهُمَّ مَالِكُ الْمُلْكِ

تَوْفِي الْمُلْكِ مِنْ تَشَاءُ وَتَنْزِعِ الْمُلْكِ مِمَّنْ تَشَاءُ

وَتَعِزْ مَنْ تَشَاءُ وَتَكْذِلْ مَنْ تَشَاءُ

بِيَدِكَ الْخَيْرُ إِنَّكَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ"

صدق الله العظيم

"ال عمران 26"

يَا رَبِّ ...

وَإِذَا أَعْطَيْتَنِي مَالًا ... فَلَا تَاْخُذْ سَعَايَ  
وَإِذَا أَعْطَيْتَنِي قُوَّةً ... فَلَا تَاْخُذْ عَقْلِي  
وَإِذَا أَعْطَيْتَنِي جَاهًا ... فَلَا تَاْخُذْ تَوَاضُعِي  
وَإِذَا أَعْطَيْتَنِي تَوَاضُعًا ... فَلَا تَاْخُذْ عِزِّي  
وَإِذَا أَعْطَيْتَنِي قُدْرَةً ... فَلَا تَاْخُذْ عَفْوِي



*A huge bunch of flowers  
are offered to  
the soul of my dearest mother  
who was always  
loving, giving , caring  
and impressed me a lot*

***MERCY OF ALLAH  
BE UPON HER***



محضر  
اجتماع لجنة الحكم على الرسالة المقدمة من  
الطبيب / محمد همام عبد مناف عوض  
توظنة للحصول على درجة الدكتوراه  
فى التوليد وأمراض النساء

عنوان الرسالة باللغة الإنجليزية :

**THE ROLE OF D ULTRASONOGRAPHY AND DOPPLER STUDIES  
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BLEEDING IN PREMENOPAUSAL WOMEN**

عنوان الرسالة باللغة العربية :

دورالموجات فوق الصوتية ثلاثية الأبعاد ودراسات الدوبلر فى تشخيص النزيف الرحمى  
فى سن ما قبل انقطاع الطمث ومقارنتهما بنتائج المنظارالرحمى والهيستوباثولوجى

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**Mohamed Hamam**

## Abstract

Abnormal uterine bleeding is one of the commonest manifestations of the premenopausal period. Although Dysfunctional bleeding is one of the important causes, yet endometrial focal lesions are considered one of the debilitating etiologies and common causes of failure of blind medical treatment.

The aim of this study was to evaluate the role of each of 3D ultrasound, Doppler studies versus hysteroscopy and endometrial biopsy in comparison to each other, in screening and detection of endometrial pathologies in premenopausal bleeding.

**Material and methods:** 50 cases, recruited from the outpatient gynaecological clinic, Kasr El-Ainy Hospitals, were included in the study. All cases presented with premenopausal bleeding. All patients were subjected to 3D transvaginal ultrasonographic evaluation of the endometrium , Doppler velocimetric study of the uterine arteries , hysteroscopy and the results were correlated to the histopathological picture of the endometrium.

**Results:** The age ranged between 41 and 50 years with a mean of 45.7 years. They had a mean parity of 3.7. The most common endometrial histopathology was hyperplasia (26 cases , 52%) followed by disordered proliferative endometrium (14 cases, 28%) then endometrial polyps (8 cases, 16 %) with 1 case of atrophic endometrium (2%) and 1 case of endometrial carcinoma (2%). Endometrial volume measurement and Uterine artery PI were significant investigations to differentiate between atrophic endometrium, benign endometrial pathology and endometrial carcinoma in premenopausal patients but not a significant tools in differentiating hyperplasia from polyp. Hysteroscopy is the best single investigation to use, to predict the endometrial pathology. However, histopathologic diagnosis is always needed to confirm the suspicion.

**Keywords:** Three Dimensional ultrasound, Doppler, hysteroscopy, endometrial biopsy, premenopausal bleeding.

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# **Introduction and aim of work**

Abnormal uterine bleeding is one of the most common presenting complaints in women of premenopausal age. It is a complicated clinical problem with myriad causes. However, physicians with a solid knowledge of menstrual physiology and a thorough approach to differential diagnosis can evaluate and manage the problem with confidence (*Brenner, 1996*). One national study found that menstrual disorders were the reason for 19.1% of 20.1 million visits to physician offices for gynaecologic condition over a two-year period (*Nicholson et al, 2001*). Furthermore, a reported 25% of gynaecologic surgeries involve abnormal uterine bleeding (*Goodman, 2000*). Several types of abnormal uterine bleeding are described. It is important to understand, however, that although trends exist for each type, there are no consistent relationships between abnormal uterine bleeding patterns and their causes (*Petrozza and Poley, 1999*). Causes include: Fibroids, endometrial hyperplasia polyps and endometrial carcinoma, cervical and ovarian carcinoma atrophic endometrium, atrophic vaginitis and dysfunctional uterine bleeding (*Weber et al, 1997*).

Various imaging techniques are used to enable the precise localization and characterization of uterine pathology (*Karasick et al., 1992*).

Transvaginal ultrasound with high resolution probes is a widely performed investigation prior to surgery. This technique is however an operator dependent and the 2D hard copy images can be difficult for a third party to interpret. Assessment of the uterine cavity and its distortion by an adjacent uterine mass can be particularly difficult if the endometrial lining is not well defined (*Batten et al., 1993*.)

Three dimensional sonography allows simultaneous visualization of the three orthogonal planes along with the three dimensional rendering mode. Three dimensional rendering mode of the uterine cavity allows ruling out endometrial pathology with

almost absolute certainty. Three dimensional rendering did allow distinguishing with much more clarity between atrophic endometrium, polyps, focal and generalized hyperplasias and carcinomas. Polyps of just few millimeters in size could be observed with shape, size and precise location of the implantation base of the polyp (*Bonilla-musoles et al., 1997*).

Furthermore the ability to use color and power Doppler mapping became an essential part of our everyday scanning practice. They added more diagnostic power in different fields including Reproductive Medicine, Oncology and Obstetrics. A simple example in the office would be to switch on the color Doppler to help in the diagnosis of a suspected endometrial polyp by showing the feeding vessels. The same could be true in cases of suspected fibroids when colour Doppler shows blood vessels around but not into the uterine mass.

Hysteroscopy is an important method for the diagnosis of intrauterine pathology in several gynecologic complaints including abnormal uterine bleeding, infertility, recurrent abortion and retained IUCD. This technique has replaced dilatation and curettage as a blind technique; with high diagnostic failure. Stock & Kanbour, 1975 reported on a series of patients who underwent dilatation and curettage prior to hysterectomy that in 60% of the hysterectomy specimens less than half of the endometrial lining had been sampled (*Dectoedt & Fenton, 1999*).

## **AIM OF WORK**

The aim of this work is to evaluate the role of 3D ultrasonography and Doppler studies versus hysteroscopy and endometrial sampling, in comparison to each other, in detection of endometrial pathologies in premenopausal women having abnormal uterine bleeding.