

**OFFICE HYSTEROSCOPY VERSUS THREE-
DIMENSIONAL ULTRA-SONOGRAPHY IN DIAGNOSIS
OF ENDOMETRIAL PATHOLOGY IN CASES OF
POSTMENOPAUSAL BLEEDING**

Thesis

*Submitted for partial fulfillment of the Master Degree in
Obstetrics and Gynecology*

By

Ahmed Mohammed Ahmed Foad El-Turky

M.B., B.Ch, Ain Shams University 2007

Supervised by

Prof. Dr. Magdy Mahmoud Abd EL-Gawwad

Professor of Obstetrics and Gynecology

Faculty of Medicine, Ain Shams University

Prof. Dr. Fekreya Ahmed Salama

Professor of Obstetrics and Gynecology

Faculty of Medicine, Ain Shams University

Dr. Amr Abd EL-Aziz EL-Sayed

Lecturer of Obstetrics and Gynecology

Faculty of Medicine, Ain Shams University

Ain Shams University

2012

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

CONTENTS

• Acknowledgment	
• List of Abbreviations	
• List of Figures	
• Introduction	
• Aim of the work	
• Review of Literature	
Post-Menopausal Bleeding	2
Hysteroscopy	7
Three Dimensional Ultra-Sonography	18
• Patients and methods	33
• Results	45
• Discussion	68
• Summery and Conclusions	76
• Recommendations	79
• References	81
• Arabic Summary	

ACKNOWLEDGMENT

First and Foremost, I feel always indebted to Allah, the most kind and most merciful.

I wish to thank all those who helped me in this work especially: Prof. Dr. Magdy Abd El-Gawwad for giving me the honor and great advantage of working under his supervision, Prof. Dr. Fekreya Salama who offered me support, motivation and encouragement, Dr. Amr Abd El-Aziz who taught me how to write and edit this work and Dr. Mohamed El-Sherbiny who helped me in many parts of this work, Without them, I could not have completed it and I really appreciate their patience and support.

Finally, words alone cannot express the thanks I owe to my great family for their great support to me among last months which contributed directly and indirectly in this work.

Ahmed El-Turky

List of Abbreviations

3D-U/S:	Three-dimensional ultrasonography
GA :	General anesthesia
PMB :	Postmenopausal bleeding
TVS :	Trans-vaginal sonography
WHO :	World Health Organization
ITP :	Idiopathic Thrombocytopenic Purpura
E ₂ :	Estradiol
IUDs :	Intrauterine Devices
HSG :	Hysterosalpingogram
SONAR:	Sound Navigation and Ranging
RADAR:	Radio Detection And Ranging
AUB :	Abnormal Uterine Bleeding:
DVT :	deep venous thrombosis
VWD :	Von Willibrand factor defect
DM :	Diabetes mellitus
SD :	Standard deviation
SE :	Standard error
PPV :	Positive Predictive Value,
NPV :	Negative Predictive Value
ROC :	Receiver operating characteristic

List of Figures

Figure 1: Post-menopausal bleeding an evaluation endometrial biopsy, vaginal ultrasound and outpatient hysteroscopy.....	6
Figure 2: Diagnostic Hysteroscope.....	8
Figure 3: Hysteroscopic view for submucous fibroid.....	14
Figure 4: Normal hysteroscopic view (Case 1).....	15
Figure 5: Hysteroscopic view showing thickened endometrium (Case 2).....	15
Figure 6: Hysteroscopic view showing large intrauterine polyp (Case 3).....	16
Figure 7: Hysteroscopic view showing thickened endometrium and endometrial polyp (Case 4).....	16
Figure 8: Hysteroscopic view showing thickened polypoidal endometrium (Case 5).....	17
Figure 9: Hysteroscopic view showing submucous anterior wall fibroid (Case 6)...	17
Figure 10: 3D ultrasonic view for submucous fibroid	26
Figure 11: Endometrial thickness by 3D ultrasound 7.5 mm (Case 1).....	27
Figure 12: Endometrial volume by 3D ultrasonography 7.41 cm ³ (Case 1).....	27
Figure 13: Endometrial thickness by 3D ultrasound 21.9 mm (Case 2).....	28
Figure 14: Endometrial volume by 3D ultrasonography 16.929 cm ³ (Case 2).....	28
Figure 15: Endometrial thickness by 3D ultrasound 23.4 mm (Case 3).....	29
Figure 16: Endometrial volume by 3D ultrasonography 49.932 cm ³ (Case 3).....	29
Figure 17: Endometrial thickness by 3D ultrasound 22.2 mm (Case 4).....	30
Figure 18: Endometrial volume by 3D ultrasonography 34.655 cm ³ (Case 4).....	30
Figure 19: Endometrial thickness by 3D ultrasound 26 mm (Case 5).....	31
Figure 20: Endometrial volume by 3D ultrasonography 48.566 cm ³ (Case 5).....	31
Figure 21: Endometrial thickness by 3D ultrasound 21 mm (Case 6).....	32
Figure 22: Endometrial volume by 3D ultrasonography 32.088 cm ³ (Case 6).....	32

List of Tables

Table 1: The age of patients ranges from 49 to 66 years with a mean 55 years, while the weight of patients ranges from 84 to 104 Kg with a mean 93.7 Kg.	46
Tables 2, 3: distribution of patients according to parity.....	47
Tables 4, 5: Among 60 patients, 15 of them stated that it was the first attack of vaginal bleeding with incidence of 25%, while 30 patients stated that they had 2 – 5 previous attacks of vaginal bleeding with incidence if 50% and 15 patients stated that they had experienced more than 5 previous attacks of vaginal bleeding with an incidence of 25%.....	48
Tables 6, 7: Among 60 patients suffering from PMB, endometrial thickness by 3D-TVUS was >5mm in 51 patients with incidence of 85% while only 9 patients had endometrial thickness <5mm with incidence of 15%.....	49
Tables 8, 9: Among 60 patients suffering PMB, endometrial volume by 3D-TVUS was >13.5cm ³ in only 30 patients with incidence of 50%.....	50
Tables 10, 11: Prevalence of thickened endometrium 40% of patients	51
Tables 12, 13: Prevalence of submucous fibroid 26.7% of patients	52
Tables 14, 15: Prevalence of intrauterine polyp 30% of patients.....	53
Tables 16, 17: Hysteroscope was +ve in 76.7% of patients.....	54
Tables 18, 19: Histopathology was +ve in 75% of patients	55
Tables 20, 21: Endometrial thickness measurement by 3D ultrasonography is significant in cases with submucous fibroid, with p-value <0.05.....	56
Tables 22, 23: Endometrial volume measurement by 3D ultrasonography is significant in cases with submucous fibroid, with p-value <0.05.....	57
Tables 24, 25: Endometrial thickness measurement by 3D ultrasonography is non-significant in cases with intrauterine polyp, with p-value >0.05.....	58
Tables 26, 27: Endometrial volume measurement by 3D ultrasonography is non-significant in cases with intrauterine polyp, with p-value >0.05.....	59

Tables 28, 29: Endometrial thickness measurement by 3D ultrasonography is significant in cases with +ve histopathological findings, with p-value <0.05.....	60
Tables 30, 31: Endometrial volume measurement by 3D ultrasonography is significant in cases with +ve histopathological findings, with p-value <0.05.....	61
Table 32: Three-dimensional U/S was found to be significant in cases of postmenopausal bleeding with histopathological examination, with p-value <0.05.....	62
Table 33: Hysteroscopy was found to be significant in cases of postmenopausal bleeding with histopathological examination, with p-value <0.05	63
Tables 34 and 35: Hysteroscope has sensitivity 100% and specificity of 93.3%, positive predictive value 97.8%, negative predictive value 100%, with accuracy 0.967 in cases of +ve histopathological findings	64
Tables 36, 37 and 38: Endometrial thickness by 3D ultrasound of more than 4.5 mm has sensitivity 93.3% and specificity of 40%, positive predictive value 82.4%, negative predictive value 66.7%, with accuracy 0.96 in cases of +ve histopathological findings.....	65
Tables 39, 40 and 41: Endometrial volume by 3D ultrasound of more than 11.3 cm ³ has sensitivity 66.7 % and specificity 100 %, positive predictive value 100 %, negative predictive value 61.4 %, with accuracy 0.933 in cases of +ve histopathological findings.....	66

INTRODUCTION

Menstruation refers to physiological shedding of the endometrium accompanied by uterine bleeding that occurs at approximately monthly interval from the menarche to the menopause. The menarche usually occurs between the ages 11-14 years, while the menopause usually occurs at 45-55 years of age (*Butler, 1997*).

Menopause is defined by the World Health Organization as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity (*Gale, 2009*).

Postmenopausal bleeding (PMB) refers to bleeding from the reproductive system occurring one year or more after menopause (other than the expected cyclic bleeding that occurs in women taking sequential postmenopausal hormonal therapy). It accounts for about five percent (5%) of office gynecology visits (*Breijer, 2010*).

A definitive diagnosis in postmenopausal bleeding is made by histology. Historically, endometrial samples have been obtained by dilatation and curettage. Nowadays it is more usual to obtain a sample by endometrial biopsy, which can be undertaken