



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم



**MONA MAGHRABY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**MONA MAGHRABY**



# **Relationship between Transvaginal Ultrasound Endometrial Volume, Body Mass Index and Endometrial Pathology in Women with Postmenopausal Bleeding**

Thesis

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in Obstetrics & Gynecology*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قَالَ

سُبْحَانَكَ لَا عِلْمَ لَنَا  
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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# List of Abbreviations

| Abb.                 | Full term                                                  |
|----------------------|------------------------------------------------------------|
| <i>2D</i> .....      | <i>Two dimensional</i>                                     |
| <i>3D</i> .....      | <i>Three dimensional</i>                                   |
| <i>3D-PDA</i> .....  | <i>Three dimensional power Doppler angiography</i>         |
| <i>ACOG</i> .....    | <i>American College of Obstetricians and Gynecologists</i> |
| <i>AUC</i> .....     | <i>Area under the curve</i>                                |
| <i>BMI</i> .....     | <i>Body mass index</i>                                     |
| <i>CAMS</i> .....    | <i>Council of Affiliated Menopause Societies</i>           |
| <i>CLD</i> .....     | <i>Chronic liver disease</i>                               |
| <i>COPD</i> .....    | <i>Chronic obstructive pulmonary disease</i>               |
| <i>CT</i> .....      | <i>Computerized tomography</i>                             |
| <i>D&amp;C</i> ..... | <i>Dilatation and curettage</i>                            |
| <i>DH</i> .....      | <i>Diagnostic hysteroscopy</i>                             |
| <i>DM</i> .....      | <i>Diabetes mellitus</i>                                   |
| <i>EA</i> .....      | <i>Endometrial atrophy</i>                                 |
| <i>EC</i> .....      | <i>Endometrial carcinoma</i>                               |
| <i>EH</i> .....      | <i>Endometrial hyperplasia</i>                             |
| <i>EMB</i> .....     | <i>Endometrial biopsy</i>                                  |
| <i>EMP</i> .....     | <i>Endometrial polyp</i>                                   |
| <i>FT</i> .....      | <i>Flow index</i>                                          |
| <i>HNPCC</i> .....   | <i>Hereditary Non Polyposis Colorectal Cancer</i>          |
| <i>IM</i> .....      | <i>International Menopause Society</i>                     |
| <i>IV</i> .....      | <i>Intravenous</i>                                         |

# List of Abbreviations cont...

| Abb.                 | Full term                                                                 |
|----------------------|---------------------------------------------------------------------------|
| <i>MRI</i> .....     | <i>Magnetic resonant imaging</i>                                          |
| <i>PMB</i> .....     | <i>Postmenopausal bleeding</i>                                            |
| <i>ROC</i> .....     | <i>Receiver-operator characteristic</i>                                   |
| <i>RR</i> .....      | <i>Relative Risk</i>                                                      |
| <i>SRU</i> .....     | <i>Society of Radiologists in Ultrasound</i>                              |
| <i>TVS</i> .....     | <i>Transvaginal ultrasonography</i>                                       |
| <i>UKCTOCS</i> ..... | <i>United Kingdom collaborative trial of<br/>ovarian cancer screening</i> |
| <i>US</i> .....      | <i>Ultrasound</i>                                                         |
| <i>VFI</i> .....     | <i>Vascularization flow index</i>                                         |
| <i>VI</i> .....      | <i>Vascularization index</i>                                              |
| <i>VI</i> s.....     | <i>Vascularization indices</i>                                            |
| <i>VOCAL</i> .....   | <i>Virtual Organ Computer-aided Analysis</i>                              |
| <i>WHO</i> .....     | <i>World health organization</i>                                          |

# INTRODUCTION

**M**enopause is recognized to have occurred after one year of amenorrhea, for which there is no other obvious pathological or physiological cause (*Koirala et al., 2018*).

**Perimenopause** should include the period immediately prior to the menopause (when the endocrinological, biological and clinical features of approaching menopause commence) and the first one year after menopause (*Monteleone et al., 2018*).

**Menopausal transition** should be reserved for that period of time before the final menstrual period when the variability in the menstrual cycle is usually increased (*Harlow et al., 2018*). **Premenopause** often used ambiguously to refer to the one or two years immediately before the menopause, or to refer to the whole of the reproductive period prior to the menopause (*De Kat et al., 2017*).

**Post menopause** defined as dating from the final menstrual period, regardless of whether the menopause was induced or spontaneous (*Tripathy et al., 2017*).

**Premature menopause** should be defined as menopause that occurs at an age more than two standard deviations below the mean that estimated for the reference population. In practice, the age of 40 years is frequently used as an arbitrary

cutoff point, below which menopause is said to be premature (*Tehrani et al., 2016*).

### **Endometrial cancer and Postmenopausal Bleeding**

Endometrial cancer is the most common gynecologic cancer in developed countries and accounts for nearly 5% of cancer cases and more than 2% of deaths due to cancer in women worldwide (*Ferlay et al., 2015*). In regions such as North America and parts of Europe, the incidence of endometrial cancer is disproportionately higher than in other developed countries, which may be attributed to higher rates of obesity, as well as other important risk factors such as aging, early menarche, late menopause, nulliparity, and postmenopausal estrogen therapy use. Unlike most cancers, the incidence of endometrial cancer and associated mortality rates have increased in recent years and are projected to rise during the next 10 years (*Jamison et al., 2013*).

Most endometrial cancers are diagnosed at a localized stage and are often curable with surgery, with a 5-year survival of approximately 95%. In contrast, 5-year survival for late-stage (stage IV) endometrial cancer ranges from 16% to 45% (*Weiderpass et al., 2014*). However, studies evaluating early detection strategies for endometrial cancer are lacking, and at present no recommendation for population-based screening exists. In the era of precision prevention, emphasis on identifying individuals at high risk to maximize the positive

outcomes of clinical interventions while avoiding unnecessary harms is growing (*Kitson et al., 2017*).

Rather than targeting the whole population, early detection strategies for endometrial cancer could focus on women at high risk of developing endometrial cancer, while excluding most women at low risk. Postmenopausal bleeding (PMB) is a common symptom of endometrial cancer and accounts for approximately two-thirds of all gynecologic visits among perimenopausal and postmenopausal women (*van Hanegem et al., 2011*).

Women presenting with PMB undergo additional clinical testing using a combination of transvaginal ultrasonography (TVUS), hysteroscopy, endometrial biopsy, and/or dilation and curettage, and workup varies widely among different settings (*Breijer et al., 2010*).

However, PMB is often associated with benign conditions such as endometrial polyps or may result from unscheduled bleeding in women using hormone therapy (HT) (*Burbos et al., 2012*). The risk of endometrial cancer in women with PMB varies widely in individual studies from 3% to 25% (*Burbos et al., 2012*).

Accurate estimates of the prevalence of PMB in endometrial cancers (equal to the sensitivity of PMB for detecting endometrial cancer) and the risk of endometrial