

UITRASONOGRAPHIC STUDY OF FIRST TRIMESTER  
PREGNANCY IN PATIENTS WITH RECURRENT  
MISCARRIAGE

**A thesis**

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Gynecology

**By**

Noura Mohammed Al Zamel  
MB, B.Ch. Faculty of Medicine, Kuwait University

**Supervised By**

PROF.Dr, Mohammed Zayed  
Professor of Obstetrics and Gynecology  
Faculty of Medicine- Cairo University

Dr, Fouad Abou Hemila  
Assistant Prof. of Obstetrics and Gynecology  
Faculty of Medicine- Cairo University

Dr, Ahmed Maged  
Lecturer of Obstetrics and Gynecology  
Faculty of Medicine- Cairo University

**Faculty of Medicine**

**Cairo University**

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# *ABSTRACT*

Recurrent miscarriage is defined as the loss of three or more consecutive early pregnancies irrespective of the gestation. It occurs in 0.5-2% women. Unexplained miscarriage occurs in about 50% of women attending specialist recurrent clinics. Etiology of recurrent miscarriage can be broadly categorized into genetic, infective, structural, endemic, immune and idiopathic causes.

Sonographic findings of recurrent miscarriage depends on the stage of gestation and type of abortion e.g. irregular gestational sac contour, presence or absence of yolk sac or embryo, subchorionic hematoma and retained products of conception and how to differentiate them from blood clot.

Prospective study of 50 patients with current pregnancies at 9-12 weeks of gestation was done. The patients were divided into two groups: cases and controls. The cases had history of recurrent miscarriage while the controls had normal obstetric history. They have almost the same inclusion criteria. Those patients underwent 1<sup>st</sup> trimester transvaginal ultrasonography.

The aim of this work is to evaluate efficacy of transvaginal ultrasound (9-12 weeks) in assessment of uterus, fetus and other ultrasonographic parameters in patients with recurrent first trimester miscarriage.

## Key words:

Recurrent miscarriage, first trimester transvaginal ultrasound.

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## LIST OF ABBREVIATIONS

<b>2D</b>	Two- dimensional
<b>3D</b>	Three-dimensional
<b>4D</b>	Four-dimensional
<b>APAS</b>	Antiphospholipid antibodies
<b>APL-AB</b>	Antiphospholipid Antibodies
<b>APS</b>	Antiphospholipid syndrome
<b>B-HCG</b>	B subunits of HCG
<b>BMD</b>	Bone mineral density
<b>BPD</b>	Biparietal diameter
<b>BV</b>	Bacterial vaginosis
<b>CMV</b>	Cytomegalovirus
<b>CRL</b>	Crown rump length
<b>DES</b>	Diethylstilbestrol
<b>DSS</b>	Double decidual sac sign
<b>GA</b>	Gestational Age
<b>GS</b>	Gestational sac
<b>HB</b>	Hemoglobin
<b>HCG</b>	Human chorionic gonadotrophin
<b>HLA</b>	Human leucocyte antigen
<b>HSG</b>	Hysterosalpingography
<b>IFN</b>	Interferon
<b>IL</b>	Interleukin
<b>IRP</b>	International Reference Preparation
<b>IUH</b>	Intrauterine hematoma (Subchorionic hematoma)
<b>IVF</b>	Invitro-fertilization
<b>IVIG</b>	Intravenous immunoglobulin



<b>LA</b>	Lupus anticoagulant
<b>LDA</b>	Low dose aspirin
<b>LH</b>	Luteinizing Hormone
<b>LMWH</b>	Low molecular weight heparin
<b>MSD</b>	Mean sac diameter
<b>MTHFR</b>	Methylene tetrahydrofolate reductase
<b>NK</b>	Natural killer cells
<b>NS</b>	Not significant
<b>PAI-1</b>	Plasminogen activator inhibitor-1
<b>PCOS</b>	Polycystic ovarian syndrome
<b>PP</b>	Plasma pheresis
<b>RBS</b>	Random Blood Sugar
<b>RCOG</b>	Royal College of Obstetricians and Gynecologists
<b>RPOC</b>	Retained products of conception
<b>S</b>	Significant
<b>SD</b>	Standard Deviation
<b>SLE</b>	Systemic Lupus Erythematosus
<b>SPSS</b>	Statistical package for social studies
<b>TAS</b>	Transabdominal Sonography
<b>Th1</b>	T-helper1 cells
<b>Th2</b>	T-helper2 cells
<b>TNF</b>	Tumor Necrosis Factor
<b>TORCH</b>	Toxoplasmosis Rubella Cytomegalovirus & Herpes
<b>TSH</b>	Thyroid Stimulating Hormone
<b>TVCD</b>	Transvaginal Color Doppler
<b>TVS</b>	Transvaginal Sonography
<b>UFH</b>	Un fractionated Heparin
<b>Urine R/M</b>	Urine Routine/ Microscopy
<b>Wks</b>	Weeks

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# **INTRODUCTION**

Recurrent miscarriage is defined as the loss of three or more consecutive early pregnancies irrespective of the gestation. It occurs in 0.5-2% of women (**Daya 1993, Katz & Kuller 1994, Stirrat 1990**). Unexplained miscarriage occurs in about 50% of women attending specialist recurrent clinics (**Clifford et al., 1994, Li 1998, Stephenson 1996**).

Although etiology of recurrent miscarriage can be broadly categorized into genetic, infective, structural, endemic, immune and idiopathic causes, there is disagreement among clinicians as to the numerical contribution of each of these factors (**Clifford et al., 1994**).

Sonographic findings of recurrent miscarriage depends on the stage of gestation and type of abortion e.g. irregular gestational sac contour, presence or absence of yolk sac or embryo, subchorionic hematoma and retained products of conception and how to differentiate them from blood clots (**Wong et al., 2002**).

Transvaginal sonography with its high frequency transducers can be used to create clear, high resolution image. Consequently, fetal anatomy can be accurately defined at an earlier gestational age. It has therefore been suggested that the appropriate time to perform a scan to diagnose many structural anomalies should be moved from conventional 16-24 weeks (transabdominal) to 9-16 weeks (transvaginal) (**Rottem et al., 1990**).

As use of transvaginal sonography during early pregnancy increases (**Bronshtein & Zimmer 1997**), more major and minor anomalies are diagnosed (**Chitty & Pandya 1997**).

An important aspect of first trimester vaginal ultrasound is the evaluation of nuchal thickness to predict chromosomal aberrations **(Nicolaidis 1986)**.

Because extensive and basic structural anatomy takes place over relatively short period of time (i.e. days), it is imperative to know the exact date of the last menstrual period (LMP) or the conception to be able to draw line between normal and abnormal development **(Timor-Tritsch et al., 1988)**.

## ***Aim OF WORK***

To evaluate efficacy of transvaginal ultrasound in assessment of uterus, fetus and other ultrasonographic parameters in patients with recurrent first trimester miscarriage.

# RECURRENT MISCARRIAGE

## INTRODUCTION

Miscarriage is the most common complication of pregnancy and accounts for a high proportion of gynecology consultations and hospital admissions. It can be traumatic and highly emotional event for a woman and her partner and the impact may be greatly underestimated by all who are involved in their care (**William & Regan 2003**).

Current recommendations are that in early pregnancy loss, the term “abortion” should be avoided and more sensitive terminology substituted e.g. spontaneous abortion should be replaced by miscarriage and recurrent or habitual abortion should be replaced by recurrent miscarriage, etc. (**William & Regan 2003**).

At the present time in the United Kingdom, miscarriage is defined as the loss of an intrauterine pregnancy before 24 completed weeks of gestation. The World Health Organization definition of miscarriage is the expulsion of a fetus or embryo weighing 500g or less and gestational limit of less than 22 completed weeks of pregnancy (**WHO, 1977**).

Sporadic miscarriage is the most common complication of pregnancy; approximately 25% of women lose a pregnancy at some time in their reproductive lives. The majorities of sporadic miscarriages occur in the first trimester and are termed early pregnancy losses. Late miscarriage (the loss of a fetus that has reached an ultrasound size compatible with at least 13 weeks’ gestation) is a rare event (**Cashner et al., 1987, Mackenzie et al., 1988**).

Recurrent miscarriage is defined as three or more consecutive miscarriage (**Stirrat 1990**). This can be subdivided into a primary recurrent miscarriage, where there have been no previous live births, and secondary recurrent miscarriage where at least one previous successful pregnancy has occurred. It is relatively uncommon. It occurs in 0.5- 2% women (**Daya 1993, Katz & Kuller 1994, Stirrat 1990**). Unexplained miscarriage occurs in around 50% of women attending specialist recurrent miscarriage clinics (**Clifford et al., 1994, Li 1998, Stephenson 1996**). The risk of miscarriage is increasing with each successive loss. The risk of miscarriage also increases with maternal age. Women

aged 40 years have a 30% chance of miscarrying a clinically recognized pregnancy (Alberman 1988).

## *AETIOLOGY*

Recurrent miscarriage is a heterogenous condition with no single pathological condition underlying all cases (Table 1-1) and it follows that no single therapy will be applicable to every case (Clifford et al., 1997).

### (Table 1-1)The potential causes of recurrent miscarriage

<b><u>Genetics</u></b>	Parental chromosomal abnormalities Recurrent aneuploidy Other genetic causes
<b><u>Anatomical</u></b>	Uterine anomalies Cervical incompetence
<b><u>Infective</u></b>	Predisposition to infection Possible pathogens
<b><u>Endocrine</u></b>	Systemic endocrine diseases Luteal phase deficiency Hyper secretion of LH / Polycystic ovary Syndrome.
<b><u>Immunological</u></b>	Antiphospholipid Syndrome Other thrombophilic defects. Alloimmune.
<b><u>Nutritional</u></b>	Hyperhomocysteinemia. Folate deficiency.
<b><u>Social</u></b>	Alcohol. Smoking.

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(William & Regan 2003)