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الطبيب/ يحيي محمد كامل عزب عثمان

بكالوريوس الطب والجراحة، ماجستير امراض النساء والتوليد – جامعة عين شمس

تحت إشراف

الأستاذ الدكتور/ هشام محمد فتحي

أستاذ أمراض النساء والتوليد

كلية الطب – جامعة عين شمس

الأستاذ الدكتور/ حسن عواد بيومي

أستاذ أمراض النساء والتوليد

كلية الطب – جامعة عين شمس

الأستاذ الدكتور/ حازم محمد سمور

أستاذ أمراض النساء والتوليد

كلية الطب – جامعة عين شمس

كلية الطب - جامعة عين شمس

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THE ACCURACY OF TRANSVAGINAL DOPPLER ULTRASOUND IN THE DIAGNOSIS OF UNDISTURBED ECTOPIC PREGNANCY

Thesis
Submitted for Partial Fulfillment of MD Degree
in Obstetrics and Gynecology

Presented by

Yehia Mohamed Kamel Azab Othman
M.B.B.Ch., M.SC. (Ain Shams University)

Supervisors

Prof. Dr. Hisham Mohamed Fathi
Prof. of Obstetrics, and Gynecology
Faculty of Medicine Ain Shams University

Prof. Dr. Hassan Awwad Bayoumy
Prof. of Obstetrics, and Gynecology
Faculty of Medicine Ain Shams University

Prof. Dr. Hazem Mohamed Sammour
Prof. of Obstetrics and Gynecology
Faculty of Medicine Ain Shams University

Faculty of Medicine - Ain Shams University
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Yehia Kamel

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List of Abbreviations

Abb.	Full term
Ab	Abortion.
ACOG	American College of Obstetrics and Gynecology.
AFP	Alfa foeto protein.
ART	Assisted Reproductive Therapy.
B-HCG	Beta-Human Chorionic Gonadotrophin.
BSA	Body Surface Area.
CA-125	Cancer Antigen – 125.

CDC	Centers for Disease Control.
CL	Corpus Luteum.
CLC	Corpus luteal cyst.
D&C	Dilatation and Curettage.
DES	Diethylstilbestrol.
DIC	Disseminated Intravascular Coagulopathy.
DP	Douglas Pouch.
DX	Diagnosis.
DZ	Discriminatory Zone.
E2	Estradiol.
EP	Ectopic Pregnancy.
FF in DP	Free fluid in Douglas pouch.
GIFT	Gamete Intra Fallopian Transfer.

List of Abbreviations (Cont…)

Abb.	Full term
GS	Gestational sac.
h	hour.
HPL	Human placental lactogen.
ICSI	Intra cytoplasmic sperm injection.
IM	Intra muscular.
IUCD	Intra Uterine Contraceptive Device.
IUD	Intra uterine device.

IUGS	Intrauterine gestational Sac.
IUP	Intra Uterine Pregnancy.
IV	Intra venous.
IVF	In Vetro Fertilization.
MHz	Mega hertz
MTX	Methotrexate.
PEC	Previous evacuation and curettage.
PEP	Previous ectopic pregnancy.
PI	Pulsatility Index.
PID	Pelvic Inflammatory Disease.
PIO	Previous induction of ovulation.
PO	Previous operation.
PP14	Placenta protein 14.

List of Abbreviations (Cont…)

Abb.	Full term
PPID	Previous pelvic inflammatory disease.
PRF	Pulse Repetition frequency.
PTB	Peritrophoblastic.
RI	Resistance Index.
RPOC	Retained product of conception.
RR	Relative risk.
RUQ	Right Upper Qudrant.

SART	Society for assisted reproductive technology.
SD	Standard deviation.
SP1	Schwangerschafts protein 1.
TAS	Trans Abdominal Sonography.
TE	Thick endometrium.
TV-CDS	Trans vaginal-color Doppler Sonography.
TVS	Trans Vaginal Sonography.
TVUS	Trans vaginal ultrasound.
US	United States.
USG	Ultrasonography.
17-oHP	Hydroxyl progesterone.
1^{st}	First.
2D	Two Dimension.

INTRODUCTION

Ectopic pregnancy is a major cause of maternal death allover the world, accounting for 80% of early pregnancy deaths in the last triennial report in the UK ***(Lewis and Drife, 2004)***.

The early diagnosis of ectopic pregnancy in clinically stable women with transvaginal ultrasonography (TVS) is not only potentially life saving, but may decrease the number of operative procedures such as diagnostic laparoscopy and dilatation and curettage ***(Atri et al., 2003)***.

Ectopic pregnancy is suspected if transabdominal ultrasonography does not show an intrauterine gestational sac and the patient's beta-hCG level is greater than 6,500 mIU per mL or if transvaginal ultrasonography does not show an intrauterine gestational sac and the patient's beta-hCG level is 1,500 mIU per mL or greater ***(Borrelli et al., 2003)***. This early diagnosis of unruptured ectopic pregnancy also allows for consideration of conservative management options such as methotrexate ***(Hajenius et al., 1997)*** or even an expectant approach ***(Korhonen et al., 1994)***. Should surgery be necessary, a laparoscopic approach should be used in the majority of cases—with advantages in terms of patient recovery time and bed

occupancy ***(Vermesh et al., 1989; Lundorff et al., 1991; Murphy et al., 1992).***

Despite the advent of transvaginal ultrasound, a confident diagnosis of Ectopic pregnancy cannot be made in many cases ***(Russel et al., 1993)***.

The diagnosis of Ectopic pregnancy is still made on the basis of an adnexal ring or a solid adnexal mass ***(Atri et al., 2002)*** with or without free fluid suggestive of hemoperitoneum in the presence of a positive pregnancy test. If the above findings cannot be conclusively demonstrated, the diagnosis of an Ectopic pregnancy may be entirely missed or delayed, leading to significant morbidity and mortality.

Some authors have mentioned a ‘‘ring of fire’’ pattern on transvaginal Doppler ultrasound as one of the specific signs of Ectopic pregnancy ***(Kaakaji et al., 2000; Szabo et al., 2003)***. However, the corpus luteal cyst in the ovary also has a ring of vascularity around it. This creates a diagnostic dilemma. Several articles have dealt with the issue of differentiating ectopic pregnancies from corpus luteum cysts on the basis of its gray-scale features ***(Stein et al., 2004)*** as well as resistivity indices (RIs) in the vascularity of the two entities and found that significant overlap exists between the two, at least in the RI values ***(Atri, 2003)***. Some articles have mentioned an increase in

the supply of the tubal arteries by showing a reduction in the mean RI on the side harboring the Ectopic pregnancy as compared to the contralateral side ***(Kirchler et al., 1992; Shalev et al., 1998)***

However, a reliable diagnostic method for picking up early ectopic pregnancies has never been convincingly demonstrated. Recently a reliable ultrasound pattern have been able to consistently demonstrate a characteristic feeding vessel to the Ectopic pregnancy which can be seen on Doppler ultrasonography as ‘‘a leash’’ ***(Ramanan and Gajaraj, 2006)***.

AIM OF THE WORK

The aim of this study is to evaluate the accuracy of transvaginal Doppler ultrasound in the diagnosis of undisturbed ectopic pregnancy.