

Transperineal versus Transvaginal Sonography in First Trimester Bleeding: the Systematic Differences

Thesis

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BY

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ABBREVIATIONS

AF	Amniotic fluid
AFP	Alpha-fetoprotein
ALARA	As low as reasonably achievable
ART	Assisted reproductive technologies
AV	Arteriovenous
AVM	Arteriovenous malformation
CFD	Color flow Doppler
CHM	Classic hydatidiform moles
CRL	Crown rump length
D&C	Dilatation and curettage
DDS	Double decidual sac
ELISA	Enzyme Linked ImmunoSorbent Assay
EO	External os
EP	Ectopic pregnancy
FDA	Food and Drug Administration
FH	Fetal head
FSH	Follicle stimulating hormone
GI	Gastrointestinal
GS	Gestational sac
GTD	Gestational trophoblastic disease
hCG	Human chorionic gonadotrophin
HIV- ¹	Human immunodeficiency virus- ¹
IgA	Immunoglobulin A
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IHM	Invasive hydatidiform moles
IRP	International reference preparation
IUD	Intrauterine devise
IUDs	Intrauterine devices
IUGS	Intrauterine gestation sac
IUH	Intrauterine hematoma
IUP	Intrauterine pregnancy
IVF	In-vitro fertilization
LH	Lutinizing hormone
LMP	Last menstrual period
MHz	Megahertz
MI	Mechanical index
MRI	Magnetic resonance imaging
MSD	Mean sac diameter
PAPP-A	Pregnancy-associated plasma protein A
PHM	Partial hydatidiform moles
PID	Pelvic inflammatory disease
PPROM	Preterm premature rupture of membranes
PPV	Positive predictive value

PSTT	Placental site trophoblastic tumors
PVA	Poly vinyl alcohol
RI	Resistive index
RIA	Radioimmunoassay
ROS	Reactive oxygen species
TAS	Transabdominal sonography
TAUS	Transabdominal ultrasound
TGC	Time-gain compensation
TI	Thermal index
TPS	Transperineal sonography
TSH	Thyroid stimulating hormone
TV	Transvaginal
TVCFD	Transvaginal color Doppler
TVS	Transvaginal sonography
TVUS	Transvaginal ultrasonography
US	Ultrasound
VEGF	Vascular endothelial growth factor

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INTRODUCTION

First trimester bleeding is a common presentation in the emergency room. Half of these patients undergo spontaneous abortion and the other half continue to term delivery.

(Paspulati, Bhatt et al. ۲۰۰۴) First trimester bleeding occurs in ۱۵-۲۵% of all pregnancies, and is associated with an increased risk of miscarriage and other complications. **(Falco, Zagonari et al. ۲۰۰۳)**

The important causes of first trimester bleeding include spontaneous abortion, ectopic pregnancy, and gestational trophoblastic disease; ۵% to ۷% of spontaneous abortions are due to genetic abnormalities. Ultrasound evaluation of patients with first trimester bleeding is the mainstay of the examination. **(Dogra, Paspulati et al. ۲۰۰۵)**

Endovaginal ultrasound has become an important tool in obstetric and gynecological practice. Because of the better images it produces of the pelvic organs, vaginal ultrasound is preferred over transabdominal ultrasound for the evaluation of most gynecological conditions and for the assessment of first-trimester pregnancy. Vaginal ultrasound is also useful in later pregnancy for measuring cervical effacement, checking the position of a low-lying placenta and for morphological assessment of fetal parts which are close to the cervix. **(Bennett and Richards ۲۰۰۰)** In spite of its usefulness, it seems possible that vaginal ultrasound might not be well received by some patients, who could find it uncomfortable, embarrassing or intrusive. In this respect, it may be similar to the female pelvic examination. Studies have shown that many women experience discomfort with a pelvic examination **(Larsen and Kragstrup ۱۹۹۵)**, **(Broadmore,**

Carr-Gregg et al. 1986) and that the majority consider it a negative experience. **(Weiss and Meadow 1999), (Smilkstein 1981)**

Transvaginal ultrasound imaging, although getting widespread acceptance in the field of obstetrics and gynecology, has the main disadvantage of the need to penetrate the vagina and the requirement of special transducers for the purpose. In virgins, and in some ethnic groups, vaginal examination and sonography are met with great reluctance. **(Chan, Chau et al. 1997)**

Traditional transabdominal ultrasound, on the other hand, has great limitations in obese women, especially in the elderly who often cannot hold a full bladder. The resolution of images is also limited by the relatively lower frequency transducers that are required to give the degree of penetration needed. **(Chan, Chau et al. 1997)**

Transperineal sonography has been found to be useful as a supplement in various special clinical situations, such as in the assessment of patients with posterior placenta previa; cervical incompetence; preterm labor **(Jeanty, d'Alton et al. 1986; Mahony, Nyberg et al. 1990; Hertzberg, Bowie et al. 1991)**; stress incontinence and vaginal prolapse **(Kohorn, Scioscia et al. 1986; Kolbl, Bernaschek et al. 1988; Creighton, Pearce et al. 1992)**; vaginal atresia **(Graham and Nelson 1986; Scanlan, Pozniak et al. 1990)**; imperforate anus **(Donaldson, Black et al. 1989)**; and others, including measurement of pelvic floor muscle thickness. **(Bernstein, Juul et al. 1991)**

No studies were conducted on the role of Transperineal Ultrasound in the evaluation of first trimester bleeding.

AIM OF THE WORK

The aim of this thesis is to evaluate the role of Transperineal sonography in the assessment of first trimester bleeding, and to study the systematic differences between Transperineal sonography and the gold standard Transvaginal sonography.