بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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The Accuracy of 3D Ultrasound versus 2D in Predicting Placental Invasion Prenatally: Prospective Study

Thesis

Submitted for Partial Fulfillment of Master Degree in Obstetrics and Gynecology

By

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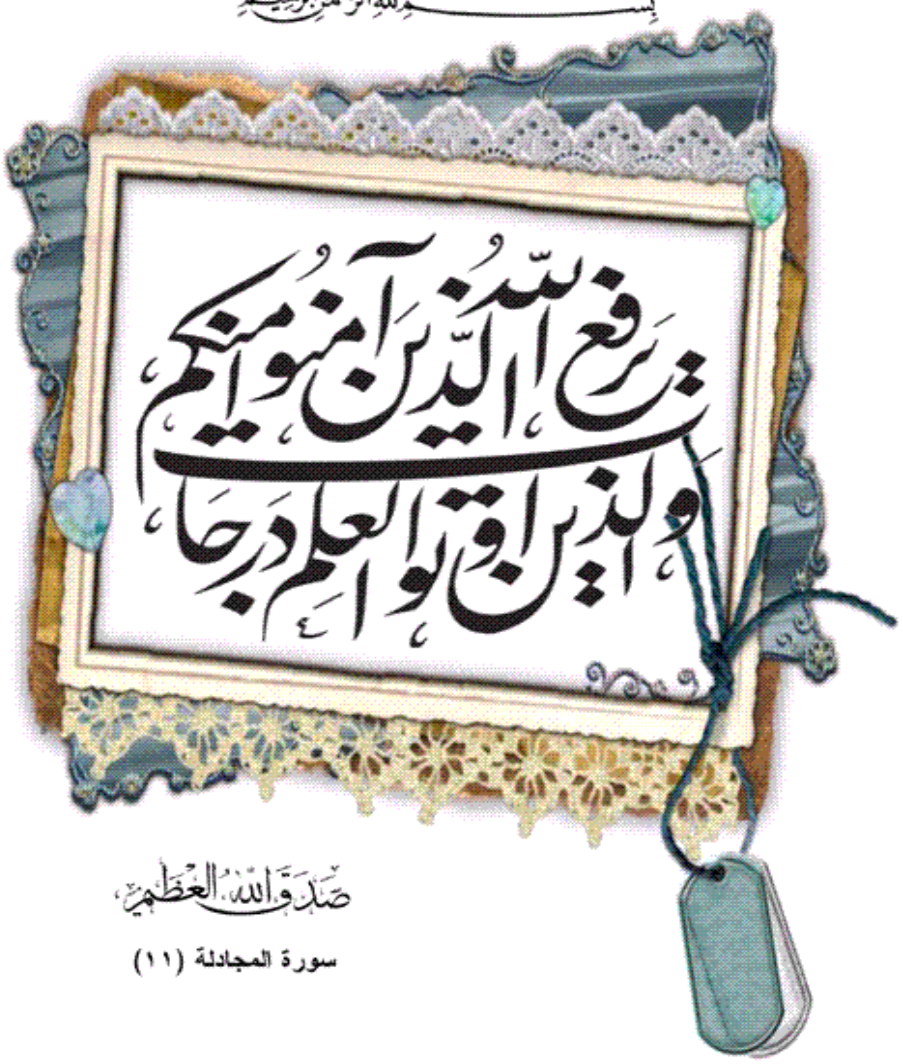

صدق الله العظيم

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List of Abbreviations

Abb.	Full term
2D	Two-dimensional
3D	Three-dimensional
3DPD	3-dimensional power Doppler
ACOG	American College of Obstetricians and Gynecologists
BMI	Body mass index
BPMF	Basal plate myometrial fibers
C19	Chromosome 19
CBC	Complete blood picture
CI	Confidence interval
CS	Ceaseren section
DNA	Deoxyribonucleic acid
EDD	Estimated Date of Delivery
EGA	Estimated gestatioal age
EVT	Extravillous trophoblast
HGF	Hepatocyte growth factor
IGF2	Insulin-like growth factor 2
MAP	Morbidly adherent placenta
MMPs	Matrix metalloproteinases
MRI	Magnetic resonance imaging
mRNA	Messenger RNA
NPV	Negative predictive value
OR	Odds ratio
PAS	Placenta accreta spectrum
PPROM	Preterm premature rupture of membranes
PPV	Positive predictive value

List of Abbreviations Cont...

Abb.	Full term
PRBC	Packed red blood cells
REBOA	Resuscitative endovascular balloon occlusion of the aorta
RH	Rhesus factor
ROTEM	Rotational thromboelastometry
RR	Relative risk
SMFM	Society for Maternal-Fetal Medicine
TEG	Thromboelastography
TGF-ß	Transforming growth factor-ß
TIMPs	Tissue inhibitors of metalloproteinase
US	Ultrasound
VEGF	Vascular endothelial growth factor

ABSTRACT

Background: Accurate antenatal diagnosis of morbid adherent placenta and placental invasion and degree of invasion of placenta, allowing multidisciplinary management during delivery, proved the improvement of maternal and fetal outcomes. Placenta previa with any uterine surgery for example previous caesarean section are the most important known risk factors for morbid adherent placenta and placental invasion.

Objective: To evaluate the precision of 3D ultrasound compared to 2D in predicting degree of placental invasion in women with placenta previa.

Patients and Methods: We examine 50 patients with placenta previa attending the outpatient clinic at Ain Shams University Maternity Hospital in the period between January 2018 and November 2019, prospective cohort study**.**

Results: Regarding the most important criteria for 2D ultrasound in predicting placental invasion was loss of retroplacental space that show the highest significant non chance agreement with placental invasion.

Regarding 3D ultrasound and power Doppler the most important criteria in prediction of placental invasion and bladder invasion was hyper vascularity between uterine serosa-bladder wall interface had the highest significant non chance agreement.

Conclusion: There was no conclusive scientific diagnostic criteria that 3D ultrasound more accurate than 2D ultrasound in detection of placental invasion, however 3D ultrasound colored Doppler can provide images for abnormal placentation and evaluation of dynamic hyper vascularity of uteroplacental space using its multiplanes capability and colored power doppler that's offer images more obvious and more precise than 2D ultrasound in portrayal of abnormal placentation

Keywords: Three-dimensional, cesarean section, placenta accreta

INTRODUCTION

Now a days with increase rate of Cesarean section placenta previa and its spectrum increases as this kind of delivery considered as a major risk factor for inppropiate site for placentation and may result in placental invasion to the underlying layers of uterus and other obstetric complication.

Severe invasive placentation may discoverd at the time of delivery can lead to unprefearble complication , such as potential risks of uterine bleeding tratogenic injury of adjucent viscera ***(Chou, 2004; Wu et al., 2005).***

During antenatal care and assessment of fetal wellbeing ultrasonography is used routinely for diagnosis of placental site and if there is abnormality detected or not however, placental invasion to myometrium and degree of this invasion mostly diagnosed during delivery, upon trying to remove the placenta ,this trials can lead to sever uterine bleeding and maternal morbidity .therefore an accurate prenatal diagnosis is required to reduce the risk of maternal/fetal morbidity and mortality. ***(Tikkanen et al., 2011).***

Invasive placentation can be classified according to degree of invasion and either bladder invaded or not so There are three form of; placenta accrete and placenta increta and placenta percreta with bladder invasion, which present a great obstetrical challenge as life threating hemorrhage resulting in maternal mortality, caesarean hysterectomy, injury of the bladder and post-partum hemorrhage may occur. ***(Mazouni et al., 2007).***

Therefore, it very important to know the degree of invasive placentation exactly before delivery so that an experienced team of surgeons and obstetrician can be assembled in advance to deal with expected complications, taking in consideration to decrease complication to mother.

Although the most accurate gold standard diagnostic tool is clinical pathology post cesarean hysterectomy, however reliable diagnosis is of such importance regarding this clinical entity, all types of imaging techniques have been tried in an attempt to improve prenatal diagnosis.MRI had superior to two-dimensional (2D) ultrasonography (US) and 3D US but cannot used as the standard screening tool for the diagnosis of invasive placentation. The 2D ultrasound may be used as screening tool as it is more available and cheaper before the 3D ultrasound. Three-dimensional (3D) power Doppler. To sum up ultrasound could represent a core stone for diagnosis of abnormal placentation and 3D color Doppler more confirmatory tool to suggest effective criteria for sever adherent placentation diagnosis and bladder invasion ***(Chou et al., 2001).***