Alpha feto-protien as a Biochemical Marker in prediction of morbidly adherent placenta

Thesis

Submitted as Partial Fulfillment of Master Degree
in Obstetrics and Gynecology

By

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Kyrollos Refat Khalf Marzok

Contents

List of Abbreviations

Abbr.	Full term
2DUS	: Two-dimensional ultrasound
3D	: Three-dimensional
3DPD	: 3 dimensional power doppler
3DUS	: Three-dimensional ultrasound
ACOG	: American College of Obstetricians and Gynecologist
AJOG	: American Journal of Obstetrics and Gynecology
AUC	: Area under the curve
AFP	: Alpha feto-protien
CS	: Cesarean section
EGFR	: Epidermal growth factor receptor
FFP	: Fresh frozen plasma
IIA	: Internal iliac artery
MAP	: Morbidly adherent placenta
MNGCs	: Number of multinucleated giant cells magnetic
MRI	: Magnetic resonance imaging
MS US	: Multislice ultrasound
MSV	: Multi-Slice View
NPV	: Negative predictive value
OMD	: Orthogonal display mode
PAD	: Placental adhesion disorders
PPV	: Positive predictive value
PRBCs	: Packed red blood cells.

List of Abbreviations *(Cont.)*

Abbr.	*Full term*

RCOG : Royal College of Obstetricians and Gynecologist

ROC : Receiver operating characteristic (ROC)

ROI : Region of interest

SD : Standard deviation

SPSS : Statistical package for social sciences

UA : Uterine artery

US : Ultrasound

VEGFR-2 : Vascular endothelial growth factor receptor-2

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Protocol of Thesis

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Introduction

Placenta accrete is a potentially life-threatening condition that requires a multidisciplinary approach to management. The incidence of placenta accrete has increased and seem to parallel the increasing cesarean delivery rate. Women at greatest risk of placenta accrete are those who have myometrial damage caused by previous cesarean delivery with either an anterior or posterior placenta previa overlying the uterine scar. Diagnosis of placenta accrete before delivery allows multidisciplinary planning in an attempt to minimize potential maternal or neo natal morbidity and mortality**.(ACOG,2012)**

In general, the recommended management of suspected placenta accreta is planned preterm cesarean hysterectomy with the placenta left in situ because attempts at removal of the placenta are associated with significant hemorrhagic morbidity. Although a planned delivery is the goal, a contingency plan for an emergency delivery should be developed for each patient, which may include following an institutional protocol for maternal hemorrhage management **(ACOG, 2012).**

Researchers have reported the incidence of placenta accreta as 1 in 533 pregnancies for the period of 1982–2002 **(Wu et al., 2005).** This contrasts sharply with previous reports, which ranged from 1 in 4,027 pregnancies in the 1970s, increasing to 1 in 2,510 pregnancies in the 1980s **(Miller et al., 1997).**

Abnormal placentation poses a diagnostic and treatment challenge for all providers caring for pregnant women. As one of the leading causes of postpartum hemorrhage, abnormal placentation involves the attachment of placental villi directly to the myometrium with potentially deeper invasion into the uterine wall or surrounding organs. Surgical procedures that disrupt the integrity of uterus, including cesarean section, dilatation and curettage, and myomectomy, have been implicated as key risk factors for placenta accrete **(Megier et al., 2000).**

Prenatal diagnoses of placenta accreta through the use of gray-scale ultrasonography, color Doppler imaging, and magnetic resonance imaging have been reported previously **(Chou et al., 1997).**

Placenta increta and percreta have rarely been diagnosed antepartum, and ultrasonographic findings may provide the only objective evidence of placenta accreta. A biochemical marker for this condition would therefore be useful **(Ophir et al., 1999).**

Alpha-fetoprotein (AFP) is found in both fetal serum and also amniotic fluid. This protein is produced early in gestation by the fetal yolk sac and then later in the liver and gastrointestinal tract. The true function of AFP is unknown **(Johnson et al., 2012).**

It is considered to be one of the most important markers which are used nowadays in early screening and diagnosis of many of high risk conditions and fetal abnormalities and malformations during pregnancy **(Dehghani-Firouzbadi et al., 2010).**

For example maternal serum level of the Alpha-Fetoprotein is found by evidence to be raised hugely if the fetus has nervous system malformations as neural tube defects (example Spina bifida and anencephaly) or Down syndrome **(Wang et al., 2009).**

It is critical to make the diagnosis before delivery because preoperative planning can significantly decrease blood loss and avoid substantial morbidity associated with placenta accrete **(Shih et al., 2009).**

Aggressive management of hemorrhage through the use of uterotonics, fluid resuscitation, blood products, planned hysterectomy, and surgical hemostatic agents can be life-saving for these patients. Conservative management, including the use of uterine and placental preservation and subsequent methotrexate therapy or pelvic artery embolization, may be considered when a

focal accreta is suspected; however, surgical management remains the current standard of care **(Tseng et al., 2006).**

Clinically, the most significant feature of placenta accreta is the abundant uteroplacental neovascularization, which can lead to life-threatening hemorrhage **(Finberg and Williams, 1992, Levine et al., 1997).**

However, its antenatal diagnosis is usually based on characteristic findings on gray-scale ultrasound imaging, such as the loss of subendometrialecholucent zone or the presence of abnormal placental lacunae **(Comstock et al., 2004).**

Despite the modern advances in imaging techniques, no single diagnostic technique affords complete assurance for the presence or absence of placenta accrete **(ACOG, 2006).**

The diagnosis is most often made during the third stage of labor or on Cesarean delivery.

Aim& Objectives (Maximum 300 words)

The aim of this study is to compare between alpha-fetoprotein as biochemical marker & ultrasound & Doppler findings for prenatal predication of morbid adherent placentation in anterior placenta on scar of previous cesarean section.

Research Hypothesis

In pregnant women with previous cesarean delivery, placenta previa, and ultrasonographic findings of an abnormally adherent placenta; maternal serum alpha-fetoprotein may predict the presence of morbid adherent placenta accurately.

Research Question

Dose maternal serum alpha-fetoprotein level predict accurately the presence of morbid adherent placenta in pregnant women with previous cesarean delivery, placenta previa and ultrasonographic findings of an abnormally adherent placenta?