Uterine Artery Doppler and Placental Morphological Features as Predictors of Peripartum Complications in Placenta Previa and Placenta Previa Accreta.

Thesis

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List of Abbreviations

IIA	Internal iliac artery
PPH	Postpartum hemorrhage
UAE	Uterine artery embolization
3DPD	Three D power Doppler
3DUS	3D ultrasound
RI	Resistive index
PI	Persistence index
PP	Placenta previa
PPA	Placenta previa accreta
UTA	Uterine artery

Abstract

Placenta previa and placenta previa accreta are considered serious pregnancy complications. Histopathological examination after hysterectomy is the gold standard for final diagnosis of placenta accreta, The use of ultrasonography for evaluation of placental morphology and Doppler flow pattern became very helpful tools in establish the diagnosis and prediction especially when used combined. The study was conducted on 30 cases of placenta previa ≠ placenta previa accreta compared to 30 normal subjects. Results were statistically analyzed to show diagnostic value of such tool to confirm diagnosis and possible prediction of maternal and fetal outcome.

Keywords:

Placenta previa
Placenta previa accreta
Uterine artery doppler

Introduction

Placenta previa and placenta previa accreta are severe pregnancy complications with maternal morbidity had been reported to occur in up to 60% and mortality in up to 7% of women with placenta accreta. In addition, the incidence of perinatal complications is also increased mainly due to preterm birth and small for gestational age fetuses ***(Hudon et al., 1998; Eller et al., 2009).***

Such abnormal placentation may be associated with massive and potentially life-threatening antepartum, intrapartum and postpartum hemorrhage ***(Faranesh et al., 2007).*** The severe uterine hemorrhage may lead to the need of extensive life-saving surgical interventions such as hysterectomy and ligation of major pelvic vessels, placenta accreta has become the leading cause of emergency hysterectomy ***(Daskalakis et al., 2007).***

Several risk factors for placenta accreta have been reported including a previous cesarean delivery particularly when accompanied with a coexisting placenta previa, increasing numbers of prior cesarean deliveries exponentially increase the risk of placenta accreta ***(Wu et al., 2005; Sivan et al., 2010).*** Other predisposing factors have been identified including: scarred uterus, multiparity, previous uterine surgery, advanced maternal age, previous uterine curettage ***(Miller et al., 1997).***

As a consequence of placental invasion to adjacent organs, reconstruction of the urinary bladder or bowel may be necessary. Massive blood and blood products transfusions are the rule in these dramatic cases. Other complications include neonatal death, infection, fistula formation & ureteral damage.

It is likely that antenatal diagnosis of placenta accreta has contributed to the overall drop in maternal morbidity and deaths

that has been associated with this condition ***(Eller et al., 2009; Stafford and Belfort, 2008)***. So it is important to make the diagnosis of placenta accreta prenatally because this allows effective management planning to minimize morbidity, this diagnosis is usually made by ultrasonography or magnetic resonance imaging (MRI).

Aim of work

The aim of this study was to investigate whether different placental morphological features and uterine artery Doppler can predict maternal and fetal outcome in pregnancies complicated with placenta previa and placenta accreta.

REVIEW OF LITERATURE

CHAPTER ONE

Anatomy of the Placenta

During its brief intrauterine existence, the fetus is dependent on the placenta for pulmonary, hepatic, and renal functions as it ensures CO2 and O2 exchange for the fetus, it delivers nutrients which the fetus needs to complete his growth, it also removes the waste products of the growing fetus, it has also a barrier function that prevents certain toxins and materials from reaching the fetus from maternal circulation ***(Wang and Zhao, 2010).***

The placenta accomplishes these functions through its unique anatomical association with the mother.

Placenta has also an endocrine function as it produces many hormones that ensure a healthy pregnancy; it supports and promotes fetal growth. However, all these functions depend on normal vascular development within the placenta itself. Normal placental vascular development ensures a healthy pregnancy outcome, whereas insufficient or abnormal placental vascular development will compromise pregnancy outcomes both on the mother and the fetus. The functional unit of the placenta is the chorionic villus, which contains layers of syncytiotrophoblasts/cytotrophoblasts, villous stroma, and fetal vascular endothelium that separate maternal blood from the fetal circulation ***(Wang and Zhao, 2010).***