Outcomes of Patients with Morbidly Adherent Placenta in Ain Shams Maternity Hospital: A Retrospective Study

Thesis

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List of Abbreviations

Abb.	Full term
β-hCG	*β Subunit of Human Chorionic Gonadotrophin*
2D	*Two Dimentional*
3D	*Three Dimentional*
AFP	*Alpha Fetal Protein*
ASUMH	*Ain Shams University Maternity Hospital*
BL	*Urinary Bladder*
cAMP	Cyclic adenosine monophosphate
CEACAM1	*Carcinoembryonic Antigen-Related Cell Adhesion Molecule 1*
CET	*Cryopreserved Embryo Transfer*
col-IV	*Collagen Type IV*
CRH	*Corticotrophin-Releasing Hormone*
CRHR1	*Corticotrophin-Releasing Hormone Receptor Type 1*
EGFR	*Epidermal Growth Factor Receptor*
EVT	*Extravillous Trophoblast*
EVTs	*Extravillous Tropho-Blasts*
fβhCG	*free-Beta Human Chorionic Gonadotrophin*
GS	*Gestational Sac*
hCG	*Human Chorionic Gonadotropin*
HCG	*Human Chorionic Gonadotropin*
IIA	*Internal Iliac Arteries*
IVF	*In Vitro Fertilization*
JZ	*Junctional Zone*

List of Abbreviations (Cont...)

Abb.	Full term
MAP	*Morbidly Adherent Placenta*
MMPs	*Matrix Metalloproteinases*
MNGCs	*Multinucleated Giant Cells*
MOMS	*Multiples of the Median*
MS	*Maternal Serum*
PA	*Placenta Accreta*
PAPP-A	*Pregnancy-Associated Plasma Protein A*
PL	*Placenta*
PV	*Placental Villi*
SD	*Standard Deviation*
sFLT-1	*Soluble Fms-Like Tyrosine Kinase*
TIMPs	*Tissue Inhibitors of Metalloproteinases*
UAE	*Uterine Artery Embolization*
UM	*Uterine Myometrium*
uNK	*Uterine Natural Killer*
uPA	*Urokinase Plasminogen Activator*
uPAR	*Urokinase-Type Plasminogen Activator Receptor*
VEGF	*Vascular Endothelial Growth Factor*
X^2	*Chi-square*

ABSTRACT

Background: Morbidly adherent placenta is defined as an abnormal adherence of all or part of the placenta to the underlying uterine wall.

Objective: The aim of this study is to evaluate the management of morbidly adherent placenta in Ain Shams Maternity Hospital during the 5-year period from January 2012 to December 2016.

Study Design: A Retrospective Study

Study Setting: Ain Shams University Maternity Hospital.

Subjects and Methods: Records of hospital admissions during the planned time frame with the diagnosis of antepartum haemorrhage or placenta accreta/increta/percreta were reviewed.

Results: Ain Shams University Maternity hospital (ASUMH) is a major tertiary referral hospital in Egypt. In evaluation of the management and short term maternal and perinatal outcomes of morbidly adherent placenta offered to women at ASUMH, the hospital archives ware examined for hospital records fulfilling the criteria of the study population during the 5-year period from January 2012 to December 2016.

Conclusion: Morbidly adherent placenta is highly associated with the existence of placenta previa, especially in cases with previous cesarean section. When morbidly adherent placenta is diagnosed or suspected antenatally, the patient must be referred to a tertiary center. Generally, the recommended management is cesarean hysterectomy. However, this approach might not be considered first-line treatment for women who have a strong desire for future fertility. Therefore surgical management of Morbidly adherent placenta may be individualized.

Key Words: *Morbidly Adherent Placenta – In Vitro Fertilization - Alpha Fetal Protein*

INTRODUCTION

Morbidly adherent placenta (MAP) is defined as an abnormal adherence of all or part of the placenta to the underlying uterine wall ***(Pinto et al., 2016)***.

The morbidly adherent placenta is now a significant obstetric challenge. Morbidly adherent placenta is often used as a general term but is defined by the levels of invasion of chorionic villi into maternal myometrium. Once a rare diagnosis, it is now the leading cause of postpartum hemorrhage and indication for a gravid hysterectomy. Traditionally, abnormal placentation has been classified into accreta, increta and percreta based on the depth of myometrial invasion: superficial, deep, and through the uterine serosa respectively and the greater the invasion, the greater the risks for hemorrhage and maternal morbidity ***(Goh et al., 2016)*.**

Invasive placenta first reviewed by Irving and Herting in 1937. The basic histopathological disorder lies on the absence of both the decidua basalis and the Nitabuch's layer, which result in a direct attachment of the chorionic villi to the myometrium. The most severe manifestations of this process result in placenta increta when chorionic villi invade into myometrium and placenta percreta when chorionic villi invade to or through the uterine serosa ***(Garmi et al., 2012; Pinto et al., 2016)*.** About 75% of morbidly adherent placentas are morbidly adherent placenta s, 18% are placenta incretas, and

7% are placenta percretas. Morbidly adherent placenta s can be subdivided into total morbidly adherent placenta, partial morbidly adherent placenta and focal morbidly adherent placenta based upon the amount of placental tissue involved in their attachment to the myometrium ***(Wehrum et al., 2011).***

The incidence of morbidly adherent placenta has been steadily increasing specially during the last two decades, mirroring increased rates of caesarean section ***(Miller et al., 2016).*** The incidence varies from 1 in 533 to 1 in 2500 ***(Miller et al., 1997; ACOG, 2002; Tanimura et al., 2015).***

In the event of morbidly adherent placenta, the third stage of labour may be complicated by severe uterine haemorrhage that may lead to the need of extensive life-saving surgical interventions such as hysterectomy and ligation of major pelvic vessels. The average blood loss volume at delivery is 3, 000-5, 000 ml ***(ACOG, 2012)***. 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, and maternal morbidity is high. Other complications include neonatal death, infection, fistula formation & ureteral damage. A maternal mortality rate of 7% has been quoted previously for this condition ***(O'Brien et al., 1996; Abuhamad, 2013; Tanimura et al., 2015)***.

The major risk factor is placenta preavia with a previous cesarean section, but other predisposing factors have been identified including: scarred uterus, multiparity, previous uterine surgery, advanced maternal age, Previous uterine curettage, uterine closure with continuous suture after cesarean section and Asherman syndrome ***(Jacques et al., 1996; Miller et al., 1997; Jauniaux and Jurkovic, 2012; Sumigama et al., 2014; Pinto et al., 2016)***. Furthermore, female fetus gender was also reported more frequently than males in association with morbidly adherent placenta ***(Khong et al., 1991; James, 1995)***.

Antenatal diagnosis is a key factor in optimizing the maternal and neonatal outcome. Morbidly adherent placenta is diagnosed ideally in the antenatal period by either sonographic or magnetic resonance imaging techniques. Several studies have demonstrated the usefulness of ultrasonography in making this diagnosis, particularly at > 20 weeks' gestation ***(Comstock, 2005; Lam et al., 2002; Azour et al., 2016)***. Unfortunately, some cases of morbidly adherent placenta are diagnosed at the time of delivery when the mother experiences continued vaginal bleeding, or heavy vaginal bleeding when an attempt is made to remove the placenta or only part of the placenta is able to be removed ***(Oyelese and Smulian, 2006)***.

There is debate over the ideal therapeutic approach for management of morbidly adherent placenta. The generally held opinion is that the morbidly adherent placenta should be treated by caesarean hysterectomy, without attempts at

removal of the placenta ***(Oyelese and Smulian, 2006)***. Conservative management, whereby the placenta is left within the uterus, is advocated by some investigators who cite that this approach has the benefits of preservation of fertility, prevention of massive haemorrhage, and protection against damage to adjacent organs ***(Kayem et al., 2004)***. This conservative approach, however, is not without risks, which include significant bleeding, infection, fistula formation, and failure of placental resorption ***(Kayem et al., 2004; Chiang et al., 2006)***.