

MEASUREMENT OF CERVICAL LENGTH USING
TRANSVAGINAL ULTRASOUND AS A PREDICTOR FOR
ANTEPARTUM HEMORRHAGE IN CASES OF PLACENTA
PREVIA

Thesis

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By

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List of Abbreviations

Abb.	Full term
<i>APH</i>	<i>Antepartum hemorrhage</i>
<i>AUC</i>	<i>Area under the curve</i>
<i>CL</i>	<i>Cervical length</i>
<i>CS</i>	<i>Cesarean section</i>
<i>dNK</i>	<i>Decidual natural killer</i>
<i>IL-1</i>	<i>Interleukin - 1</i>
<i>MRI</i>	<i>Magnetic resonance imaging</i>
<i>NICU</i>	<i>Neonatal intensive care unit</i>
<i>NK</i>	<i>Natural killer</i>
<i>PRBCs</i>	<i>Packed red blood cells</i>
<i>PROM</i>	<i>Prelabor rupture of membranes</i>
<i>ROC</i>	<i>Receiver operating characteristic curve</i>
<i>SD</i>	<i>Standard deviation</i>
<i>TVS</i>	<i>Transvaginal sonography</i>
<i>- PV</i>	<i>Negative predictive value</i>
<i>+PV</i>	<i>Positive predictive value</i>

INTRODUCTION

Placenta previa is defined as a placenta implanted in the lower segment of the uterus, presenting ahead of the leading pole of the fetus. It occurs in 1,8/1000 singleton pregnancies and 3,9/1000 twin pregnancies and represents a significant clinical problem, because the patient may need to be admitted to hospital for observation, she may need blood transfusion, and she is at risk for premature delivery. The incidence of hysterectomy after Caesarean section for placenta previa is 0,3% (relative risk compared with those undergoing CS without placenta previa is 33). Perinatal mortality rates are three to four times higher than in normal pregnancies (*SOGC Clinical Practice Guideline*, 2009)

Due to the widespread use of ultrasound and the rising cesarean section rates, the estimated prevalence of placenta previa rises between 0,4 and 0,3% of third-trimester pregnancies (*Rosenberg et al.*, 2010).

The etiology of hemorrhage is formation of the lower uterine segment and dilation of the internal os, tearing of placental attachments, compounded by the inability of the lower uterine segment myometrium to constrict the torn vessels (*Cunningham et al.*, 2009).

suspected before delivery, placenta accreta can be diagnosed if manual removal of the placenta is partially or totally impossible and no cleavage plane exists between part or the entire placenta and the uterus; a heavy bleeding occurs from the implantation site after forced placental removal. After a hysterectomy performed because of postpartum hemorrhage, placenta accreta is shown by histologic confirmation of accreta on the hysterectomy specimen (*Gielchinsky et al., ۲۰۰۲*).

Prenatal identification of placenta accrete would facilitate the choices about management of delivery and allow the appropriate precautions (reinforcement of obstetric, anesthetic and radiology teams, blood transfusion readiness). However, the sensitivity and specificity of transvaginal or transabdominal ultrasound and magnetic resonance imaging vary from ۳۳% to ۹۵% in different studies; they depend greatly on placenta location. For these reasons, imaging should be considered only when placenta accreta is suspected for clinical reasons (mainly placenta previa associated with previous Cesarean section) (*Lam et al., ۲۰۰۲*).

This can lead to massive and unpredictable hemorrhage and emergent preterm delivery (*Salihu et al., ۲۰۰۳*).

The clinical outcomes of placenta previa are highly variable with increased risk of antepartum hemorrhage (APH) and emergency preterm cesarean delivery, both are unpredictable. Although complete previa tends to be associated with earlier and more severe bleeding, a lesser degree of placenta previa may cause life-threatening hemorrhage necessitating blood transfusion and cesarean section (*Tuzovic, ۲۰۰۶*).

Thus, the degree of placenta previa is only one factor in prognosis and management. Transvaginal sonography (TVS) can provide detailed and accurate information about implantation site, placental migration, the lower placental edge and may help to predict delivery outcome (*Oppenheimer et al., ۲۰۰۱*).

Prediction of likelihood of antepartum hemorrhage is important in planning the management of placenta previa, including the method and time of intervention and the controversial area of patient management (*Ghourab, ۲۰۰۱*).

Research Question:

In women with placenta previa will the cervical length measured by transvaginal ultrasound be used as a predictor for antepartum hemorrhage?

Research Hypothesis:

The shorter the cervical length, the more predictive for antepartum hemorrhage in cases of placenta previa.

AIM OF THE WORK

To find out the relation between cervical length and antepartum hemorrhage in cases of placenta previa.

CLASSIFICATION OF CAUSES AND TYPES OF ANTEPARTUM HEMORRHAGE

Antepartum hemorrhage (APH) defined as bleeding from the genital tract in the second half of pregnancy, remains a major cause of perinatal mortality and maternal morbidity in the developed world.

Usually the placenta is situated in the upper uterine segment. Placental abruption is the premature separation of a normally situated placenta from the uterine wall, resulting in hemorrhage before the delivery of the fetus.

It occurs in around one in 100 deliveries and remains a significant source of perinatal mortality and morbidity. The risk of abruption recurring in a subsequent pregnancy is increased as much as 10-fold (*Rosalba et al., 2010*).

Abruption arises from hemorrhage into the deciduas basalis of the placenta, which results in the formation of haematoma and an increase in hydrostatic pressure leading to separation of the adjacent placenta. The resultant haematoma may be small and self-limited or may continue to dissect through the decidual layers. However, the bleeding may be in whole or in part concealed, if the haematoma does not reach the margin of the placenta and cervix for the blood loss to be revealed. Therefore the amount of revealed hemorrhage poorly reflects the degree

of blood loss. The bleeding may infiltrate the myometrium resulting in so-called Couvelaire uterus.

The other leading cause is Placenta praevia which is defined as a placenta that lies wholly or partly within the lower uterine segment.

In a small proportion of cases where placenta praevia and placental abruption have been excluded, a cause may still be found. They include excessive show, cervicitis, trauma, vulval varicosities, genital tumours, haematuria, genital infections and vasa previa. Many of these conditions are evident on the initial speculum examination.

The exact cause of bleeding in late pregnancy is unknown in about half of cases. The woman typically presents with painless vaginal bleeding without ultrasound evidence of placenta praevia. Placenta praevia can be excluded by an ultrasound scan, but the diagnosis of placental abruption is based on clinical signs and symptoms, and is difficult to confirm in mild cases (*Rosalba et al., 2010*).

Laing and Jeffrey (1991) suggested the following classification:

- (1) Placenta praevia: Bleeding from separation of the placenta wholly or partially implanted in the lower uterine segment. Occurred in 0.8% of pregnancies and accounted for 22% of all antepartum hemorrhage.
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