The role of Transvaginal Ultrasonography in the assessment of cases of missed abortion after surgical evacuation

thesis

Submitted for the fulfillment of the Master degree in obstetrics & gynecology

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2009

Abstract

In the present study, ultrasonography was done for 60 women having missed abortion 30 cases had undergone ultrasound guided curettage & the other 30 cases had undergone blind curettage.

Out of 30 cases undergone blind curettage 8 cases were found to have incomplete evacuation & 2 cases had perforation, out of 30 cases undergone ultrasound guided curettage all cases were found to have no perforation or incomplete evacuation.

So, Intraoperative ultrasound appears to be a safe and valuable tool for the gynecologic surgeon. So, it should be routinely used during surgical evacuation.

Key words: Vaginal ultrasound - Surgical evacuation – Abortion

List of abbreviations

βHCG: β subunit of Human Chorionic Gonadotropin.

CMV : Cytomegalo-virus

CRL**:** Crown rump length.

D & E: dilatation and evacuation.

EVS**:** Endovaginal Sonography.

GnRH **:** Gonadotropin releasing hormone

hCG: human chorionic gonadotropin**.**

HIV**:** human immunodeficiency virus

HSV: Herpes simplex virus

LH **:** luteinizing hormone.

MSD: Mean sac diameter.

PG: prostaglandin.

RCOG**:** Royal College of Obstetricians and Gynaecologists

TAS: Transabdominal sonography.

TVS: Transvaginal sonography.

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Introduction and Aim of work

INTRODUCTION

Abortion is the termination of pregnancy by any means, either spontaneously or intentionally, before the fetus develops sufficiently to survive. By convention, abortion is usually defined as pregnancy termination prior to 20 weeks gestation or less than 500-g birth weight. ***(Cunningham et al., 2005)***

Spontaneous abortion or miscarriage is defined as the involuntary termination of pregnancy before 20 weeks of gestation (dated from the last menstrual period) or spontaneous expulsion of fetus below a fetal weight of 500 gm (**Speroff et al., 2005**).

Management of abortion relies on accurate clinical classification. Depending on the patients' signs and symptoms, abortions are stated to be threatened inevitable, incomplete, complete, missed, septic, or habitual. In addition, therapeutic abortion is applied for those few instances when abortion is indicated for medical reasons ***Cunningham et al., 2001)***.

Aim of work

The aim of this study is to study the importance of ultrasonography in the assessment of uterine cavity, endometrial thickness, remnant of content if present after curettage of missed abortion.

This is done in patients with missed abortion who undergone D&C 50% of them will have it under ultrasound guidance, & the other 50% will have it without ultrasound guidance.

Review of Literature

SPONTANEOUS ABORTION

Definition:

Spontaneous abortion is defined as the expulsion of an embryo or a fetus before the twentieth completed week (or 139 days) of gestation dated from the first day of the last menstrual period, or below a fetal weight of 500 grams (i.e., before the fetus is sufficiently developed to survive post-nataly) ***(Cunningham et al, 2005)***.

Spontaneous abortion or miscarriage is defined as the involuntary termination of pregnancy before 20 weeks of gestation (dated from the last menstrual period) or spontaneous expulsion of fetus below a fetal weight of 500 gm **(Speroff et al., 2005).**

Abortion is the termination of a pregnancy, induced or spontaneous, before the conceptus is sufficiently developed to survive after delivery. Most authorities restrict the term 'abortion' to the first 20 weeks of pregnancy; or in retrospect, to the delivery of any infant weighing less than 500g. In the following discussion, abortion is defined as expulsion of the products of conception before gestational week 20. **(Apuzzio et al 2006).**

Abortions taking place before week 12 are termed (first-trimester) abortions; those occurring at weeks 12-20 late (second-trimester, mid trimester) abortions. This subdivision into two different categories is important because of the different etiologies and types of treatment applied**. (Apuzzio et al 2006).**

Incidence:

Miscarriage is the most common complication of pregnancy; it has been estimated that the overall miscarriage rate is around 50%. Even though the majority of these losses occur before a missed menstrual period, bleeding complicates 21% of clinically detected pregnancies and 12–15% are lost. **(chudleigh et al, 2004).**

It is generally estimated that at least 10-15% of all pregnancies terminate in spontaneous abortion. These figures are based upon abortions recognized clinically and by means of laboratory tests and histological examination. An unexpected delay in the menstrual period followed by excessively heavy bleeding may in many instances result from early pregnancy wastage, where the fertilized ovum never was implanted properly. The number of these early 'occult' abortions cannot be accurately determined, since the evidence of pregnancy usually is missing. **(Apuzzio et al 2006)**.

Hertig has calculated a biologic rate of spontaneous abortion of approximately 28%, once the menstrual period was missed. From various data, it appears that the real incidence of spontaneous abortion is much higher than the 10-15% usually mentioned. **(Apuzzio et al 2006).**

Miscarriage risk increases with the number of previous pregnancy losses but rarely exceeds 40-50%. Risk for pregnancy loss also rises with increasing maternal age, moderately after age 35 and more rapidly after age 40 **(Speroff et al., 2005).**

Approximately 20 percent of pregnant women will have some bleeding before 20 weeks' gestation, and roughly one half of these pregnancies will end in spontaneous abortion. (**Scroggins et al., 2000)**.

Frequency depends on gestational age (GA) at time of abortion and method of abortion. About 15% to 20% of known pregnancies terminate in spontaneous abortion. With the use of serial human chorionic gonadotropin (hCG) measurements to detect early subclinical pregnancy losses, the percentage

increases to 30%. About 80% of spontaneous pregnancy losses occur in the first trimester; the incidence decreases with each gestational week. In a study of 347 patients with a first-trimester pregnancy documented by ultrasonography, the overall rate of pregnancy loss was 6.1% to 4.2% in patients without bleeding and 12.4% in patients with bleeding. In women who have had one prior spontaneous abortion, the rate of spontaneous abortion in a subsequent pregnancy is about 20%; in women who have had three consecutive losses, the rate is 50%. The causes of this condition are varied and most often unknown. Patients should be reassured that, in most cases, spontaneous abortion does not recur**. (Berek et al. 2007)**

PATHOLOGY

The exact pathophysiology resulting in the uterine expulsion of the early pregnancy remains unknown **(Buckett et al., 2003).**

The immediate cause of abortion is hemorrhage into the decidua basalis and necrotic changes in the tissue adjacent to the bleeding. The ovum becomes detached and loss of placental function stimulates uterine contractions that result in expulsion and abortion.**(Cunningham et al., 2004).**

Before the 8th week, the sac is opened, fluid is commonly found surrounding a small macerated foetus, or alternatively there may be no visible fetus in the sac (blighted ovum). The placental villi visualized by dissecting microscope appear thick and distended with fluid. Some of products of conceptions may be retained either in the cavity of uterus or in the cervix. Uterine bleeding occur during expulsion process.

Blood or corneous mole is an ovum that is surrounded by a capsule of clotted blood. The capsule is of varying thickness, with degenerated chorionic villi scattered through it. The small fluid containing cavity within appears compressed and distorted by thick wall of blood clot **(Cunningham et al., 2004).**

Hemorrhage into the decidua basalis, followed by necrosis of tissues adjacent to the bleeding, usually accompanies abortion. If early, the ovum detaches, stimulating uterine contractions that result in its expulsion. When a

gestational sac is opened, fluid is commonly found surrounding a small macerated fetus, or alternatively no fetus is visible, the so-called *blighted ovum.* **(Cunningham et al 2005)**.

Mechanism of missed abortion:

The reason why some abortions do not terminate after death of the fetus, while others do, is not clear. The use of more potent progestational compounds to treat threatened abortion, however, may contribute to a missed abortion **(Pritchard et al, 1985)**.

Etiology

The exact causes of most spontaneous abortions are considered unknown. In the early weeks of pregnancy, the expulsion of the conceptus is usually preceded by the death of the embryo. Later, the fetus frequently is expelled alive. The causes of abortion can be fetal or genetic, maternal, paternal, and combined factors. **(Apuzzio et al 2006)**.

The causes of spontaneous abortion are multiple and include fetal, maternal and paternal factors. A definite reason for a specific spontaneous abortion cannot always be established, because analysis of all causative factors is impossible **(Cunningham et al, 2001).**

FETAL OR GENETIC FACTORS:

Abnormal Zygotic Development. Early spontaneous abortions commonly display a developmental abnormality of the zygote, embryo, early fetus, or at times the placenta. Of 1000 spontaneous abortions analyzed by **Hertig et al (1943)**, half demonstrated degenerated or absent embryos, that is, blighted ova. **Poland et al (1981)** identified morphological disorganization of growth in 40 percent of abortuses that were expelled spontaneously before 20 weeks.

Analysis using newer techniques not dependent on cell culture (fluorescence in situ hybridization, FISH; comparative genomic hybridization, CGH), and more recent careful cytogenetic studies of early missed abortions

suggest that the true incidence of chromosomal abnormalities in miscarried early pregnancies is closer to 75% **(Philipp et al, 2003).**

Aneuploid Abortion. Approximately 50 to 60 percent of embryos and early fetuses that are spontaneously aborted contain chromosomal abnormalities, accounting for most of early pregnancy wastage. **Jacobs et al (1980)** reported that approximately 95 percent of chromosomal abnormalities were due to maternal gametogenesis errors and 5 percent to paternal errors. **(Cunningham et al 2005).**

Autosomal trisomy is the most frequently identified chromosomal anomaly associated with first-trimester abortions. Although most trisomies result from *isolated non-disjunction,* balanced structural chromosomal rearrangements are present in one partner in 2 to 4 percent of couples with a history of recurrent abortions (American College of Obstetricians and Gynecologists, 2001a). Trisomies for all autosomes except chromosome number 1 have been identified in abortuses, but autosomes 13, 16, 18, 21, and 22 have been found most commonly. **(Cunningham et al., 2005).**

Monosomy X (45,X), the second most frequent chromosomal abnormality, usually results in abortion and much less frequently in liveborn female infants (Turner syndrome). Conversely, autosomal monosomy is rare and incompatible with life. **(Cunningham et al., 2005).**

Triploidy is often associated with hydropic placental (molar) degeneration. Incomplete (partial) hydatidiform moles may contain triploidy or trisomy for only chromosome 16. Although these fetuses frequently abort early, the few carried longer are all grossly malformed. Advanced maternal and paternal age does not increase the incidence of triploidy. **(Cunningham et al., 2005).**

Tetraploid abortuses rarely are liveborn and most often are aborted early in gestation.