

The Reliability of Ultrasonography in Determining the Degree of Completeness of First Trimester Spontaneous Abortion

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Abstract

Background: Management of Spontaneous first trimester abortion is often based on ultrasonography findings.

Objective: To determine the reliability of ultrasonography in selecting women for uterine evacuation.

Study Design: A prospective descriptive study of women with first trimester abortion who presented at the Obstetrics and Gynecology clinics.

Materials and Methods: Ninety-five women were studied with clinical presentation of spontaneous abortion; all the women had ultrasonography, and suction curettage. The histological report was then correlated with the ultrasound findings to determine the accuracy of ultrasonography.

Results: Ultrasound classified 39 patients as having complete abortion and 56 patients had incomplete abortion. Thirty-seven of 39 patients with ultrasound finding of empty uterus showed no chorionic villi on histological examination of uterine curetting. Thus the predictive value of a negative ultrasonography was 95%. Of the 56 patients with ultrasound findings of incomplete abortion, 25 patients had retained products on ultrasonography evidenced by presence of gestational sac or echogenic mass within the uterine cavity, 24 of these women had positive confirmation of chorionic villi at histology, giving a positive predictive value for this sonographic sign of 96%. The rest 31 patients had minimal endometrial fluid collection, surrounded by thickened endometrial plate of at least 20mm in diameter, 24 had positive chorionic villi identification, giving a positive predictive value for this sign of 77%.

Conclusion: Ultrasonography is reliable in making a diagnosis of complete abortion, and thus in selecting patients for expectant management after early trimester abortion.

Key Words: Ultrasonography, Spontaneous Abortion.

Introduction

About 15% to 20% of all human pregnancies result in spontaneous abortion, the management of which has focused on prompt evacuation of the uterus in order to prevent infection and reduce blood loss. This management modality has been unquestioned for decades. However, recent randomised trials have suggested that expectant management may be advantageous, particularly for women with complete abortion. Expectant management will reduce the incidence of perforations, uterine synechiae, and need for anaesthesia. But the practice in many centers is to perform uterine curettage for all spontaneous abortions to ensure that the abortion process is complete, and enable routine histological examination for the exclusion of unsuspected molar pregnancies².

Because recent findings have suggested that routine histological examination of uterine curetting is unnecessary, and expectant management may be a more appropriate treatment for first trimester abortions that are clinically complete. We conducted a prospective study to evaluate the reliability of pelvic ultrasonography in predicting the completeness of an abortion process. The authors are of the opinion that the result will help in the selection of patients for the expectant management of spontaneous abortions.

Materials and Methods

This is a descriptive study, the aim of which was to determine the predictive value of ultrasonography in the detection of completeness of first-trimester spontaneous abortions managed at the Ladoke Akintola University Teaching Hospital, Osogbo, from January 2003 to December 2003. The subjects comprise of 95 women who presented with spontaneous abortion during this period. All the women had a previous urine pregnancy test confirming the presence of pregnancy, or had urine test during presentation to confirm gestation.¹

For the purpose of this study, incomplete first trimester abortion was diagnosed to a variable period of amenorrhoea not exceeding 13 weeks, followed by vaginal bleeding, intermittent moderate to severe lower abdominal pain, presence of signs of pregnancy, and an open cervix. Abortion was considered to be complete if there were initial findings as above, but at presentation the pain and bleeding has markedly subsided, and the cervix is closed. We retrieved the previous obstetrics history as related to previous abortion, and parity from the case notes. Excluded from this study are women

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who did not have confirmation of pregnancy, or who were unsure of their last menstrual period.

Trans- abdominal ultrasound was done by the one of us (BTO) the consultant radiologist, with a Simens Sonoline SL1 machine, using a 3.5MHZ linear probe. Abortion was assessed to be complete by ultrasound if there are no products of conception, with an intact endometrial plate. It is judged incomplete if there are

echogenic materials within the endometrium suggestive of retained products or if there is endometrial fluid collection greater than 20mm surrounded by thickened endometrial plate. The histology findings following uterine evacuation were compared with the ultrasonographic findings prior to evacuation to assess the reliability of ultrasonography in determining the degree of completeness of the abortion process.

Table 1
Characteristics of studied women. Values given as mean SD, or n (%).

	Negative ultrasonography (n = 39)	Positive ultrasonography (n = 56)
Age	27.0 ± 1.7	27.7 ± 2.0
Parity	1.1 ± 0.4	0.9 ± 0.4
Previous abortions	11 (28)	15 (27)
Gestational age at time of abortion (wks)	9.4 ± 1.0	8.9 ± 0.9
Previous dilatation and curettage	9 (23)	14 (25)
Associated uterine fibroid	9 (23)	11 (20)

Table 2
Ultrasonographic findings

	No.	No. with villi on histology	Predictive value
Negative findings	39	2	95%
Positive findings			
Gestational sac/echogenic mass	25	24	96%
Endometrial thickening + fluid collection	31	24	74%
Total of positive findings	56	48	

Results

Table 1 shows the characteristics of 95 studied patients. The mean age ± standard deviation [SD] was 27 ± 1.9 years, and mean parity was 1 ± 0.4. There was a history of previous abortion in 26 (27%) of the women, and previous dilatation and curettage in almost all of these, that is 23 of the 26 patients, for a prevalence rate of dilatation and curettage following abortions of 88%. Associated uterine fibroid was documented on ultrasonography in 20 (21%) of the studied patients.

A total of ninety-five sonographic examinations were performed for spontaneous abortion during the study period. Of these, 39 had a negative sonographic picture, that is, no visible retained products or thickened but intact endometrial layer (an ultrasonographic diagnosis of complete abortion). Histology of the curetting in the 39 women revealed chorionic villi in two patients. Thus the predictive value of a negative ultrasonographic examination was 95%.

There were 56 ultrasonographic examinations with positive results, defined as either demonstration of retained products of conception (in 25 patients) or

moderate endometrial fluid collection (>20mm) surrounded by thickened endometrial layer (in 31 patients). All the patients had uterine evacuation in the operating theatre after antibiotics. Of the 25 patients having ultrasonographic demonstration of retained products, there was moderate-profuse quantity of retained products in all, of which histological examination of curetting reported chorionic villi in 24, giving a positive predictive value of 96%. Of the 31 women having endometrial fluid collection with thickened endometrium on ultrasonography, 24 had chorionic villi on histology of endometrial curetting, thus, giving a positive predictive value of 74.4%, Table 2.

Discussion

The current controversy regarding the optimal mode of management of early spontaneous abortions that may or may not be complete is whether or not to evacuate the uterus. One school of thought advocates routine uterine evacuation in all cases to prevent complications of retained products of conception, particularly intrauterine infection with its immediate and late sequelae¹. Another school of thought recognizes that uterine evacuation is an invasive procedure, and should

only be restricted to cases where retained products are demonstrated on ultrasonic examination².

The present study examines the reliability of ultrasonography in the management of patients with early spontaneous abortion. Our data suggests that ultrasonography is a highly reliable test in the management of women with early spontaneous abortion: 95% of women with negative ultrasonic examination had either no detectable chorionic villi on curettage⁵

Moreover, the positive sonographic sign of the presence of gestational sac or an echogenic mass within the uterine cavity has a positive predictive value of 96%. The most unreliable sonographic sign is endometrial fluid collection with thickened endometrial plate, with a positive predictive value of 74.4%. The authors are of the opinion that such patients should be managed with serial ultrasound assessment to quantify the volume of the fluid collection and also to re-evaluate the clinical symptoms. Other investigators have reported similar findings. Kurtz et al retrospectively analyzed 97 first-trimester spontaneous abortions to determine whether ultrasound could reliably rule out retained products of conception. The results indicated that ultrasound could correctly diagnose retained products in 100% of the cases by detecting a gestational sac, collection, similar to the results of this study. Mansur evaluated 155 patients presenting with signs of incomplete abortion with ultrasound. Those found to have retained products of conception were treated by dilatation and curettage. Those found on ultrasound to have no products of conception were followed-up conservatively. Only one of the latter needed dilatation and curettage subsequently, and this patient had a sub-mucous fibroid; thus a negative predictive value of 97.6% was demonstrated for ultrasonography. Rulin et al conducted a prospective study in patients with clinical findings suggestive of complete spontaneous abortion. In their

study, patients with 'empty uterus' were managed expectantly, while those with ultrasonographic findings of tissue collections or gestational sac were subjected to curettage, 98% of ultrasound diagnosed complete abortion had an uneventful recovery without curettage. Cetin and Cetin reported a similar finding.

However, other authors have obtained somewhat different results from ours. In the series by Alcazar et al the negative predictive value of ultrasonography was only 83%, while the positive predictive value was 93%. The lower negative predictive value observed in their study was probably due to the fact that transvaginal ultrasonography was used in their study, while we used transabdominal ultrasound. Transvaginal ultrasonography is more likely to pick products that were too small to be visible on abdominal ultrasound or too small to be of any clinical significance, particularly blood clots, hence less negative predictive value and more positive predictive value. In developed countries, colour Doppler sonography have been employed, but the findings are not too different from those employing less sophisticated measures.

The authors are of the opinion that all patients should not be subjected to uterine evacuation because of spontaneous first-trimester abortions. While it may appear superficially plausible that routine evacuation may make histological diagnosis of other abnormalities possible, especially gestational trophoblastic diseases, a recent prospective study has shown that findings from routine histological examination of tissue from pregnancy termination and uterine evacuation may result in unnecessary further investigation and treatment.¹¹

In conclusion our findings agree with many others,^{5,6,7,8,9} that ultrasonography is highly reliable in detecting clinically complete abortion, and can be used to select patients for expectant management.

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