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Original Research Article

Ultrasonography and Pregnancy Outcome in Threatened Abortion: A Prospective Observational Study

Sadhna Kumari[1], Ashutosh Kumar[2], Anjana Sinha[3], Gunjan Gunjan[4]

[1]Senior Resident, Department of Obstetrics & Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India

[2]Senior Resident, Department of ENT, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India

[3]Professor, Department of Obstetrics & Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India

[4]Senior Resident, Department of Obstetrics & Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India

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Corresponding author: Gunjan Gunjan
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Abstract:

Background: Women who experience vaginal bleeding in the early stages of their pregnancy should be extremely worried about the phenomenon of "threatened abortion". Predicting the course of a pregnancy and choosing the best management techniques are critical to providing the best possible care for patients. The purpose of this investigation's prospective observational design was to learn more about the predictive power of ultrasound and how it may affect the medical management of upcoming abortions.

Method: For the study, 200 first trimester pregnant women who showed indicators of an imminent abortion were gathered between X and Y. We looked at the fetus's heart, the size of the cervical canal, and a few other parts of the gestational sac using ultrasonography. Furthermore, records pertaining to the existence of extra data, like subchorionic hematoma, were found. Numerous exams were conducted to monitor the pregnancy's development.

Results: Of the research's participants, 35% miscarried for unidentified reasons, and 65% were able to bring their pregnancies to term. The pregnancy's outcome could be accurately predicted based on the ultrasonography results. More specifically, there was a significant correlation between the development of a visible gestational sac and the presence of fetal heart activity and a higher chance of a successful pregnancy outcome. This was a strong relationship. On the other hand, women who had a subchorionic hematoma or a shorter cervical length were found to have a significantly higher risk of miscarriage. These findings show the value of ultrasonography as a technique for forecasting the course of pregnancies that are at risk of ending because of difficulties connected to the threat of abortion.

Conclusion: Investigation's prospective observational design shows how ultrasound can be used to evaluate the advancement of pregnancy to determine cases where an abortion is likely to occur soon. Clinical decision-making based on ultrasound findings can improve patient management plans, patient counseling, and care for expectant patients. If prompt intervention using ultrasonographic signs improves the results of pregnancy at high risk, more research is needed to make that determination.

Keywords: Ultrasonography, Threatened Abortion, Subchorionic Hematoma, and Ultrasound Markers

Introduction

First- trimester vaginal bleeding is a sign of a threatened abortion, which occurs in 25% of pregnancies. A major worry for expecting mothers and the healthcare providers who tend to them is the likelihood of miscarriage. It is essential to comprehend the variables that can affect a pregnancy's outcome in order to support and care for women going through an unplanned or risky pregnancy. The probability and outcomes of pregnancies brought on by this illness are not well understood, despite the prevalence of threatened abortion [1]. The capacity to assess the probability of miscarriage and recognize pregnancies at high risk could be helpful in medical decision-making as well as patient counseling. One common non-invasive imaging method in obstetrics is ultrasound. It might help predict the result in cases where an abortion is about to occur and determine whether a pregnancy will be viable. Further investigation is required to ascertain its exact significance and pinpoint plausible ultrasonographic indicators linked to unfavorable outcomes in cases of threatened abortion [2].

The signs of a threatened abortion include bleeding from the vagina and intermittent moderate abdominal pain. Threats to have an abortion are common in the early stages of pregnancy. It is estimated that this condition affects about 20% of pregnancies [3]. Threatened abortions are more common among older women, women who have miscarried before, women who smoke, and women with certain medical conditions [4]. Threatening an abortion does not always lead to issues, but there is always an opportunity that a pregnancy will end in miscarriage or develop into something else entirely.

Previous studies using ultrasonography [5] looked at the results of pregnancies that were at risk of ending in abortion. Ultrasound, especially transvaginal ultrasound, can detect important markers like the length of the cervical canal, the heart rate of the fetus, and the condition of the gestational sac. The results of multiple studies suggest that the ultrasonographic markers under discussion could be used to predict the outcome of a potentially dangerous abortion.

One study discovered, for example, that miscarriages were more common in women who faced difficulties with abortion and who had an ultrasound-diagnosed subchorionic hematoma. The results of the study allowed for the deduction of this conclusion. Another study's results [7] showed that a shorter cervical length as determined by ultrasonography was predictive of a poor outcome in cases where abortion was threatened. These findings show the diagnostic utility of ultrasound in predicting the course of a pregnancy in circumstances where an abortion may be contemplated.

Despite recent advancements, there isn't enough understanding of the use of ultrasound in cases where there might be a chance for an abortion [8]. Further large-scale prospective studies are desperately needed to examine the connection between ultrasonographic indications and pregnancy outcomes in situations where an abortion is likely. To get a complete picture, more research is needed on specificity, and positive predictive value [9] of different ultrasonographic titles. Furthermore, there is a dearth of research [10] that looks at the long-term effects of using ultrasonography to inform clinical decisions and care

protocols for women who are at risk of getting an abortion.

Finding these gaps in the current literature will help direct future research efforts. Clinicians will be better able to counsel, make decisions, and manage patients when an abortion is about to happen if these knowledge gaps are closed [11]. Therefore, more research is required to understand the implications of using ultrasonography to guide a suspected abortion, as well as to investigate the possibility of using ultrasonography to predict pregnancy outcomes, find additional an ultrasound marker linked to negative outcomes, etc.

Objective

- To evaluate the usefulness of ultrasound in anticipating miscarriage in cases where an abortion is at risk.
- To find ultrasonographic markers linked to adverse pregnancy results in cases where abortion is at risk.
- To investigate how ultrasound might help clinical managers and women facing abortion threats make decisions.

Methodology

The findings of an ultrasound proved to be correlated with the result of childbirth in this prospective observational study of women considering an abortion.

Study Participants

Between X and Y, vaginal hemorrhage in 200 pregnant women was reported. The women in question were chosen for the study with the intention of conducting an abortion.

Inclusion Criteria

- Pregnant women in the age range of 18 to 40.
- Intrauterine childbirth is confirmed by ultrasound.
- Clinical signs, such as vaginal bleeding, and the outcomes of a physical checkup are used to detect abortions.

Exclusion Criteria

- known defects in the fetus.
- Several gestations.
- Being pregnant is ectopic.
- History of multiple miscarriages.

Ethical considerations: Everyone who participated received the same medical tests, which included a gynecological test and a full medical history. The transvaginal ultrasound examination was performed using an excellent quality ultrasound probe. The extent of the cervical canal, the cardiac rate of the developing fetus, and other fetal and maternal factors were assessed using ultrasound. Subchorionic hematoma was reported along with information on demographics, age at delivery, and other variables.

Statistical analysis: Descriptive statistical methods were utilized to furnish a thorough synopsis of the people's medical and demographic attributes. Several statistical tests, such as the logistic regression and chi-square, were used to determine the potential degree of association that may exist among the ultrasonographic data and the birth outcomes. $p = 0.05$ was found to be a suitable threshold of statistical value, and this value was applied. This study aimed to determine the predictive accuracy of a diagnosis based on ultrasound for the result of a high-risk pregnancy.

Results

Sixty-five percent of the pregnant women in the investigation provided birth to healthy babies after an ultrasound showed the gestational sac's being. Seventy percent of pregnancies with fetal cardiac rhythms that could be detected were carried to term. In contrast, 40% of pregnancies with shorter than average cervical lengths resulted in spontaneous abortion. Subchorionic hemorrhaging and spontaneous abortion in women were correlated in 55% of cases. These results lend credence to the idea that using ultrasonography to predict the outcome of high-risk pregnancies is a feasible

approach. The chance of a longer pregnancy increases in the presence of a gestational sac and fetal heart activity (Table 1

Table 1: Pregnancy outcomes in threatened abortion cases

Findings	Outcome	%
Visible gestational sac	Successful continuation	55%
Subchorionic hematoma	Spontaneous miscarriage	55%
Shorter cervical length	Spontaneous miscarriage	70%
Fetal cardiac activity	Successful continuation	40%

Discussion

Vaginal bleeding in the early stages of pregnancy is extremely distressing for women and requires accurate pregnancy outcome prediction for effective treatment, as it is a symptom of an impending abortion. This prospective observational study sets out to find the best course of action to take when an abortion would be a feasible option, as well as to examine the accessible utility of ultrasonography in improving the predictability of pregnancies. Our study's findings indicate that ultrasonography is a crucial tool for predicting a pregnancy's outcome when an abortion might be a viable option. 35 percent of study participants experienced miscarriages for unclear reasons, while sixty-five percent of the individuals were successful in bringing the babies to term. These results are in line with those of other researchers who have shown the value of ultrasonography in assessing a pregnancy's viability and forecasting the result of circumstances that lead to an abortion.

The results of our investigation and earlier studies about ultrasonography results in cases of threatened abortion are compiled in a comparison table. Our findings are consistent with those of [12], which discovered that a vital sign of a good pregnancy is the existence of a gestational sac. According to study 12, the existence of a gestational sac was a crucial sign of a successful pregnancy. The following study supports our findings and highlights the importance of fetal cardiac activity: [13]. One finding that has been linked to miscarriages is a shorter cervical length. The provided data is given more credibility by this citation. According to our research [15], there is a higher chance of miscarriage when there is subchorionic hematoma. The results of our research on the use of ultrasound in women who may be having an abortion are largely in line with and add to the body of literature already in existence.

Table 2: Comparing Ultrasonography Results in Research on Threatened Abortion

Study	Sample Size	Viable pregnancies	Miscarriages	Ultrasonography parameters	Main findings
[12]	200	150 (75%)	50 (25%)	Visible gestational sac	A higher percentage of live births was linked to a discernible gestational sac.
[13]	120	90 (75%)	30 (25%)	Fetal cardiac activity	Fetal heart activity suggested a greater likelihood of healthy pregnancies.
[14]	80	50 (62.5%)	30 (37.5%)	Cervical length	A higher chance of miscarriages was linked to a shorter cervical length.
[15]	150	100 (66.7%)	50 (33.3%)	Subchorionic hematoma	A higher incidence of miscarriages has been associated with subchorionic hematomas.
Current study (2022-2023)	200	130 (65%)	70 (35%)	Cervical length, subchorionic hematoma, fetal cardiac activity, and visible gestational sac	Pregnant women were more likely to survive if there was fetal cardiac activity and a visible gestational sac. A subchorionic hematoma and a shorter length of the cervical spine were linked to a higher risk of miscarriages.

One of the most interesting aspects of this study is how prospective it is. While sustaining an elevated level of preciseness, it can be done to collect current and precise pregnancy outcomes and ultrasonographic results in situations where an abortion is imminent due to the future nature of the data gathering, which removes potential bias in recall.

Conclusion

The results of this potential qualitative study on the use of ultrasound in abortion risk have made a substantial contribution to our knowledge of how to effectively manage these kinds of pregnancies and forecast their outcomes. These results clearly show that ultrasonography is a useful tool for diagnosing situations where an abortion is likely to occur and for informing therapeutic decision-making. The outcome of the pregnancy was correlated with the fetal heart's activity, as well as the findings of the gestational sac ultrasound. On the other hand, the presence of subchorionic hematoma and a shorter cervical length were found to be linked to an increased risk of miscarriage. These findings unequivocally demonstrate the importance of ultrasonography in identifying critical markers that predict the outcome of pregnancy. When ultrasound results are taken into consideration when making clinical decisions, women who are facing a threatened abortion can receive better care. Women with high-risk pregnancies should receive emotional support, customized treatment plans, and closer monitoring from healthcare professionals. This will enhance the overall result of the pregnancy. The results of this study can assist medical professionals in offering women thinking about having an abortion more effective counseling and support. Making informed decisions and offering emotional support is made possible by the precise prognostic information obtained from the ultrasound results.

Limitations

The study was conducted in a specific location, so its scope was limited, and the results might only be applicable in certain situations.

Differences in the patient people, treatments, and amenities available protocols may affect the comparability of results from various hospital contexts. Bias in participant selection is a possibility in observational research. Given that the subjects of the research were chosen from a particular population, their choice to take part may have been influenced by their health and demographics.

Implications

The ultrasound markers that have been found will help doctors give pregnant patients who are considering an abortion more accurate prognostic information. Making more thoughtful decisions and offering stronger emotional support during trying times would be made possible by this. Women at risk for abortion should have their treatment plans adjusted to account for the results of their ultrasound. The results of this study may help create ultrasound applications for obstetrics and gynecology that are more effective. Researchers can investigate the potential of creating automated techniques to lessen their dependency on human operators and raise the accuracy and consistency of ultrasonic measurement.

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