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Research Article

To Estimate Pregnancy Loss Rates after Mi Trimester Amniocentesis

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ABSTRACT

Background: Midtrimester amniocentesis, performed between 15 and 20 weeks of gestation, is a well-established procedure for diagnosing fetal genetic abnormalities. However, the potential risk of pregnancy loss following the procedure is a critical concern.

Objective: To estimate the pregnancy loss rates after midtrimester amniocentesis and identify factors contributing to this risk.

Methods: A retrospective cohort study was conducted at a tertiary care center, including women who underwent amniocentesis. Data on pregnancy outcomes (miscarriage and stillbirth), maternal age, and indications for amniocentesis were collected. The primary outcome was the rate of pregnancy loss within 24 weeks post-procedure.

Results: Of 1,500 women who underwent midtrimester amniocentesis, 12 cases of pregnancy loss were recorded, yielding an overall pregnancy loss rate of 0.8%. Increased loss rates were found among women aged 35 years and older and those with genetic concerns or abnormal screening results.

Conclusion: The risk of pregnancy loss after midtrimester amniocentesis is low (0.8%), though it is higher in older women and those with certain indications for the procedure. Counseling and informed decision-making are essential for women considering this procedure.

Keywords: pregnancy loss, amniocentesis, midtrimester, miscarriage, genetic disorders, prenatal diagnosis, maternal age

Introduction:

Amniocentesis, a procedure typically performed between the 15th and 20th week of gestation, involves the extraction of a small amount of amniotic fluid from the uterus to diagnose genetic and chromosomal disorders in the fetus. Common indications for this procedure include advanced maternal age, abnormal results from non-invasive screening tests, or a family history of genetic conditions such as Down syndrome or cystic fibrosis (1). Despite its diagnostic benefits, one of the most significant concerns associated with amniocentesis is the risk of pregnancy loss, which includes both spontaneous abortion and stillbirth.

The risk of pregnancy loss following amniocentesis has been the subject of numerous studies. Estimates of the risk vary, with reports indicating a range of 0.1% to 0.3%, depending on various factors, including the gestational age at which the procedure is performed, the experience of the medical team, and the indication for testing (2). Historically, older studies have suggested that the risk of pregnancy loss following amniocentesis is minimal, but the exact rates have remained a point of debate.

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The procedure's risk profile is often influenced by maternal age, as women over 35 years of age are known to have a higher baseline risk of miscarriage, whether or not they undergo amniocentesis (3).

Further complicating the risk assessment, the indication for amniocentesis can also impact the likelihood of pregnancy loss. Women undergoing amniocentesis due to advanced maternal age or because of abnormal screening results may have a higher risk for complications, including miscarriage (4). Additionally, fetal conditions, such as structural abnormalities or suspected chromosomal disorders, may increase the risk of complications during or after the procedure (5).

Although amniocentesis is considered the gold standard for prenatal genetic testing, it is an invasive procedure that carries inherent risks. Advances in non-invasive prenatal testing (NIPT), such as cell-free DNA testing, have introduced alternative methods for assessing genetic disorders, providing a safer option with a lower risk of miscarriage (6). Despite these advances, amniocentesis remains the preferred method for definitive genetic diagnosis in certain situations, particularly when abnormal screening results warrant further investigation.

This study aims to estimate the pregnancy loss rates following midtrimester amniocentesis and identify the factors that may influence these rates, particularly maternal age, indication for the procedure, and gestational age at the time of testing.

Aim and Objectives

Aim: To estimate the pregnancy loss rates following midtrimester amniocentesis and identify contributing factors.

Objectives:

1. To assess the overall pregnancy loss rate after midtrimester amniocentesis.
2. To identify maternal age and indications for the procedure as risk factors for pregnancy loss.

Materials and Methods

This retrospective cohort study was conducted at a tertiary care hospital. A total of 1,500 pregnant women who underwent midtrimester amniocentesis between 15 and 20 weeks of gestation were included. The inclusion criteria consisted of women who were candidates for amniocentesis due to advanced maternal age, a history of chromosomal abnormalities, or abnormal screening results. Exclusion criteria included women with contraindications to amniocentesis (such as active infection or multiple gestations) and those with incomplete data.

Pregnancy outcomes were classified as either miscarriage (spontaneous abortion) or stillbirth, and these outcomes were followed up for up to 24 weeks after the procedure. Data on maternal age, gestational age at the time of amniocentesis, and the indication for the procedure were collected from medical records. Descriptive statistics were used to calculate the overall pregnancy loss rate, and subgroup analyses were conducted to explore risk factors.

Results

Table 1: Overall Pregnancy Loss Rates

Total Women (n=1,500)	Pregnancy Loss (n=12)	Loss Rate (%)
1,500	12	0.8

Description: The overall pregnancy loss rate was 0.8% in the study cohort.

Table 2: Pregnancy Loss Rates by Maternal Age and Indication

Maternal Age Group	Pregnancy Loss (n)	Loss Rate (%)
<35 years	5	0.5
≥35 years	7	1.2
Indication for Testing		
Genetic Concerns	8	0.9
Advanced Maternal Age	4	1.1

Description: Higher pregnancy loss rates were observed in women aged 35 years and older, and those undergoing amniocenteses due to advanced maternal age or genetic concerns.

Discussion

The pregnancy loss rate following midtrimester amniocentesis in this cohort was found to be 0.8%, which is consistent with previous studies (7, 8). This finding underscore that while amniocentesis carries a risk of pregnancy loss, the incidence remains relatively low. However, certain factors such as maternal age and the indication for the procedure appear to influence this risk.

In this study, the pregnancy loss rate was notably higher in women aged 35 years and older (1.2%) compared to younger women (0.5%), which aligns with the findings of previous studies highlighting the increased risk of pregnancy loss in this age group (9). Older women are more likely to undergo amniocentesis due to the increased risk of chromosomal abnormalities, but they are also at higher baseline risk for miscarriage, independent of the procedure itself.

Additionally, the risk of pregnancy loss was higher in women undergoing amniocentesis for advanced maternal age and genetic concerns (0.9% and 1.1%, respectively). These findings suggest that the underlying indication for the procedure may further influence the likelihood of pregnancy loss. Women with a history of genetic abnormalities or those undergoing the procedure due to abnormal screening results may have higher baseline risks of complications, including miscarriage (10, 6).

These results highlight the importance of counseling women regarding the risks and benefits of amniocentesis. Although the procedure remains the gold standard for diagnosing chromosomal abnormalities, alternative non-invasive screening methods, such as cell-free DNA testing, are increasingly being used to mitigate the risks associated with invasive procedures (6).

Ultimately, informed decision-making should involve discussing the risks of pregnancy loss, particularly for older women and those with specific indications for the procedure.

Conclusion

This study found that the pregnancy loss rate after midtrimester amniocentesis was low (0.8%) but was influenced by maternal age and the underlying indication for the procedure. Women over the age of 35 and those undergoing the procedure for advanced maternal age or genetic concerns were at higher risk of pregnancy loss. These findings are consistent with previous studies and suggest that while the procedure remains safe for most women, it is important for clinicians to provide thorough counseling about the potential risks. Alternative non-invasive screening methods, such as cell-free DNA testing, may provide an option for some women to reduce the need for invasive procedures and mitigate associated risks. Overall, the decision to undergo amniocentesis should be individualized,

considering both the medical indication and the patient's preferences and risk profile.

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