Original Research Article

ASSESSING UTERINE ANOMALIES AS A CRITICAL FACTOR IN RECURRENT MISCARRIAGES

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ABSTRACT

Background: *Recurrent miscarriage is a distressing reproductive problem, and uterine structural anomalies are recognized contributors. Early identification of these anomalies is essential for appropriate management and improvement of future pregnancy outcomes.* **Objective:** *To determine the frequency and types of uterine anomalies among women presenting with recurrent miscarriages.* **Study Design:** *Descriptive cross-sectional study.* **Setting:** *Conducted in a tertiary care gynecology department.* **Duration of Study:** *From January 2025 to August 2025.* **Methods:** *Eighty women with a history of two or more consecutive pregnancy losses were evaluated. All participants underwent transvaginal ultrasonography to detect uterine anomalies, including septate uterus, arcuate uterus, bicornuate uterus, didelphys uterus, and endometrial polyps, according to established ultrasonographic criteria. Data analysis was performed using SPSS version 27. Descriptive statistics were used to report frequencies, percentages, and mean values.* **Results:** *The mean age of the participants was 28.13 ± 5.16 years. More than half of the women (52.5%, n = 42) had experienced more than three miscarriages. Uterine anomalies were detected in 40% of the cohort (n = 32). The most frequent anomalies were a septate uterus (15% n = 12), an arcuate uterus (10% n = 8), and endometrial polyps (8.8% n = 7).* **Conclusion:** *Uterine anomalies were identified in a substantial proportion of women with recurrent miscarriages, emphasizing their role as a significant etiological factor. Septate uterus, arcuate uterus, and endometrial polyps were the most common findings. Early detection using transvaginal ultrasound may improve reproductive outcomes.*

Keywords: Miscarriage, Uterine Anomalies, Septate Uterus, Sonohysterography

INTRODUCTION

A miscarriage, also referred to as spontaneous abortion, is defined as the unintentional termination of pregnancy before 20 gestational weeks. Global estimates indicate that up to 26% of total pregnancies end in miscarriage (1). More than 80% of these early losses occur during the first trimester, and the overall probability of pregnancy loss declines significantly following 12 gestational weeks (2). Vaginal bleeding is the most frequent manifestation and is commonly associated with abdominal cramping as well as lower pelvic pain (3, 4). Early pregnancy loss remains the most prevalent complication in obstetrics that affects women across the globe (5). Miscarriages may result from a range of uterine factors. Genetic abnormalities, anatomical defects, placental dysfunction, psychological distress, and major life stressors all contribute to the etiological profile (6). Women with a previous history of miscarriage demonstrate an evidently heightened risk of consequent pregnancy loss (7). Current data suggest that approximately one in every eight pregnancies is likely to culminate in miscarriage. Recent evidence also indicates that women who experience miscarriage may have a higher likelihood of premature mortality before the age of 70 compared to those with other pregnancy outcomes (8, 9).

A substantial proportion of early pregnancy failures are attributed to genetic defects, making miscarriage one of the most common complications encountered during gestation. Congenital uterine anomalies such as unicornuate, bicornuate, septate, intrauterine adhesions, uterine polyps, and endometriosis have been identified as major contributors to recurrent second-trimester pregnancy loss. Uterine fibroids are present among 40% of women, yet their precise role in fertility and pregnancy outcomes remains debated (10, 11). Uterine anomalies represent a significant yet often underdiagnosed factor contributing to recurrent miscarriages affecting women and their families. Assessing uterine anomalies as a critical determinant in recurrent miscarriages is essential for clinicians for timely management and ultimately enhancing reproductive outcomes.

METHODOLOGY

This cross-sectional study was conducted in the Obstetrics and Gynaecology department of tertiary care hospital from January 2025 to August 2025. Eighty patients were selected using a non-probability sampling technique. The patients were aged 20 to 40 years, with a history of two or more consecutive pregnancy losses before 20 weeks of gestation. Women with known causes of miscarriage and major medical conditions were not included.

All the patients provided their consent to participate in the study. All patients underwent a complete physical examination, and their obstetric history was obtained. All the patients underwent a transvaginal ultrasound examination. This was performed by an experienced sonographer using a Toshiba Famio 5 ultrasonography device equipped with a high-frequency transvaginal probe. The initial scan evaluated general uterine morphology, myometrial texture, and endometrial lining. A uterus was classified as normal if it exhibited a uniform pear-shaped myometrial outline and a single triangular endometrial cavity without any indentation or internal division. A septate uterus was diagnosed when a fibromuscular band of tissue was seen dividing the endometrial cavity partially or completely. At the same time, the external uterine fundal contour was convex, flat, or showed only a minor indentation of less than 10 millimetres. An arcuate uterus was defined by the presence of a mild broad indentation of the fundal endometrial myometrium into the cavity, with a central point of indentation depth less than 1.5 centimetres. A bicornuate uterus was characterised by a fundal external indentation > 10 millimetres, leading to two separate divergent uterine horns and a

concave internal fundal outline. The didelphys uterus was identified by the clear presence of two entirely separate uterine bodies and cavities, each often leading to a distinct cervix. Endometrial polyps were diagnosed as hyperechoic focal lesions within the endometrial cavity, often pedunculated, that were well visualised and usually more different during saline infusion.

SPSS 27 was used to analyze the data. Data were presented in the form of means with standard deviations and frequencies with percentages.

RESULTS

This study had eighty women with a history of recurrent miscarriage. The average age of these women was 28.13 ± 5.16 years. Their mean body mass index was 25.80 ± 2.21 kg/m².

Forty-two (52.5%) had more than three miscarriages. Twenty-four women (30.0%) reported three miscarriages. Forty-four (55.0%) women described their menstrual cycles as irregular (Table I).

Forty-eight women (60%) had normal uterine structure. Among the thirty-two women identified with a uterine anomaly, the septate uterus was present in twelve cases (15.0%). This was followed by the arcuate uterus 8(10.0%). Endometrial polyps were detected in seven women (8.8%). Less frequent anomalies included a didelphys uterus in three women (3.8%) and a bicornuate uterus in two women (2.5%) (Table II).
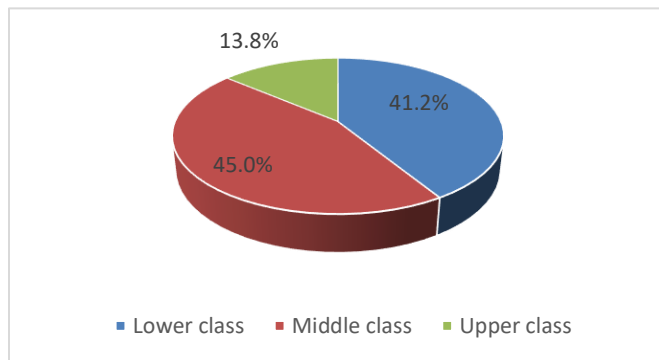

Figure 1: Socioeconomic background

Table 1: Obstetrical history

Obstetrical history		n	%
Frequency of miscarriage	2	14	17.5%
	3	24	30.0%
	> 3	42	52.5%
Menstrual status	Regular	36	45.0%
	Irregular	44	55.0%

Table 2: Uterine anomalies

Uterine anomaly	n	%
Normal	48	60.0%
Septate uterus	12	15.0%
Acuate uterus	8	10.0%
Bicornuate uterus	2	2.5%
Didelphys	3	3.8%
Endometrial Polyps	7	8.8%

DISCUSSION

The findings from this study offer a valuable perspective on the profile of women experiencing recurrent miscarriage and the role of uterine anomalies. The mean age of patients was 28.13 years. This aligns with the study by Habib et al., which reported a mean age of 29.6 years (12). It also aligns with Pervaiz et al., who reported a mean age of 28.73 years (13). The average body mass index in this cohort was 25.80 kg/m². This places the majority of the cohort in the overweight category. Yasmeen et al identified obesity as a notable risk factor for pregnancy loss (14). It underscores the potential interplay between metabolic health and reproductive outcomes.

The majority of the women, over 52%, had more than three miscarriages. This indicates a cohort with particularly severe reproductive challenges, the high prevalence of irregular menstrual cycles, at 55%, further points towards endocrine disturbances. Conditions like polycystic ovarian syndrome are often associated with such irregularities and are known risk factors for miscarriage (14).

The majority of women in this study had a normal uterus (60%). It emphasizes that while uterine anomalies are important, they might not be the only factors for recurrent pregnancy loss. This reinforces the multifaceted nature of the condition. The literature suggests that a comprehensive evaluation is essential (15, 16).

Regarding the uterine anomalies, a septate uterus was present in 15% cases. Habib et al. reported 25% in their cohort (12). Carbonnel et al. noted that the septate uterus is the most frequently associated congenital malformation with recurrent loss, with a prevalence of 6% to 16% (15). The septate uterus is believed to contribute to pregnancy loss due to its poorly vascularised fibromuscular tissue. This can lead to imperfect implantation and placentation (16).

The arcuate uterus was the second most common anomaly in this study, found in 10% of women. Habib et al. cited a prevalence of 12.2% for the arcuate uterus in women with recurrent loss (12). While sometimes considered a mild variant, its high prevalence in affected populations suggests a potential causal role. It should not be dismissed completely during clinical assessment.

The bicornuate uterus was found in 2.5% cases. The didelphys uterus was present in 3.8% cases. These figures are consistent with those of Carbonnel et al., who reported that these anomalies are present in only 0.5% to 2% of cases (15). Regarding the acquired anomalies, endometrial polyps were observed in 8.8% patients. This finding is similar to the 5.7% reported by Pervaiz et al (13).

This study validates the findings from other studies, conducted locally and internationally. Uterine anomalies were linked with 40% of the current cohort, presenting with recurrent miscarriages. This suggests initial screening for uterine examination in such a population.

CONCLUSION

In conclusion, this study firmly validates uterine anomalies as a major factor associated with recurrent miscarriages in 40% of cases. The septate uterus followed by the acuate uterus were the most common congenital anomalies, while endometrial polyps were the most common acquired anomaly. Future work should integrate a full spectrum of investigations. This will help in building a complete aetiological profile for each patient. It will ultimately lead to more personalised and effective management strategies.

DECLARATIONS

Data Availability Statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
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Consent for publication
Approved
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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

MAH NOOR KHAN (Post Graduate Resident)
Conception of Study, Development of Research Methodology Design, Review of manuscript, and final approval of manuscript.
JAWAIRIA (Post Graduate Resident)
Manuscript revisions, critical input and final approval of manuscript.
ZEENAT AFRIDI (Post Graduate Resident)
Critical Input and literature search
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Review of Literature.

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