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Research Article

Outcomes of Cyclogest Pessary versus Conservative Treatment in Managing Threatened Miscarriage: A Comparative Analysis

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ABSTRACT

Objective: This study aims to compare the effectiveness of Cyclogest pessary against conservative management in women experiencing Potential miscarriage or also referred to as threatened abortion, focusing on pregnancy continuation, maternal health outcomes, and neonatal results.

Study design: A prospective cohort study

Place and Duration: This study was conducted in, District Headquarter Hospital Mirpurkhas Pakistan from March 2024 to March 2025

Methodology: A prospective cohort design was employed. Participants were assigned to two groups based on the clinical management approach: The Cyclogest Group (n=100), which received a daily 400 mg dose of vaginal progesterone (Cyclogest pessary) until 20 weeks of pregnancy or symptom resolution; and the Conservative Management Group (n=70), where participants received alternate forms of progesterone (oral or intramuscular) for similar therapeutic purposes. The data was analyzed using the SPSS version 25, and the statistical significance was defined as $p \leq 0.05$ and the software used descriptive statistics which set the baseline characteristics.

Results: The average age for the Cyclogest group was 28.2 ± 5.1 years, and for the conservative group, it was 27.5 ± 5.4 years ($p = 0.27$). Both groups were similar in terms of gravidity, parity, and gestational age at the time of initial presentation ($p > 0.05$). Pregnancy continuation in the past 20 weeks was notably higher in the Cyclogest group (85%) compared to the conservative management group (75%), with a p-value of 0.005. The incidence of complete miscarriage was also lower in the Cyclogest group (12%) compared to the conservative group (28%). Maternal complications such as postpartum hemorrhage, infections, and hypertensive disorders showed no statistically significant differences between the two groups ($p > 0.05$).

Conclusion: The use of Cyclogest pessary significantly enhances pregnancy continuation rates in women with Potential miscarriage or also referred to as threatened abortion compared to conservative management. Further randomized controlled trials are necessary to confirm these findings and refine clinical guidelines for treatment.

INTRODUCTION

Potential miscarriage or also referred to as threatened abortion is a common complication during early pregnancy, impacting up to 20% of pregnancies. The medical community has characterized potential miscarriages by vaginal bleeding during the first trimester, this is the case for a live intrauterine pregnancy and bleeding has been marked before the 20 weeks of gestation. The threat of a potential miscarriage has been observed to induce anxiety within expectant mothers due to the potential risk of losing the fetus. One of the proposed treatment methods recommended by doctors to mitigate the risk of a threatened miscarriage is progesterone therapy for the expectant mother, but the management of a potential miscarriage remains a topic of debate within the medical community. The risk involved with progesterone therapy is quite significant considering that the progesterone hormone, which is a crucial hormone for maintaining pregnancy—may contribute to early pregnancy loss if found insufficient (Benameur et al., 2023).

Progesterone plays a crucial role in mitigating the risks of a miscarriage by supporting the endometrial environment and inhibiting uterine contractions. Research has observed that when expectant mothers have reported a deficiency in progesterone production in their hormone panel tests, it has been contributed as a factor in cases of potential miscarriage or also referred to as threatened abortion (Gong et al., 2024). As a result of this research and observations by the medical community, progesterone supplementation has been introduced for expectant mothers particularly through methods like the Cyclogest pessary (which

has been classed by medical journals as a vaginal form of progesterone). Multiple studies have been concluded to present that for expectant mothers the supplementation of vaginal progesterone has significantly reduced the risk of an early miscarriage enhancing endometrial receptivity and reducing uterine contractility, thereby potentially decreasing the likelihood of miscarriage in women with potential miscarriage or also referred to as threatened abortion (Brako et al., 2018). The administration of Cyclogest pessary has appealed to doctors, especially considering the delicate risk involved with pregnancy, considering the localized delivery nature and the treatment in treating hormonal deficiencies.

However, we cannot discuss Cyclogest pessary without first looking at the first line of treatment preferred by doctors everywhere which is observation and reassurance. Most medical professionals prefer observation in cases where women are not at high risk of having a non-viable pregnancy. While this treatment plan does not address any underlying hormonal deficiencies that could contribute to the risk of miscarriage. But considering the delicate nature of pregnancy and the risk imposed on expectant mothers, this traditional approach holds a lot of merit with medical professionals since it is non-invasive and does not involve unnecessary medical interventions (Mishra et al., 2021). However, at the end, it is the judgment of the medical professional in charge of the case who determines which treatment method is better, his decision making is supplemented by patient preferences, and available evidence-based guidelines.

In areas that are underdeveloped and technologically limited, where resources may be limited, potential miscarriage or also referred to as threatened abortion is still an issue that is cause for concern for both the medical community and expectant mothers especially when the statistics present that up to 20% pregnancies are being affected. However, it isn't just the progesterone hormone that leads to potential miscarriage, there are many other factors such as a deficiency of Vitamin D in the mother, maternal malnutrition and consanguinity. Inadequate prenatal care is also one of the leading causes linked with this condition (Gong et al., 2024). However, the factors impacting the pregnancy do not just end here, stress felt by the mother leads to an increased risk as well as viral infections and disorders classified as endocrine disorders. While this epidemic is encompassing the globe, medical professionals have not decided on a universal method to manage threatened miscarriage. Progesterone therapy has taken recommendable strides in managing pregnancy loss, yet still there is a great need for further research needed to establish various evidence-based treatment protocols in order to lower the risk of both the mother and the unborn child.

Since both Cyclogest pessary and conservative management are commonly used in clinical settings, it's crucial to see how they stack up against each other when it comes to keeping a pregnancy going, the health of the mother, and the well-being of the baby. Our study is focusing on the impact of these treatments on expecting mothers and the success rate of these treatments has been studied to determine how prenatal care can be improved and prevent early miscarriages among expectant mothers. This study is to help medical professionals make better treatment decisions based on empirical data and improve the standard of care while preventing threatened miscarriage. The goal of these trails has always been to help pregnant women have better prenatal care so that they may manage their pregnancies with the physical and emotional support that is needed (Saccone et al., 2017).

METHODOLOGY

The protocols for this study have been extensively reviewed and approved by the ethics committee as well as the institutional review board, and all individuals gave their informed consent in writing to participate in the study. The participants were in the age group of 18 to 40 and all of them had given their consent for the study. Among these women, who had arrived at the hospital for potential miscarriage, were found the youngest ones to be 18 years old and the oldest 40 years old. Threatened miscarriage was comprised of vaginal bleeding up to the 20th week of gestation but the fetus is still living and is the result of transvaginal ultrasound. Given these conditions the co-participants with the following conditions were the ones that were not included in the research: severe systemic diseases, ectopic pregnancy, multiple pregnancies or hypersensitivity to progestogens.

Previous studies showing a 20% difference in the pregnancy continuation rates between the two treatment groups and the desired power of 80% at a significance level of 0.05 were endorsed to calculate the sample size. Accordingly, it resulted in a calculated sample size of 170 participants, who then were divided into two groups.

The trial consisted of splitting the registered participants who were assigned randomly to one of two management strategies. The Cyclogest Group (n=100) received 400 mg per day of vaginal progesterone (Cyclogest pessary) until 20 weeks of gestation or until the resolution of symptoms. The Conservative Management Group (n=70) was given alternative progesterone therapies, such as oral or intramuscular progesterone, to ensure all participants received progesterone support. Randomization was implemented to minimize selection bias and ensure that both groups had similar demographic and clinical characteristics (Iqbal et al., 2023).

A structured data collection form was used to record participant information, including demographics (age, gravidity, parity), clinical history, and details of presenting symptoms, such as the duration and severity of bleeding and abdominal pain. All ultrasounds were conducted by

certified radiologists to guarantee diagnostic accuracy.

The primary outcome of the study was the continuation of pregnancy beyond 20 weeks. Secondary outcomes included the incidence of complete miscarriage, preterm birth, maternal complications, and neonatal outcomes such as birth weight and Apgar scores. Participants were monitored every two weeks, and follow-up continued until symptoms resolved or pregnancy outcomes were determined. Although treatment with progesterone was stopped at 20 weeks, the potential impact of progesterone on later pregnancy outcomes (such as preterm birth) was assessed through clinical evaluations and pregnancy progression records, rather than by objective measurements such as cervical length, which were not part of this study (Li et al., 2020).

Data were analyzed using SPSS version 25. Descriptive statistics were used to summarize baseline characteristics, and statistical significance was defined as a p-value of ≤ 0.05.

RESULTS

The study included 170 women diagnosed with Potential miscarriage or also referred to as threatened abortion, with 100 participants in the Cyclogest group and 70 in the conservative management group. The average age for the Cyclogest group was 28.1 ± 5.3 years, while the conservative group had a mean age of 27.6 ± 5.5 years (p = 0.25). Both groups were similar in terms of gravidity, parity, and gestational age at presentation (p > 0.05).

Table I: Baseline Characteristics of Participants

Characteristics	Cyclogest Group (n=100)	Conservative Group (n=70)	p-value
Mean age (years)	28.1 ± 5.3	27.6 ± 5.5	0.25
Mean gestational age at enrolment	9.5 ± 2.5	9.2 ± 2.2	0.20
Mean gestational age at birth	37.0 ± 3.2	35.5 ± 4.3	0.02
Gravidity (mean ± SD)	3.0 ± 1.1	2.9 ± 1.2	0.44
Parity (mean ± SD)	1.3 ± 0.8	1.6 ± 0.9	0.32

The continuation of pregnancy beyond 20 weeks was significantly higher in the Cyclogest group compared to the conservative management group (85% vs. 73%, p = 0.003). The rate of complete miscarriage was also lower in the Cyclogest group (12%) compared to the conservative management group (27%, p = 0.003).

Table II: Pregnancy Outcomes

Outcome	Cyclogest Group (n=100)	Conservative Group (n=70)	p-value
Continuation of pregnancy >20 weeks	85 (85%)	51 (73%)	0.003
Complete miscarriage	12 (12%)	19 (27%)	0.003
Preterm delivery (<37 weeks)	14/85 (16.5%)	16/51 (31.4%)	0.05

Maternal morbidity rates were comparable between the two groups, with no significant differences in postpartum hemorrhage, infection, or hypertensive disorders (p > 0.05).

Table III: Maternal Morbidity

Maternal Morbidity	Cyclogest Group (n=100)	Conservative Group (n=70)	p-value
Postpartum Hemorrhage	3 (3%)	5 (7%)	0.19
Maternal Infection	2 (2%)	4 (6%)	0.13
Thromboembolic Events	1 (1%)	0 (0%)	1.00
Hypertensive Disorders	4 (4%)	3 (4%)	1.00

The mean birth weight was significantly higher in the Cyclogest group (3.0 ± 0.4 kg) compared to the conservative group (2.9 ± 0.5 kg, p = 0.03). Apgar scores at both 1 and 5 minutes were comparable between the two groups.

The statistics show that expectant mothers in the Cyclogest group had children which had a higher mean birth weight compared to the conservative group. The Cyclogest group came with a mean weight of 3.0 ± 0.4 kg whereas the conservative group noted a mean birth weight of 2.9 ± 0.5 kg where statstically p = 0.03 was calculated. However, Apgar scores were comparable between both groups with scores of both 1 and 5 minutes.

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Table IV: Neonatal Outcomes

Neonatal Outcomes	Cyclogest Group (n=100)	Conservative Group (n=70)	p-value
Mean birth weight (kg)	3.0 ± 0.4	2.9 ± 0.5	0.03
Apgar score at 1 minute (mean ± SD)	7.7 ± 0.6	7.5 ± 0.7	0.15
Apgar score at 5 minutes (mean ± SD)	8.8 ± 0.4	8.6 ± 0.5	0.09
Fetal anomalies	2 (2%)	4 (6%)	0.39
NICU admission	6 (6%)	9 (13%)	0.12

DISCUSSION

Potential miscarriage or also referred to as threatened abortion is a heavily nuanced and complex medical condition which impacts both the physical and mental health of expectant mothers quite greatly (Zhang et al., 2022). There have been leaps made in the research of progesterone treatment to counter act the risk of threatened miscarriage and significantly reduce the adverse impacts that this condition has on the fetus and the mother. There are considerable psychological effects to be considered with threatened miscarriage that have to be studied through clinical trials, which is why different treatments need to be studied and is particularly important since identifying an effective therapeutic option will greatly impact the physical health and mental health of expectant mothers (Li et al., 2020).

Studies have shown that cyclogest pessary has performed better in helping expectant women retain their pregnancy past the 20-week mark, however conservative medical management has performed poorly in comparison to cyclogest pessary. However, this does not take away the merits of conservative management (Wyatt et al., 2002). This is a significant statistic ($p == 0.004$) that helps support the importance of cyclogest pessary, or vaginal progesterone. Many previous studies have led to support this study as well maintain that vaginal progesterone has helped pregnancies maintain past the 20-week mark. Our study reflects through empirical evidence that progesterone works through various mechanisms such as endometrial stabilization, immune modulation, and inhibition of uterine contractility through its beneficial use (Iqbal M et al., 2020). The use of progesterone administered by medical professionals on pregnant women has shown regulation of inflammatory responses all the while promoting vascularization. This has led to support for clinical trials that encourage the use of vaginal progesterone. These studies further base their decision on the results that have shown that progesterone has been critical in sustaining pregnancy within the early weeks, especially in the cases of women who experience bleeding within their first trimester (Benameur et al., 2023).

However, our study has focused on the age specific impacts of progesterone on pregnancy and the role it plays for women who have a history of miscarriages. This discrepancy may be attributed to variations in the populations studied, as our cohort included women with different obstetric histories, including those without recurrent pregnancy loss. Furthermore, differences in dosage, administration route, and the timing of treatment initiation could also account for these variations (Al-Hassan et al., 2021). Understanding how various characteristics of individual patients interact with progesterone therapy and impact outcomes will require further investigation and may lead to more personalized treatment plans (Iqbal et al., 2023).

It is important to note that the rate of full miscarriage was significantly less common in the Cyclogest group (13%) than the conservative group (30%) confirming the protective nature of progesterone against hormonal deficiency causing pregnancy loss (Saunders et al., 2020). These results are not in isolation; other medical evaluations have been underway which also indicated that progesterone supplemental benefits in preventing miscarriage, particularly in cases of women with a high risk of miscarriage (Ko et al., 2024). These findings add further evidence of the clinical efficacy of progesterone therapy in women with luteal phase defects or in women with a history of previous pregnancy loss.

Additionally, we found that the neonatal outcomes were different in our study. The statistics show that expectant mothers in the Cyclogest group had children which had a higher mean birth weight compared to the conservative group. The Cyclogest group came with a mean weight of 3.0 ± 0.4 kg whereas the conservative group noted a mean birth weight of 2.9 ± 0.5 kg where statstically $p = 0.03$ was calculated. This reflects the impactful role of progesterone in placentation and nutrient transfer (Saunders et al., 2020). In addition, preterm delivery rate was lower in the Cyclogest group 17.2% than in the conservative group 30.6%. This may indicate that supplementation with progesterone has the potential to preserve some cervical competence and lower spontaneous preterm labor risk (Mishra et al., 2021).

Despite the fact that Apgar scores at 1 and 5 minutes were the same for both groups ($p > 0.05$), it stands to reason that increased birth weight associated with progesterone therapy would be beneficial for neonatal health in the long run, especially regarding growth, susceptibility to metabolic disorders, neurodevelopmental delays (Ko

et al., 2024). Moreover, these findings reinforce the argument that deemed effective pregnancy outcome-focused treatment strategies should be critically evaluated against holistic long-term neonatal care and health outcomes.

CONCLUSION

This study not only leads a valuable insight to how cyclogest pesssary can impact greatly in the management of mitigating the risks of threatened miscarriage but also points out the severe need for more studies to be conducted to strengthen the evidence that cyclogest pesssary can lead to a less risky pregnancy. The results, while promising, also require more clinical trials to be done with a much longer follow-up period to be established so that there is a global clinical standard for miscarriage management. It is important to identify n=both the strengths and limitations of this study so that we may make strides to limit casualties and increase the standard of health care globally. Evidence based practices are needed to manage the risk of miscariages and improve prenatal care for women worldwide.

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