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Recurrent Bacterial Vaginosis in Pregnancy: Clinico-Laboratory Monitoring and Relapse-Oriented Follow-Up in a Tertiary Maternity Hospital in Uzbekistan

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Background

Recurrent bacterial vaginosis (RBV) is a clinically significant form of vaginal dysbiosis characterised by repeated episodes of disturbed microbiota composition, typically involving a reduction of Lactobacillus dominance and an overgrowth of anaerobic bacteria. During pregnancy, this condition deserves particular attention because physiological hormonal and immunological adaptations can influence vaginal microbial stability and potentially modify both symptom manifestation and treatment response. In routine obstetric practice, RBV presents not only as a common cause of vaginal discharge and malodor but also as a condition that complicates clinical decision-making due to frequent relapse and the limited therapeutic options acceptable in pregnancy.

A key clinical issue is that symptom relief after therapy does not necessarily correspond to microbiological normalization. In recurrent cases, remission may be short-lived, and recurrent symptoms may reflect either reinfection-like events or persistent dysbiosis that has not been fully corrected. This makes RBV a time-dependent condition rather than a one-time diagnosis. Consequently, standard episodic management, treating an acute episode without structured follow-up, can lead to under-recognition of relapse patterns and may underestimate the true frequency of recurrent disease during pregnancy.

From a methodological standpoint, the evaluation of RBV in pregnant women requires an approach that integrates clinical assessment with laboratory verification and dynamic monitoring. The relevance of such an approach becomes especially clear in tertiary maternity facilities, where patients present at different gestational stages, often with obstetric comorbidities and heterogeneous clinical histories. In Uzbekistan, tertiary-level obstetric institutions, including the I. Irgashev Republican Maternity Hospital No.4 in Tashkent receives a large flow of pregnant women and provides a realistic setting for studying RBV within everyday акушеplik amaliyoti.

The clinical environment allows observation of RBV not in controlled experimental settings but in the context of real diagnostic workloads, patient compliance variability, and pregnancy-related physiological changes.

In this dissertation-based research, the focus was placed on constructing a relapse-oriented follow-up logic: RBV was approached as a condition requiring predefined monitoring points and objective endpoints. Such an approach aims to improve the reliability of outcome assessment by distinguishing stable remission from temporary symptom improvement and by documenting relapses consistently within an evidence-based methodological framework.

Aim

The primary aim of this dissertation-based study was to substantiate a clinico-laboratory methodology for dynamic follow-up of pregnant women with recurrent bacterial vaginosis (RBV) under routine clinical conditions at a tertiary maternity hospital in Uzbekistan. Unlike research focusing solely on treatment regimens, the present work emphasised the methodological and observational dimension: how RBV should be monitored over time, how treatment effectiveness should be evaluated objectively, and how recurrent episodes should be documented in a standardised manner during pregnancy.

A central objective was to demonstrate that RBV in pregnancy cannot be reliably assessed through a single-time clinical encounter. One-time evaluation provides only a limited cross-sectional picture and may fail to capture the temporal dimension of the disease, particularly relapse probability. Therefore, the study aimed to develop and apply a stepwise monitoring protocol that includes baseline assessment, post-treatment control, and relapse detection within predetermined follow-up intervals. This approach was intended to increase data comparability and reduce variability caused by symptom-based, non-standardised patient return patterns.

Another objective was to strengthen the role of laboratory verification in outcome assessment. In clinical practice, patient-reported improvement often becomes the major indicator of success. However, RBV is known for discordance between clinical symptoms and microbiological status. In pregnancy, this discordance may be amplified due to physiological changes affecting vaginal secretion patterns and immune responses. The study, therefore, aimed to incorporate laboratory normalisation as a core endpoint, alongside clinical improvement, to define remission stability more accurately and to avoid overestimation of therapeutic success.

Additionally, the study aimed to adapt the follow-up model to obstetric realities. Pregnant women require careful monitoring not only of vaginal microbiota status but also of the pregnancy course and fetal well-being. Thus, the methodology was designed to ensure that RBV assessment remained integrated within акушеplik kuzatuv. The overall goal was to produce a framework that is both scientifically valid and practically applicable in high-flow tertiary maternity care settings, enabling clinicians to assess RBV as a dynamic condition and to generate evidence that can inform improved management strategies within Uzbekistan’s obstetric healthcare context.

Materials and Methods

This study was conducted between 2022 and 2024 at the I. Irgashev Republican Maternity Hospital No.4 in Tashkent, Uzbekistan, is a tertiary-level obstetric facility providing both routine and specialised pregnancy care. The study population consisted of 40 pregnant women diagnosed with recurrent bacterial vaginosis (RBV). Participant selection was oriented toward recurrent disease patterns, with emphasis on including women who had repeated episodes consistent with RBV rather than isolated or transient dysbiotic changes. This approach ensured that the study focused specifically on clinically meaningful recurrence and remission instability.

The methodological structure was established as a dynamic observation model with predefined stages of follow-up. At baseline, participants underwent clinical evaluation documenting major symptoms (abnormal discharge, odour, discomfort, irritation) and objective gynaecological signs. Clinical findings were not used in isolation; instead, laboratory verification was incorporated as

an essential component for diagnostic confirmation and follow-up monitoring. Laboratory assessment aimed to characterise the dysbiotic state and to evaluate post-treatment restoration of the vaginal microbial environment. By integrating laboratory endpoints into the methodological logic, the study improved the objectivity of remission assessment and strengthened relapse detection.

Follow-up visits were planned in predetermined time windows. A post-treatment control evaluation was performed to assess immediate response, including both clinical symptom dynamics and laboratory changes. Additional monitoring points were used to identify recurrence during the pregnancy course. This design allowed relapses to be recorded systematically rather than only when symptoms became severe enough for the patient to return spontaneously. Recurrence was defined using a combined criterion approach: reappearance of relevant clinical symptoms accompanied by laboratory evidence supporting dysbiosis, thereby reducing misclassification based solely on subjective complaints.

Ethical requirements were strictly observed due to the vulnerable study population. Informed consent was obtained from all participants. Confidentiality was maintained, and the principle of risk minimisation guided the monitoring strategy. Follow-up procedures were designed to align with standard obstetric care, avoiding unnecessary interventions and ensuring patient safety. Clinical monitoring was performed in coordination with routine obstetric assessments, preserving the obstetric context and allowing the evaluation of RBV without neglecting maternal and fetal considerations. Data analysis was performed using descriptive statistical methods appropriate for clinical observation studies, supporting interpretation of clinical and laboratory trends across follow-up stages.

Results

Implementation of the relapse-oriented clinico-laboratory follow-up model provided structured and clinically interpretable information on RBV dynamics during pregnancy. At baseline, all 40 participants demonstrated clinical and laboratory features consistent with vaginal dysbiosis, though symptom severity varied considerably. This variability reinforced an important clinical observation: the intensity of subjective complaints did not always correlate with the degree of laboratory-confirmed microbial disturbance. Some women reported pronounced discharge and odour, while others had less severe symptoms but still demonstrated persistent dysbiotic patterns. This heterogeneity highlighted the need for objective laboratory verification when assessing RBV in pregnancy.

After therapy, many participants reported subjective clinical improvement. Reduced discharge and relief of discomfort were frequently noted during early post-treatment assessment. However, the dynamic monitoring protocol revealed that clinical improvement did not uniformly coincide with stable laboratory normalisation. In a subset of participants, laboratory indicators suggested incomplete restoration of vaginal microbial balance despite symptom reduction. Such findings are methodologically significant because they indicate that “clinical remission” may not represent microbiological remission. In recurrent disease, this discordance can contribute to relapse, as persistent dysbiosis may serve as a biological background for repeated episodes later in gestation.

The predefined follow-up timeline enabled systematic identification of recurrent episodes. Rather than relying on spontaneous patient return, recurrence was documented within planned control intervals. This approach allowed the study to register relapses consistently and to interpret recurrence as a predictable event in RBV rather than as an accidental occurrence. Combined clinical and laboratory criteria for recurrence strengthened diagnostic certainty and reduced the risk of overdiagnosis based solely on subjective complaints or underdiagnosis due to temporary symptom suppression. Importantly, the monitoring framework was feasible within the акушерlik environment of a tertiary hospital. Follow-up procedures were integrated into routine obstetric evaluations, ensuring that maternal and fetal contexts were considered alongside RBV assessment. The results, therefore, demonstrate that structured clinico-laboratory follow-up is not only

methodologically justified but also practically applicable in high-flow maternity care settings. Overall, the findings support the concept that RBV in pregnancy should be managed and studied as a dynamic condition requiring standardised follow-up. Such an approach improves comparability of clinical material, enhances reliability of treatment outcome evaluation, and facilitates early identification of unstable remission and relapse patterns.

Conclusion

In conclusion, the study supports the implementation of standardized clinico-laboratory follow-up in managing RBV during pregnancy, particularly in tertiary maternity hospitals in Uzbekistan. The methodological foundation developed in this work can be used to improve routine clinical protocols and conduct future research with higher comparability and stronger interpretability of clinical material. By emphasising objective, relapse-oriented monitoring, the approach contributes to more evidence-based strategies aimed at maintaining stable remission, reducing the burden of recurrence, and improving overall pregnancy-related outcomes.