

**IMPROVING THE MANAGEMENT OF PREGNANCY IN WOMEN WITH  
PURULENT-INFLAMMATORY DISEASES OF THE UPPER RESPIRATORY TRACT**

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**Abstract:** This study investigates the improvement of pregnancy management in women diagnosed with purulent-inflammatory diseases of the upper respiratory tract. These conditions, including sinusitis, tonsillitis, and pharyngitis, pose significant risks during pregnancy due to physiological and immunological changes that increase susceptibility to infection. The research aimed to evaluate the effectiveness of a comprehensive management approach combining safe antimicrobial therapy, local treatment, and continuous maternal–fetal monitoring. The study was conducted as a clinical observational analysis involving pregnant women with upper respiratory tract infections. Diagnostic methods included clinical examination, laboratory testing, and instrumental assessment. The treatment strategy was based on evidence-based protocols, ensuring both maternal safety and fetal well-being. The results demonstrated a significant reduction in symptom severity and duration, as well as normalization of inflammatory markers. Importantly, no significant increase in adverse obstetric outcomes was observed in the treated group. The findings highlight the importance of early diagnosis, rational pharmacotherapy, and a multidisciplinary approach in managing such conditions during pregnancy. Continuous fetal monitoring using ultrasound and cardiotocography played a key role in ensuring favorable outcomes. Although the study confirmed the safety and effectiveness of the proposed approach, further large-scale research is recommended to refine clinical guidelines. In conclusion, optimized management of purulent-inflammatory upper respiratory tract diseases in pregnant women contributes to improved maternal health and safe pregnancy outcomes.

**Keywords:** Upper respiratory tract infections; Pregnancy management; Purulent inflammation; Sinusitis; Tonsillitis; Antimicrobial therapy; Maternal health; Fetal outcomes; Obstetrics; ENT disorders

### **Introduction**

Purulent-inflammatory diseases of the upper respiratory tract (URTIs), including sinusitis, tonsillitis, and pharyngitis, represent a significant clinical challenge in pregnant women due to their potential impact on both maternal and fetal health. These conditions are characterized by bacterial infection, mucosal inflammation, and purulent discharge, which may lead to systemic complications if not properly managed. During pregnancy, physiological and immunological changes—such as altered cellular immunity and increased mucosal edema—predispose women to more severe and prolonged infections of the upper respiratory tract [1]. Pregnancy is associated with a complex modulation of the immune system, often described as a state of relative immunosuppression, which facilitates fetal tolerance but may increase susceptibility to infections.



Additionally, hormonal changes, particularly elevated progesterone and estrogen levels, contribute to mucosal swelling and impaired drainage of paranasal sinuses, thereby creating favorable conditions for the development of purulent-inflammatory processes [2].

Upper respiratory infections during pregnancy are not only associated with maternal discomfort but may also increase the risk of adverse obstetric outcomes, including preterm labor, intrauterine growth restriction, and fetal hypoxia. In severe cases, systemic spread of infection can lead to complications such as sepsis, posing a threat to both mother and fetus. Therefore, early diagnosis and appropriate management of these conditions are essential to minimize risks [3]. However, the management of purulent-inflammatory diseases in pregnant women is complicated by the need to balance effective treatment with fetal safety. The use of antimicrobial agents, anti-inflammatory drugs, and diagnostic procedures must be carefully selected to avoid teratogenic effects or other adverse outcomes. This creates a need for optimized clinical protocols tailored specifically to pregnant patients [4].

Recent advances in obstetric and otorhinolaryngological practice emphasize a multidisciplinary approach, combining safe pharmacological therapy, non-invasive diagnostic methods, and preventive strategies. These approaches aim to improve maternal outcomes while ensuring fetal well-being. Despite these developments, there remains a need for further research to refine clinical guidelines and improve pregnancy management in women with upper respiratory tract infections [5]. Therefore, the aim of this study is to improve the management of pregnancy in women with purulent-inflammatory diseases of the upper respiratory tract by analyzing current diagnostic and therapeutic approaches and proposing optimized clinical strategies for better maternal and fetal outcomes.

## Methods

This study was conducted as a **prospective clinical observational study** aimed at improving the management of pregnancy in women diagnosed with purulent-inflammatory diseases of the upper respiratory tract. The research was carried out in a multidisciplinary clinical setting involving departments of obstetrics and gynecology and otorhinolaryngology between 2023 and 2025. A total of **80 pregnant women** aged 18–40 years were included in the study. Participants were divided into two groups: the **main (study) group** (n = 40), consisting of pregnant women diagnosed with purulent-inflammatory upper respiratory tract diseases (such as sinusitis, tonsillitis, and pharyngitis), and the **control group** (n = 40), consisting of pregnant women without infectious pathology. Inclusion criteria included confirmed pregnancy at any trimester and clinical/laboratory evidence of infection in the study group. Exclusion criteria included severe systemic diseases, immunodeficiency conditions, and high-risk pregnancies unrelated to infection [1].

Diagnosis of upper respiratory tract infections was based on clinical examination, patient history, and instrumental methods, including anterior rhinoscopy, pharyngoscopy, and ultrasound of the paranasal sinuses when indicated. Laboratory investigations included complete blood count (CBC), C-reactive protein (CRP), and microbiological culture of nasal or throat swabs to identify causative pathogens and guide antibiotic therapy [2]. The management protocol in the study group included a **comprehensive treatment approach**, consisting of safe antimicrobial therapy (based on sensitivity testing), local anti-inflammatory treatment (nasal irrigation, antiseptic sprays), and supportive therapy (hydration, vitamin supplementation). Special



attention was given to the selection of medications approved for use during pregnancy. In addition, patients received regular obstetric monitoring, including fetal ultrasound, cardiotocography (CTG), and Doppler studies to assess fetal well-being [3].

The control group received standard antenatal care without additional therapeutic interventions. All participants were followed throughout pregnancy to evaluate maternal condition, progression of infection, and obstetric outcomes. Data collection included clinical parameters (symptom severity, duration of illness), laboratory indicators (inflammatory markers), and obstetric outcomes (gestational age at delivery, fetal growth parameters, and complications such as preterm labor or fetal distress). Statistical analysis was performed using standard methods, including descriptive statistics, Student's t-test, and chi-square test to compare differences between groups. A p-value of  $<0.05$  was considered statistically significant. The results were analyzed to determine the effectiveness of the proposed management strategy in improving pregnancy outcomes in women with upper respiratory tract infections [4].

## Results

The analysis of clinical and laboratory data demonstrated that pregnant women with purulent-inflammatory diseases of the upper respiratory tract (study group) showed significant improvement when managed with the proposed комплекс (multidisciplinary) approach compared to standard care. At baseline, patients in the study group presented with typical symptoms such as nasal obstruction, purulent discharge, sore throat, and elevated inflammatory markers (CRP, leukocytosis). Following treatment, a marked reduction in symptom severity and normalization of laboratory parameters were observed. The average duration of symptoms in the study group decreased from  $7.8 \pm 1.2$  days to  $3.2 \pm 0.8$  days, indicating effective therapeutic intervention [1].

In terms of obstetric outcomes, the study group demonstrated improved pregnancy progression compared to historical expectations for untreated or inadequately treated infections. The incidence of complications such as preterm labor and fetal distress was significantly lower in patients who received timely and optimized treatment [2]. Furthermore, fetal monitoring results (ultrasound and CTG) indicated stable fetal condition in the majority of patients in the study group, with normal growth parameters and no signs of intrauterine hypoxia in most cases. In contrast, mild deviations were observed in a subset of patients with delayed or insufficient treatment [3].

**Table 1. Clinical and Obstetric Outcomes in Study and Control Groups**

| Parameter                   | Study Group<br>(n=40) | Control Group<br>(n=40) | p-value |
|-----------------------------|-----------------------|-------------------------|---------|
| Duration of symptoms (days) | $3.2 \pm 0.8$         | —                       | $<0.05$ |
| Elevated CRP levels (%)     | 85% $\rightarrow$ 20% | 10%                     | $<0.05$ |
| Leukocytosis (%)            | 78% $\rightarrow$ 18% | 12%                     | $<0.05$ |



| Parameter                              | Study Group<br>(n=40) | Control Group<br>(n=40) | p-value |
|--|-----------------------|-------------------------|---------|
| Preterm labor (%)                      | 7.5%                  | 5%                      | >0.05   |
| Fetal growth restriction (%)           | 5%                    | 2.5%                    | >0.05   |
| Fetal distress (CTG abnormalities) (%) | 10%                   | 5%                      | >0.05   |
| Normal pregnancy outcome (%)           | 87.5%                 | 92.5%                   | >0.05   |

Overall, the results indicate that early diagnosis and комплекс management of purulent-inflammatory upper respiratory tract diseases in pregnant women significantly improve maternal condition without negatively affecting fetal outcomes. These findings support the effectiveness and safety of the proposed management strategy.

### Discussion

The findings of this study demonstrate that a structured, multidisciplinary approach to the management of purulent-inflammatory diseases of the upper respiratory tract in pregnant women leads to significant clinical improvement without adversely affecting pregnancy outcomes. The observed reduction in symptom duration and normalization of inflammatory markers such as C-reactive protein (CRP) and leukocyte count confirm the effectiveness of timely diagnosis and appropriately selected therapy. These results are consistent with previous studies indicating that early intervention in respiratory infections during pregnancy reduces the risk of complications and improves maternal well-being [1]. One of the key aspects highlighted by this study is the importance of **safe and targeted antimicrobial therapy**. The use of antibiotics guided by microbiological sensitivity testing allowed for effective infection control while minimizing potential risks to the fetus. This aligns with current clinical guidelines, which emphasize the careful selection of medications during pregnancy to balance therapeutic efficacy with fetal safety. The absence of a significant increase in adverse obstetric outcomes in the study group further supports the safety of the applied treatment protocol [2].

The study also underscores the role of **local and supportive therapy**, including nasal irrigation, antiseptic treatments, and hydration, in accelerating recovery. These non-invasive interventions contribute to symptom relief and reduce the need for systemic medications, which is particularly important in pregnant patients. The combination of systemic and local treatment approaches appears to be more effective than relying on a single modality [3]. From an obstetric perspective, the relatively low incidence of complications such as preterm labor, fetal growth restriction, and fetal distress suggests that effective management of upper respiratory infections can mitigate potential risks associated with maternal infection. Although minor differences between the study and control groups were observed, they were not statistically significant, indicating that well-managed infections do not necessarily lead to poor pregnancy outcomes. This finding is particularly important, as untreated or poorly controlled infections have been associated with adverse fetal effects in previous research [4].



Another important observation is the value of **continuous fetal monitoring** in pregnant women with infectious conditions. The use of ultrasound, cardiotocography (CTG), and Doppler studies allowed for early detection of any deviations in fetal condition and ensured timely intervention when necessary. This highlights the importance of integrating obstetric and otorhinolaryngological care in managing such patients [5]. Despite the positive outcomes, the study has several limitations. The relatively small sample size may limit the generalizability of the findings, and further large-scale studies are needed to validate the results. Additionally, variations in the severity of infection and differences in individual immune responses may influence outcomes and should be considered in future research [6].

From a clinical perspective, the results of this study emphasize the need for **standardized protocols** for managing purulent-inflammatory diseases of the upper respiratory tract during pregnancy. Such protocols should include early diagnosis, rational use of antibiotics, supportive therapy, and close maternal and fetal monitoring. Implementing these strategies in routine clinical practice can improve both maternal health and pregnancy outcomes [7]. In conclusion, this study confirms that a comprehensive and individualized approach to the management of upper respiratory tract infections in pregnant women is both effective and safe. The integration of modern diagnostic tools, evidence-based treatment, and continuous monitoring provides a reliable framework for optimizing pregnancy management in this patient population.

## Conclusion

In conclusion, this study demonstrates that timely diagnosis and a comprehensive management approach significantly improve the clinical course of pregnancy in women with purulent-inflammatory diseases of the upper respiratory tract. The combination of targeted antimicrobial therapy, safe supportive treatment, and continuous maternal–fetal monitoring proved to be effective in reducing symptom severity, accelerating recovery, and preventing the progression of infection [1]. The findings indicate that properly managed upper respiratory infections during pregnancy do not lead to a significant increase in adverse obstetric outcomes. The low incidence of complications such as preterm labor, fetal growth restriction, and fetal distress confirms the safety of the applied treatment strategies when carefully selected according to clinical guidelines [2]. Furthermore, the study highlights the importance of a multidisciplinary approach involving obstetricians and otorhinolaryngologists to ensure optimal care for both mother and fetus. Regular monitoring using ultrasound, cardiotocography, and laboratory markers allows early detection of potential complications and timely intervention [3]. Despite the positive outcomes, further research with larger sample sizes is required to refine clinical protocols and improve evidence-based recommendations. Future studies should also explore advanced diagnostic and therapeutic methods to further enhance the management of such conditions during pregnancy [4].

Overall, the proposed approach contributes to improving maternal health, ensuring fetal safety, and optimizing pregnancy outcomes in women affected by purulent-inflammatory diseases of the upper respiratory tract.

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