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Puerperal Sepsis among Reproductive Age Women: A Review

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ABSTRACT

Puerperal sepsis, a bacterial infection that affects women in the postpartum period, is a leading cause of maternal morbidity and mortality globally, particularly in low- and middle-income countries. This review examines the associated risk factors for puerperal sepsis in reproductive-age women, including hygiene and sanitation issues, prolonged labor, cesarean sections, underlying maternal health conditions, and limited access to healthcare. Furthermore, strategies for prevention, such as improving sanitation, promoting facility-based deliveries, and enhancing postpartum care, are discussed. This review aims to highlight the critical need for effective interventions to reduce the incidence of puerperal sepsis and improve maternal health outcomes.

Keywords: Puerperal Sepsis, Reproductive Age Women.

Introduction

Puerperal sepsis is defined in the International Classification of Diseases (ICD-10) as a temperature rise above 38.0°C (100.4°F) maintained over 24 h or recurring during the period from the end of the first to the end of the tenth day after childbirth or abortion. Alternatively, the United States Joint Commission on Maternal Welfare uses a standard definition for puerperal fever used for reporting puerperal morbidity as an oral temperature of 38.0°C (100.4°F) or more on any 2 of the first 10 days postpartum. While puerperal infection is most commonly encountered within the first 2 weeks after delivery, the definition extends to 42 days postpartum(1). Further, the World Health Organization (WHO) defines puerperal sepsis as infection of the genital tract occurring at any time between the onset of the rupture of membranes or labor and the 42nd day postpartum in which fever and one or more of the following are present:

1. Pelvic pain
2. Abnormal vaginal discharge
3. Abnormal odor of discharge
4. Delay in the rate of reduction of size of the uterus

Further differentiation is made between “puerperal sepsis,” which refers specifically to infection of the genital tract after delivery, and “puerperal pyrexia or fever” which encompasses all cases of significant pyrexia in the puerperium, and would

include patients with puerperal sepsis, as well as those with other causes of pyrexia(2).

These include:

- Wound infection, e.g., scar of cesarean section
- Thrombo-embolic disorders, e.g., thrombophlebitis
- Other systemic infections, e.g., urinary tract, breast, ear, nose, and throat
- Viral, bacterial, protozoal infections, such as human immune deficiency virus (HIV)-related infections, malaria, typhoid

sepsis is defined as an infection of the genital tract occurring at any time between the onset of labor and 42 days postpartum. This condition remains a significant cause of maternal mortality, particularly in resource-limited settings where access to quality healthcare is limited. Understanding the associated risk factors is crucial for developing interventions aimed at reducing sepsis-related maternal deaths. Sepsis is usually reported as the third or fourth leading cause of maternal death not only in developing countries but in developed countries as well. Postpartum endometritis occurs in 1–3% of normal vaginal deliveries, in 5–15% of scheduled cesarean deliveries (done before labor starts), and in 15–20% of unscheduled cesarean deliveries (done after labor starts). Puerperal sepsis causes at least 75,000 maternal deaths every year, mostly in developing countries(3,4)

1. Risk Factors Associated with Puerperal Sepsis

- **Poor Hygiene and Sanitation during Delivery** Poor hygiene and sanitation practices during childbirth are significant contributors to puerperal sepsis. Women who deliver in environments lacking sterilized medical instruments or skilled healthcare professionals are at higher risk. Studies have shown that the risk of puerperal sepsis is markedly increased in non-hospital settings with inadequate infection control measures(5).
- **Prolonged or Obstructed Labor** Prolonged labor, lasting more than 18 hours, exposes women to a higher risk of infection. This is because prolonged exposure of the birth canal increases the likelihood of bacterial invasion. A studies found that women experiencing prolonged labor were more susceptible to puerperal sepsis, especially when delays in accessing emergency care occurred(6,7).

- **Caesarean Section and Instrumental Deliveries** Cesarean sections and other instrumental deliveries, such as forceps and vacuum-assisted procedures, increase the risk of puerperal sepsis due to the potential for tissue trauma. The risk is particularly high in facilities lacking adequate postoperative care or infection prevention measures. Research highlights the increased susceptibility of women undergoing cesarean deliveries to postpartum infections, particularly when performed in suboptimal conditions.
- **Underlying Maternal Health Conditions** Pre-existing health conditions, including anemia, diabetes, and HIV, weaken the immune system and increase susceptibility to infections. Women with diabetes and HIV have compromised immune responses, making them more vulnerable to infections postpartum(8). Additionally, anemia has been linked to increased susceptibility to puerperal sepsis as it reduces immune function.
- **Frequent Vaginal Examinations during Labor** Multiple vaginal examinations, particularly in non-sterile conditions, can introduce pathogens into the reproductive tract. Studies indicate that frequent vaginal exams (more than five times) significantly increase the risk of puerperal sepsis, particularly when performed in unsterile environments(9).
- **Premature Rupture of Membranes (PROM)** Premature rupture of membranes (PROM) before labor can increase the risk of infection by exposing the fetus and birth canal to external bacteria. Research demonstrates that women with PROM lasting over 12 hours are at a higher risk of developing puerperal sepsis, especially in settings where prompt medical care is unavailable(10).
- **Socioeconomic Factors and Limited Access to Healthcare** Low socioeconomic status is closely associated with limited access to quality healthcare, poor living conditions, and inadequate nutrition—all of which increase the risk of puerperal sepsis. The World Health Organization emphasizes that improving access to healthcare and maternal services is critical to reducing maternal mortality from sepsis in low-income settings(10).
- **Inadequate Postpartum Care** Inadequate postpartum care limits the early detection and management of infections, allowing sepsis to progress undiagnosed. In many settings, postpartum care is either minimal or not

prioritized, leading to delayed intervention in cases of infection(11).

- **Low Immunization Rates** In some regions, the lack of immunization against tetanus is a risk factor for puerperal sepsis. Tetanus, which can enter the body through wounds, is a concern in cases where sterile techniques are not followed during delivery.

2. Prevention Strategies

- **Improving Hygiene Practices in Healthcare Facilities** Strict adherence to hygiene protocols, including handwashing, sterilization of equipment, and use of personal protective equipment, is essential to prevent puerperal sepsis. The WHO's *Clean Care is Safer Care* campaign has proven effective in promoting infection control practices in healthcare settings.
- **Encouraging Facility-Based Deliveries** Deliveries in healthcare facilities with skilled birth attendants reduce the risk of puerperal sepsis by ensuring the use of sterile techniques and timely access to emergency care if needed. Community programs that promote facility-based deliveries are crucial, particularly in underserved areas(6).
- **Minimizing Unnecessary Vaginal Examinations** Minimizing vaginal examinations during labor, unless medically necessary, can help reduce the risk of puerperal sepsis. Healthcare providers should be trained to avoid unnecessary procedures to prevent the introduction of pathogens.
- **Enhancing Postpartum Monitoring and Care** Strengthening postpartum care and encouraging follow-up visits enable the early detection of puerperal infections. Training healthcare workers to recognize early symptoms of sepsis, such as fever and pelvic pain, can facilitate prompt treatment and improve maternal outcomes .

Conclusion

Puerperal sepsis remains a significant cause of maternal morbidity and mortality, particularly in low-resource settings. Key risk factors include poor hygiene during delivery, prolonged labor, cesarean deliveries, underlying health conditions, and limited postpartum care. Addressing these factors through improved sanitation practices, encouraging facility-based deliveries, and enhancing postpartum care are essential strategies for reducing the incidence of puerperal

sepsis. This review highlights the importance of targeted interventions in high-risk populations to improve maternal health outcomes and reduce sepsis-related maternal deaths.

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