Postoperative Infection After Cesarean Section: Can Timing of Antibiotics Administration Be a Remedy?

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Dear Editor,

Cesarean section also known as a C-section is a method of childbirth in which an incision is made on the lower abdominal level of the uterus of the mother.[1] Usually, this C-section is planned and in other instances not planned. The C-section is a surgical procedure that has negative and positive consequences for both the mother and the infant. While the positive consequences are desired, the negative consequences can be reduced to a minimum by avoiding needless operations and adhering to the best surgical practices/guidelines.

Cesarean section was first carried out in 1020 AD, and the practice has vastly improved since then.[2] Cesarean section is presently one of the commonest surgical procedures in the United States, with more than 1 000 000 women giving birth by C-section each year. Cesarean birth rates increased from 5% in 1970 to about 32.0% in 2016.[3] Despite ongoing efforts to reduce C-section rates, professionals do not think a major decrease could happen any time soon. Despite the risks of both immediate and long-term repercussions, cesarean delivery may be the safest or even the only way for some women to deliver a happy child.[4]

When it comes to labor, one of the most important aims for any medical team is to ensure safe delivery. Cesarean sections were originally used to protect both the mother and the fetus.[1] Today, however, C-section is perceived as a trouble-free, harmless, and improved alternative to vaginal delivery, and the myth that C-section is easy with regard to pain, harmless, and healthier than spontaneous vaginal delivery has spread among women.[4]

Due to major developments in anesthetic and surgical methods and the availability of blood transfusion facilities and effective antibiotics, cesarean birth has become a significantly safer operation as compared to spontaneous vaginal delivery. Approximately 10-14% of C-section are performed at the request of pregnant women without medical justification.[3] However, it is still linked to clinical risks to the mother and fetus in the short and long term, such as bleeding, injury to abdominal organs, wound infection, uterine synechiae, secondary infertility, and so on.[4] Cesarean birth is also connected with a higher cost in most cases, making it difficult for individuals who are on a tight budget.[4]

Infections during childbirth are responsible for about a tenth of all maternal deaths worldwide. Peripartum infections can cause significant morbidity and long-term disability such as fallopian tube obstruction, secondary infertility, and long-lasting pelvic pain in women.[1] An estimated 1 million newborns die annually due to maternal infections pre- or post-childbirth.[1] Infection rates after C-section range between 3% and 15% globally.[5] The pooled rate of infections after C-section in Africa is 10.21%.[6] Biccard et al[7] in a study in Africa showed that postoperative complications were 18.2% among participants, of which cesarean birth made up one-third of all patients studied. Postoperative infection was the most common complication, occurring in 10.2% of the patients, including 9.7% of deaths. The risk of infection following C-section is still high in Africa. Despite this rise in infection rates, there is insufficient knowledge regarding the origins of the infections, the scope of the issues they cause, and the risk factors associated with them in developing nations.

Antibiotics usage as both prophylactic and therapeutic, are a useful intervention for decreasing morbidity and mortality associated with maternal infection around the world. Prophylactic antibiotics are one of the approaches adopted to deal with infection problems after a C-section.[8] Antibiotic prophylaxis is used in surgical operations to minimize the survival of microorganisms introduced during the surgical operation until the patient's immune systems overcome the invading infectious agents.[1] Unfortunately, antibiotic overuse for obstetric diseases and procedures is often in many countries and could lead to misuse. Meanwhile, antibiotic misuse has ramifications for the international effort to prevent and reduce antibiotic resistance.[1,9]

The question of when antibiotic prophylaxis for C-section should be given and whether it should be given before the surgical incision or at the point of umbilical cord clamping is still debated.[10] Prophylaxis has historically been postponed in hopes of avoiding masking a newborn infection and avoiding an unwanted septic workup. Nevertheless, available literature has revealed that neonatal sepsis, maternal sepsis, and length of stay in the hospital are not increased when antibiotics are given preoperatively.[10] For instance, Costantine et al[11] performed a meta-analysis that revealed that supported antibiotic prophylaxis usage before C-section is essential in reducing infection and related illness without compromising newborn outcomes.[11]

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Though more recent research implies that antibiotic prophylaxis may have long-term consequences on neonates, these findings must be confirmed by long-term follow-up studies of neonates exposed to antibiotics.[10] As a result, in 2010, the American Congress of Obstetricians and Gynecologists published a revised guideline for antibiotic prophylaxis after cesarean birth.[2] According to the new guidelines, women who give birth by C-section should get antibiotics normally 1 hour before the operation. Prophylaxis should be initiated as soon as feasible in the event of an emergency C-section. Following the new recommendations on the use of antibiotics before C-section by the American Congress of Obstetricians and Gynecologists, a study conducted in the United States showed that about 85% of pregnant women received antibiotics before surgery,[12] showing that the recommendations are being complied with.

In conclusion, there are no significant negative neonatal outcomes linked to when antibiotic prophylaxis was given. As supported by the literature, we can conclude that the use of antibiotics before the C-section should be effective in preventing infections as compared to the non-use of antibiotics preoperatively. Based on relevant literature, we strongly propose that prophylactic antibiotics be used within 1 hour before skin incision in patients booked for C-section to reduce the overall likelihood of postoperative infection.

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