



SINGLE-DOSE VERSUS MULTIPLE-DOSE ANTIBIOTIC PROPHYLAXIS IN CAESAREAN DELIVERY

Obstetrics & Gynaecology

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ABSTRACT

Background: Antibiotics prevent infections and save lives, but many a times they are prescribed when they aren't really needed. WHO's current guidelines does not recommend a routine antibiotic prophylaxis for all operative vaginal deliveries. The aim of this study is to know if prophylactic single dose antibiotics prevented maternal infection in operative deliveries. **Method:** Women aged >18 years who underwent an operative delivery were randomly chosen and were divided into 2 groups. Half of the study group received multidose antibiotic regimen and the other random half received single or no dose regimen. patients were regularly followed up to 30 days to look for any signs or symptoms of infection. suspected and proven infection were analysed early with a confirmed culture or endometritis during the 6 weeks of follow up period and were treated accordingly. **Result:** This study was conducted on 200 patients with 100 patients in each group . Demography ,indications for LSCS, duration of LSCS, intra OP complications of LSCS were comparable in both the groups. No significant statistical differences were found in both the groups in patients developing post operative superficial wound infections ($p=0.28$), patients developing urinary tract infections ($p=0.5$), respiratory tract infections ($p=0.28$). No patient required a readmission due to wound associated complications. **Conclusion:** there was no significant difference found in the effects offered by both single dose and multiple dose antibiotics prophylaxis. No signs or symptoms of major wound infections were found with both the regimens offered to the patient.

KEYWORDS

INTRODUCTION:

Infections following delivery have always been one of the many trouble some causes prolonging hospital stay and costs¹. Hence it became a tradition to unnecessarily overload the patients with antibiotics. Lately there is a global concern regarding the misuse of antibiotics and increasing incidence of resistance developed against antibiotics. Prophylactic duration should be as short as possible. A good practice of hygiene during delivery can prevent maternal infections after child birth . In some instances few antibiotics are known to cause adverse drug reactions presenting as rash or diarrhoea in mother, some get expressed in the breast milk and the breast feeding baby gets exposed to it⁵.

Maternal Infections following delivery can range from mild to sever grades and can present as fever, wound infection, urinary tract infection, endometritis, pelvic abscess, septic pelvic vein thrombophlebitis, sepsis and septic shock³. As defined by Disease Control and Prevention (CDC) criteria surgical site infections occur within 30 days after a surgical procedure. They are divided as superficial incisional primary and secondary SSIs, deep incisional primary and secondary SSIs and organ/space SSIs if involving structures deeper than muscle and fascia space⁸. Endogenous flora of vagina and skin gain immediate access to the suture wound making it the most common source of SSI⁴. Fecal flora may contribute when the the incision is near perineum⁴. Current WHO guidelines do not recommend routine antibiotic prophylaxis for women undergoing operative vaginal delivery because of insufficient evidence of efficacy⁶.

An adequate dose has to be achieved in the plasma and tissue during a surgical procedure which can be achieved using a single bolus given 15-60 mins before the incision^{2 7}. Therapeutic drug level is maintained for 3-4 hrs, after single dose⁴. Hence the aim is to apply the prophylaxis at the optimal time for major procedure like LSCS⁷.

This study was done to investigate whether a single dose of prophylactic amoxicillin and clavulanic acid was effective for preventing maternal infections following operative deliveries.

METHODS:

This study was conducted in srinivas hospital and research center mukka . Women undergoing operative deliveries were randomly chosen for the study . 200 women were randomly divided into 2 groups in 1:1 ratio, one group received a multidose regimen and the other group received a single or no dose antibiotic regimen. All the women in the multidose study group who underwent vaginal delivery received a 5 days course of amoxicillin clavulanic acid as oral dose, those requiring LSCS received amoxicillin clavulanic acid 1.2g as an i.v

dose for as much as 3 doses followed by oral dose for a total of 5 day course. In the single dose study group those undergoing vaginal delivery received no dose of antibiotics, women requiring LSCS received a single dose of Amoxicillin clavulanic acid which was given as an i.v dose after test dose, 30 mins before placing the skin incision.

Women who were enrolled for the study were previously informed about the study and the necessary consents were taken. Study group was chosen after ensuring that these women had no signs of ongoing infection and had no indication for antibiotics in the post- partum period. Care was taken to see that all the procedures were done under strict aseptic precautions.

Exclusion criteria were hypersensitivity to any of the trial drugs, antibiotic administration within the previous 2 weeks, presence of chorioamnionitis, diabetes mellitus (both gestational and pre-existent), HIV/AIDS, tuberculosis, anaemia (Haemoglobin <7 g/dL), rupture of membranes >24 hours, intrauterine fetal death, urinary tract infection.

On the day of discharge all the participants were well educated to recognize any signs of maternal infections such as fever, excessive pain at the suture site, pain and or discharge from wound or vagina, burning or increased frequency of micturition. They were followed up 7 days later, followed by SOS if any of the above complaints were present. In case of any signs of infection patients were asked to follow up to same hospital.

Post Operative Moberbidities	A Group Frequency	B Group Frequency	P Value
Superficial Wound /infection	2	1	0.28
Respiratory Tract Infection	2	1	0.28
Urinary Tract Infection	1	1	0.5
Cannula Site Infection	1	3	0.15

RESULT:

There were 200 patients as participants in the study divided in 2 groups. The mean age of participants in group A was 27.95+/- 3.475 years and 28.58+/-3.6716 in group B . Mean BMI in group A was 24.31+/-2.6326 kg/m2 and in group B it was 23.904+/-2.36 kg/m2 . Mean gestational age was 38.58814+/- 0.629weeks in group A and 38.65928+/-0.620weeks in group B. Majority of the patients from both the groups underwent PV examinations for not more than two times. In both the groups most common indication for LSCS was previous LSCS. Vicryl number 1 (Polyglycolic acid) and monocril

number 3-0 were the preferred suture materials for skin suturing in all the patients. Skin in both the groups were sutured as subcuticular pattern in majority of the patients where as only 3 patients in group A and 4 patients in group B underwent mattress sutures. Intra OP time for both the groups were statistically comparable. Post op period canulas were removed after 24 hours in group A where as in group B after 48 hours, as a result cannula site pain and infection were seen more in group B patients, although this difference was statistically insignificant ($p=0.28$). 2 patients in group A and 1 patient in group B developed superficial Wound Infection ($p=0.28$). 1 patient in group A and 1 patient in group B developed UTI ($p=0.5$). 2 patients in group A and 1 patient in group B developed respiratory tract infections. Only 2 patients from group A and 1 patient in group B required new Antibiotics ($p=0.28$). No patients were readmitted or suffered prolonged admission in the study. No patients had any drug reactions. No patients had any Deep wound infections or sepsis. No patients developed endometritis.

DISCUSSION :

This study shows that a single dose of antibiotics given preoperatively as prophylaxis before caesarean deliveries is equally effective as multidose regimen which is other wise widely followed in preventing puerperal morbidities.

Pooja P et al compared single dose preoperative antibiotic prophylaxis with multidose antibiotic prophylaxis in caesarean sections in Bagalkot, Karnataka and found no statistically significant differences in wound infections. Preoperative single dose antibiotic regimen was as effective as multiple dose multiple antibiotic regimen prophylaxis for routine caesarean delivery⁹.

In one of the study by Vathana M, et al where There where effectiveness and safety of single doses antibiotic against conventional multiple doses regimen was compared and no statistically significant differences in febrile morbidity, wound infections, perinatal outcome and median duration of hospital stay in both groups were found¹⁰.

Choudhary A et al, in a study compared the wound outcomes with interrupted mattress vs. subcuticular suture. His study showed that the best method and material for skin closure is subcuticular suture with an absorbable material which leaves a cosmetically better scar with lesser wound complications¹¹. In our study no patients with subcuticular sutures developed wound complications.

Higher rates of canula site wound infections were noted in patients who received multidose antibiotics, probably because these patients required to have canulas for longer days for administration of drugs.

The number of days of hospital stay in both the study group were same. Hospital stay depends on the patients ability to recover and time taken for wound healing, indicating that patients from both the study groups recovered at the same pase. There was no added benefits from multidose antibiotics in recovery time.

This study was conducted in a tertiary care centre where the patients from both the study groups received equal post op care and had similar reasons for undergoing caesarean deliveries conducted under good aseptic precautions, which is the major strength of this study.

The draw backs of the study were that the study was not extended to follow up with the effects of antibiotics on the neonates. Patients were followed up after 7 days post delivery with a hospital visit. Following the first visit due to non compliance of patients they were well educated to recognize any signs of maternal infections such as fever, excessive pain at the suture site, pain and or discharge from wound or vagina, burning or increased frequency of micturition and were asked to followup in such instances to our hospital. Those patients who did not have symptoms were followed up over the phone call. We did not address the cost analysis in this study.

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