

STUDY OF CEFTRIAXONE VERSUS MULTIPLE DRUGS IN CAESAREAN SECTIONRaghunath Shinde¹, Rahul Shah², Sudhir Bhav³, Smita Bhat⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: The incidence of caesarean section has increased. Maternal morbidity has also increased. Inadvertent use of antibiotics many drug resistant microbial strains have emerged. Management of post caesarean wound infection becoming difficult. Attempts have been made to bring down such infections by taking all aseptic precautions and use of minimal possible effective dose of prophylactic antibiotic or antibiotics post operatively. The purpose of this study to evaluate the effectiveness of single dose antibiotic in uncomplicated caesarean section. **OBJECTIVES:** To evaluate the effectiveness of single dose of ceftriaxone prophylaxis to that of ampicillin, gentamicin and metronidazole for 5 days post-operatively with regard to post-operative complications in uncomplicated caesarean sections. **MATERIAL & METHODS:** Hundred registered patients were selected among the pregnant women who underwent caesarean section in Obstetrics & Gynaecology department in Bharati Hospital, Sangli for a period of 1 year from December 2013 to November 2014. This study compares the drug efficacy of prophylactic single dose injection of ceftriaxone 1gm given intravenously 30 minutes prior to caesarean section with the control group of injection Ampicillin, + Gentamicin, Metronidazole given routinely for 5 days post operatively to prevent postoperative infection. In single dose antibiotic 50 patients and in control group 50 patients were studied. **RESULT:** Failure rate in single dose antibiotic was 2.0% (1 out of 50) and failure rate in multiple dose antibiotics was 6.0% (3 out of 50). Average duration of hospital stay was about 7 to 8 days. In all failure patients antibiotic were given according to culture and sensitivity report. **CONCLUSION:** Prophylactic single dose antibiotic is effective in reducing infective morbidity in low risk patients and also reduces chances of drug resistant in future.

KEYWORDS: Prophylaxis, caesarean section, ceftriaxone, Ampicillin, + Gentamicin, Metronidazole, morbidity, hospital stay, cost effectiveness.

INTRODUCTION: Caesarean section is one of the commonest forms of surgery performed in obstetric practice. Maternal morbidity has increased due to bacterial infection.¹ The commonest complication associated with surgery being postoperative wound infection. This leads to increased maternal morbidity. The consequences involving nursing time and increased costs that are more easily quantified.² Concept of prophylactic antibiotics has gained wide acceptance.^{1,3}

Antibiotics should be present at the time when bacteria are introduced so as to prevent infection.¹ Thus prophylactic antibiotic defined as short term use of antibiotics for the prevention of infection in the absence of clinical signs and symptoms of infection came into consideration.^{4,5} Various study have shown decreased wound infection when appropriate prophylactic antibiotics were given compared with that of untreated or placebo groups.² The concept of antimicrobial prophylaxis for caesarean section is now gaining wide acceptance.^{3,6} Most clinical trials have shown the efficacy of antimicrobials not only in preventing endometritis but also in reducing wound infection.⁷

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The use of prophylactic antibiotics involves several studies such as incidence of postoperative infections, complications without prophylaxis, cost and potential toxicities.² Morbidity due to urinary tract infections, febrile episodes and respiratory tract infections were also noted in the post-operative period.^{4,8} Attempts are made to bring down such infections by taking all aseptic precaution and use of single dose of prophylactic antibiotic. In this study the effectiveness of single dose of ceftriaxone 1gm prophylaxis in caesarean section has been studied and compared to that of ampicillin, gentamicin and metronidazole for 5 days post-operatively with regard to post-operative morbidity, cost of the treatment, hospital stay and side effects.

MATERIALS AND METHODS: Hundred cases were selected among the pregnant women who underwent caesarean sections in Obstetrics & Gynecology department in Bharati Hospital, Sangli for a period of 1 year from December 2013 to November 2014. In single dose antibiotic 50 patients and in control group 50 patients were studied.

A detail history, general examination, obstetrics examination and laboratory investigations like hemogram, urine examination, blood sugar levels, and serology of each patient was done.

Inclusion Criteria: Inclusion criteria are Primigravida and Multigravida, term gestation, membranes intact, afebrile, not on any antibiotics and Elective / emergency caesarean section.

Exclusion Criteria: Exclusion criteria are Hypersensitivity to any cephalosporin or penicillin group of drugs, antibiotic treatment within two weeks prior to surgery, presence of chorioamnionitis which is defined as presence of documented rupture of membranes with fever, uterine tenderness or maternal tachycardia >100 beats/ min, foul smelling amniotic fluid, leaking per vaginum, prolonged labour and any other infection if present. Others excluded are patients with severe anaemia (Haemoglobin less than 7 gram %), cardiac disease, diabetes, any infective focus and immune-compromised patients.

In our Study Group: Injection ceftriaxone 1 gm IV as a single dose 30 minutes prior caesarean section.

In Control Group: Injection Ampicillin – 500 mg IV 8thhourly + Injection Gentamicin – 80 mg IV/IM 12th hourly +Injection Metronidazole 100cc IV 8th hourly. For 48 hours post operatively and switched over to oral Ampicillin and Metronidazole with injection Gentamicin for next 3 days.

We have looked for following parameters during post-operative period.

- 1) Temperature.
- 2) Wound infection.
- 3) Foul smelling lochia.
- 4) Urinary tract infection.
- 5) Respiratory tract infection.

In clinical examination, patient's general condition, pulse rate, temperature, blood pressure, cardio-vascular system, respiratory system, foul smelling lochia were studied. Follow up of patients was done according to the following criteria:

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- Temperature record was maintained.
- Post-operative routine investigations –catheter urine sample was taken while removing catheter and send for culture and sensitivity.
- The patient was discharged on 7th post-operative day if no infection was present.
- Comparison between study and control group regarding all the above criteria was done.

Patients were followed 1 week and 4 weeks after discharge. All patients in the study who developed any sign of infection, wound gape antibiotic was given for 5 days according to culture & sensitivity report and resuturing done whenever required.

RESULTS AND DISCUSSION:

Types of LSCS	Study (n = 50)	Control (n = 50)
Elective	20(40%)	18(36%)
Emergency	30(60%)	32(64%)

Table 1: Showing Type of LSCS done

It was observed that majority of caesarean section done were emergency both in study and control group.

Indication	Study Group(n=50)	Control group (n=50)
1. Foetal distress	17(34%)	18(36%)
2. CPD	10(20%)	08(16%)
3. Previous 2 LSCS	05(10%)	04(8%)
4. Brow presentation	01(2%)	00(0%)
5. Primi with breech presentation	02(4%)	02(4%)
6. Oblique lie	01(2%)	01(2%)
7. Transverse lie	02(4%)	03(6%)
8. Placenta praevia	02(4%)	02(4%)
9. Abruption placentae	01(2%)	03(6%)
10. Imminent eclampsia	03(6%)	04(8%)
11. Oligohydramnios	02(4%)	01(2%)
12. Failed induction	03(6%)	03(6%)
13. Twins	01(2%)	01(2%)

Table 2: Showing Indications for caesarean section

Type of LSCS	Study group(n=6)12%	Control group(n=08)16%
Elective	2(33.3%)	3(37.5%)
Emergency	4(66.67%)	5(62.5%)

Table 3: Showing Morbidity patterns in study and control groups

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Morbidity	Study group(n=6)	Control group(n=08)
1) Urinary tract infection	2(33.3%)	3(37.5%)
2) Wound infection	2(33.3%)	3(37.5%)
3) Foul smelling lochia(endometritis)	0(0%)	0(0%)
4) URTI	1(16.67%)	1(12.5%)
5) Only fever	1(16.67%)	1(12.5%)

Table 4: Showing the Comparison of morbidity indices in both groups

Groups given	No. of cases additional drugs (Failure case)
Study (n=6)	1(16.67%)
Contro (n=8)	3(37.5%)

Table 5: Showing Additional drugs given

DISCUSSION: Puerperal infection remains the common problem of any surgery in pregnancy. Previously, the use of prophylactic antibiotics in surgery was controversial for some time. Various studies like Parulekar et al, Chelmow et al^{1,3} have clearly proved that there is a definitive role of prophylactic antibiotics in surgery. Aim of preoperative antibiotic is to reduce the infection and thereby reduce morbidity and mortality. In our study, both emergency and elective caesarean sections have been included. Study by Parulekar et al (2001)¹ had included both elective and emergency caesarean section in their studies, whereas studies by Chelmow et al (2004),⁷ Ahmed et al (2004)⁷ and Baqratu et al (2002)⁹ included only elective caesarean section in their studies. Faro et al (1990),¹⁰ Eliot et al (1986),¹¹ Kristensen et al (1990)¹² and Mansue et al (1989)¹³ had included only emergency caesarean section in their studies. Our study and all other studies showed single dose to be more efficacious in prevention of postoperative complication, except in the study by Saltzman (1986) which showed better results with multiple doses antibiotic therapy compared to the single dose prophylaxis. In our study 33.3% patient had UTI in study group and 37.5% in control group. In our study no patient had endometritis.

In our study 33.3% patient had wound infection in study group and 37.5% in control group. In the present study wound infection was significantly low in the study group. In our study 33.3% patient had wound URTI 16.67% in study group and 12.5% in control group. In our study 33.3% patient had wound fever 16.67% in study group and 12.5% in control group. Additional drugs were given in 16.67% of cases in the study group and 37.5% of cases in the control group. Total 4 cases were reported as failures as they require additional antibiotic. Out of that 1 in study group and 3 in control group. Patient was treated with antibiotic. One patient in inclusion group had skin gape after suture removal out of this one had serous wound discharge; for which alternate day dressings were done till healing and no resuturing required. For both the patients culture and sensitivity swab was sent. One had growth of E coli, other patient's C& S had no growth of organisms. Resuturing was done after wound was healthy granulation tissue and antibiotics were given for 7 days. These patients were hospitalized for 15 days. Wound healed without any further complication. Rest all cases in inclusion group were successful.

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The average duration of stay was 7 to 8 days. In our study morbidity is significantly more in control group compared to study group. Whereas in Von Mandach study there was no statistically significant difference.¹⁴ The cost effectiveness of the treatment in both groups was compared. Single dose antibiotic has been found to be more economic. In an economic review by Chelmow (2004) revealed a significant reduction in overall cost of treatment (30\$) in the study group⁷. Prophylactic single dose Ceftriaxone has better postoperative outcome as compared to routine antibiotic therapy probably due to its administration in the preoperative period and its broader spectrum of action. Injection Ceftriaxone did not produce any significant side effects in this study group.

CONCLUSION: Single dose ceftriaxone prophylaxis was cost effective, easy to prepare and administer, has significantly reduced post-operative morbidity, reduced the hospital stay of the patients, has no major side effects and can be widely applied in routine practice.

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