

Compression cefazolin at cord clamping & before in section skin incision in decreasing the infectious complication in patients underwent cesarean section

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Abstract: Cesarean Section (CS) is associated with a high incidence of puerperal infections. The antibiotic prophylaxis in obstetric surgery may reduce infectious complications; nevertheless antibiotic prophylaxis only has proved to be effective in women with risk factors for the occurrence of infection. The aim of this study was to determine the suitable time for antibiotic injection in CS to decrease infectious side effects. In a clinical trial in 2010, 750 patients, undergone elective cesarean section, were enrolled into the study. The population was divided into two groups: Group A, including 375 women to whom antibiotic prophylaxis was applied before skin incision and Group B, including 375 women to whom antibiotic prophylaxis was applied after umbilical cord clamping. The occurrence of endomyometritis/endometritis, wound infection, febrile morbidity, total infectious morbidity, and neonatal complications were compared. In patients of group A, 356 cases (94.9%) showed no side effects, 14 cases (3.7%) had wound infection, and 5 cases (1.3%) suffered endometritis. In patients of group B, 341 cases (90.9%) showed no side effects, 24 cases (6.4%) suffered wound infection, and 10 cases (2.7%) had endometritis ($p=0.099$). Injection of Cefazolin before skin incision and during clamping the cord shows no difference in incidence of infectious side effects of cesarean section, and similar results were acquired in the two groups.

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1. Introduction

Caesarean Section (CS), with 1.2 million operations a year, is the most common surgery on women in the United States of America, and uterine infection and wound infection are the cause of the most postoperative morbidities in 7 – 20% of the patients (Glick and Guglielmo, 1990).

Cesarean section is associated with a high incidence of puerperal infections. The antibiotic prophylaxis in obstetric surgery may reduce infectious complications; nevertheless antibiotic prophylaxis only has proved to be effective in women with risk factors for the occurrence of infection (Figuerola Damián, 1995).

The need for ICU (60 percent higher), hospitalization (x5 times) and mortality (x2 times) are increased in these patients. CS is the most important risk factor for infection post-delivery infections, so that women undergoing CS compared with women with vaginal delivery, show 5 to 20 times more infectious complications (Glick and Guglielmo, 1990; Bertram, 2005).

Administration of prophylaxis antibiotic may reduce the incidence of such cases up to 75 percent, which applies to both elective and

emergency caesarean section operations (Glick and Guglielmo, 1990; Di Lieto, 1996).

Although antibiotics are more frequently used than cephalosporin, no best single agent has been found yet (Figuerola Damián, 1995).

Then, the first-generation cephalosporins are the most commonly used drugs that can be administered intravenously before skin incision or immediately after clamping the umbilical cord. Cefazolin belongs to the first-generation cephalosporins family. It is a derivative of 7-aminocephalosporin acid with beta-lactam ring structure and renal-excreted. Cefazolin attaches to PBPs on the bacterial cell membrane and controls the construction of cell wall and is a bactericide (Bertram, 2005; Jakobi, 1988; Phelan and Pruyn 1979).

This drug is effective on gram-positive cocci including staphylococci and streptococci, and most strains of *E. Coli* and *Klebsiella*, and commonly used surgical prophylaxis (Bertram, 2005; Yildirim, 2009).

Our aim in this study is to evaluate the different effects of Cefazolin injections before skin incision and clamping the umbilical cord on the incidence of infectious complications in cesarean section.

2. Material and Methods

In a trial in the Department of Obstetrics and Gynecology, Qazvin University of Medical Sciences in 2010 on 750 pregnant women candidate for termination of pregnancy by CS due to obstetric emergency, the results of administration of Cefazolin, injected before skin incision and clamping the umbilical cord, were studied on the incidence of infectious complications in cesarean section.

Patients were enrolled in the study after obtaining informed consent, and randomized into two groups. Individuals with a history of allergy to Cefazolin, PROM for more than 6 hours, and also diabetic and obese patients, and those who were treated with antibiotics and corticosteroids for any reason during the week prior to surgery were excluded from the study.

750 patients, undergone elective cesarean section in 2010 were enrolled into the study. The population was divided into two groups: Group A, including 375 women to whom antibiotic prophylaxis was applied before skin incision, and Group B, including 375 women to whom antibiotic prophylaxis was applied after umbilical cord clamping. The occurrence of endomyometritis/endometritis, wound infection, febrile morbidity, total infectious morbidity, and neonatal complications were compared.

One week after discharge and at the day of removing sutures, patients were examined for wound and uterine infections.

3. Results

Mean age of the patients was 26.19 ± 5.31 years in the test group (Group A) and 26.75 ± 5.62 years in the control group (Group B), that there was no significant difference in age of patients between the two groups (Table I).

Mean gravid of patients was 1.991.05 in the test group (Group A) and 2.12 ± 1.14 in the control group (Group B), that there was no significant difference in Gravidity between the two groups (Table II).

The reason of CS in the patients in test group (Group A) and control group (Group B) included the lack of progress in delivery, repetitious CS, premature disposal of Meconium, Preeclampsia, infertility, breech demonstration, macrosomia, old age, multipara, and transverse presentation of face and brow, that there was no significant differences in the reason of CS between the two groups. Of the total patients, 697 cases (92.9 percent) had no infectious complications, 38 cases (5.1 percent) suffered Wound infection and 15 cases (2 percent) had uterine infection. The frequency of postoperative complications is shown in Table III.

Table I: Age distribution of patients between two groups

Age	Group		Total
	Case	Control	
<15	1(3%)	0(0%)	1(1%)
15-20	35(9.3%)	41(10.9%)	76(10.1%)
20-25	111(29.6%)	93(24.8%)	204(27.2%)
25-30	113(30.1%)	100(26.7%)	213(28.4%)
30-35	87(23.2%)	107(28.5%)	194(25.9%)
35-40	24(6.4%)	28(7.5%)	52(6.9%)
>40	4(1.1%)	6(1.6%)	10(1.3%)

Table II: distribution of patient's Gravidity between two groups

Gravidity	Group		Total
	Case	Control	
1	137(36.5%)	135(36%)	272(36.3%)
2	157(41.9%)	123(32.8%)	280(37.3%)
3	39(10.4%)	75(20%)	114(15.2%)
4	31(8.3%)	26(6.9%)	57(7.6%)
5	9(2.4%)	11(2.9%)	20(2.7%)
6	2(0.5%)	5(1.3%)	7(0.9%)

Table III: Infection's complications of patients between two groups

	Group		Total
	Case	Control	
Wound infection	14(3.7%)	24(6.4%)	38(5.1%)
Endometritis	5(1.3%)	10(2.7%)	15(2%)

4. Discussion

The only most important risk factor for postpartum maternal infection is cesarean section (Smaill and Gyte, 2010).

The findings of this study show that injection of Cefazolin before skin incision and at the time of clamping the umbilical cord makes no significant difference in incidence of infectious postoperative complications.

In a study by Wax(1997) at the University of Virginia, results similar to ours were obtained (Wax, 1997). In this study, he compared the effect of injection of single dose of Cefazolin before surgery and after clamping the umbilical cord and observed no significant difference in the incidence of primary and secondary infectious complications (Wax, 1997).

In a study by Cunningham in 1983 on 642 patients, the results obtained were also similar to ours. He studied the effect of administration of Cefazolin before surgery and after clamping the umbilical cord and observed no significant difference in the incidence of infectious complications in neither of case and control groups (Cunningham, 1993).

In a double-blind interventional study by Skosolian at the Department of Medicine, USC, on 357 patients divided into two groups of case (group A) and control (group B), similar results were obtained on the incidence wound infection, while no significant difference was observed between the two groups of case (group A) and control (group B) in the incidence of uterine infection (Sullivan, 2007).

In a study by Rouzi in 2000 in Saudi Arabia, they studied 440 cases of emergency and elective CS and expressed that Cefazolin injection is more effective in reducing most of infectious complications in cases of emergency CS (Rouzi, 2000).

In a study by Thigpen et al at the University of Mississippi Medical Center, results similar to ours were obtained where they stated that there was no difference in maternal infectious morbidity whether antibiotics were given before skin incision or at cord clamping (Thigpen, 2005).

In the study of Dimitrov, the infectious complication incidence in patients receiving Cefazolin was 17.1% (Dimitrov, 2001).

In our study, the incidence of infectious complications was observed in 7.06% of patients, that in comparison to the above mentioned study, better results were obtained in our study.

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References

- 1- Glick M, Guglielmo BJ. Antibiotic prophylaxis in cesarean section. DICP 1990; 24(9):841-6.
- 2-Figueroa Damián R, Ortiz Ibarra FJ, Labastida Domínguez VM, Villagrana Zesati R, García Benítez CQ, Arredondo García JL. Ceftriaxone vs. cefazolin in obstetrical surgical prevention. Ginecol Obstet Mex 1995; 63:302-7.
- 3-Bertram G, Katzung A, Anthony J. Katzung and Trevor's Pharmacology. 6th edition, Hayyan culture publishing, New York, 2005; 393-95.
- 4-Di Lieto A, Albano G, Cimmino E, Pontillo M, Gallo F, Micalef R, Paladini A. Retrospective study of postoperative infectious morbidity following cesarean section. Minerva Ginecol 1996;48(3):85-92.
- 5- Jakobi P, Weissman A, Zimmer EZ, Paldi E. Single-dose cefazolin prophylaxis for cesarean section. Am J Obstet Gynecol 1988; 158(5):1049-52.
- 6- Phelan JP, Pruyn SC. Prophylactic antibiotics in cesarean section: a double-blind study of cefazolin. Am J Obstet Gynecol 1979; 133(5):474-8.
- 7-Yildirim G, Gungorduk K, Guven HZ, Aslan H, Celikkol O, Sudolmus S, Ceylan Y. When should we perform prophylactic antibiotics in elective cesarean cases? Arch Gynecol Obstet 2009; 280(1):13-8.
- 8-Smaill FM, Gyte GM. Antibiotic prophylaxis versus no prophylaxis for preventing infection after cesarean section. Cochrane Database Syst Rev 2010; 1:CD007482.
- 9- Wax JR, Hersey K, Philput C, Wright MS, Nichols KV, Eggleston MK, Smith JF. Single dose cefazolin prophylaxis for postcesarean infections: before vs. aftercord clamping. J Matern Fetal Med 1997; 6(1):61-5.
- 10-Cunningham F, Leveno K, Roark M. Administration of cefazolin prior skin incision & after at cord clamping in preventing infections morbidity. Obstet gynecol 1983; 43(3):252-61.
- 11-Sullivan SA, Smith T, Chang E, Hulsey T, Vandersten JP, Soper D. Administration of cefazolin prior to skin incision is superior to cefazolin at cord clamping in preventing postcesarean infectious morbidity: a randomized, controlled trial. Am J Obstet Gynecol 2007; 196(5):455.e1-5.
- 12- Rouzi AA, Khalifa F, Ba'aqueel H, Al-Hamdan HS, Bondagji N. The routine use of cefazolin in cesarean section. Int J Gynaecol Obstet 2000; 69(2):107-12.
- 13- Thigpen BD, Hood WA, Chauhan S, Bufkin L, Bofill J, Magann E, Morrison JC. Timing of prophylactic antibiotic administration in the uninfected laboringgravida: a randomized clinical trial. Am J Obstet Gynecol 2005; 192(6):1864-8; discussion 1868-71.
- 14-Dimitrov A, Pünevskä M, Dikov I, Nikolov A, Kostov I. Prophylaxis with tercef of infection-related complications after cesarean section. Akush Ginekol (Sofia) 2001;42(2):33-7.

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