

Effect of prophylactic antibiotics (Cephalosporin versus Amoxicillin) on preventing post caesarean section infection

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ABSTRACT: Prophylactic antibiotics have been shown to be effective in reducing the incidence of febrile morbidity associated with cesarean section after labor. However, the relative effectiveness of different single antibiotics has been studied infrequently. Several new broad spectrum antibiotics are now available, and any further benefit from more traditional antibiotics for surgical prophylaxis remains untested. A randomized clinical trial for testing the efficacy of cephalosporin versus Amoxicillin in preventing post cesarean section infection, and to identify the role of health education about wound care in reducing post cesarean section wound infection. This study conducted at emergency unit of the Obstetrics & Gynecological department, Woman's Health Center, Assiut University Hospital, between 2008 to 2009. Women's undergoing emergency and elective cesarean section were recruited into the study and given either drug as prophylaxis. The sample comprised 200 pregnant women. 100 pregnant women received Amoxicillin and the other 100 pregnant women received Cephalosporin as a prophylactic antibiotic. For each group, 50 women received routine hospital wound care and the other 50 women received health education about wound care. Random assignment was done by computer generated tables. Concealed envelopes containing the random number made to be opened after deciding to include the case in the study. The present study presented that the incidence of post-operative wound infection was significantly higher in Amoxicillin group (12%) versus (3%) in Cephalosporin group, (P=0.016). It was also illustrated from the present study that, women who had infected wounds (3%) did not receive health education about wound care and were not significantly higher than those received health education about wound care (2%), (P=0.361).. We can conclude that use of Amoxicillin as a prophylactic antibiotic as effective as Cephalosporin in preventing post cesarean section wound infection. And women that received health education about wound care are less likely to expose to wound infection than those who receive only routine hospital care, in spite that the comparative results are not significant.

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Key Words: Prophylactic antibiotics, Wound infection, Cesarean section.

Introduction:

Infection is one of the most common complications of cesarean delivery. Factors that have been associated with an increased risk of infection among women who have a cesarean delivery include emergency cesarean section, labor and its duration, ruptured membranes and the duration of rupture, the use of prophylactic antibiotics or not, the socioeconomic status of the woman, number of prenatal visits, vaginal examinations during labor, anemia, blood loss, obesity, diabetes, general anesthesia, the skill of the operator and the operative technique. (John & Sons, 2007).

In the absence of prophylactic antibiotics, the rates of postpartum endometritis can be as high as 35% to 40%. This rate varies dramatically according to the clinical situation; the use of routine prophylactic antibiotics substantially reduces the rate of infection. (Peter, 2007).

Amoxicillin as a prophylaxis antibiotic do not kill bacteria, but they stop bacteria from multiplying

by preventing bacteria from forming the walls that surround them. The walls are necessary to protect bacteria from their environment and to keep the contents of the bacterial cell together. Bacteria cannot survive without a cell wall. But, Cephalosporins are the most frequently prescribed class of antibiotics. (Yury, 2009).

Cephalosporins are bactericidal agents, which mean that they kill bacteria. They have the same mode of action as penicillin. All bacterial cells have a cell wall that protects them. Cephalosporins disrupt the synthesis of the peptidoglycan layer of bacterial cell walls, which causes the walls to break down and eventually the bacteria die. (Jay, 2007).

General principles for the prevention of any surgical infection include skin antisepsis and antimicrobial prophylaxis. Although antibiotic prophylaxis during cesarean section has been extensively studied and generally found to be effective in preventing infection, surveys suggest inconsistent and variable application of

recommendations for its use. Questions remain about the indications for prophylaxis, the choice of drug (whether a broad spectrum or longer acting agent is better), its route, timing and frequency, the cost-effectiveness of different strategies, adverse effects of antibiotics for the woman and her infant. Particularly controversial is whether antibiotic treatment should be given to all mothers or only to those at greatest risk of infection. (John & Sons, 2007).

In women undergoing either elective or non-elective cesarean section with no signs of infection before the operation, the use of prophylactic antibiotics has been shown to reduce the risk of endometritis by two thirds to three quarters (Smaill, 2007). The reduction of wound infection by three-quarters justifies giving prophylactic antibiotics for non selective C.S. (Blado, 2008).

A guideline for preventing surgical site infection developed by the American Centers for Disease Control and Prevention (CDC, 2005) recommended that sterile dressings should be used to protect the incision for 24 to 48 hours postoperatively. The guideline also recommends educating patients and their families on wound care, including symptoms of infection and the need to report such symptoms. There was no recommendation that incisions primarily closed (when the edges of the wound incision are brought together and closed with sutures, clips, glue or staples) should be covered for longer than 48 hours. (Fernandez *et al.*, 2008)

Significance of the study:

The use of prophylactic antibiotics to decrease the incidence of maternal infectious morbidity following Cesarean section has been systematically investigated. The rate of cesarean section is increasing and so infection due to this procedure is expected to increase. Without prophylaxis, the incidence of endometritis is reported to range from 20 to 85%; rates of wound infection and serious infectious complications as high as 25% have been reported. (John & Sons, 2007). Several types of antibiotics are used, so the investigator is interested in studying the role of use of prophylactic antibiotic with different types of antibiotics on prevention of post cesarean section infection and the effect of health education about wound care in reducing the rate of wound infection.

Aim of the study:

To Compare the effect of Amoxicillin versus Cephalosporin in preventing post cesarean section infection, and Identify the role of health education about wound care in reducing post cesarean section wound infection.

Subjects and Methods:

Research design:

This study was a Randomized Controlled Trial.

Setting:

This study conducted at emergency unit of the Obstetrics & Gynecological Department, Woman's Health Center, Assiut University Hospital.

Participants:

Women undergoing emergency and elective cesarean section were recruited to the study and given either drug as prophylaxis. Excluded patients who had established infection prior to the operation, had had any antibiotic in the preceding week, those allergic to any of the drugs, premature rupture of membranes for more than 24 hrs, diabetic and anemic pregnant women.

The sample comprised 200 pregnant women. 100 pregnant women received Amoxicillin and the other 100 pregnant women received Cephalosporin as a prophylactic antibiotic. For each group, 50 women received routine hospital wound care and the other 50 women received health education about wound care through the investigator.

Tools of data collection

Data were collected using an interview questionnaire that was designed by the researchers to collect the necessary data. It based on review of related literature and reviewed by experts from nursing, Obstetrics and Gynecological nursing and medical related specialists, it contains six sections that includes the following:-

- 1) Socio demographic data.
- 2) Obstetrical data.
- 3) Past Obstetric history.
- 4) Current pregnancy data included.
- 5) Data related to the current C.S delivery.
- 6) Data related to the wound infection if present.

Data collection took place within 12 months from 1/10/2008 to 30/9/2009. Follow up of the cases end in 30/10/2009. Permission was obtained from the director of Woman's Health Center at Assiut University Hospital.

Pilot study:

A pilot study was conducted on 20 women (10%) of the studied women to test feasibility of tools and time required to be applied. Simple modification was done of some items of the interview questionnaire and the assessment sheet that they were not consistent with this study.

The present study carried out through three phases as follow:

Interviewing phase: In which the investigator interviewed the mother, after that explained the nature of study, full history and consent obtained from the women.

Intervention phase:

Women were randomized to either Amoxicillin or Cephalosporin prophylactics antibiotics groups with or without health education about wound infection. Random assignment was done by computer generated tables. Concealed envelopes containing the random number made to be opened after deciding to include the case in the study.

Then a full medical and obstetrical history were taken from the mother, Woman's vital signs, especially temperature and pulse were taken before C.S. The pregnant woman was brought into the theater for elective C.S and type of the chosen antibiotic with her.

The investigator informed the anesthetist about the dose (2gm) given intravenously and time (after cord clamping) of the given antibiotic. When the pregnant woman received anesthesia spinal or general and the Obstetrician began to make an incision the time of the beginning observed by the investigator and accounted till the end of the operation.

Through this time the investigator observed the C.S operation for:

1. Any intra-operative complications occurred
2. The dose and time of the giving antibiotic.

After C.S. operation, the investigator reminded the Obstetrician not to write any type of antibiotics in the patient's sheet as a post operative treatment.

The health education about wound care was given in the form of:

- The wound may be painful especially when you move or cough. This is due to internal pressure on the wound. Placing a hand firmly on the wound when you cough or move will counteract this pressure and reduce the pain.
- Keep the wound dry until any stitches are removed (normally about 7 days) so, no bathing allowed.
- Do not lift heavy items for at least 6-8 weeks after the delivery
- Keep the wound clean and dry.
- Avoid wetting the dressing if it was being wet change it quickly.
- When you change the dressing, clean the wound with sterile anti septic solution.
- Do not soak the wound until it is healing well, such as swimming, bathing (shower is fine)

- Change the wound dressing day after day.
- Use sterile dressing.
- Avoid exposure to sun rays.
- Avoid exposure to heat. .
- Increase intake of vitamin C like (Lemon juice – Orange) as it improves the immunity.
- Increase intake of iron supplementation.
- Increase intake of protein in diet. (Fernandez *et al.*,2008).

Follow up phase:

In the second day after operation the investigator observed the patient and the patient sheet for hyperthermia (temperature more than 38 degree) and if recurrent as a sign of fever. The investigator gave health education about wound care to the woman that the envelope showed that she would receive health education about wound care .

In the third day of the operation (day of discharge of the woman), the investigator ensured that the woman had the discharge card , the treatment was free of antibiotics and informed the woman to come back in the tenth day post operative at the out patient clinic with her follow up card. Follow up of the wound was done by the investigator and the Obstetrician to observe wound status for healing process and signs of wound infection if present.

The following postpartum complications were recorded if present:

-Febrile morbidity: Temperature of > 38°c obtained on 2 or more occasions at least 4 hours apart and wound infections.

Signs of wound infection according to Killian *et al.* 2001 are:

- Redness or excessive swelling in the wound are
- Throbbing pain or tenderness in the wound area
- Generalized chills or fever
- Pus or watery discharge collected beneath the skin or draining from the wound
- Foul odor from the wound
- Red streaks in the skin around the wound or progressing away from the wound
- Erythema, indurations, cellulites or purulent drainage.
- Uterine tenderness after 48 hrs.
- Offensive or purulent lochia.

Then, the Obstetrician and the investigator determined if the wound was completely healed or not. If not, the mother needed to receive therapeutic antibiotic or readmitted to the hospital to be treated from wound infection. The decision of treatment was

taken by the Obstetricians according to the women's health center policy.

Ethical consideration:

The study protocol was approved by pertinent research and ethics committees. No health hazards affect the women. Informed consent was taken from every woman before inclusion in the study.

Statistical Analysis:

Data entry and statically analysis were done using Statistical Package for the Social Sciences (SPSS, version 11). Comparison between the groups was done using Student's t-test to compare the mean values between groups in scale variables. For analysis $P < 0.05$ was considered significant.

3. Results:

A total of 200 women were recruited into the study, 100 each to amoxicillin and cephalosporin antibiotic groups.

Their demographic data were presented in **Table 1**. The two groups were similar in age, education, residence and parity with no significant difference.

Concerning the admission data, **Table 2** illustrates that both groups had similar gestational age / weeks, (majority of cases were between 36-40 wks) and similar vaginal examinations with no significant difference. It also shows that more than one third of the woman had previous C.S as an antenatal risk factor.

Table 3 shows data related to operation characteristics of both groups. Repeated cesarean section constituted the commonest indication of C.S

followed by previous C.S & postdate, and precious baby with no significant differences. The study sample shows no significant difference in the duration of C.S and majority of cases were done under spinal anesthesia.

The study outcome measures related to wound infection are presented in **Table 4**. the incidence of post- operative wound infection was significantly higher in Amoxicillin group (12%) versus (3%) in Cephalosporin group ,(P=0.016). It also shows that there were no significant difference among both groups regarding the side effects during intrapartum period, number of dressings, place of dressing, and the duration of wound healing.

It was also illustrated from the present study that, women who had infected wounds(3%) did not receive health education about wound care and were not significantly higher than those received health education about wound care (2%), (P=0.361).

As regards the relation between age groups and wound healing, it was noticed that no significant difference among women of both groups regarding age groups(P=0.392).

Patterns of wound healing were not significantly different between both groups with regards the duration of the C.S .

Number of PV examinations in cephalosporin and amoxicillin groups presented in this study as follow, infected wounds that take more than 20 days to heal (3%) were undergone PV examinations more than 5 times in the whole duration of labor process among both groups with no statistical significance difference (P = is 0.669).

Table 1: Women's socio-demographics characteristics.

Socio-demographic characteristics	Amoxicillin group N=(100)		Cephalosporin group N=(100)		P-value
	No	Percent (%)	No	Percent (%)	
1) Age/years					.601
• 16-24 years	44	44%	38	38%	
• 25-30 years	43	43%	45	45%	
• More than 30 years	13	13%	17	17%	
2) Occupation					.516
• Housewife	94	94%	96	96%	
• Employed	6	6%	4	4%	
3) Education					.850
• Illiterate	20	20%	22	22%	
• Read and write	11	11%	10	10%	
• Basic& Secondary education	53	53%	56	56%	
• University	16	16%	12	12%	
4) Residence					.825
• Urban areas	27	27%	25	25%	
• semi urban	12	12%	10	10%	
• Rural areas	61	61%	65	65%	

Values are given as frequencies and percentages .

Table 2:Current pregnancy status and admission data.

Variable	Amoxicillin group N=(100)		Cephalosporin group N=(100)		P-value
	No	Percent (%)	No	Percent (%)	
1) Gestational age / weeks					.117
• less than 36 wks	3	3%	0	0%	
• 36-40 wks	70	70%	79	79%	
• more than 40 wks	27	27%	21	21%	
2) Current antenatal problem					.554
• Normal	17	17%	18	18%	
• Previous C.S	41	41%	46	46%	
• Contacted pelvis	6	6%	6	6%	
• P.I.H	6	6%	1	1%	
• Olighydrominous	12	12%	9	9%	
• Polyhydrominous	1	1%	----	----	
• Rhesus isoimmunization	----	----	1	1%	
• I.U.G.R	1	1%	----	----	
• Congenital anomalies	2	2%	1	1%	
• More than one problem	14	14%	18	18%	
3) Number P.V examination / Times					.467
○ Not done	11	11%	13	13%	
○ 1 – 5	81	81%	83	83%	
○ More than 5	8	8%	4	4%	

Table 3:Indications for C.S and operation characteristics

Variable	Amoxicillin group N=(100)		Cephalosporin group N=(100)		P-value	
	No	Percent (%)	No	Percent (%)		
1) The primary indication for C.S.					.063	
• Breech in primigravida	9	9%	4	4%		
• Previous 2 or more C.S.	14	14%	34	34%		
• Previous C.S & post date	22	22%	12	12%		
• Previous C.S & decrease amniotic fluid	8	8%	7	7%		
• Malpresentation(other than breech presentation)	5	5%	5	5%		
• Precious baby	13	13%	14	14%		
• Cephalopelvic disproportion	11	11%	14	14%		
• Multiple pregnancy	2	2%	1	1%		
• Eclampsia/ pre-eclampsia	0	0%	1	1%		
• Decrease amniotic fluid	8	8%	1	1%		
• Breech presentation	3	3%	2	2%		
• Others	5	5%	5	5%		
2) Duration of C.S / minute						.786
• With in 30 min.	38	38%	41	41%		
• 31 - 60 min.	60	60%	58	58%		
• More than 60 min.	2	2%	1	1%		
3) Type of anesthesia					.651	
• General	3	3%	2	2%		
• Spinal	97	97%	98	98%		

Table 4: Outcomes related to wound infection between the study groups.

Outcome variable	Amoxicillin group N=(100)		Cephalosporin group N=(100)		P-value
	No	Percent (%)	No	Percent (%)	
1) Post-operative fever					.016
• Yes	12	12%	3	3%	
• No	88	88%	97	97%	
2) Side effects during intra-operative period					.953
• None	63	63%	69	69%	
• Itching	15	15%	14	14%	
• Dizziness	11	11%	9	9%	
• Nausea	6	6%	4	4%	
• Vomiting	3	3%	2	2%	
• Itching& Vomiting	2	2%	2	2%	
3) Number of dressings during follow up					.631
• less than 5	75	75%	72	72%	
• 5 or more	25	25%	28	28%	
4) Place of dressing					.144
• Outpatient clinic of Assiut University hospital	2	2%	0	0%	
• Other health care unit near to the mother	13	13%	12	12%	
• At home	55	55%	68	68%	
• Private clinic	30	30%	20	20%	
5) Wound healing duration					.397
• Healing within 10 days					
• Healing within 20 days	93	93%	90	90%	
• Infected wound and take more than 20 days to heal	6	6%	6	6%	
	1	1%	4	4%	

Discussion

Women's Health Center at Assiut University Hospitals is a tertiary Center. It conducts on the average 18,000 delivery a year and had a caesarean delivery rate of 40 % (unpublished from official records). Patients who undergo caesarean delivery spend an average of 3 days on the ward in the absence of post operative morbidity. Those with complications may spend up to twice as many days on the ward. As has been found in other studies, abdominal wound infection is the major post operative complication. Any intervention which reduces this complication will therefore speed up recovery and cut down on the length of stay on the ward.

The traditional measure of effectiveness of an antibiotic used prophylactically is the subsequent presence or absence of postpartum febrile morbidity. Broad spectrum antibiotics are available, and in this randomized controlled study, cephalosporin was compared with amoxicillin.

The present study shows no statistically significant difference as regards demographic characteristics, maternal characteristics in obstetrical history, and current obstetrical history.

The present study revealed that the great majority of women were housewives (94% in Amoxicillin group and 96% in Cephalosporin group), more than one half of them were had basic& secondary education (53% in Amoxicillin group and 56% in Cephalosporin group), and the majority of women were lived in rural areas (61% in

Amoxicillin group and 65% in Cephalosporin group). These sociodemographic characteristics were typical of the clients attended, the Woman's Health Center, Assiut University Hospital, Assiut Governorate, upper Egypt. In the same line, these findings are inconsistent with Mahmoud (2007) who showed that the majority of women, who had cesarean section, were from rural areas and housewives (82.9% and 93.6% respectively). But she presented that more than half of women were illiterate. These socio demographic characteristics were also typical of the clients attended, the Woman's Health Center, Assiut University Hospital, Assiut Governorate. But, these findings are not totally incongruence with EDHS, (2005) in Egypt, Hildingsson, *et al.*(2002) in Sweden, and Greene, *et al.* (2005) in U.S.A. who reported cesarean section increased with the women's educational level and common in urban areas.

In this study the incidence of post- operative fever was significantly higher in Amoxicillin group (12%) versus (3%) in Cephalosporin group ($P=0.016$). This was inconcurrent with the study of Ghana medical Association (GMA),(2007) who reported that post- operative fever occurred in 5.6% and 7.5% in the Co-amoxiclav and triple therapy groups who compare the efficacy of co- amoxiclave (amoxicillin + clvulanic acid) and the triple therapy of ampicillin + gentamycin + metronidazole as prophylactic antibiotic during cesarean section.

Concerning the indications of cesarean section, the present study findings revealed that, the previous two or more cesarean sections included nearly one fourth of the women (24%) as a primary indication of cesarean section, 17% for previous cesarean section and post date, and 7.5% for previous cesarean section and decrease oligohydraminous. This finding is in agreement with Mahmoud (2007), in Assiut University, who found that the main indication for cesarean sections was repeated cesarean section n (20.1%). This is agreed nearly with Gulfareen *et al* (2009) who showed that the percent of repeated cesarean section as primary indication was (19.2%).

Regarding number of P.V examinations, the present study showed no significant difference between the two groups ($P=0.467$). It presented that the majority of women were examined between 1-5 times (81% in Amoxicillin group and 83% in Cephalosporin group). Similar finding concerning with the study of Tippawan (2005), this study showed that more than one half (56.8%) of women were examined per vagina from 1-5 times. And all cesarean sections were included elective and

emergency cesarean section. Olson *et al*, (2008) found no statistically significant difference between two groups (case and control group) ($P=0.408$) and the majority of women (60.5% in case group and 61.9% in control group) were examined vaginally between 1-6 times before cesarean section.

Regarding duration of cesarean section the present study showed that majority of women (60% in Amoxicillin group and 58% in Cephalosporin group) their operation were ended within (31-60) minute. These findings were in agreement with Johnson *et al* (2006), who reported that majority of women their operation were finished within 31-60 minutes. On the other hand Tippawan *et al* (2005) showed that majority of women (62%) their operation finished in a time less than 90 minutes.

All cesarean section operations performed to the women under spinal anesthesia except 5 women that their operations performed under general anesthesia, three in Amoxicillin group and two in cephalosporin group with no statistically significant difference between two groups. On the other hand GMA (2007), found that the great majority of women (96.3% in Co-amoxiclav group and 92.5% in triple therapy group) their operation were performed under general anesthesia. And the rest of women's performed their operations under spinal anesthesia .

Although prophylactic antibiotics have been shown to reduce the incidence of postoperative infections morbidity after cesarean delivery, the most effective regimens and timing of administration have not been established, some has suggested antibiotic prophylaxis only for emergency cesarean section and others demonstrated that prophylactic antibiotics were effective and cost saving for all cesareans, elective and emergency (Johnson *et al.*,2006).

Some investigators recommended cefazolin, while cephalotin, cefazolin plus metronidazole, ampicillin, and metronidazole plus gentamicin had also been proposed by others. Controversies are also exist regarding the timing of antibiotic administration since some suggested prior incision, but others proposed after cord clamping. Neither single dose administration nor triple dose is another issue of discrepancy (Thigpen *et al.*, 2005).

As to the timing of administration, delayed administration of prophylactic antibiotics, after clamping the umbilical cord, did not result in more post operative infections. The major reason not to start prior to surgery is to prevent placental passage and fetal exposure to the drug. Moreover, there will

be neither alteration of the neonatal flora nor interference with the pediatrician's assessment of possible sepsis in the newborn (Sullivan *et al.*, 2007).

In the present study prophylactic antibiotics were given to the women in a single dose of 2 gms Amoxicillin or Cephalosporin that was given intra operatively after cord clamping. Thigpen *et al.* (2005) studied Cefazolin administration either before skin incision or right after cord clamping and demonstrated similar infectious morbidity in both groups.

Regarding side effects of the antibiotic, the present study reported that there was no significant difference between Amoxicillin and Cephalosporin. And the side effects were resolved without need to treatment, these clinical signs were very simple because the drug was prescribed for such a short interval in healthy, reproductive aged women. But, Mirghani *et al.*, (2004) noted that three patients suffered vomiting and one patient (1%) in the Ceftriaxone group developed a maculopapular skin rash; this occurred immediately after drug administration and resolved spontaneously without treatment. No patient suffered adverse drug effects in the Ampicillin / Cloxacillin group; there was no statistically significant difference between groups. With taking into consideration that the prophylactic antibiotic was given to the patients in the form of Ceftriaxone as a single dose of 1 gm or 1 gm Ampicillin / Cloxacillin intravenously at the time of induction of anesthesia.

The present study reported that the percent of surgical site infection (SSI) of elective cesarean section was 1% in Amoxicillin group and 4% in Cephalosporin group with no significant difference between them. The study which was done in 2007 by GMA presented that abdominal wound infection was found in rates; 3.7% in Co-amoxiclav group and 13.1% in the triple therapy group. Co-amoxiclav was statistically found superior to the triple therapy in preventing abdominal wound infection and uterine tenderness. With taking in consideration that group 1 (triple therapy) included Ampicillin 1gm + Metronidazole 500mg + Gentamycin 80 mg all given intravenously after cord clamping and repeated 12 hours after first dose.

Concerning duration of cesarean section and its relation to wound infection, the present study reported that there is no relation between duration of cesarean section and wound infection. This is not in agreement with Oliver *et al.* (2009) who demonstrated that the risk of postoperative wound infection was considerably reduced when the

operation time was short. In the course of prolonged operation, there was significant tissue devitalisation resulting from tissue handling and reduced tissue perfusion

Findings of the present study regarding number of P.V examination and its relation to wound healing, reported that the women who examined per vagina more than 5 times exposed to infection by 8%, but the women that not examined per vagina exposed to infection by 4%. This means that there was a relation between the number of P.V examination and wound healing. These finding were in agreement with Oliver *et al.* (2009), who demonstrated an association between multiple vaginal examinations and post cesarean wound infection.

Regarding the health education about wound care given to the mother and its relation to wound healing versus receiving routine hospital care, the present study showed that the women that their wounds were infected and received the routine hospital care were not significantly higher than those received post partum wound care. This ensured the association between health education about wound care and wound healing.

Conclusion:

Based on the findings of the present study it concluded that: use of Amoxicillin as a prophylactic antibiotic is as effective as Cephalosporin in preventing post cesarean section wound infection, and women that received health education about wound care are less likely to expose to wound infection than those who received only routine hospital care, in spite that the comparative results are not differ significantly.

Recommendations:

Based on the findings of the present study it was recommended that:

-Use of Amoxicillin as a prophylactic antibiotic be less costly compared by Cephalosporin in preventing post cesarean section wound infection. So, it should be taken in consideration the cheaper than other to be used as a prophylactic antibiotic.

-The nurse carry a vital role in reducing wound infection by introducing health education about wound care to the mothers, so there should be an encouragement from head nurses and doctors to follow this action to aid in reducing post C.S wound infection.

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