The Egyptian Journal of Hospital Medicine (July 2023) Vol. 92, Page 6371- 6378

Combination Vs Single Antibiotics for Prevention of Surgical Site Infection during Caesarean Section in Obese Women: Randomized Controlled Trial

Hassan T. Khairy, Mohammed S. El Safty, Abeer M. El Sayed, Waleed M. Khalaf
Department of Obstetrics & Gynaecology, Ain-Shams University Faculty of Medicine
Corresponding author: Waleed Mohamed Khalaf **Mobile:** 01226274935 **Email:** waleed.khalaf1980@yahoo.com

ABSTRACT

Background: Obesity rate among ladies have been growing, and it is one of the risk factors of surgical site infection (SSI) ensuing Caesarean delivery. Medical comorbidities, structural variables (such as increased tissue pressure and skin folds), and bioactive adipose tissue that are linked to an increase in the risk of SSI are all connected with obesity. In order to avoid SSI in obese women having caesarean deliveries, the work compares the effectiveness of cephalexin + metronidazole versus cephalexin alone.

Objective: This study aimed to compare the effectiveness of cephalexin combined with metronidazole and cephalexin alone for SSI prevention in obese women having Caesarean deliveries**.**

Subjects and methods: 280 patients participated in this interventional prospective randomised controlled-clinical trial in accordance with the inclusion and exclusion criteria. They were divided randomly in 2 groups (A & B), from them 270 patients completed follow up. In group A, patients received 2 gm cephalexin IV before skin incision then postoperatively they received 1 gm cephalexin IV after 8 hrs. In group B, patients received 2 gm cephalexin IV before skin incision plus 1 gm metronidazole rectally at time of urinary catheter insertion then postoperatively they received 1 gm cephalexin IV plus 1 gm metronidazole rectally after 8 hrs. Both groups were followed for the occurrence of SSI, endometritis, UTI, febrile morbidities, hospital stay and readmission and studied drugs side effects.

Results: This study found a statistically significant difference in post-operative SSI rates (P>0.05). The most frequent postpartum complication in both groups was wound infection, which occurred more frequently in group A (the control group) than group B (the study group), with a statistically significant difference between the two. Between the two groups, there was no discernible difference in any other aspect of the postpartum experience for mothers. The women in both groups did not significantly differ from one another concerning hospital readmission, receiving therapeutic antibiotic. Concerning hospital readmission: in group A, 2 patients was readmitted to manage wound infection (wound dehiscence) and in group B no one was readmitted at hospital. As regards etiology of therapeutic antibiotic, it was mainly to manage wound complications according to C & S.

Conclusion: Administration of prophylactic combined antibiotics to obese women prior to caesarean delivery was more effective than single antibiotic administration (cephalexin alone) in reducing post-CS SSI in class I obesity.

Keywords: Single antibiotics, Surgical site infection, Caesarean delivery, Obese women.

INTRODUCTION

The goal of a Caesarean delivery, a crucial obstetrical surgical procedure, is to rescue both the mother and the foetus. Over the past few decades, there has been a sharp increase in the frequency of caesarean deliveries, both primary and recurrent, with an estimated 22.9 million Caesarean deliveries worldwide in 2012 **(1).**

SSI is one of the most frequent obstacle following Caesarean delivery. Its incidence is about 3% to 15%. It causes significant financial load on the health care system, as well as physical and psychological burdens on the mother. Additionally, SSI is linked to a potential 3% maternal death rate. It is projected that the SSI will rise as well, explaining its clinical significance, as the Caesarean delivery rate increases globally. Body mass index (BMI) of 30 kg/m^2 for mothers was linked to a significant rise in the probability of SSI (**2**).

In order to reduce post Caesarean delivery morbidity and mortality, it is essential to recognize the considerable implications, and the consequences of SSI and to develop master plans to diagnose, prevent, and treat SSI. Evidence-based surgical approaches, appropriate antibiotic prophylaxis, and optimisation of maternal comorbidities are crucial procedures that effectively reduce the risk of SSI. Globally, the SSI rate varies from 3% to 15%. The vast variation in incidence may be brought about by variations in population characteristics and vulnerability factors, perioperative procedures, and the time between the operation and the diagnosis. In the past thirty years, there has been a notable decrease in the chance of getting SSI, largely as a result of advances in medical technology, sterile practices, antibiotic prophylaxis, and other procedures **(3)**. However, the increase in Caesarean delivery rate is expected to result in increase of SSI. Moreover, SSI can be annoying for the mother who is caring for her newborn while recovering from the treatment. It might lengthen maternal hospital stays, expand health care fees, and have other negative socioeconomic consequences **(4).**

The misuse of antibiotics is the main cause of the development of antibiotic resistance. For instance, using broader spectrum medications than necessary or

Received: 23/2/2023
Accepted: 25/4/2023

skipping antibiotic courses. Compliance with treatment and prevention recommendations often helps to reduce infection and the emergence of antibiotic resistance. Doctors' cohesion to published guidelines for antibiotic prophylaxis varies and is typically in disagreement with them [(5)]. Other than antibiotic prophylaxis, it is critical to evaluate all aspects of obstetrical practice that reduce the incidence of SSI. It is necessary for patients and personnel to adhere to proper skin preparation procedures, including clipping hair instead of shaving, and to use efficient antisepsis [(6)].

The need of sterile surgical environments makes continuous quality assessment of sterilisation practices, air ventilation, and postoperative wound care necessary. To reduce these morbidities and maybe spot infection clusters and the formation of antibiotic resistance, regular infection control surveillance and reporting of infectious consequences are crucial. In order to adapt to the expanding microbial variety, which seems unavoidable, this will necessitate alterations to operational procedures [(7)]. This study aimed to compare the effectiveness of cephalexin combined with metronidazole and cephalexin alone for SSI prevention in obese women having Caesarean deliveries.

PATIENTS AND TECHNIQUES

This prospective randomized clinical trial was conducted in Ain Shams University Maternity Hospital through the period from March 2018 to February 2019. The study included 280 women, planned for CS divided randomly into two equal groups **(group A & group B),** 140 women in each group.

Justification for sample size:

Using PASS version 11, the necessary sample size had been determined (NCSS, LLC, Kaysville, Utah, USA, 2011). A sample of 120 patients in either study group was predicted to have a power of 83% (type II error = 0.17) to detect a difference of 8% in the incidence of postoperative wound infection between the two groups. How often wounds become infected was assumed to equal 10% under the null hypothesis and to equal 10% and 2% in group A and group B, correspondingly, under the alternative hypothesis.

Inclusion criteria: 1. Class I obese females with a BMI of 30 to 34.9 kg /m^2. 2. Delivery via elective Cesarean section. 3. Informed consent.

Exclusion criteria: 1. Class II and III obese women with BMI $\geq$ 35 kg/m^2. 2. Patients with known immunodeficiency syndromes or receiving immunosuppressive drugs. 3. Mental disease or Psychological troubles that makes the patient is incapable of understanding the purpose, scope, and methods of the investigation. 4. Women with risk factor for infection as premature rupture of membranes, diabetic and anemic patients. 5. Hypersensitivity reaction to cephalexin or metronidazole.

Intervention:

Group (A): 140 women were included. They received 2 gm cephalexin (CEP) IV before skin incision then postoperatively they received 1 gm CEP IV after 8 hrs.

Group (B): 140 women were included. They received 2 gm cephalexin IV before skin incision plus 1 gm metronidazole (MET) rectally at time of urinary catheter insertion then postoperatively they received 1 gm cephalexin IV plus 1 gm metronidazole rectally after 8 hrs.

On hospital discharge: Group A received 1 gm cephalexin every 12 hrs orally for one week. **Group B** received 1 gm cephalexin plus 500 mg metronidazole every 12 hrs orally for one week.

On admission, and after obtaining an exhaustive medical history from them, a clinical evaluation. A case record form (CRF1) and an interventional case record form (CRF2) would be included for each.

The following were recorded in the CRF1; initials of the patient:

- The patient count in accordance with the randomization plan.
- Age, height, weight, BMI, employment, and place of residence.
- Information related to health, surgery, and any comorbidities.
- Parity, gravidity, gestational age, and Caesarian delivery indication.
- Past uterine scarring.
- Drugs used within the previous month.
- Any known allergies.
- A clinical examination that included a general checkup and blood pressure and pulse check.
- Investigations**:**

1- Routine lab (CBC, RBS, urea, creatinine and coagulation profile).
2- Ultrasonography for fetal wellbeing assessment and placental assessment as regards site and maturity.
3- Cross matching and blood group.
4- Urine analysis to exclude preoperative urinary tract infection.

The interventional case record form (CRF2):

Vital signs were checked after preparing for a Caesarean delivery, and anaesthesia was administered, antibiotic chemotherapy were given before skin incision whether combined or the single therapy according to randomization, duration of C.S and surgical techniques were standardized. The surgical treatment was performed in accordance with

Ain Shams University Maternity Hospital (ASUMH) standards with pfannenstiel incision.

Hospital stays:

The average hospital stay expected to be 24 hrs for follow up for signs of postoperative pyrexia, wound infection, urinary tract infection and endomyometritis. Monitoring of vital signs every 15 minutes in the 1st hour then every 4 hours in the 1st 24 hours postoperative and documentation of any abnormality as uterine atony or vaginal bleeding.

First follow up after 1week for stitch removal and wound assessment as regards healing and signs of SSI. Another follow up visit at 3 weeks for wound healing assessment.

Primary outcome: it concerned on maternal infectious morbidities, as having any one of the following:

A -Postoperative fever: defined as oral temperature more than 38 ^{o}C on 2 separate occasions more than 6 hrs apart, after the initial 24 hrs postoperative period.

B - Wound infection: Three degrees of SSI are described by the Centres for Disease Control (CDC):

I. Skin and subcutaneous tissue are involved in an incision that is superficial. Redness, discomfort, heat, swelling, or pus leakage at the site of the wound are symptoms.
II. Deep incisional, affecting layers of the muscles and fascia.
III. Organ or space infection affecting any portion of the anatomy other than the incision that is opened or touched during surgery, such as the peritoneum.

The following criteria would be used to diagnose surgical site infection:

I. Complete or partial wound disruption.
II. The presence of pus or swollen serous tissue with induration.
III. Heat, rosiness, and softness.
IV. Culture of wounds.

C -Signs of endomyometritis: - (defined as uterine tenderness and fever).

Secondary outcome

1- Major infectious complication (as septic shock or necrotizing fasciitis).
2- Length of stay in hospital.

Ethical and legal aspect: Detailed Informed written consent was given to participants including their rights, nature, objectives, benefits and hazards of the study in a form understandable for her in Arabic language containing all locally required data and specifications. The original form was signed by personally dated signature, then retained by the investigator. If any woman was unable to read, oral presentation and explanation of the written consent in the presence of impartial witness would be available. Alternatively, the participant could use the thumbprint or a mark in presence of witness who would also sign and personally date it. Nothing done till a valid consent was obtained.

All reports, evaluation forms won't contain any personal data to ensure their confidentiality. Only patient number and initials were recorded, and if the name of patient was appearing in any document, its privacy should be kept by the investigator who has the personal identification list.

The protocol and any corresponding element according to the local regulations was approved before the beginning of the study by the Obstetrics & Gynaecology Department Council, Faculty of Medicine, Ain Shams University. This study was registered on clinical trial.gov, no. NCT03736187. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical analysis

The statistical software for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the recorded data. The mean and standard deviation (SD) were used to express quantitative data. Frequency and percentage were used to express qualitative data. When comparing two means, the independent-samples t-test of significance was applied. To compare proportions between qualitative factors, the Chi-square (x^2) test of significance was applied. The allowable margin of error was set at 5%, while the confidence interval was set at 95%. P- $\leq$ 0.05 were deemed significant. P- $\leq$ 0.001 was deemed to be very significant. P- > 0.05 was deemed insignificant.

RESULTS

The following tables provide examples of the study's findings. According to the baseline characteristics shown in table (1), there was no statistically significant difference between the groups.

Table (1): Comparison between groups based on the traits of the patients.

Baseline characteristics	Group A *(n=135)*	Group B *(n=135)*	Test	p-value
Age (years) Mean ± SD Range	 27.91±4.92 19-34	 28.2±5.1 19-33	t=0.475	0.635
BMI [wt/(ht)^2] Mean ± SD Range	 33.5±2.91 30-34.9	 32.8±2.84 30-34.9	t=2.000	0.067
Parity Median (IQR) Range	 1 (1-2) 0-3	 1 (1-2) 0-3	z=0.645	0.519
Gravida Median (IQR) Range	 3.65±1.63 1-9	 3.46±1.35 1-8	t=1.043	0.298
Gestational age, wk Mean ± SD Range	 38.2±1.8 37-40	 38.6±1.34 37-40	t=2.071	0.058

P-value >0.05 NS; t-Independent Sample t-test; z-Mann-Whitney test

According to the operative criterion, there were no statistically significant difference between the groups (Table 2).

Table (2): Comparison of groupings based on operative criteria.

Operative criteria	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Indication for CS				
Previous CS	88 (65.2%)	86 (63.7%)	0.009	0.924
Postdate	9 (6.7%)	11 (8.1%)	0.043	0.836
Breech presentation	8 (5.9%)	9 (6.7%)	0.021	0.884
Contracted pelvis(by clinical examination)	6 (4.4%)	4 (3.0%)	0.042	0.791
Elderly primigravida (>35y) or precious baby.	5 (3.7%)	6 (4.4%)	0.021	0.884
Multiple pregnancy	4 (3.0%)	5 (3.7%)	0.021	0.884
Patient request	2 (1.5%)	1 (0.7%)	0.021	0.884
Oligohydramnios	8 (5.9%)	9 (6.7%)	0.021	0.884
Macrosomia (Efwt >4.5kg)	5 (3.7%)	4 (3.0%)	0.021	0.884

Chi-square test, x^2, p > 0.05, NS

According to the operative time in this table, there were no statistically significant differences between the groups (Table 3).

Table (3): Comparison of the groups' operating times (in minutes)

Operative time in minutes	Group A *(n=135)*	Group B *(n=135)*	t-test	p-value
Mean ± SD	68.5 ±8.9	66.5 ± 8.2	1.920	0.056
Range	57-75	55-75		

P-value >0.05 for the t-Independent Sample T-Test; NS

According to hospital stay, table (4) did not demonstrate any statistically significant differences between the groups.

Table (4): Comparison of groups based on length of hospital stay.

Hospital stay(days)	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
1 day	134 (99.2%)	135 (100%)	0.494	0.481
2 days	1 (0.7%)	0 (0.0%)		

Chi-square test, x^2, p > 0.05, NS

According to complications, table (5) demonstrated statistically significant differences between the groups (higher in group A compared to group B).

Table (5): Comparison of groups based on complications.

	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Complications	**39 (28.9%)**	**22 (16.3%)**	5.427	0.020*
Wound infection (SSI)	**25 (18.5%)**	**11 (8.1%)**	5.462	0.019*
Fever (pyrexia)	37 (27.4)	21 (15.6)	4.892	0.027*
Complicated (SSI)	23 (17.0)	10 (7.4)	4.946	0.026*
Non complicated (No SSI)	14 (10.4)	11 (8.1)	0.196	0.658

Chi-square test, x^2, *p 0.05 S

Table (6) displayed statistically significant differences between groups based on cellulitis/erythema, heat, and superficial incisional infection (higher in group A compared to group B).

Table (6): Comparison of groups based on SSI

SSI	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Superficial incisional infection	19 (14.1%)	9 (6.7%)	8.039	0.005*
Hotness	15 (11.1%)	7 (5.2%)	6.209	0.013*
Redness	14 (10.4%)	4 (3.0%)	4.788	0.029*
Swelling	12 (8.9%)	7 (5.2%)	2.594	0.107
Tenderness	13 (9.6%)	8 (5.9%)	2.378	0.123
cellulitis/erythema	13 (9.6%)	6 (4.4%)	5.457	0.019*
Serous/serosangous discharge	9 (6.7%)	4 (3.0%)	3.684	0.055
Deep incisional infection	6 (4.4%)	2 (1.5%)	3.452	0.063
Purulent discharge	4 (3.0%)	2 (1.5%)	0.928	0.335
Wound dehiscence	2 (1.5%)	0 (0.0%)	2.743	0.098
Organ/Space infection	0 (0.0%)	0 (0.0%)	0.000	1.000
Peritonitis	0 (0.0%)	0 (0.0%)	0.000	1.000
Pelvic abscess	0 (0.0%)	0 (0.0%)	0.000	1.000

Chi-square test with an x^2 value of >0.05 NS and 0.05 S

Agreement and disagreement can't be calculated because all data of one parameter were negative side (Table 7).

Table (7): Comparison of groups based on secondary outcome

Secondary outcome	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Postoperative Endometritis	0 (0%)	0 (0%)	0.000	1.000
Postoperative UTI	5 (3.7%)	3 (2.2%)	0.129	0.719

x^2: Chi-square test; p-value >0.05 NS

Table (8) displayed statistically significant differences between groups based on when wound manifestations started to appear (between 3 and 7 days after surgery).

Table (8): Comparison of groups based on timing of development of wound manifestations

Timing of development of wound manifestations (SSI)	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Within 1st 2 days Postoperatively	0 (0%)	0 (0%)	0.000	1.000
Within 3 to 7 days Postoperatively	21 (15.6%)	9 (6.7%)	4.536	0.033*
After 1st week Postoperatively	4 (3.0%)	2 (1.5%)	0.177	0.674
After three week Postoperatively	0 (0%)	0 (0%)	0.000	1.000

Chi-square test, x^2, $p > 0.05$, NS

According to the administration of therapeutic antibiotics and hospital readmission, table (9) did not demonstrate any statistically significant differences between the groups.

Table (9): Comparison of groups based on administration of therapeutic antibiotic and readmission to hospital

	Group A *(n=135)*	Group B *(n=135)*	x2	p-value
Administration of therapeutic antibiotic	6 (4.4%)	2 (1.5%)	1.099	0.294
Readmission to hospital	2 (1.5%)	0 (0%)	0.523	0.469

Chi-square test, x^2, $p > 0.05$, NS

According to maternal medication side effects, table (10) did not demonstrate any statistically significant differences between the groups.

Table (10): Comparison of groups based on maternal drug side effect

Maternal drug Side effect	Group A *(n=135)*	Group B *(n=135)*	$\chi 2$	p-value
Allergy	0 (0%)	0 (0%)	0.000	1.000
Nausea	17 (12.6%)	21 (15.6%)	0.284	0.594
Vomiting	7 (5.2%)	10 (7.4%)	0.243	0.622

Chi-square test, x^2, $p > 0.05$, NS

DISCUSSION

Women are becoming more obese, which is one of the risk factors for surgical site infection (SSI) after Caesarean delivery. Medical comorbidities, structural variables (such as increased tissue pressure and skin folds), and bioactive adipose tissue that are linked to an increase in the risk of SSI are all connected with obesity **[8].**

280 subjects were enrolled in this trial according to inclusion and exclusion criteria who were divided randomly into 2 groups (A & B) from them 270 patients completed follow up. In group A, patients received 2 gm cephalexin IV before skin incision then postoperatively they received 1 gm cephalexin IV after 8 hrs. In group B, patients received 2 gm cephalexin IV before skin incision plus 1 gm metronidazole rectally at time of urinary catheter insertion then postoperatively they received 1 gm cephalexin IV plus 1 gm metronidazole rectally after 8 hrs. Both groups were followed for the occurrence of SSI, endometritis, UTI, febrile morbidities, hospital stay and readmission and studied drugs side effects.

According to patient parameters like age, BMI, parity, gravidity, and gestational age, the study's findings showed no significant differences between the two groups. Additionally, there were no differences between the two groups in terms of the need for a Caesarean section and the length of the procedure, or the length of the hospital stay (Tables 2, 3, 4).

Regarding occurrence of post-operative complication (SSI & pyrexia) there were 39 (28.9%) women in group A (control group) compared to 22 women in group B (study group) 16.3%. This difference between both groups reached significant statistical difference (P= 0.020), which agrees with a study done by **Valent *et al.*** **[9]** for the purpose of preventing SSI in obese women (BMI 30) who had received conventional intravenous preoperative cephalosporin prophylaxis. They conducted a randomised, double-blind clinical trial to assess oral cephalexin and metronidazole vs placebo for 48 hours after Caesarean delivery.

Regarding the incidence of wound infection (SSI), there were 25 women in group A (control group) (18.5%), complicated with SSI, while there were 11 women in group B (study group) (8.1%) complicated with SSI. This difference between both groups reached significant statistical difference (P=0.019), which agrees with a study done by **Valent *et al.*** **[9].**

Regarding primary outcome the degree and severity of SSI, which was classified into incisional (superficial & deep) and organ/space infection. Between research groups, there was a statistically significant difference in terms of superficial incisional infection 19 (14.1%) cases in group A and 9 (6.7%) cases in group B with P=0.005. Also between research groups, there were no notable statistical differences with regard to deep incisional infection or organ and space infection, P =0.063 &P =1.00 respectively.

Comparing SSI separately, there was significant difference between the 2 groups A & B regarding hotness, redness and cellulitis/erythema with P=0.013 &P=0.029 & P=0.019 respectively. There was no significant difference between both groups regarding swelling, tenderness, serosanguinous discharge, with P > 0.05.

4 cases in group A and 2 cases in group B suffered purulent discharge, so wound swab was done for culture and sensitivity and therapeutic

antibiotics started according to it. Also, 2 cases in group A suffered from wound dehiscence, and patients were readmitted to hospital for wound care and therapeutic AB according to C & S. Statistically in both complications, there was no statistically significant difference between the groups (P > 0.05).

In the current study, there was no cases suffered organ/space infection (peritonitis or pelvic abscess) that match with study done by **Amy *et al.* [(2)].**

Regarding secondary outcome, no cases suffered from postoperative endometritis in both groups. 5 cases in group A and 3 cases in group B suffered from UTI (dysuria with positive urine culture), but between the two groups, there was no statistically significant difference (P > 0.05).

Our results were in accordance with **Amy *et al.* [(2)],** administration of standard preoperative cephalosporin prophylaxis to obese women undergoing caesarean delivery then in comparison with using a placebo, a postoperative 48-hour course of oral cephalexin and metronidazole decreased the rate of SSI within 30 days of birth. Prophylactic oral cephalexin and metronidazole may be helpful for SSI prevention in obese women who have had caesarean sections.

On the other hand, A single dose of prophylactic ampicillin and metronidazole was just as effective as a multiple-day regimen in preventing post-Caesarean wound infections in low resource settings, according to a systematic review and meta-analysis by **Esther *et al.* [(10)]**, so it can be regarded as a good masterplan in low-resource settings. Costs will drop as a result of the reduction in prophylactic antibiotic use without an increase in the danger of maternal infection. When pyrexia was taken into consideration, there was a significant difference in body temperature between both groups A and B (37& 21 cases respectively) with P=0.027. Also we detected a significant difference in the body temperature between complicated (SSI) & uncomplicated (no SSI) cases in each group separately (P <0.026 & P <0.65 respectively). These results agree with **Amy *et al.* [(2)],** their goal was to compare the incidence of SSI in obese women receiving preventive oral cephalexin and metronidazole for 48 hours after Caesarean delivery to placebo. Also, agree with **Esther *et al.* [(10)]**. The result of our study disagrees with study done by **Shakya and Sharma [(11)]**. They found that the number of doses of prophylactic antibiotic administration did not change the maternal post Caesarean section infectious morbidities. Furthermore, it is emphasised that antibiotic abuse leads to medication resistance, which is a new and developing issue [(12)].

Regarding the difference in the timing of wound infection occurrence, it was observed that delayed wound infection (3-7 days) was more frequent than early wound infection (in the first 2 days) or after 1st week in both groups A and B (21 & 9 cases respectively). Also9, there was a significant difference in the timing of wound infection incidence between the two groups. (P=0.033).

Regarding administration of therapeutic antibiotic, 6 cases in group A and 2 in group B were given therapeutic AB to overcome SSI according to C/S testing but between the two groups, there was no statistically significant difference.

Regarding to readmission to hospital (**Table 9**) Only 2 cases in group suffered wound dehiscence and were readmitted for better wound care, dressing and therapeutic AB, but neither debridement nor 2ry suture needed.

Neither cephalexin nor metronidazole were associated with any severe adverse events or allergic responses. Nausea and vomiting were common side effect that were overcomed by reassurance, timing of medications after meal, withdrawal of non-steroidal drugs given for analgesia and symptomatic treatment (antacid & antiemetic in resistant cases). Fortunately, there were no statistically significant difference between groups based on maternal drug side effect (P > 0.05).

CONCLUSION

Our study showed that prophylactic combined antibiotic administration (cephalexin + metronidazole) prior to CS is more effective than single antibiotic administration (cephalexin alone) in reducing post-CS SSI in class I obesity.

REFERENCES

1. **Liu S, Liston R, Joseph K *et al.* (2007):** Maternal mortality and severe morbidity associated with low risk planned cesarean delivery versus planned vaginal delivery at term. CMAJ., 176 (4): 455–460.
2. **Amy M, Valent D, Chris D Armond, R, Judy M *et al.* (2017):** Effect of Post–Cesarean Delivery Oral Cephalexin and Metronidazole on Surgical Site Infection Among Obese Women. A Randomized Clinical Trial; JAMA., 318 (11): 1026-1034**.**
3. **Peleg D, Eberstark E and Warsof S (2016):** Early wound dressing removal after scheduled cesarean delivery: a randomized controlled trial. Am J Obstet Gynecol , 3: 388.–388.
4. **Tita A, Szychowski J, Boggess K *et al.* (2016):** Adjunctive Azithromycin prophylaxis for cesarean delivery. N Engl J Med., 375 (13): 1231–1241.
5. **Olsen M, Butler A, Willers D, Devkota P, Gross G, Fraser V (2006):**Risk factors for surgical site infection after low transverse cesarean section. Infect Control Hosp Epidemiology, 29 (6): 447–484.
6. **Johnson A, Young D, Reilly J (2006):** Caesarean section surgical site infection surveillance. J Hosp Infect., 64: 30–35.
7. **Schneid-Kofman N, Sheiner E, Levy A Holcberg G (2005):** Risk factors for wound infection following cesarean deliveries. Int J Gynaecol Obstetric., 90: 10–15.

8. **Pierpont Y, Dinh T, Salas R *et al.* (2014):** Obesity and surgical wound healing: a current review. ISRN Obes., 638936.
9. **Valent D, Chris D, Armond R, Judy M *et al.* (2017):** Effect of Post–Cesarean Delivery Oral Cephalexin and Metronidazole on Surgical Site Infection Among Obese Women. A Randomized Clinical Trial;JAMA., 318 (11): 1026-1034**.**
10. **Esther H, Westen, Pascal R *et al*. (2014):** Single dose compared with multiple day antibiotic prophylaxis for cesarean section in low resource settings, a randomized controlled, noninferiority trial. Acta Obstetricia Et Gynecologica Scandinavica, 94:1. DOI:10.1111/aogs.12517
11. **Shakya A, Sharma J (2010):** Comparison of single versus multiple doses of antibiotic prophylaxis in reducing post-elective Caesarean section infectious morbidity. Kathmandu University Medical Journal, 8 (2): 179-84.
12. **Ashiru-Oredope D, Hopkins S, Vasandani S, Umoh E, Oloyede O, Nilsson A *et al*. (2021):** Healthcare workers' knowledge, attitudes and behaviours with respect to antibiotics, antibiotic use and antibiotic resistance across 30 EU/EEA countries in 2019. Euro Surveill., 26 (12): 1900633. doi: 10.2807/1560-7917.ES.2021.26.12.1900633.