



ISSN : 2350-0743

www.ijramr.com



International Journal of Recent Advances in Multidisciplinary Research

Vol. 02, Issue 10, pp.0792-0794, October, 2015

RESEARCH ARTICLE

ELECTIVE CAESAREAN SECTION AND CEFTRIAXONE

*Saif M. Hassan

Department of Babylon Health, Ministry of Health, Al-Shomaly Hospital, Iraq

ARTICLE INFO

Article History:

Received 29th July 2015

Received in revised form

13th August, 2015

Accepted 27th September, 2015

Published online 31st October, 2015

Keywords:

Efficacy of Ceftriaxone,
Obstetrics & Gynecological,
Babylon.

ABSTRACT

Subject: To compare the efficacy of ceftriaxone before skin incision and after cord clamping in preventing post-operative infectious morbidity in elective caesarean section.

Methods: Our study was a randomized controlled trial conducted among 200 women undergoing elective caesarean section in the Obstetrics & Gynecological Department, Babylon Hospital of Babylon government from 8/ 2015 to 10/ 2015. All caesarean section were performed using standard technique. Post-operative care followed standard clinical practice.

Group 1: received single dose of ceftriaxone 1 g intravenously 24 hr. before skin incision. Group 2 :(control) received normal saline 24 hr. before skin incision. Primary outcome measures were maternal post-operative infectious morbidities like surgical site wound infection, febrile morbidity, and urinary tract infections.

Conclusion: Pre cesarean antibiotics reduce post operation complications like surgical site wound infection, febrile morbidity, and urinary tract infections.

INTRODUCTION

Cesarean section is the most important risk factor for postpartum maternal infection (Declercq, 2007). In Western countries the percentage of live births by cesarean section is about 22%. Women undergoing cesarean section have a 5 – 20 fold greater risk for infection compared with a vaginal birth. Infectious complications that occur after cesarean are an important cause of maternal morbidity and significant increase in hospital stay (Henderson and and Love, 1995).

Cesarean Infectious complications

Inflammatory complications which follow the caesarean section can occur in 30 to 85 % of operated patients (Grujić, 2010). Infectious complications following cesarean surgery include fever (febrile morbidity), wound infection, endometritis (inflammation of the lining of the uterus), and urinary tract infection. There can also occasionally be serious infectious complications including pelvic abscess (collection of pus in the pelvis), bacteremia (bacterial infection in the blood), septic shock (reduced blood volume due to infection), necrotizing fasciitis (tissue destruction in the uterine wall) and septic pelvic vein thrombophlebitis (inflammation and infection of the veins in the pelvis); sometimes these can lead to maternal mortality (Henderson and Love, 1995; Gibbs, 1980). Factors that have been associated with an increased risk of infection include emergency cesarean section, the socioeconomic status of the woman, number of prenatal visits, vaginal examinations during

labor, internal fetal monitoring, urinary tract infection, anemia, blood loss, obesity, diabetes, general anesthesia, development of subcutaneous hematoma, the skill of the operator and the operative technique (Gibbs, 1980; Olsen, 2008; Killian, 2001).

Prophylactic antibiotics

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 (Smaill and Gyte, 2010). The basic significance of antibiotic in the prevention of surgical infection is based on the reduction of endogenous and exogenous bacterial contamination during the surgical procedure (Grujić, 2010). There are differences in the route of administration of prophylactic antibiotics; for cesarean section the antibiotic is generally given intravenously. Usually a single dose is administered at the time of the procedure or multiple doses administered over a short period of time.

NICE clinical guideline 2012 Offer women prophylactic antibiotics at Cesarean Section before skin incision. Inform them that this reduces the risk of maternal infection more than prophylactic antibiotics given after skin incision, and that no effect on the baby has been demonstrated. Choose antibiotics effective General guidelines for the prevention of surgical site infections recommend the antimicrobial dose is administered before the incision to achieve low infection rates (Bratzler *et al.*, 2005; Gholitabar, 2011). Administered of Antibiotics prophylactically decrease the bacterial inoculum during surgery and reduce the rate of bacterial contamination of the surgical site.

*Corresponding author: Saif M. Hassan,

Department of Babylon Health, Ministry of Health, Al-Shomaly Hospital, Iraq.

An adequate antibiotic level in the tissue can help immune defense mechanisms and help kill pathogens that are inoculum into the wound during surgery (Bennett *et al.*, 2014)

MATERIALS AND METHODS

Study design

Our study was a randomized controlled trial conducted among 200 women undergoing elective caesarean section in the Obstetrics & Gynecological Department, Babylon Hospital of Babylon government from 8/ 2015 to 10/ 2015. All caesarean section were performed using standard technique. Post-operative care followed standard clinical practice. The occlusive dressing applied in theater removed after 48 hours.

Each patient was examined daily and post-operative infectious morbidity noted till the date of discharge from the hospital. These women were randomly categorized into six groups with 100 women in each group. Group 1: received single dose of ceftriaxone 1 g intravenously 24 hr. before skin incision (Owens, 2009). Group 2: (control) received normal saline 24 hr. before skin incision. Primary outcome measures were maternal post-operative infectious morbidities like surgical site wound infection, febrile morbidity, and urinary tract infections (Kalaranjini *et al.*, 2013).

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 outpatient 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.

Statistical Analysis

Data entry and statically analysis were done using Statistical Package for the Social Sciences (SPSS, version 22). 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.

RESULTS

Our study was a randomized controlled trial conducted among 150 women undergoing elective caesarean section from 8/ 2015 to 10/ 2015. These women were randomly categorized into two groups with 100 women in each group.

Demographic data

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

Tab. 1. socio-demographics characteristics. P-value < 0.05

Socio demographic characteristics	Group 1	
	No.	%
1) Age/years		
1. 16-24 years	8	32 %
2. 25-30 years	11	44 %
3. More than 30 years	6	24 %
2) Occupation		
1. Housewife	19	76 %
2. Employed	6	24 %
3) Education		
1. Illiterate	3	12 %
2. Read and write	7	28 %
3. Basic & Secondary	12	48 %
4. University	3	12 %
4) Residence		
1. Urban areas	14	56 %
2. Rural areas	11	44 %

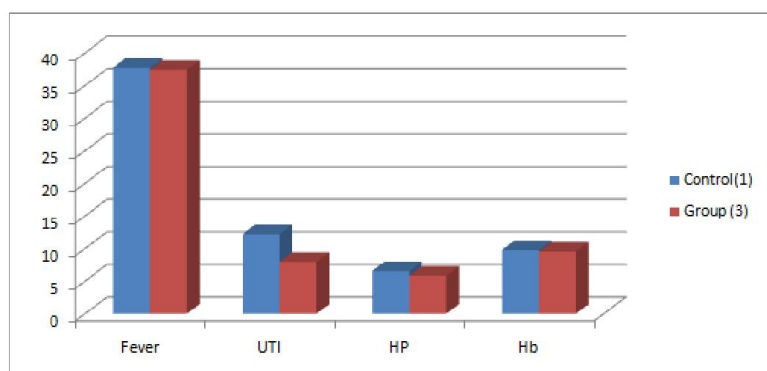
Study measurements between groups and it’s controls

Group 1. received single dose of ceftriaxone 1 g intravenously 24 hr. before skin incision

At the end of the study, we are found that there was a significant difference between Control and Group 1.

Table 2. Outcome measurements of the group 1 at the end of study (n = 100) The data expressed as mean ±SEM

	Fever	UTI	HP	Hb	P value
Control	37.7 ± 0.021	12.25 ± 1.23	6.54 ± 0.28	9.71 ± 0.17	0.05
Group	37.0 ± 0.004	3.75 ± 0.43	3.62 ± 0.14	9.46 ± 0.14	



The incidence of post-operative complication fever, urinary tract infection (UTI), and healing period (HP) are significantly higher in Control versus Group 1, while there are insignificant differences between two groups in hemoglobin (Hb). (P=0.03). Table (2) and Figure (1)

DISCUSSION

Caesarean delivery spends an average of 2 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, febrile, urinary tract infection, and endometriosis are the major post-operative complication. Any intervention which reduces these complications will therefore speed up recovery and cut down on the length of stay on the ward. The demographic characteristics of this present study show no statistically significant difference, maternal characteristics in obstetrical history, and current obstetrical history. The present study showed that the great majority of women were housewives (76 %), nearly half of them (48 %) were had basic and secondary education and the majority of women were lived in urban areas. These findings are in the same line with Mahmoud (2007) who showed that the majority of women, who had cesarean section were housewife, but she presented that the majority of women were from rural areas (Mahmoud, 2007), Hildingsson, *et al.* (2002) in Sweden who showed that cesarean section increased with the women's life in urban areas. also recommended that antimicrobial prophylaxis is recommended for all cesarean deliveries and these lead to reduce incidence of febrile, endometriosis (Hildingsson, 2002). We found that the use of perioperative antibiotics in cesarean delivery significantly reduced the risks of fever, urinary tract infection, and wound infection. These results are in agreement with Mara J. Dinsmoor *et al.* (2009) who concluded antibiotic prophylaxis at the time of 24 hr. before cesarean delivery significantly reduces the risks of postpartum fever and wound infection (Dinsmoor, 2009). Hofmeyr *et al.* (2010) showed that the use of perioperative antibiotics reduces the risk of postpartum fever by 75% (Hofmeyr and Smaill, 2010). Ahmed *et al.* 2004 showed that administration of ceftriaxone before surgery reduced the postpartum fever, and urinary tract infection (Ahmed, 2004). Tita *et al.* 2004 concluded administration of an extended-spectrum antibiotics regimen appears to be associated with a reduction in post-cesarean maternal infection (Tita, 2009).

Recommendations

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

- introducing health education about wound care to the mothers by the nurse carry a vital role in reducing wound infection, so there should be an encouragement from head nurses and doctors to follow this action to aid in reducing post C.S wound infection.
- Antimicrobial prophylaxis is recommended for all cesarean deliveries and that prophylaxis should be administered within at least 30 minutes before the start of the cesarean delivery.
- For cesarean delivery prophylaxis, a single dose of a targeted antibiotic, such as a first-generation cephalosporin,

is the first-line antibiotic of choice, unless significant drug allergies are present.

REFERENCES

- Ahmed, E. *et al.* 2004. Ceftriaxone versus ampicillin/cloxacillin as antibiotic prophylaxis in elective caesarean section. *East Mediterr Health J.*, 10 (3): p. 277-288.
- Bennett, J.E., Dolin, R. and Blaser, M.J. 2014. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. Elsevier Health Sciences.
- Bratzler, D.W., P.M. Houck, and S.I.P.G.W. 2005. Workgroup, Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. *The American Journal of Surgery*, 189 (4): p. 395-404.
- Declercq, E. *et al.* 2007. Maternal outcomes associated with planned primary cesarean births compared with planned vaginal births. *Obstetrics and Gynecology*, 109 (3): p. 669-677.
- Dinsmoor, M.J. *et al.* 2009. Perioperative antibiotic prophylaxis for non-Laboring cesarean delivery. *Obstetrics and gynecology*, 114 (4): p. 752.
- Gholitabar, M. *et al.* 2011. Caesarean section: summary of updated NICE guidance. *BMJ*, 343.
- Gibbs, R.S. 1980. Clinical risk factors for puerperal infection. *Obstet Gynecol*, 55 (5 Suppl): p. 178s-184s.
- Grujić, Z. *et al.* 2010. Preoperative administration of cephalosporins for elective caesarean delivery. *Srpski arhiv za celokupno lekarstvo* 138 (9-10): p. 600-603.
- Henderson, E. and Love, E. 1995. Incidence of hospital-acquired infections associated with caesarean section. *Journal of hospital infection*, 29 (4): p. 245-255.
- Hildingsson, I. *et al.* 2002. Few women wish to be delivered by caesarean section. *BJOG: An International Journal of Obstetrics & Gynaecology*, 109 (6): p. 618-623.
- Hofmeyr, G.J. and Smaill, F.M. 2010. Antibiotic prophylaxis for cesarean section. *The Cochrane Library*.
- Kalaranjini, S., Veena, P. and Rani, R. 2013. Comparison of administration of single dose ceftriaxone for elective caesarean section before skin incision and after cord clamping in preventing post-operative infectious morbidity. *Arch Gynecol Obstet*, 288 (6): p. 1263-8.
- Killian, C.A. *et al.* 2001. Risk factors for surgical-site infections following cesarean section. *Infection Control*, 22 (10): p. 613-617.
- Mahmoud, G.A. 2007. A study of cesarean section morbidity at Assiut university hospital.
- Olsen, M.A. *et al.* 2008. Risk factors for surgical site infection after low transverse cesarean section. *Infection Control*, 29 (06): p. 477-484.
- Owens, S.M. *et al.* 2009. Antimicrobial prophylaxis for cesarean delivery before skin incision. *Obstetrics and Gynecology*, 114 (3): p. 573-579.
- Smaill, F.M. and G.M.L. 2010. Gyte, Antibiotic prophylaxis versus no prophylaxis for preventing infection after cesarean section. *The Cochrane database of systematic reviews*, (1): p. CD007482-CD007482.
- Tita, A.T. *et al.* 2009. Evolving concepts in antibiotic prophylaxis for cesarean delivery: A systematic review. *Obstetrics and gynecology*, 113 (3): p. 675.