Pravara Med Rev; September 2023, 15 (03), 39 – 43
DOI: 10.36848/PMR/2022/99900.51088

Original article

Comparative study of preoperative vaginal preparation with cetrimide versus routine care for evaluating postpartum uterine sepsis

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Abstract

Introduction : The rate of post caesarean section infection varies from 7-20% depending on operating time, maternal body mass index, duration of labor, number of vaginal examinations during labor, the amount of blood loss, emergency or elective caesarean delivery and surgeon experience.

Materials and methods: This was a hospital based interventional study was conducted at DR. DY Patil Medical College, hospital and research centre, Pimpri, Pune , for 3 months – After ethical clearance certificate. A total of 200 pregnant women undergoing elective cesarean delivery were recruited in the study.

Results: In the present study, distribution based on postpartum morbidities shows 8 (8%) in the intervention group and 23 (23%) in Control group had Fever. ($p<0.05$)

4 (4%) in the Intervention group and 8 (8%) in the control group had wound infection. 5 (5%) in the intervention group and 17 (17%) in the control group had Endometritis. This observation was statistically significant. ($p<0.05$)

Conclusion: Interpretation of the study findings suggests that a preoperative vaginal scrub with antiseptic Cetrimide solution decreases the risk of post-cesarean fever and endometritis. This intervention, however, does not seem to reduce the risk of postoperative wound infection. Differences in reported postoperative morbidities rates could be attributed to the technique and materials used for the vaginal preparation itself or the amount of antiseptic used for the preparation might affect infectious outcomes.

Keywords: Caesarean section, body mass index, emergency delivery, cetrimide, pregnancy

Introduction

The rate of post caesarean section infection varies from 7-20% depending on operating time, maternal body mass index, duration of labor, number of vaginal examinations during labor, the amount of blood loss, emergency or elective caesarean delivery and surgeon experience. [1-5]. Post cesarean wound infection and endometritis still serious morbidities, in spite of use of strategies to prevent these complications with respect to patient complain, patient cost, use of antibiotics and prolonged hospital stay. The risk of post caesarean infectious morbidity is reported to range from 5-85%. The most recognized risk factors for developing post caesarean endometritis involve pathways that introduce high quantities of bacteria into the uterine cavity. [6]Preoperative vaginal cleansing by povidone-iodine before hysterectomy reduces the incidence of postoperative infectious morbidity. [7]Also Ameer et al[6] showed that preoperative vaginal cleansing with povidone - iodine decreases the incidence of post-cesarean endometritis.The present study was conducted to investigate the effect of vaginal preparation with antiseptic solution (cetrimde) before cesarean section for reducing post partum Uterine sepsis.

PMR P ISSN: 0975-0533, E ISSN: 0976-0164

Materials and methods

This was a hospital based interventional study was conducted at DR. DY Patil Medical College, hospital and research centre, Pimpri, Pune , for 3 months – After ethical clearance certificate. A total of 200 pregnant women undergoing elective cesarean delivery were recruited in the study.

The subjects were divided into two groups:

- Group (A): intervention group: consisted of 100 pregnant women who receiving vaginal cleaning before cesarean section by antiseptic Cetrimide solution and standard abdominal scrub.
- Group (B): Control group: consisted of 100 pregnant women who receiving standard abdominal scrub only.

Inclusion criteria:-

- Full term pregnant women.
- Elective cesarean delivery
- Age ranged between 20 -35 years.

Exclusion criteria:-

- Women who are at risk for developing postpartum infection as premature rupture of membranes, diabetes mellitus, anaemia.
- History of post caesarean section infection, obstructed labor, or preeclampsia
- Women whose given history of being allergic to antiseptic Cetrimide solutions.

Approval was taken from the institutional Ethical Committee before commencing the study. Written and informed consent was obtained from all patients

Data was collected using a pretested proforma meeting the objectives of the study. The purpose of the study was explained to the patient and informed consent obtained. Cases were selected for study who satisfy all inclusion and exclusion criteria.

Purposive sample was recruited for the study. Women were undergoing elective cesarean section at the study setting were included in the study until the sample size was completed. By random assignment, the intervention and control group were assigned. From the prepared list of caesarian section, the odd numbers were recruited as the intervention group and the even numbers are recruited as control group.

The tool of data collection consists of three part:

Part I: Includes general data and anthropiometric measures as age, para, gravid and weight.

Part II: Includes data related to C.S type and time and hospital stay.

Part III: Includes data related to follow up after one week as (fever, wound infection and endometritis)

Data was presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Qualitative variables were compared using T test and Correlation (r) test. Statistical significance was considered at p-value < 0.05.

Results

In the present study, mean age of the study population in the Cetrimide group was 27.4 ± 3.98 years and in the Control group was 27.1 ± 4.1 years. 34% were Primi and 66% were Multi in the Intervention group and 38% were Primi and 62% were multi. The mean weight in Kg in the Intervention group was 73.7 ± 8.5 kg and in the control group the mean weight was 78.6 ± 10.02 kg. (Table 1)

Table 1: Sociodemographic profile

		Intervention group	Control group	P value
Age		27.4 ± 3.98	27.1 ± 4.1	>0.05 (Not significant)
Weight		73.7 ± 8.5	78.6 ± 10.02	>0.05 (Not significant)
Parity	Primi	34 (34%)	38 (38%)	>0.05 (Not significant)

PMR P ISSN: 0975-0533, E ISSN: 0976-0164

	Multi	66 (66%)	62 (62%)	
Place of residence	Rural	56 (56%)	61 (61%)	>0.05 (Not significant)
	Urban	44 (44%)	39 (39%)	

Distribution based on type and causes of cesarean section shows 32 (32%) of intervention group had primary caesarean section compared to 42(42%) of control group and (68%) of intervention group had secondary caesarean section compared to 58% of control group. This observation was most statistically significant. (Table 2)

Table 2: Type of Caesarean section

	Intervention group	Control group	P value
Primary	32 (32%)	42 (42%)	>0.05 (Not significant)
Secondary	68 (68%)	58 (58%)	

Table 3: Causes of Caesarean section

	Intervention group	Control group	P value
Previous CS	48 (48%)	42 (42%)	>0.05 (Not significant)
Malpresentation or position	30 (30%)	29 (29%)	
Maternal distress	4 (4%)	9 (9%)	
Fetal distress	10 (10%)	11 (11%)	
Premature rupture of membranes	8 (8%)	9 (9%)	

In the present study, most common cause of caesarean section is previous caesarean section 48 (48%) of intervention group compare to 42 (42%) of control group. 30 (30%) of intervention group had malpresentation and position compare to 29 (29%) of control group. 4 (4%) of intervention group compared to 9 (9%) in the control group had maternal distress, 10 (10%) of the intervention group and 11 (11%) in the control group had fetal distress, 8 (8%) of the intervention group and 9 (9%) in the control group had Premature rupture of membranes. There no statistically significant difference was found between both groups (Table 3)

Based on the duration of Caesarean section time in minutes, the mean duration in the Intervention group was 42.85 ± 13.17 and in the control group it

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was 41.14 ± 11.15. This observation was not statistically significant.

In the present study, distribution based on duration of hospital stay ranged from one to two days. About 91% of mother in intervention group stay one day compare to 90% in control group. There was no statistically significant difference between both groups regarding hospital stay.

In the present study, distribution based on postpartum morbidities shows 8 (8%) in the intervention group and 23 (23%) in Control group had Fever. ($p<0.05$)

4 (4%) in the Intervention group and 8 (8%) in the control group had wound infection. 5 (5%) in the intervention group and 17 (17%) in the control group had Endometritis. This observation was statistically significant. ($p<0.05$) (Table 4)

Table 4: Post operative complications

	Intervention group	Control group	P value
Fever	8 (8%)	23 (23%)	<0.05*
Wound infection	4 (4%)	8 (8%)	0.22
Endometritis	5 (5%)	17 (17%)	<0.05*

Discussion

In the present study, mean age of the study population in the Cetrimide group was 27.4 ± 3.98 years and in the Control group was 27.1 ± 4.1 years. The current study's findings revealed that there was no significant difference between the control and intervention groups in the study subjects' general data such as age, gravidity, and para. Many studies have reported an insignificant difference between the general and obstetric characteristics data of both groups.[7-9]

In the case of postoperative fever, the results demonstrated a statistically significant difference between the intervention and control groups. These findings matched those of Hayat et al (2014)[8] , who investigated the effect of vaginal cleaning before caesarean birth on post-cesarean section and postpartum infection and discovered that the control group's temperature increased statistically significantly more than the research group's. Also, the findings are consistent with those of Ried et al (2001) [9] , who investigated the influence of vaginal preparation on post-cesarean infectious morbidity and found that 7.2 percent of the individuals had an oral temperature of 37.7 or higher on the day of surgery.

The current study agreed with Ameer (2009)[6] ,who evaluated the risk of postcesearan endometritis with preoperative vaginal preparation and reported that a vaginal scrub had a measurable effect on postoperative fever. In terms of endometritis, the study results revealed a statistically significant difference between the two groups.

The current findings are consistent with the findings of Hayat et al. (2014) [8] , who reported that endometritis was found in 10% of the control group and 5% of the study group. According to Reid et al (2001)[9], 7.2 percent of women had endometritis. Rouse et al (2007)[10] studied the effect of chlorhexidine vaginal irrigation for the prevention of peripartum infection and found that the incidence of postpartum infection morbidities such as endometritis appears to be reduced with vaginal preoperative cleansing with povidone iodine. On the other hand, a study conducted by Pitt et al (2009) [11]using intravaginal povidone iodine before caesarean delivery revealed a significant reduction in post-cesarean endometritis. Starr et al (2005) [12] conducted a small trial using providone iodine and reported a reduction rate of post caesarean endometritis. Furthermore, the study findings are consistent with Ameer (2009)[6] , who reported that post- Cesarean endometritis occurred in (14% of control patients) and in (7% of patients who received a preoperative vaginal scrub) ($P<0.05$). In terms of wound infection, study findings revealed that the intervention group had a lower

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rate of wound infection, but the difference was not statistically significant. These findings agreed with Reid et al. (2009) [9], who reported that vaginal preparation has no effect on the incidence of postoperative wound infection. Ameer (2009) [6] also reported that vaginal preparation with iodine before Cs has no effect on the incidence of postoperative wound infection.

Conclusion:

Interpretation of the study findings suggests that a preoperative vaginal scrub with antiseptic Cetrimide solution decreases the risk of post-cesarean fever and endometritis. This intervention, however, does not seem to reduce the risk of postoperative wound infection. Differences in reported postoperative morbidities rates could be attributed to the technique and materials used for the vaginal preparation itself or the amount of antiseptic used for the preparation might affect infectious outcomes.

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