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Original Research Article

Incidence of post-operative (caesarean section) infectious morbidities in cleansing and non-cleansing group after povidone iodine vaginal cleaning

Pragya Verma¹, Dolly Chawla², Rashmi Khatri², Preeti Verma^{3*}

¹Department Obstetrics and Gynecology, Regency Hospital- IVF Unit, Kanpur, Uttar Pradesh, India

²Department Obstetrics and Gynecology, Dr. Baba Sahaib Ambedkar Medical College and Hospital, New Delhi, India

³Department of Community Medicine, Government Medical College, Kannauj, Uttar Pradesh, India

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***Correspondence:**

Dr. Preeti Verma,

E-mail: dr.preetivermakgmc2002@gmail.com

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ABSTRACT

Background: Despite of wide spread use of prophylactic antibiotics and various antiseptic measures, post-operative infection remains one of the significant and serious complication of caesarean delivery contributing to high maternal morbidity and mortality. Objective was to study the incidence of post-operative infectious morbidities in patients with/without povidone iodine vaginal cleansing done prior to caesarean section.

Methods: A prospective randomized control study was done in the department of obstetrics and gynecology of Dr. Baba Saheb Ambedkar Medical College and Hospital, New Delhi.

Results: Mean age of participants in group A is 26.22±2.47 years and in group B is 26.48±2.3 years. Majority women (84.0%) underwent emergency lower segment caesarean section (LSCS). (6.4%) women developed post-operative endometritis, out of which maximum (4.6%) belong to no vaginal cleansing group (B) compared to 1.8% in povidone iodine vaginal cleansing group(A), which is statistically significant (p=0.01). Over all (13%) women had post-operative fever, with significant difference among the two groups i.e. (8.6%) were in group B versus (4.4%) in group A (p=0.005).

Conclusions: Povidone iodine vaginal cleansing prior to caesarean section is significantly effective in reducing post-operative infectious morbidities.

Keywords: Caesarean section, Post-operative infectious morbidities (endometritis), Cleansing and non-cleansing group, Povidone iodine

INTRODUCTION

Caesarean section has been part of human culture since ancient times starting from the Greek and Roman mythology to the surgical birth of Julius Caesar. At that time the procedure was performed only when the mother was dead or dying, as an attempt to save the child. The 20th century brought about a shift in mindset. A greater focus was placed on saving the life of the child, as well as the mother.¹ As evident from national family health survey (NFHS-4) data, incidence of caesarean section in India has

increased from 5% (1993) to 18% (2014) since last 21 years.² Despite of wide spread use of prophylactic antibiotics and various antiseptic measures, post-operative infection remains one of the significant and serious complication of caesarean delivery contributing to high maternal morbidity and mortality. These complications include postpartum endometritis, maternal fever, wound infection and pelvic abscess.³ Endometritis is an infection of uterus in the postpartum period. Incidence of postpartum endometritis is about 1% to 3% after vaginal births, and up to 27% after caesarean births.⁴

Aim and objectives

Aim was to study the efficacy of povidone iodine vaginal cleansing prior to caesarean section in reducing post-operative infectious morbidities.

Objective was to study the incidence of post-operative endometritis, fever, wound infection, wound seroma or hematoma with/without povidone iodine vaginal cleansing done prior to caesarean section.

METHODS

Study design

A prospective randomized control study was done in the department of obstetrics & gynecology of Dr. Baba Saheb Ambedkar Medical College and Hospital, Rohini, New Delhi during the period of December 2018 to May 2019.

Study population

500 pregnant women undergoing caesarean section (either elective/emergency caesarean section) were a part of the study.

Inclusion criteria

All pregnant women were undergoing caesarean section and able to give informed consent were included in the study.

Exclusion criteria

Placenta praevia, obstructed labour, chorioamnionitis or leaking per vaginum >18 hours, active genital herpes infection, abnormal vaginal discharge, immune-compromised states (diabetes, very severe anaemia, HIV), iodine sensitivity, any febrile condition, category emergency caesarean section (for acute fetal distress/cord prolapse/uterine rupture) were excluded.

Sample size

The sample size of the study group was calculated by using the formula given below.

$$n = 2\{(Z(1 - \alpha) + Z(1 - \beta))/d\}^2 \times p(1 - p)$$

Hence, each group will have a sample size of 224 each.

Group A (n) included 224 patients group B (n) included 224 patients. So, in order to avoid any drop out, we have taken 250 cases in each group.

Methodology

Participants were selected as per inclusion and exclusion criteria and after taking informed consent from the

candidates, the clinical history and physical examination was conducted along with routine ANC investigations. After history and examination, women were randomly assigned into 2 groups by using simple random number tables.

Group A (N) included 250 participants (povidone iodine vaginal cleansing group) and group B (N) included 250 (no vaginal cleansing group).

Upon arrival to operation theatre and after adequate anaesthesia, all patients were catheterized with Foley's catheter in sterile manner. Group A received 10% povidone iodine vaginal cleansing along with the usual abdominal scrub; the vaginal cleansing was done with 4 gauze pieces soaked with 10% povidone iodine. In group B, no separate vaginal cleansing was done; however the standard surgical preparation of abdomen was done in the usual manner. The lower segment caesarean section was performed. All women were given the prophylactic antibiotic i.e. injection ceftriaxone 1 gram intravenous 15 to 30 min prior to surgery followed by the routine post-operative care, as per our hospital protocol. Temperature monitoring was done in post-operative wards in every 4 hourly till post-operative day 4 (patient discharge day). Afterwards participants were told to do temperature monitoring at home every 12 hourly and whenever felt fever. Then, on postoperative day 10 (stitch removal day), they were told to bring their home temperature charting and finally on 6th week postpartum (PNC visit). Inspection of incision wound was done during dressing of the wound and wound was checked daily for any soakage, discharge and bleeding. On postoperative day 4, dressing was changed and wound checked for any erythema, tenderness and purulent discharge from incision site or any serous or blood/clot collection in subcutaneous area of incision. On postoperative day 10, stitch removal done along with wound inspection and finally followed on 6th week PNC visit.

Daily per abdomen monitoring for endometritis was done for any uterine fundal tenderness and local examination for excessive or fowl smelling lochia till postoperative day 4 and then on postoperative day 10.

Statistical analysis

The data was entered in Microsoft excel spread sheet and analysis was done using statistical package for social sciences (SPSS) version 21.0. A p value of <0.05 was considered statistically significant. Qualitative variables were compared using Chi-square test.

RESULTS

Figure 1 showed that mean age was 26.2±2.47 years in group A and 26.48±2.3 years in group B and according to Figure 2 majority (87.0%) of the study group are Hindus. Maximum (35.0%) of the study group were second gravida followed by gravida >2 (34.4%). Majority women (84.0%)

underwent emergency LSCS. The table showed that incidence of post-operative endometritis in both the group was (6.4%), out of which maximum (4.6%) belong to group B in comparison to group A (1.8%). The difference in the incidence of post-operative endometritis between these two groups was statistically highly significant ($p < 0.01$). In the present table over all (13%) women had post-operative fever, out of them (66.1%) were in group B

as compared to (39.9%) in group A. The difference was highly significant ($p < 0.005$). In this study total (3.2%) women developed post-operative wound infection, among them (56.2%) cases belong to group B, and rest belong group B. The difference in the result was statistically insignificant ($p < 0.611$) and total (1.8%) women developed post-operative wound hematoma/seroma, out of which (55.5%) were in group B and (44.5%) in group B.

Table 1: Comparison of post-operative endometritis, fever, wound infection and wound hematoma/seroma between both groups.

Parameters	Groups (%)		Total (%)	P value
	Group A	Group B		
Post-operative endometritis				
Yes	9 (3.6)	23 (9.2)	32 (6.4)	0.01
No	241 (96.4)	227 (90.8)	468 (93.6)	
Total	250 (100)	250 (100)	500 (100.0)	
Post-operative fever				
Yes	22 (8.8)	43 (17.2)	65 (13.0)	0.005
No	228 (91.2)	207 (82.8)	435 (87.0)	
Total	250 (100.0)	250 (100.0)	500 (100.0)	
Post-operative wound infection				
Yes	7 (2.8)	9 (3.6)	16 (3.2)	0.611
No	243 (97.2)	241 (96.4)	484 (96.8)	
Total	250 (100.0)	250 (100.0)	500 (100.0)	
Post-operative wound hematoma/seroma				
Yes	4 (1.6)	5 (2.0)	9 (1.8)	0.737
No	246 (98.4)	245 (98.0)	491 (98.2)	
Total	250 (100.0)	250 (100.0)	500 (100.0)	

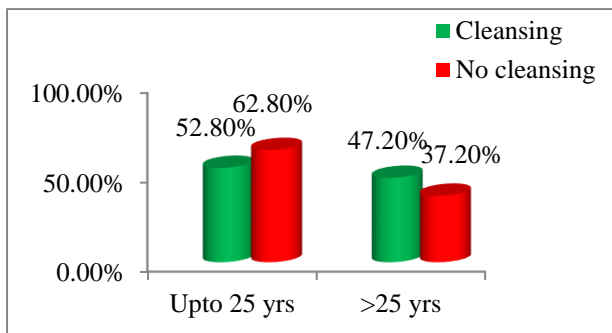


Figure 1: Distribution according to age between two groups (cleansing and no cleansing).

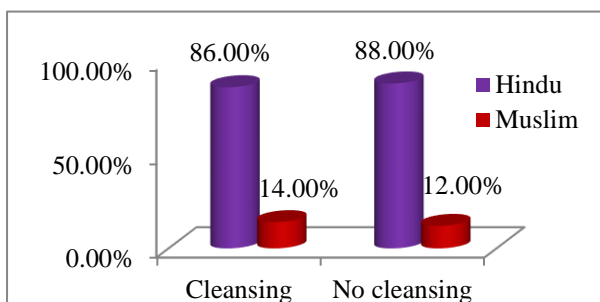


Figure 2: Distribution according to religion between two groups (cleansing and no cleansing).

DISCUSSION

Caesarean section is the most common surgical procedure in obstetrics and also, most important risk factor for developing postpartum infectious morbidities. Despite of wide spread use of prophylactic antibiotics and various antiseptic measures, post-operative infection remains one of the significant and serious complication of caesarean delivery. So the present study was conducted in the department of obstetrics and gynecology of Dr. Baba Saheb Ambedkar Medical College and Hospital, New Delhi to determine efficacy of povidone iodine vaginal cleansing prior to caesarean section in reducing post-operative infectious morbidities. In the present study the mean age of participants in group A (cleansing) is 26.22 ± 2.47 years and 26.48 ± 2.3 years in group B (no cleansing). Similarly, Memon et al found in their study that mean age of participants was 27.1 ± 4.7 years.⁵ In this study maximum participants (35.0%) are in gravida 2. Primigravida contributes 30.6% and gravida 3 or more contributes 34.4%. This is comparable to the study of Reid et al in which 36.7% were primigravida and 40.8% second gravid and 22.5% third gravida or more.³ In this study 6.4% women among the study population developed post-operative endometritis, out of which 4.6% belong to group B and to 1.8% belong to group A. The difference of occurrence of incidence of post-operative endometritis

between these two groups is statistically significant ($p=0.01$), which concluded that there is significant decrease in the incidence of post-operative endometritis in povidone iodine vaginal cleansing group compared to no vaginal cleansing group. Starr et al found in their study that post-operative endometritis in vaginal cleansing group was 7.0% and in no vaginal cleansing group was 14.5% ($p<0.05$).⁶ Yildirim et al conducted a study and found that incidence of post-operative endometritis was 6.9% in vaginal cleansing group and 11.6% in no vaginal cleansing group ($p<0.05$).⁷ Similar results were seen in study done by Memon et al and Asad et al.^{5,8} In this study 13% women had post-operative fever and 17.2% were belong to group B. The difference in result is highly statistically significant ($p=0.005$), concluding a significant decrease in the incidence of post-operative fever in povidone iodine vaginal cleansing group in comparison to no vaginal cleansing group. On the contrary Memon et al and Asad et al did not found any significant difference between occurrence of post-operative fever in povidone iodine vaginal cleansing group in comparison to no vaginal cleansing group.^{5,8}

The reason behind the present study showing increased incidence as well as significant difference in post-operative fever among two groups may be due to large number of emergency caesarean section (420/500) included in our study (as the patient is already in labour or with ruptured membranes and multiple per vaginal examinations) predisposing the patient more for post-operative fever in no vaginal cleansing group. In the present study overall 3.2% women developed post-operative Wound infection, Among them 3.6 % cases belong to group B, 2.8 % cases in group A. Almost similar result also found in study done by Yildirim et al, Memon et al and Asad et al.^{5,7,8} In this study only 1.8% women developed post-operative wound hematoma/seroma. 2.0% were in group B and 1.6% were in group B. Reid et al in their study found that 5.5% post-operative wound hematoma/seroma was seen in group A in comparison to 8.5% wound hematoma/seroma in group B ($p=0.300$), which was insignificant, similar to our study.³ But overall incidence is more in these study because no prophylactic antibiotics were given, prior to caesarean section.

Limitations

Clinical diagnosis of endometritis could be subjective and more number of cases especially elective caesarean could have been taken, so that better comparison could be made.

CONCLUSION

Povidone iodine vaginal cleansing prior to caesarean section is effective in reducing post-operative infectious morbidities.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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