



## Original Article

## Effectiveness of Preoperative Vaginal Cleansing with an Antiseptic Solution among Cesarean Patients

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## ABSTRACT

Cesarean section is thought to be one of most common surgical method for delivery of baby, perhaps most frequent procedure by obstetricians. The most important factor after Cesarean section to return to normal life functions and look after new born is Infectious morbidity.

**Objective:** To compare the Effectiveness of preoperative vaginal cleansing with an antiseptic solution among cesarean patients. **Methods:** This Comparative study was done in department of Obstetrics and Gynecology, Sheikh Zayed Hospital Chandka Medical College Larkana from 20 June 2019 and the last at 19 December 2019. we included 336 patients fulfilling the inclusion criteria. Informed consent was taken. The data were collected on prepared proforma in two groups as A group (intervention group) and B (control group) respectively. **Results:** Study includes 336 patients with mean age of 26.29±4.7 and 26.52±5.9 years, divided in two groups 168 in each group A and B respectively. Out of 336, 14(4.2%) developed endometritis, 8(2.4%) developed wound infection and 16(4.8%) developed fever. The composite morbidity was 11.3%; with 26.3% of group A and 73.6% of group B. **Conclusions:** This study showed that the use of 10% Povidone iodine was significant in reducing post op morbidity. Cleansing of vagina with an antiseptic solution is easy intervention before cesarean section.

## INTRODUCTION

In current era where different and improved techniques of surgery are evolved in field of surgery post operative infection still important factor to achieve surgical results. In field of obstetrics cesarian section is most commonly performed procedure and accounts for major mode of child birth worldwide, according to statics only in united states of America it accounts for more than 30% mode of birth, whereas in the UK, the operative vaginal delivery rate is stable at between 10 and 15% [1]. Post operative morbidity remained special concern for any obstetrician that includes postoperative fever as result of endometritis, or wound complications at surgical site results in disruption

of the abdominal incision and hematoma formation that needs antibiotics, readmission in hospital for longer period and wound care that causes finical burden and negligence of newborn baby [2]. In long run, chances to develop disabilities like fallopian tube blockage resulting in secondary infertility and chronic pelvic pain are increased. Moreover, it accounts about one tenth of maternal deaths globally [3]. Chances for developing infection is more in cesarean mode of delivery in comparison with vaginal route of delivery. In different studies rate of post operative morbidity varies from 7% up to 20% [4]. Meanwhile various strategies are in practice to reduce this burden of infection

as there is paucity and variable data with different techniques, we planned this study with use of use of 10% Povidone iodine in our population[5]. CS in the 2nd stage of labor is associated with increased morbidity to the mother. Most common reasons of CS are abnormal position of the fetus during birth, labor that fails to progress or does not progress normally and baby is too large to be delivered vaginally [6]. Other reason may include placental complications such as placenta previa, and premature detachment from the fetus is known as abruption. Certain maternal medical conditions (such as diabetes, high blood pressure, or human immunodeficiency virus [HIV] infection) and active herpes lesions in the mother's vagina or cervix can also be the reason of CS [7]. Some cesarean deliveries are planned and scheduled, while others may be done as a result of problems that occur during labor. The objective was to make local guidelines to improve the standard of care for patient's outcome and to make it cost-effective.

## METHODS

This Comparative study was done after the approval of ethical committee in department of Obstetrics and Gynecology, Sheikh Zayed Hospital Chandka Medical College Larkana from 20 June 2019 to 19 December 2019. We included 336 patients in two groups A and B each with 168 patients fulfilling the inclusion criteria using Non-Probability, Consecutive Sampling. All the full-term pregnant patients admitted in gynae and obs unit for elective cesarean with age of 20 to 40 years were included and gave informed consent. We excluded patients with known immune compromised state (i.e., chronic liver disorders, chronic kidney disease or obesity), bleeding placenta previa, history of Pre cesarean section infection, obstructed labor, or preeclampsia and those with history of allergic to antiseptic solutions. The data were collected on prepared proforma from the prepared list those having Vaginal preparation with povidone-iodine solution were recruited as the intervention group (group A) and others are recruited as control group (group B). Demographic along with duration of labor, indication of caesarian recorded, post op morbidity defined as oral temperature of 38°C or more after 24 hours of procedure, endometritis was defined as uterine tenderness and foul-smelling lochia requiring broad spectrum intravenous antibiotic administration and wound complications labeled if infection at surgical site (seroma, hematoma, and disruption of the abdominal incision) that requires antibiotics will be assessed and collected on Performa. Data were entered and analyzed into SPSS version 20.0. The qualitative data like DM, rupture of membrane, Postoperative fever, endometritis, wound infection Postpartum composite infectious morbidity was

presented as frequency and percentages. Quantitative data like age (in years), BMI, parity hemoglobin was presented as means and standard deviations. Effect modifiers were controlled and chi square test was applied to compare the effectiveness postoperatively in both groups with p-value <0.05 remained significant.

## RESULTS

Among the total study subjects (n=336), 168 in each group, group A (intervention group) and group B (control) respectively. The patients in both groups showed no significant difference in demographic characteristics with a p value of >0.05. In group A and group B the minimum age was 21 years and maximum 40 years with mean age of the study subjects was 26.29±4.7 and 26.52±5.9 years respectively. Mean weight of the patients was 72±13.9 and 72±45.9 in group A and group B respectively and mean height of the patients was 1.65±0.09 and 1.65±0.09 in group A and group B respectively. In group A and group B the mean BMI was 27.87± 4.02 and 27.87± 4.02 respectively. Mean hemoglobin of the patients was 9±1.9 and 10±2.9 in group A and group B respectively and mean parity of the patients was 3.1±1.9 and 3.0±1.2 in group A and group B respectively while mean parity of the gestational age was 37.12±1.9 and 37.45±1.2 in group A and group B respectively and mean length of labor after admission in hours are 3.03±6.41 and 3.26 ± 5.98 of group A and B respectively. In order of frequency the main indication of CS include repeated CS 66(39.3%), narrow pelvis 57(33.9%) and malpresentation of baby 45(26.8%) in group A while in group B the main indication of CS include repeated CS 71(42.2%), narrow pelvis 55(32.7%) and malpresentation of baby 42(25%) as shown in Table 1.

Variable	Group A	Group B
Mean Age years	26.29±4.7	26.52±5.9
Mean weight in kg	72±13.9	72±45.9
Mean height in cm	162.5±14.6	165.3±12.6
BMI	27.87± 4.02	27.87± 4.02
Mean hemoglobin in gm	9±1.9	10±2.9
Mean parity	3.1±1.9	3.0±1.2
Mean gestational age in weeks	37.12±1.9	37.45±1.2
Mean length of labor after admission in hours	3.03 ± 6.41	3.26 ± 5.98
Repeated CS	66(39.3%)	71(42.2%)
Narrow pelvis	57(33.9%)	55(32.7%)
Malpresentation of baby	45(26.8%)	42(25%)

**Table 1:** Comparison of demographic variables

Out of 336, 14(4.2%) developed endometritis, 2(14.3%) in group A and 12(85.7%) in group B with significant (p value=0.006). Out of 336 patients 8(2.4%) developed wound infection, 2(25%) from group A and 6(75%) were from group B with insignificant (p value=0.15). Latter those were readmitted and managed on the lines of wound care

protocol. Among 336 patients 16(4.8%) developed fever, 6(37.5%) from group A and 10(62.5%) from group B with insignificant ( $p$  value=0.30). The composite morbidity was 11.3% with 26.3% of group A and 73.6% of group B. Out of 336, 83(24.7%) had ruptured membrane, 38(45%) in group A and 45(54%) in group B with insignificant ( $p$  value=0.37) as shown in Table 2.

Study Variables	Total	Group A (Intervention group)	Group B (Control group)	p-value
Postpartum endometritis	14 (4.2%)	2 (14.3%)	12 (85.7%)	0.006
Postoperative wound complication	8 (2.4%)	2 (25%)	6 (75%)	0.15
Postoperative febrile morbidity	16 (4.8%)	6 (37.5%)	10 (62.5%)	0.30
Composite morbidity	38 (11.3%)	10 (26.3%)	28 (73.6%)	0.002

**Table 2:** Comparison of Post caesarean infectious morbidities

## DISCUSSION

Use of prophylactic parenteral antibiotics and other antiseptic solutions for vaginal cleansing remained in practice previously to see the outcome in terms of post operative infectious morbidity. In some previous studies Povidone iodine and chlorhexidine used for vaginal scrub while some obstetricians used intravaginal metronidazole for decrease in post operative morbidity but results were variable. We studied intervention with 10% Povidone iodine as it is cheaper, safe and easy to apply before surgery. Significant decrease in infectious morbidities post procedure (26.3% vs 73.6%) in the intervention with 10% Povidone iodine group in comparison with control group was seen in our study. Specially this reduction more in women with active labor undergoing caesarean section. Overall, post-CS infectious morbidity were significantly reduced from 24.4% in the control group to 8.8% in the intervention group;  $p$  value <0.05 by Ahmed et al., [8]. These results were consistent with observation of Guzman et al., where (6.9 vs. 11.6%) reduction povidone-iodine vaginal preparation in comparison with patients who not received, also Osborne et al., shows significant reduction in the total number of bacteria in vagina by at least 98% with the preoperative vaginal cleansing with Povidone iodine [9, 10]. In our study post caesarean endometritis was (14.3% vs 85.7%) in group A vs B. Similar Results were observed in study by Pitt et al., which shows (17% vs 7%) after using intravaginal metronidazole and also study by Rouse et al., used Chlorhexidine vaginal irrigation for the prevention of peripartur infection shows decrease in post caesarean endometritis [11, 12]. While study by Starr et al., showed post caesarean endometritis occurred in 7.0% of subjects who received a preoperative vaginal preparation and 14.5% of controls ( $P < .05$ ) [13]. Another Study by Haas et al., also showed a statistically significant reduction in the

incidence of post caesarean endometritis [14]. Our results are not consistent with study done by Sowapat et al., who prepared vaginal povidone scrub along with normal saline scrub did not find statically significant result [15]. This may be due cleansing effect of normal saline on vaginal flora. Maternal anemia, prolonged rupture of membranes and longer duration of labor due to multiple failed trails with repeated vaginal examinations by mid wives also remained consistent with our findings as risk factors. Najmi et al., also shows similar factors for early cesarian and morbidity [16]. This study finding includes Composite morbidity 38(11.3%) where Postpartum endometritis 14(4.2%) observed (14.3% vs 85.7%) in group A vs group B was statically significant. Among 336 patients only 8(2.4%) developed wound infection 2 in group A and 6 in group B some patients required Resuturing and parenteral antibiotics while study by Memon et al., showed 4 subjects had wound infection, 1 in cleansing group and 3 in the control group this may be due to small sample size in their study [17]. In other study by Tita et al., incidence of post caesarean incisional wound infections decreased, similar observation is also done by Monif et al., in their study [18, 19]. We observed Postoperative febrile morbidity 16(4.8%), out of them 6 in group A and 10 in group B with statically insignificant  $p$  value the results are consistent with the study done by Reid et al., which demonstrate no significant difference in the rate of post CS febrile morbidity with the intervention, however associated risk factors have already been discussed and reported to have a role in development of fever [20].

## CONCLUSIONS

Significant reduction was seen in post operative composite morbidity after use of use of 10% Povidone iodine. Vaginal Cleansing is cheaper and easy to practice before caesarean section. In future more research is needed to investigate all those high-risk factors and safe manipulation to reduce post op morbidity.

## Conflicts of Interest

The authors declare no conflict of interest.

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