

Normal Saline Versus Betadine use to Reduce the Incidence of Wound Infection in Cesarean Section, A Cross Sectional Comparative Study

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ABSTRACT

Aims and Objectives: The aims and objectives of this study was to observed the difference between using betadine or normal saline irrigation of wound prior to skin closure in reducing the surgical site infections.

Design of the Study: It's a case-control study

Study Settings: The study was conducted at Department of Obstetrics &Gynecology Rashid Latif Medical College, Lahore from June 2021 to November 2021.

Material and Methods: For current study 200 pregnant women were selected and equally divided them into two different groups i.e. Group A and Group B. All individuals of Group A, used betadine liquid for surgical wound irrigation while the individuals of Group B, were used normal saline for such purpose. The observed raw data were statistically analyzed by SPSS 21, one –way ANOVA in which analysis of variance followed by mean standard deviation (Mean±SD) and P values (p<0.05) for significant.

Results: The findings of current study indicated that wound irrigation with betadine liquid or normal saline have their own importance. The results are significant (p<0.05) in comparative analysis of Group A and Group B regarding allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages.

Conclusion: The findings of current study indicated that Normal saline irrigation is better than betadine because of skin irritation and allergy due to iodine and toxicity of povadine iodine solution against healthy cells.

Keywords: Cesarean delivery, surgical site infection, Normal saline, Betadine, surgical wound irrigation

INTRODUCTION

Caesarean delivery or caesarean section also some time called C-section is a surgical procedure in which complicated vaginal delivery can handle through an incision in the abdomen of mother for delivery of one or more babies^{1,2}. Caesarean section is a very useful obstetrical surgical procedure for both mother and baby^{3,4}. It has seen statistically that about 23.5 million caesarian deliveries were come in process in year 2020. C- Section is a best surgical procedure but there are many post-operative complications especially surgical site infection is very common⁵. Different studies stated that the worldwide rate of surgical site infection is about 3% to 16%. Many researchers proved in their studies that the rate of surgical site infection is decreasing gradually from last ten years because of advancement in surgical instruments sterilization and new spectrum of antibiotics⁶.

Due to decrease in surgical site infections it has concluded by number of studies that acceptance and safety of cesarean deliveries are increasing regularly in all over the world. A study stated that C- Section surgical site infections may increase maternal morbidity and mortality^{7,8}. C- Section delivery in advance may be planned if labor problems arise. Mostly caesarean delivery is planed when Cephalopelvic disproportion, previous cesarean birth, multiple pregnancy, Placenta previa, Transverse lie, Breech presentation like indications are found^{9,10,11}. In some cases an unplanned C- Section delivery is required because of fetal distress, failure of labor to progress, cord compression, prolapsed cord and abruption placentae¹².

In case of caesarean deliveries surgical wound infections developed after 4 to 7 days. Most notorious pathogens cased these infections are Escherichia coli, Proteus mirabilis, Enterococcus faecialis, Staphylococcus aureus and Staphylococcus epidermis. When wound complications are suspected than incision should be evaluated for separation and managed drainage of pus, blood, or serous fluid^{13,14,15}. When wound complications are suspected than incision should be evaluated for separation and managed drainage of pus, blood, or serous fluid. When the contamination on wounds spread due to pathogenic microbial flora it caused infection and sepsis. After physiological response microbial inflammation must require the healing process. Antiseptic which is an alternative for topical wound treatment¹⁶.

Steady flow of a solution across an open wound for hydration of wound referred as wound irrigation and through this procedure removal of deeper debris and visual examination is possible. The irrigation solution help in removing cellular debris and surface pathogens from opened wound due to such procedure contamination of different notorious pathogens can be controlled¹⁵. Compared to swabbing or bathing, wound irrigation is more effective and better way of wound cleansing than swabbing or bathing¹⁷. Betadine (Povidone-iodine Solution) is a strong, broad spectrum agent has mildly toxic to healthy cells and granulating tissues. Betadine which contain povidone iodine is very effective for the treatment of post-operative wound infections. Iodine forms a complex, while the synthetic povidone give it strength against microorganisms because povidone itself has no antimicrobial mode of action Normal saline is non-toxic to tissues and most commonly used as irrigation solution¹⁶.

MATERIALS AND METHODS

This is a comparative cross sectional study and was conducted at the Department of Obstetrics & Gynecology Rashid Latif Medical College, Lahore from June 2021 to November 2021. For current study 200 pregnant women were selected and equally divided them into two different groups i.e. Group A and Group B. The caesarean deliveries through surgical procedure were considered in both group A and group B. All individuals of Group A, used betadine liquid for surgical wound irrigation while the individuals of Group B, were used normal saline for such purpose. The goal of wound irrigation is to remove gross contaminants and reduce bacterial counts in the wound and enhance natural defenses. Allergy, postoperative infections such as Wound Cellulitis, Wound Abscess, Postoperative Fever and Obstetric Hemorrhages and wound healing time were measured in each group. The observed raw data were statistically analyzed by SPSS 21, one –way ANOVA in which analysis of variance followed by mean standard deviation (Mean±SD) and P values (p<0.05) for significant.

RESULTS

There was a significant changes (p<0.05) in allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages within specific wound healing time were

measured regarding percentage slandered mean deviation in both groups.

Group A: Betadine liquid used for surgical wound irrigation n=100, Age = 30-35 years

Parameters	After 7 days Percentage (Mean±SD)	After 15 days Percentage (Mean±SD)	After 30 days Percentage (Mean±SD)
Allergy	72.61± 9.11	54.11± 3.10	5.10± 2.10
postoperative infections			
Wound Cellulitis	51.21± 11.11	31.12± 10.10	2.10± 2.10
Wound Abscess.	21.14± 11.11	10.12± 2.12	2.10± 1.11
Postoperative Fever	61.11± 11.11	44.10± 3.20	2.10± 2.12
Obstetric Hemorrhages	25.10± 1.10	11.12± 2.11	3.10± 1.11

(p<0.05)

Group B: Normal Saline used for surgical wound irrigation n=100, Age = 30-35 years

Parameters	After 7 days Percentage (Mean±SD)	After 15 days Percentage (Mean±SD)	After 30 days Percentage (Mean±SD)
Allergy	22.51± 20.11	14.10± 4.10	2.10± 0.10
postoperative infections			
Wound Cellulitis	41.21± 10.1	27.11± 1.10	3.10± 2.10
Wound Abscess.	17.14± 12.1	10.11± 12.10	4.10± 1.10
Postoperative Fever	40.11± 11.11	30.10± 3.20	3.10± 2.12
Obstetric Hemorrhages	15.10± 1.10	10.12± 2.11	2.10± 1.11

(p<0.05)

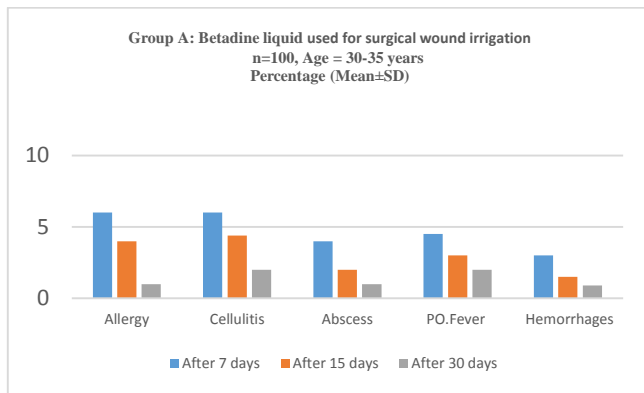


Fig-A:

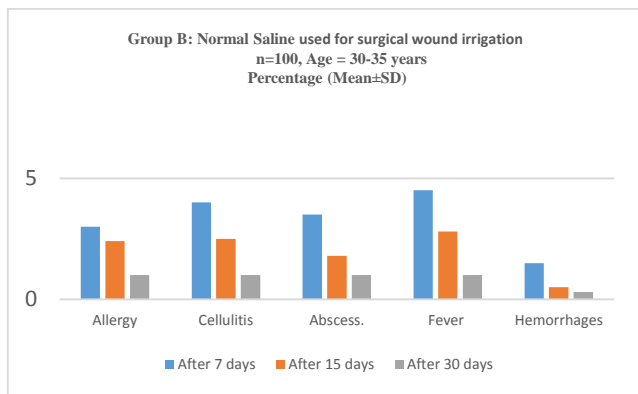


Fig-B:

The biostatistical levels of allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages in Group A and Group B, were (72.61± 9.11, 54.11± 3.10, 5.10± 2.10)(22.51± 20.11, 14.10± 4.10, 2.10± 0.10), (51.21± 11.11, 31.12± 10.10, 2.10± 2.10) (41.21± 10.1, 27.11± 1.10, 3.10± 2.10), (21.14± 11.11, 10.12± 2.12, 2.10± 1.11) (17.14± 12.1, 10.11± 12.10, 4.10± 1.10),(61.11± 11.11, 44.10± 3.20, 2.10± 2.12)(40.11± 11.11, 30.10± 3.20, 3.10± 2.12),(25.10± 1.10, 11.12± 2.11, 3.10± 1.11)(15.10± 1.10, 10.12± 2.11, 2.10± 1.11) measured respectively. Significant changes (p<0.05) in allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages regarding surgical wound irrigation were noted in both groups. Changes were presented graphically in Fig1 and Fig 2.

DISCUSSION

Postoperative cesarean delivery infections may increase morbidity, mortality and stay of a patient in the hospital. These infections mainly developed because of non-hygienic conditions of surgical site⁷. Many studies describes that surgical site infections are mainly depend upon habits, attentions of the patients and preoperative management by doctors. About 38% deliveries all over the world proceed by C- Section. Allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages are major causes of prolonged stay in the hospital⁸. On the other hand lack of medical awareness, antibiotic prophylaxis, and emergency deliveries⁶.

A study on postoperative cesarean delivery infections claimed that nosocomial infections are also cause wound cellulitis in women after C-Section⁹. A previously published cesarean delivery infections review by Müller et al. from 2015 stated that a significant reduction in surgical site infections has seen in those women how used normal saline in postoperative circumstances¹⁰. Therefore many other researchers also claimed that antibiotics and wound irrigation with antiseptics or normal saline can reduce the chances of surgical site infections¹².

The findings of current study indicated that wound irrigation with betadine liquid or normal saline have their importance but it has seen that the results are significant (p<0.05) in comparative analysis of Group A and Group B. In Group B, allergy, postoperative wound cellulitis, postoperative wound abscess, postoperative fever and obstetric hemorrhages regarding surgical wound irrigation with normal saline were noted and all the levels of each biomarker has significant change than Group B individuals.

CONCLUSION

The findings of current study indicated that Normal saline irrigation is better than betadine because of skin irritation and allergy due to iodine and toxicity of povadine iodine solution against healthy cells.

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