DOI: https://doi.org/10.53350/pjmhs211581836

ORIGINAL ARTICLE

Incidence of Surgical Site Infection among Post Cesarean Section Women Presented in Surgical Emergency of Tertiary Care Hospital

SYEDA ALIZA ZAHRA BOKHARI, MUHAMMAD IRFAN FAZAL, MAHA NASEEM, MUHAMMAD ADNAN MUMTAZ, SYEDA MAHUM ZAHRA BOKHARI, MAHMOOD UL HAQ FAROOQI, MUHAMMAD AZHAR HASSAN, MATLOOB HUSSAIN, UMER MAQBOOL

Department of Surgery, K. E. Medical University/Mayo Hospital, Lahore
Correspondence to Dr. Muhammad Irfan Fazal, Email: irfanfazal269@gmail.com Tel.03370438990

ABSTRACT

Aim: To rule out incidence and risk factors that are associated with infection at site of surgery after cesarean section.
Method: A type of retrospective study was conducted on 100 women who underwent cesarean delivery procedures within a period of 8 month from September 2020 to April 2021 and presented in surgical emergency at Mayo Hospital Lahore. The socioeconomic, demographic and clinical parameters of patients were collected by a questionnaire form. A program known as SPSS version 20 was used for analysis of data that is collected in study.
Result: After analyzing the data following factors are identified that causes surgical site infection: Higher BMI (more than 30kg/m2), loss of blood during cesarean section(more than 500mL), poor hygienic care after cesarean section, poor socioeconomic status leads to malnutrition of patient and that leads to poor wound healing and surgical site infection. Lack of education is also a key factor in SSIs. Cesarean done in emergency under improper aseptic conditions also promote SSIs. All these factors are associated with incidence of SSI.
Conclusion: SSIS are conventional among women presented in surgical emergency of Mayo Hospital Lahore within 30 days of cesarean section. Management of risk factors causing SSIs in women after cesarean section may decrease the incidence of such infections.
Keywords: Cesarean section, risk factors, infection at surgery site.

INTRODUCTION

The most common infectious complication after urinary tract infection following cesarean section (CS) delivery is infection at surgery site. Surgical site infection describes a surgical septic wound containing pus that should be cleaned with or without secondary intervention, associated with constitutional symptoms with inflammatory changes like increase in heart rate, rise in temperature and increase total leukocyte count and neutrophils.

The risk of wound infection after cesarean delivery ranges from 2.5% to >15%. If mother has chorioamnionitis at the time of procedure, the risk of infection of wound can be upto 20%. Now the prophylactic use of antibiotics have decreased the incidence of infection after elective as well as emergency C-sections. Although the correct prophylactic use of antibiotics have reduced the risk of infection at site of procedure when administered properly. The factors responsible for infection at surgery site after cesarean section are many, such as age of patient, type of cesarean section performed (emergency vs elective) and practices related to care of patient such as prophylaxis use of antibiotics.

Intrinsic factors are related to patient, while the extrinsic factors are linked to care of patient and management of infection from its source that is present external to the body of patient that includes operation theatre (insufficient air filtration, improper disinfection). The factors that are internal cannot be modified, but the peril they cause regarding infection can be managed. Infection at the site of surgery is related to factors that are connected with surgery, that may cause likelihood of infection. Body Mass Index (BMI) is another major threat that leads to infection at the site of surgery. A substantial rate of infection after cesarean section is reported in obese women.

Objective of the study was to rule out incidence and risk factors that are associated with infection at site of surgery after cesarean section.

Received on 27-01-2021
Accepted on 11-07-2021

METHODS AND MATERIAL

A type of retrospective study on 100 women were conducted after permission from Ethical Committee who delivered through cesarean section in period of 8 months from September 2020 to April 2021 and then presented in surgical emergency of Mayo Hospital Lahore with complain of surgical site infection. A standardized form for collection of data was designed to gather the patient's information regarding the socioeconomic status, and clinical parameters. The particulars gathered included following age, BMI, duration of stay in hospital, type of C-section, amount of loss of blood during procedure, no of previous C-sections, indications that causes C-section and the incidence of infection at surgical site.
Sample: A total of 100 women are included in this study who presented in surgical emergency of Mayo Hospital Lahore within 30 days of cesarean section.

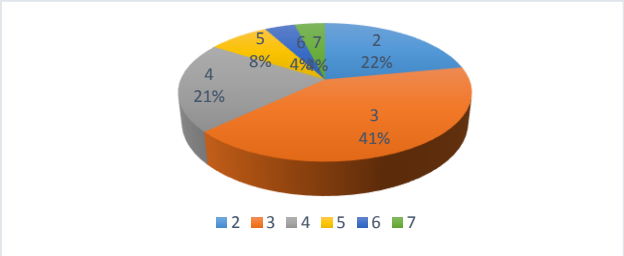
RESULTS

The age of women included in research categorize into three categories 45(44.6%) out of 100 women belongs to age ranges from 30-35years , 31(30.7%) women belongs to age ranges between 25-30 years and 24(23.8%) women belongs to age ranges between 20-25 years old. The BMI for these women was less than 30 in 49 women and more than 30 for the rest i-e 51 women. The main indications for cesarean section were fetal distress with non-reactive CTG (48 women), per vaginal bleeding (6 women), failure of induction of labour (15 women), meconium staining liqor (12 women), twin pregnancy (9 women), pre-eclampsia (4 women), eclampsia (3 women) severe macrosomia (3 women). Seventy nine women underwent CS in government hospital while 21 women had there CS in private hospital. Out of 100 women 46 were primigravida, 19 had previous one CS, 24 had two previous CS and 11 women had three previous CS.

In addition, 64 women underwent cesarean section in emergency, while 36 women had an elective cesarean. 82 women have no comorbidity before CS, 15 women were hypertensive while 3 were diabetics. Seventy four women out of 100 belongs to poor socioeconomic status while 21 belongs to middle-class and only 5 have good socioeconomic status. Educational status shows that 69 women were uneducated, 11 women had done graduation, 14 had done matriculation and only 6 were completed their primary education.

History of patients shows that all the women were given prophylactic antibiotic injection before cesarean section. 91 women took medication as per prescription after cesarean section while 9 women didn't follow medical prescription.

Fig. Patients stay (days) in hospital after C-section frequency



Age		
20-25	24	23.8%
25-30	31	30.7%
30-35	45	44.6%
BMI		
Less than 30	49	49%
More than 30	51	51%
Indication of CS		
Fetal distress with non-reactive CTG	48	48%
Per vaginal bleeding	6	6%
Failure of induction of labor	15	15%
Meconium stained liqor	12	12%
Twin pregnancy	9	9%
Pre-eclampsia	4	4%
Eclampsia	3	3%
Severe macrosomia	3	3%
Previous CS		
Primrigravida	46	46%
Previous 1 CS	19	19%
Previous 2 CS	24	24%
Previous 3 CS	11	11%
Mode of CS		
Emergency CS	64	64%
Elective CS	36	36%
Hygiene care of wound		
Poor	23	23%
Good	77	77%
Hb before CS		
Less than 10	33	33%
More than 10	67	67%
Blood loss during CS		
Less than 500ml	74	74%
More than 500ml	26	26%

Thirty three women had Hb less than 10 before CS while 67 women had Hb more than 10 before CS. Eighty four women had tetanus vaccination during the period of pregnancy while 16 women didn't had tetanus vaccination. Seventy four women had blood loss of more than 500ml during surgery while 26 had blood loss of less than 500ml during surgery. While screening for hepatitis B and C before surgery 87 women were screened negative while 13 women were screened positive for hepatitis B and C. Most of the patient stay only 3 days in hospital after C-section while only few stay in hospital as long as 7 days.

CONCLUSION

If patients educated properly regarding wound care and proper hygienic measures were taken before and after surgery, blood loss during surgery should be minimum as well as duration of operation should be less and BMI should be less than 30. If we manage these factors we can decrease the SSIs as these are leading cause of morbidity in women.

Conflict of interest: Nil

REFERENCES

1. Hillan EM. Postoperative morbidity following Caesarean delivery. *J Adv Nurs*. 1995;22:1035–1042.
2. Olsen MA, Butler AM, Willers DM, Devkota P, Gross GA, Fraser VJ. Risk factors for surgical site infection after low transverse cesarean section. *Infect Control Hosp Epidemiol*. 2008;29:477–484.
3. Petter CE, Franco Farret TC, de Souza Scherer J, Antonello VS. Fatores relacionados a infecções de sítio cirúrgico após procedimentos obstétricos. *Sci Med*.2013;23:28–33.
4. Baaqeel H, Baaqeel R. Timing of administration of prophylactic antibiotics for caesarean section: a systematic review and meta-analysis. *BJOG* 2013;120:661–669.
5. Srun S, Sinath Y, Seng AT, et al. Surveillance of post-caesarean surgical site infections in a hospital with limited resources, Cambodia. *J Infect Dev Ctries*. 2013;7:579–585.
6. Owens SM, Brozanski BS, Meyn LA, Wiesenfeld HC. Antimicrobial prophylaxis for cesarean delivery before skin incision. *Obstet Gynecol*. 2009;114:573–579.
7. Ledger WJ, Blaser MJ. Are we using too many antibiotics during pregnancy? *BJOG* 2013;120:1450–1452.
8. Chaim W, Bashiri A, Bar-David J, Shoham-Vardi I, Mazor M. Prevalence and clinical significance of postpartum endometritis and wound infection. *Infect Dis Obstet Gynecol*. 2000;8:77–82.
9. Yokoe DS, Noskin GA, Cunnigham S, et al. Enhanced identification of postoperative infections among inpatients. *Emerg Infect Dis*. 2004;10:1924–1930.
10. Opøien HK, Valbø A, Grinde-Andersen A, Walberg M. Post-cesarean surgical site infections according to CDC standards: rates and risk factors. A prospective cohort study. *Acta Obstet Gynecol Scand*. 2007;86:1097–1102.
11. Ravindran J. Rising caesarean section rates in public hospitals in Malaysia 2006.*Med J Malaysia*. 2008;63:434–435.
12. Hughes AJ, Ariffin N, Huat TL, et al. Prevalence of nosocomial infection and antibiotic use at a university medical center in Malaysia. *Infect Control Hosp Epidemiol*. 2005;26:100–104.
1. Ward VP, Charlett A, Fagan J, Crawshaw SC. Enhanced surgical site infection surveillance following caesarean section: experience of a multicentre collaborative post-discharge system. *J Hosp Infect*. 2008;70:166–173.
13. Johnson A, Young D, Reilly JV. Caesarean section surgical site infection surveillance. *J Hosp Infect*. 2006;64:30–35.
14. Myles TD, Gooch J, Santolaya J. Obesity as an independent risk factor for infectious morbidity in patients who undergo cesarean delivery. *Obstet Gynecol*. 2002;100:959–964.
15. Anaya DA, Dellinger EP. The obese surgical patient: a susceptible host for infection. *Surg Infect*. 2006;7:473–480.
16. Karlsson EA, Beck MA. The burden of obesity on infectious disease. *Exp Biol Med* 2010:235:1412–1424.
17. Modder J, Fitzsimons KJ. CMACE/RCOG joint guideline: management of women with obesity in pregnancy. Centre for Maternal and Child Enquiries and the Royal College of Obstetricians and Gynaecologists. https://www.rcog.org.uk/globalassets/documents/guidelines/cmacercogjointguidelinemanagementwomenobesitypregnancya. pdf. 2010.
18. Hägglund L, Christensen KK, Christensen P, Kamme C. Risk factors in cesarean section infection. *Obstet Gynecol*. 1983;62:145–150.
19. Ott WJ. Primary cesarean section: factors related to postpartum infection. *Obstet Gynecol* 1981;57:171–176.
20. Tran TS, Jamulitrat S, Chongsuvivatwong V, Geater A. Risk factors for postcesarean surgical site infection. *Obstet Gynecol*. 2000;95:367.
21. Tsai P-S, Hsu CS, Fan YC, Huang CJ. General anaesthesia is associated with increased risk of surgical site infection after Caesarean delivery compared with neuraxial anaesthesia: a population-based study. *Br J Anaesth*. 2011;107:757–761.
22. Barbut F, Sohr D, Geffers C, et al. Surgical site infections after cesarean section: results of a five-year prospective surveillance. *J Gynecol Obstet Biol Reprod*. 2004;33:487–496.
23. Beattie PG, Rings TR, Hunter MF, Lake Y. Risk factors for wound infection following caesarean section. *Aust New Zeal J Obstet Gynaecol* 1994;34:398–402.

24. Litta P, Vita P, Konishi de Toffoli J, Onnis GL. Risk factors for complicating infections after cesarean section. *Clin Exp Obstet Gynecol*. 1994;22:71–75.

25. Killian CA, Graffunder EM, Vinciguerra TJ, Venezia RA. Risk factors for surgical-site infections following cesarean section. *Infect Control Hosp Epidemiol*. 2001;22:613–617.