(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 4, Issue 3, Page No: 247-250
May-June 2021

Intraoperative Risk Factors for Surgical Site Infection in Caesarean Sections

Kishna Ram[1], Alka Batar[2], Kavita Arya[3], Nupur Hooja [4*],Shimla Meena[5],Bhavini Tuli [6]
[1, 3, 5, 6] M.B.B.S., Postgraduate Resident, [2]Asst.Professor M.B.B.S.,M.S, [4]Sr.Professor M.B.B.S.,M.S
Department of Obstetrics and Gynaecology, S.M.S. Medical College, Jaipur 302004

***Corresponding Author:**
Dr.Nupur Hooja
A-29,Lal Bahadur Nagar,Girdhar Marg,Malviya Nagar, Jaipur-302017,Rajasthan,India

Type of Publication: Original Research Paper
Conflicts of Interest: Nil

ABSTRACT

Background Surgical site infection (SSI) following caesarean section.Some women are at greater risk of SSI than others The objective of the study was to study the role of order of caesarean,intraoperative adhesions,duration of surgery as risk factors for infection following caesarean section.

Method Women undergoing caesarean section were selected.Detailed history,examination, surgical time,any intraoperative adhesions etc were noted.Women were followed for any surgical site infection.All details were noted and analysed

Results Women with previous two caesarean (odds ratio 4.76),prolonged surgery greater than 45 and 60 minutes (odds ratio 2.89 and 13.50 respectively) and presence of adhesions (odds ratio2.69) were at higher risk of SSI .

Conclusion Women with previous two lscs, more surgical time or greater adhesions should be closely monitored for evidence of surgical site infections and managed accordingly.

Keywords: adhesions, duration, elective, infection, surgical site.

INTRODUCTION

Caesarean section (CS) is a commonly performed obstetric surgery worldwide.Surgical site infection (SSI) following caesarean section influences adversely the postpartum period. Surgical site infection is responsible for the increasing cost, morbidity and mortality related to surgical operations and continues to be a major problem even in hospitals with most modern facilities and standard protocols of preoperative preparation and antibiotic prophylaxis. SSI rate has varied from as low as 2.5% to as high as 41.9%.[1] Prevention of SSI can be achieved by better preoperative preparation; proper infection control during surgery; adherence to principles of preventive antibiotic therapy; better surgical techniques to reduce hematoma, tissue injury and foreign bodies within the surgical site; prevention of tissue hypoxia with enhanced oxygen support. However,there are certain factors which cannot be avoided and are patient specific which increase the risk of SSI.The objective of the study was to evaluate these patient specific features,the order and type of caesarean-routine or elective,duration of surgery and intraoperative adhesions as risk factors for SSI.

METHOD

Women undergoing caesarean section were selected.450 women over a period of six months were included. Informed consent was taken prior to the study.After a detailed history and clinical examination; caesarean section was performed of all selected women using Joel-Cohen incision for opening the abdomen and procedure by Misgav-Ladach method using same suture material for all women. Duration of surgery and intraoperative adhesions etc were recorded. Antimicrobial prophylaxis was used as per hospital protocol .

Women were followed till discharge for any SSI All data was compiled and analysed.

RESULTS AND DISCUSSION

Fifty women out of 450 had surgical site infection.Majority of surgical site infections became apparent within 5th and 10th postoperative days.

40% of women with SSI had previous two caesarean, as compared to only 12.25% women with no SSI. The risk of developing SSI was found statistically higher in women with more than two caesarean sections (odds ratio=4.76).Table 1

Women who had elective caesarean section had slightly higher odds ratio (1.06) for SSI than women who had routine surgeries.Although in our study, we did not found statistically significant association between type of caesarean and risk of SSI (p = 0.839).

In our study, 42% women with SSI had prolonged duration of surgery more than 60 min. 72% women with SSI had surgery time of 45 minutes or more. Only 32.5% women with no SSI had surgery of time > 45 minutes.Women who had duration of surgery >60 min. showed higher odds ratio (13.50) for SSI than women who had surgery within 45-60 min. (odds ratio=2.89). Table 2

Women who had intraoperative adhesions, showed higher odds ratio (2.69) for SSI . Table 2

DISCUSSION

In our study,the risk of developing SSI was found to be higher in women with more than two caesarean sections .Zejnullahu et al [2] also observed that patients with a history of previous caesarean section were 7.4 times more likely to develop surgical site infection compared to the group without prior caesarean surgery(RR 7.457; 95% CI; 3.392–16.3395 and P was 0.000).

It might be due to the increased surgical time in repeated caesarean sections, greater exposure to external environment, greater adhesions, more blood loss, lesser ambulation due to greater pain – all are leading to greater surgical site infections in repeated caesareans.

Women who had elective caesarean section had slightly higher odds ratio (1.06) for SSI than women who had routine surgeries.Sayma Afroz et al [3] and Manisha Chhetry et al [4] found surgical site infection more in the patients who underwent emergency caesarean section.However,Hanan HJ et al [5] did not find type of caesarean section (emergency or elective) to be a significant determinant of surgical site infection.

This may be because most of the women who had elective surgeries, previous one or two caesarean, hypertensive, diabetic, obese, placenta praevia, morbidly adherent placenta or having some other comorbidities. In these caesarean, there was almost always longer duration of surgery. So greater exposure to external environment and greater chances of surgical site infection in these women.

Women who had duration of surgery >60 min. showed higher odds ratio for SSI than women who had surgery within 45-60 min. Various other authors, Ameer Abdallah et al [6] , Meenu Beniwal et al [1] reported similar results revealing a significant correlation between the duration of the surgical procedure and wound infection. Furthermore, prolonged surgery, lasting more than 3hr, was associated with a 4 fold increased risk for surgical site infection occurrence. The major explanations for these included anaesthesia-related stress, extensive tissue trauma and inadequate serum and tissue concentration of the antibiotics in prolonged surgical procedures. Prolonged surgery may also lead to prolonged exposure of the wound to the environment leading to more chance to inoculation of micro-organisms.[2] Furthermore, longer operation time led to desiccation and maceration of wound edges, increase number of bacteria, decreased temperature and hypovolemia leading to peripheral vasoconstriction and poorly perfused skin.[3]

Presence of adhesions are associated with greater risk of intraoperative blood loss and postpartum blood loss, greater extension, uterine vessels injury, greater surgical time, greater chances of contamination, more sutures used, greater postoperative pain, and lesser ambulation due to pain. All these may lead to greater risk of surgical site infection in presence of adhesions.

CONCLUSION

Women with elective surgery,previous two lscs, longer surgical time or greater adhesions are at greater risk for surgical site infections.They should be closely monitored for any evidence of infection and managed accordingly.

Volume 4, Issue 3; May-June 2021; Page No 247-250

REFERENCES

1. Dr Meenu Beniwal, Dr Mahavir Singh Griwan, Dr Sanjay Marwah, Dr Paritev Singh, Dr Navnik Singh Bhardwaj. Incidence of Surgical Site Infection in Clean and Clean-Contaminated Wounds:A Prospective Study. Volume3, Issue 3, Page No: 478-493 May- June 2020
2. Zejnullahu Vjosa A. Rozalinda Isjanovska, Zana Sejfija and Valon Zejnullahu. Surgical site infections after cesarean sections at the University Clinical Center of Kosovo: rates, microbiological profile and risk factors. Zejnullahu et al. BMC Infectious Disease (2019) 19:752
3. Sayma Afroz, Maliha Rashid. Study on Risk Factors and Microorganisms for Surgical Site Infection following Caesarean Section among 100 Patients in a Tertiary Hospital in Bangladesh.Journal of Enam Medical College Vol 9 No 2 May 2019
4. Manisha Chhetry, Shanti Subedi, Basudeb Banerjee. Risk factors for post caesarean surgical site infection at a tertiary care center in Eastern Nepal. Journal of College of Medical Sciences-Nepal, Vol-13, No 3, July-Sept 017
5. Hanan Hussein Jasim, Syed Azhar Syed Sulaiman, Amer Hayat Khan, Omar Thanoon Dawood, Aseel Hadi Abdulameer and R Usha. Incidence and Risk Factors of Surgical Site Infection Among Patients Undergoing Cesarean Section. inical Medicine Insights: Therapeutics Volume 9: 1–7 © The Author(s) 2017
6. Ameer Abdallah and Mohamed El Sayed Rafeek. Risk Factors of Surgical Site Infection of Cesarean Section and Role of Skin Cleansing and Prophylactic Antibiotic. Int J Reprod Med Gynecol. 2018;4(2): 047-051.

Volume 4, Issue 3; May-June 2021; Page No 247-250

Table 1.Association of Surgical Site Infection with Order and Type of LSCS

	Variable	Women with SSI (n=50)	Women with no SSI (n=400)	Odds ratio (OR)
Order of LSCS	**1 or 2**	30(7.9%)	351(92.1%)	1
	≥3	20(29.0%)	49(71%)	**4.76 (2.52-9.06)**
Type of LSCS	**Elective**	22(11.5%)	170(88.5%)	**1.06(0.59-1.92)**
	Routine	28(10.9%)	230(89.1%)	1

Table 2.Association of Surgical Site Infection with Surgical Factors

	Variable	Women with SSI (n=50)	Women with no SSI (n=400)	Adjusted odds ratio (AOR)/ Odds ratio OR
Duration of surgery	30-45 min.	14(4.9%)	270(95.1%)	1
	45-60 min.	15(13.1%)	100(86.9%)	**2.89(1.35-6.21)**
	>60 min.	21(41.2%)	30(58.8%)	**13.50(6.22-29.28)**
Adhesions	No	40(9.9%)	366 (90.1%)	1
	Yes	10(22.7%)	34 (77.3%)	**2.69(1.24-5.85)**

Volume 4, Issue 3; May-June 2021; Page No 247-250