(International Print/Online Journal)

SJIF IMPACT FACTOR: 4.617
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
Volume2, Issue 2, Page No: 79-84
March-April 2019

Surgical Site Infection Following Caesarean Section in NRS Medical College, Kolkata

Basu D [1], Kamal MA[2]
[1]Dr.Debraj Basu,Assistant Professor,Department of Gynaecology and Obstetrics
[2] Junior Resident, Department of Gynaecology and Obstetrics

NRS Medical College,Kolkata

***Corresponding Author:**

Dr.Debraj Basu, Assistant Professor
Department of Gynaecology and Obstetrics,
NRS Medical College,Kolkata

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

ABSTRACT

Objectives: To determine the prevalence, risk factors, common bacterial pathogens responsible for surgical site infections (SSI) following caesarean section (CS).

Materials and Methods: A retrospective case-control study, after verification of hospital records, of patients delivered by CS at NRS Medical College, Kolkata, India for a period of six months.

Results and Analysis: In this study 299 randomly taken patients reviewed who are delivered by caesarean section and 26 (8.7%) had SSI.

Conclusions: Most cases of SSI followed prolonged/ obstructed labor, premature ruptures of membrane (PROM); used to have longer operation time. Staphylococcus aureus sensitive to cephalosporins was the most frequently isolated pathogen.

Keywords: Cesarean section, Infection,NRS Medical College Abreviations: Cesarean section-CS, Surgical site infection-SSI

INTRODUCTION

Surgical site infection (SSI) used to complicate up to 8.9% of all cesarean sections (CSs).[1] Post-cesarean wound infection is one of the common causes of maternal morbidity ,sometimes mortality. In India, hemorrhage and infection are the leading causes of maternal death following CS.[2,3] The incidence of wound infection is associated with the duration of operation, indication of CS, prolonged rupture of membranes ,anemia , and multiple per vaginal examinations.[4,5] *Staphylococcus aureus* is the most commonly isolated bacteria in wound infections following CS.[7]However gram negative organisms like *E. coli*, *Proteus mirabilis*, *Pseudomonas* and *Klebsiella etc.* are also isolated in CS wound infections.[9] Present study reviewed 299 CS deliveries to calculate the prevalence of SSI, the risk factors, the common bacterial pathogens and their antibiotic sensitivity.

MATERIAL AND METHODS

Records of all patients that delivered in NRS Medical College, Kolkata between 1st November 2016 and 30th April 2017 are reviewed. All patients that are delivered by CS were identified from the postnatal ward and OT records; among them 299 cases taken randomly for this study ; their bedside hospital tickets were reviewed from the medical records department . They were devided into two groups: Those whose wounds were infected and those whose were not infected. In this hospital, caesarean wounds are cleaned usually with povidone- iodine solution and covered with sterile gauze and adhesive tape(leucoplast). Patients whose CSs wounds were infected and those who had no wound infection were reviewed in detail with respect to their socio-demographic characteristics, type of CS, indication and duration of surgery. All patients suspected of having wound infection had wound swab cultured. Where the culture was positive, an antibiotic sensitivity of the organism grown was carried out.

Means, standard deviation and tests of statistical significance were carried out. *P*-values less than 0.05 were considered significant.

RESULTS:

In the period under review, there were deliveries in the unit; 2120 (%) were by CS. 299 cases were taken randomly from total number of CS within this period and among them 26 cases (8.7%) were complicated by SSI, while 273(91.3%) had no evidence of infection.

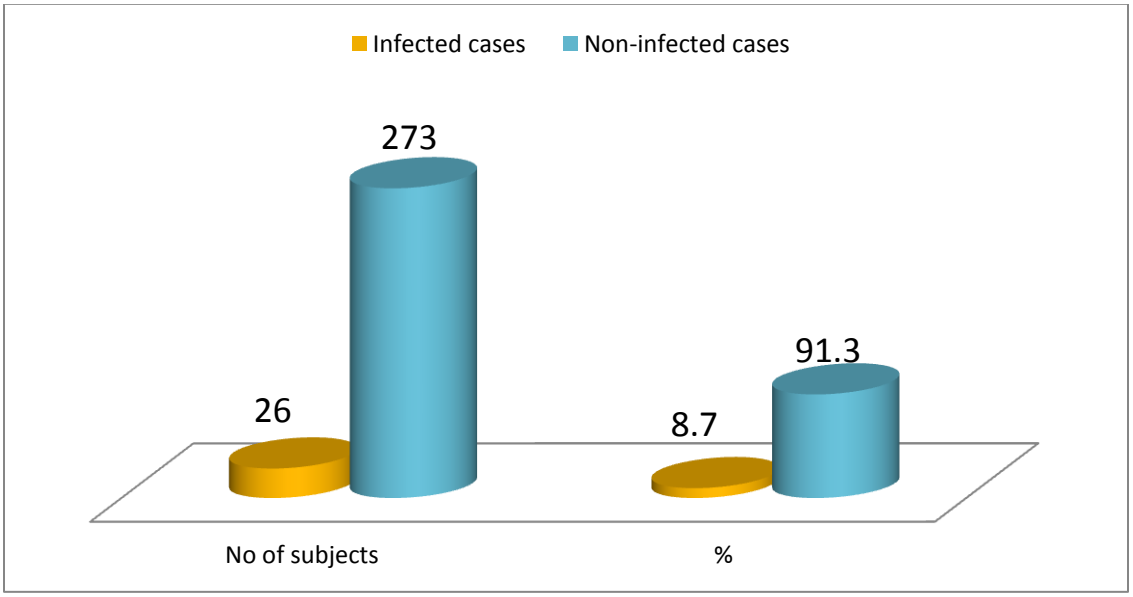

Table 1: Association between age group and SSI

			SSI		Total	P
			Infected cases	Non-infected cases		
AGE GROUP (in years)	≤19	Number of subjects	4	44	48	0.103
		%	8.3%	91.7%	100.0%	
	20-30	Number of subjects	20	207	227	
		%	9.6%	90.4%	100.0%	
	≥ 30	Number of subjects	2	22	24	
		%	8.3%	91.7%	100.0%	
Total		Number of subjects	26	273	299	
		%	8.7%	91.3%	100.0%	

Volume 2, Issue 2; March-April 2019; Page No. 79-84

p<0.05 considered as statistically significant, p computed by chi-square test.

Inference: No significant association was found between age group and SSI, p=0.094 as computed by chi-square test.

Table 2: Association between parity and SSI

			SSI		Total	p
			Infected cases	Non-infected cases		
PARITY	0	Number of subjects	16	158	174	0.942
		%	9.2%	90.8%	100.0%	
	>2	Number of subjects	2	15	17	
		%	11.8%	88.2%	100.0%	
	<2	Number of subjects	8	100	108	
		%	7.4%	92.6%	100.0%	
Total		Number of subjects	26	273	299	
		%	8.7%	91.3%	100.0%	

p<0.05 considered as statistically significant, p computed by chi-square test

Inference: No significant association was found between parity and SSI, p=0.922 as computed by chi-square test.

Table 3: Association between type of CS and SSI

			SSI		Total	p
			Infected cases	Non-infected cases		
TYPE OF CS	ELECTIVE	Number of subjects	11	100	111	0.935
		%	9.9%	90.1%	100.0 %	
	EMERGENCY	Number of subjects	15	173	188	
		%	7.97%	92.03%	100.0 %	
Total		Number of subjects	26	273	299	
		%	8.7%	91.3%	100.0 %	

p<0.05 considered as statistically significant, p computed by chi-square test

Volume 2, Issue 2; March-April 2019; Page No. 79-84

Inference: No significant association was found between type of CS and SSI, p=0.925 as computed by chi-square test.

Table 4: Association between time taken to complete CS and SSI

			SSI		Total	p
			Infected cases	Non-infected cases		
OPERATION TIME	<30 min	Number of subjects	2	29	31	0.046
		%	6.4%	93.6%	100.0 %	
	30-60 min	Number of subjects	15	197	208	
		%	6.7%	93.3%	100.0 %	
	>60 min	Number of subjects	9	47	56	
		%	16.1%	83.9%	100.0 %	
Total		Number of subjects	26	273	299	
		%	8.7%	91.3%	100.0 %	

Inference: As the duration of OT increased, the number of subjects with infection also increased, p=0.046 as computed by pooled chi-square test.

Table 5:

		Frequency	**Percent**
INDICATIONS	**APH**	**10**	
	CPD	**1**	**.**
	FD	**85**	
	NPOL	**49**	
	MALPRESENTATIONS	**19**	
	PIH	**30**	
	POST CS	**86**	
	PROM	**19**	
	Total	**299**	**100.0**

Volume 2, Issue 2; March-April 2019; Page No. 79-84

The indication was previous caesarean section in 86 cases (28.76%) but SSI was found in 10(11.62%) patients. Foetal distress was found to be the indication in 85 patients (28.42%) but only 4(4.70%) of them has SSI. The indication for CS was obstructed labor/non- progress of labour in 49(16.38%) of the patients, of these 5 (10.2%) had wound infection. 30(10.03%) patients had severe pre-eclampsia/ eclampsia,but 5(16.66%) of them had SSI. 19(6.35%) patients had caesarean section due to PROM but none of them had SSI.

Amongst the 26 cases with SSI, all had wound swab cultures done; 5(19.23%) shown no growth,in 17 (65.38%) Staphylococcus aureus was grown, while 3(11.53%) produced E. coli, 1(5.88%) produce klebsiella . Antibiotic sensitivity shows the most commonly isolated bacteria to be sensitive to second and third generation cephalosporins (ceftriaxone - 78.6%, cefuroxime - 15.4%), quinolones, amoxicillin–clavulanate and microlides (gazithromycin) and aminoglycosides in 14.3% of cases. The gram negative organisms were mostly sensitive to cephalosporins (ceftriaxone).

DISCUSSION:

In this review, the prevalence of SSI following CS was 8.7%, which is comparable to infection rates elsewhere.[1,10] Recently, Ward et al. in a multi-center collaborative study of SSI following CS in the UK reported overall wound problem of 13.6% and SSI of 8.9%.[11] These authors taken into account post-discharge surveillance. We did not have the opportunity to study post-discharge surveillance in this study . In their review Graffiths et al. reported an incidence of 9.9%.[12] Nearly all our patients had antibiotic prophylaxis; variously with ampiclox, metronidazole and gentamicin.

Majority of our cases 213(71.23%) had primary CS, which is similar to the findings of other studies[2,8] . However, type (emergency or elective) of CS found to be not a significant determinant of SSI in this study.

The skill of the surgeon here depicted by time taken to complete cs found to be statistically significant , although the mean operating time significantly differed. Prolonged operating time[14] is one of the significant determinant of SSI.

Wound infection was investigated by microbiological studies in all 26 cases 21 (80.76%) were positive cultures while 5(19.23%) show no growth. S. aureus was isolated from 17 (65.38%) cases. This bacteria was shown to be the predominant agent in post-cesarean wound infection.[13]

CONCLUSION:

Postoperative SSI is a common complication of CS . This is mostly caused by S. aureus sensitive to cephalosporins and quinolones. Strategies for prevention SSI in CS patient must target training of surgeons to improve their skills thus reducing duration of CS subsequently reducing intraoperative blood loss ; also proper antiseptic precautions before and after cs will help reducing the incidence of SSI.

REFERENCES:

1. Opoien HK, Valbo A, Grinde-Anderson A, Walberg M. Post-caesarean surgical site infections according to CDC standards: Rates and risk factors. A prospective cohort study. Acta Obstet Gynecol Scand. 2007;86:1097–102. [PubMed]
2. Ezechi OC, Nwokoro CA, Kalu BK, Njokanma FO, Okeke GC. Caesarean section: Morbidity and mortality in a private hospital in Lagos Nigeria. Trop J Obstet Gynaecol. 2002;19:97–100.
3. Chama CM, El-Nafaty AU, Idrisa A. Caesarean morbidity and mortality in Maiduguri, Nigeria. J Obstet Gynaecol. 2000;20:45–8. [PubMed]
4. Mitt P, Lang K, Peri A, Maimets M. Surgical-site infections following cesarean section in an Estonian university hospital: Postdischarge surveillance and analysis of risk factors. Infect Control Hosp Epidemiol. 2005;26:449–54. [PubMed]
5. Litta P, Vita P, de Toffoli J Konishi, Onnis GL. Risk factors for complicating infections after caesarean section. Clin Exp Obstet Gynecol. 1995;22:71–5. [PubMed]
6. Beattie PG, Rings TR, Hunter MF, Lake Y. Risk factors for wound infection following caesarean section. Aust N Z J Obstet Gynaecol. 1994;34:398–402. [PubMed]
7. Ako–Nai AK, Adejuyigbe O, Adewumi TO, Lawal OO. Sources of intra-operative bacterial colonization of clean surgical

Volume 2, Issue 2; March-April 2019; Page No. 79-84

wounds and subsequent post-operative wound infection in a Nigerian hospital. East Afr Med J. 1992;69:500–7. [PubMed]
8. Egah DZ, Bello CS, Banwat EB, Allanana JA. Antimicrobial sensitivity pattern for Staphyllococcus Aureus in Jos Nigeria. Niger J Med. 1999;8:58–61.
9. Ogunsola FT, Oduyebo O, Iregbu KC, Coker AO, Adetunji A. A review of nosocomial infection at the Lagos university teaching hospital: Problems and strategies for improvement. J Nig Infect Contr Assoc. 1998;1:14–20.
10. Barbot F, Carbonne B, Truchot F, Spielvogel C, Jannet D, Goderel I, et al. Surgical site infections after cesarean section: Results of a five-year prospective surveillance. J Gynecol Obstet Biol Reprod (Paris) 2004;33:487–96. [PubMed]
11. Ward VP, Charlett A, Fagan J, Crawshaw SC. Enhanced surgical site infection surveillance following caesarean section: Experience of a multicenter collaborative post-discharge system. J Hosp Infect. 2008;70:166–73. [PubMed]
12. Graffiths J, Demianczuk N, Cordoviz M, Joffe AM. Surgical site infection following elective caesarian section: A case–control study of postdischarge surveillance. J Obstet Gynaecol Can. 2005;27:340–4.[PubMed]
13. 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;29:477–84. discussion 485-6. [PubMed]
14. Killian CA, Graffunder EM, Vinciguerra TJ, Venezia RA. Risk factors for surgical- site infections following cesarean section. Infect Control Hosp Epidemiol. 2001;22:613–7. [PubMed]

Volume 2, Issue 2; March-April 2019; Page No. 79-84