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ORIGINAL RESEARCH PAPER

Evaluation of surgical site infections after caserean deliveries

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Abstract

Background: *Surgical site infection (SSI) is a common postoperative complication. In this study, we aimed to determine the infection rate of the surgical field after cesarean section in our hospital.*

Method: *Cesarean section patients between january 2016 and december 2017 were studied in our hospital. The culture results of 74 patients diagnosed with SSI were analyzed..*

Results: *Although no pathogen was detected in 38 (51.36%) of the patients, 36 (48.64%) of the patients were found to be pathogenic microorganisms in culture. ın the culture results of these patients; 11 patients were s. aureus (14.86%), 8 patients (10.81%) were coagulase (-) staphylococcus, ın 7 patients (9.45%), e. coli, ın 2 patients (2.70%), klebsiella pneumonia, ın 2 patients (2.70%), enterococcus faecalis, ın 2 patients (2.70%) proteus mirabilis, 1 patient (1.35%) enterobacter aerogenes, ın one patient (1.35%) Pseudomonas aeruginosa, Gram (+) cocc was detected in 1 patient (1.35%).*

Conclusion: *SSI culture results should be taken into account when selecting prophylaxis and empirical treatment to prevent surgical site infections.*

Keywords*: Surgical site infection, cesarean delivery, infection*

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Introduction

The Centers for Disease Control and Prevention (CDC) define the surgical site infection (SSI) as an infection following surgery in the body part of the operation. SSI is the most common infectious disease in surgical patients. and SSI constitute 15% of nosocomial infections [1,2].

SSI is a common postoperative complication reported at 3-15% of caesarean section births. Obstetric infection is responsible for about 12% of maternal deaths. [3-5]

Post-cesarean SSI is often superficial infections, deep wound infections or endomyometritis; less frequently abdominal or pelvic abse. Various risk factors for SSI development after caesarean section have been defined.

Emergency cesarean section, presence of chorioamnionitis, high maternal age and BMI, presence of maternal co-morbidity, use of staples for skin closure, length of surgery time, severe blood loss during surgery, early membrane rupture and prophylactic antibiotic not be used. [6-8] Proflakside is most commonly used with Cephazoline. [9]

Many risk factors for surgical site infections after caesarean section have been reported; low socioeconomic status, obesity diabettes mellitus, hypertension, corticosteroid use, smoking, urgent sectio, multiple pregnancies,, long-term premature rupture of membranes, frequent vaginal examination, prolonged labor, the length of the operation, internal fetal monitoring, no antibiotic prophylaxis, anemia, postoperative hematoma. [10,11]

Materials and Methods

In our study, 14147 patients who delivered cesarean section between January 2016 and December 2017 were evaluated. In the first 30 days after delivery, culture was obtained from the wound site of the surgical site of 74 patients who were diagnosed as having surgical infection. The culture results were evaluated. The study was approved by the local ethics committee.

In our hospital, 1 g. Cefazolin was applied. 600 mg Clindamycin was administered to patients with penicillin allergy. Postoperatively, two doses of 1 g cefazolin were administered. And 500 mg cefuroxime oral administration twice a day until 5 days after discharge from the hospital.

The surgical site was sterilized with 10% iodine solution. Cesarean delivery was performed with a Phannenstiel incision and a transverse incision of the lower segment of the uterus. The uterine incision was locked and closed with a single layer of vicryl (polyglactin 910) no. 1 and the peritoneal layers were continuously closed with vicryl (polyglactin 910) 2-0. The skin was closed with vicryl (polyglactin 910) 3-0 as subcutaneous.

Surgical field infection diagnosis, spontaneous opening of the wound site with fever in the patient, the sensitivity and redness at the wound site, wound endurance, and the detection of haemorrhagic, serous, or purulent discharge from the wound spontaneously or through surgical drainage.

IBM SPSS Statistics software, version 22.0 (IBM Corp., Chicago, Illinois, USA) was used to perform data analysis. Continuous variables are reported as mean ± standard deviation and categorical variables are presented as frequency and percentage. $P < 0.05$ was considered significant for all analyses

Result

We retrospectively analyzed the records of 74 patients who were admitted to our hospital due to surgical site infection after cesarean delivery and cultured from the wound site. During the study period, cesarean delivery was performed in 14147 patients in our hospital. In our study, surgical site infection after caesarean section was detected in 204 patients (1.44%). 74 of them were admitted to the hospital and cultured from the wound site and 130 of them were followed and treated remotely. The mean age of the 74 patients who were cultured in our study was 25.70 ± 4.89 (18-42), the mean BMI was 28.40 ± 2.06 (23.2-33.4), and the mean parity was 3.10 ± 1.62 (1-7).

In our study, microorganisms were produced in 36 (48.65%) of 74 patients cultured from the wound site and 38 (51.35%) microorganisms were not detected. The 3 most frequently breeding microorganisms were; in 11 patients (30.6%), S.Aureus, İn 8 patients (22.2%) Coagulase (-) Staphylococci , İn 7 patients (19.5%) E. coli were identified (Table 1).

Forty-five (60.8%) of the 74 patients who were hospitalized due to surgical site infection were elective cesarean section patients while 29 (39.2%) were emergency cesarean section patients. Of the 14147 cesarean sections were 5545 (39.19%) were emergency cesarean and 8602 (60.81%) were elective. Surgical field infection was detected in 84 '(1.51%) of emergency cesarean cases and surgical site infection was detected in 120 (1.39%) cases of elective cesarean section

Table 1. Demographic analysis of patients received wound culture.

Parameters	(Mean±SD)
Age	25.70±4.89
Parite	3.10±1.62
BMI	28.40±2.06
Elective CD	45 (60.8%)
Emerge CD	29 (39.2%)

Table 2. Distribution of isolated microorganisms.

Microorganism	Count (n)	%
E Coli	7	19.5
Gram (+) Cocs	1	2.8
C.Oxytoka	1	2.8
C.pneumonia	2	5.5
Coagulaz (-) Staf.	8	22.2
P.Mirabilis	2	5.5
P.auriginousa	1	2.8
S. Aureus	11	30.6
E.Faecalis	2	5.5
E.Auriginosa	1	2.8
Total	36	100

Discussion

In this study, 14147 cases of caesarean section were retrospectively analyzed. In general, the incidence of SSI was found to be 1.44%. After the emergency cesarean section, the infection rate was 1.51%, whereas it was 1.39% after elective cesarean section. As in many different studies,

As in many different studies, in our study, SSI after emergency cesarean section was found to be higher than elective cesarean section. [12] In our study, 3 most frequently breeding microorganisms were; 11 patients were S.Aureus, 8 patients were Koagulase (-) Staphylococci and 7 patients were E. coli. In similar studies, staf aureus was detected most frequently. [13-15] In another previous study, uroplasma was detected most frequently. [16]

The length of hospital stay and the duration of the surgical operation increase the risk of surgical site infection. Factors that increase infection rate most frequently are; sterilization conditions of the operating room, antibiotic prophylaxis before surgery, premature rupture of membranes, asepsis of the surgical field, frequently performed vaginal examination. Antibiotic prophylaxis is the most important factor that reduces surgical site infection after caesarean delivery. [17-19] Only 2 of the patients who had SSI had hospitalized in our hospital for more than 2 days. and only 2 of them lasted longer than 1 hour. Prophylactic antibiotics are given to all cesarean delivery patients in our hospital.

The risk factors associated with the patient are; mother age, high parity, obesity, Diabettes mellitus, chronic hypertension, previous CD and recurrent pregnancy loss. [6,20] we also found the parity high in our work. Three of our 204 SSI patients had GDM, 2 had chronic HT and 1 had preeclampsia.

The mean BMI in our study was 28.40 ± 2.06 (23.2-33.4). and obesity was not detected in patients. In addition, the mean age of our patients was 25.70 ± 4.89 (18-42). The probable cause of not having a high BMI and age in our patients is that our hospital serves a rural and relatively less developed region of our country. due to a similar likelihood The average parity in our patients was found to be increased by 3.10 ± 1.62 (1-7) compared to the relatively more developed regions of the country.

The strengths of our work are that our hospital serves a rural area that is relatively socioeconomically less developed. it is one of the center where normal delivery and sectio delivery are made the most In addition, because it serves all segments of society, it reflects the entire patient population and is made with a high number of patients. it is the center where normal birth is made the most. it is one of the centers where normal birth and sectio delivery are made the most.

Conclusion

Different types of microorganisms can cause surgical site infections.Therefore, In order to prevent surgical site infections and possible complications, SSI culture results should be taken into consideration when choosing prophylaxis and empirical treatment.

References

1. Watanabe A, Kohnoe S, Shimabukuro R, Yamanaka T, Iso Y, Baba H, et al. Risk factors associated with surgical site infection in upper and lower gastrointestinal surgery. Surg Today 2008;38:404–12.
2. Magill SS, Hellinger W, Cohen J, Kay R, Bailey C, Boland B, et al. Prevalence of healthcare-associated infections in acute care hospitals in Jacksonville, Florida. Infect Control Hosp Epidemiol 2012;33:283–91.
3. 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;29:477-84-6.
4. Witter FR, Lawson P, Ferrell J. Decreasing cesarean section surgical site infection: An ongoing comprehensive quality improvement program. Am J Infect Control 2014;42:429–31.
5. Tharpe N. Postpregnancy Genital Tract and Wound Infections. J Midwifery Women's Heal 2008;53:236–46.
6. Schneid-Kofman N, Sheiner E, Levy A, Holcberg G. Risk factors for wound infection following cesarean deliveries. Int J Gynecol Obstet 2005;90:10–5.
7. Wloch C, Wilson J, Lamagni T, Harrington P, Charlett A, Sheridan E. Risk factors for surgical site infection following caesarean section in England: Results from a multicentre cohort study. BJOG An Int J Obstet Gynaecol 2012;119:1324–33.
8. Killian C a, Graffunder EM, Vinciguerra TJ, Venezia R a. Risk factors for surgical-site infections following cesarean section. Infect Control Hosp Epidemiol 2001;22:613–7.
9. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 120: Use of prophylactic antibiotics in labor and delivery. Obstet Gynecol 2011;117:1472–83.
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;86:1097–102.

11. Vermillion ST, Lamoutte C, Soper DE, Verdeja A. Wound infection after cesarean: effect of subcutaneous tissue thickness. Obstet Gynecol 2000;95:923–6.
12. Ansar A. Surgical site infection in obstetrics practice. J Surg Pakistan 2013;18:68–73.
13. 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 Niger Infect Control Assoc 1998;1:11–3.
14. Onoh R, Onyebuchi A, Ukaegbe C, Umeora OJ, Agboeze J, Egbuji C, et al. Microbiological pattern of postcesarean wound infection at Federal Teaching Hospital, Abakaliki. African J Med Heal Sci 2013;12:97.
15. Vallejo MC, Attaallah AF, Shapiro RE, Elzamzamy OM, Mueller MG, Eller WS. Independent risk factors for surgical site infection after cesarean delivery in a rural tertiary care medical center. J Anesth 2017;31:120–6.
16. Roberts S, Maccato M, Faro S, Pinell P. The microbiology of post-cesarean wound morbidity. Obstet Gynecol 1993;81:383–6.
17. Anvikar. One year prospective study of 3280 surgical wounds. Indian J Med Microbiol 1999;17:129.
18. Lilani SP, Jangale N, Chowdhary A, Daver GB. Surgical site infection in clean and clean-contaminated cases. Indian J Med Microbiol 2005;23:249–52.
19. Hopkins L, Smaill FM. Antibiotic prophylaxis regimens and drugs for cesarean section. In: Henderson S, editor. Cochrane Database Syst. Rev., Chichester, UK: John Wiley & Sons, Ltd; 1999.
20. Korol E, Johnston K, Waser N, Sifakis F, Jafri HS, Lo M, et al. A systematic review of risk factors associated with surgical site infections among surgical patients. PLoS One 2013;8.