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A comparative study of short and extended regimens of antibiotics for elective caesarean sections

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Abstract

Background and objective: A Caesarean section procedure often produces a wound that is free from dirt or any form of contamination. Antibiotics are mostly utilised to reduce parturition infections and related complications. Reducing the death rate and illness rate after surgical procedures. This study examined the efficacy of a brief regimen of antibiotics compared to the standard longer regimen commonly employed at a government tertiary care centre.

Method: This study was conducted as a prospective interventional study. The current investigation comprised a total of 150 participants who were randomised at random to two distinct groups. Each group consists of 75 persons. The participants were selected based on predetermined criteria for inclusion and exclusion. The study was conducted at Department of Obstetrics and Gynaecology, Surabhi Institute of Medical Sciences. The study was conducted from March 2020 to February 2021.

Result: According to the current study that has been referenced, the estimated occurrence of wound infection usually falls within the range of 3% to 5%. The research conducted by Robinson *et al.* investigated the correlation between risk variables and wound infection. The results suggested that those with extreme obesity had a greater likelihood of developing wound infections in comparison to those who were not obese.

Conclusion: The results of this study suggest that a shorter length of antibiotic treatment is just as effective as a longer duration of antibiotic treatment. There were no statistically significant differences seen between the two groups regarding febrile morbidity, wound induration, serous wound discharge, purulent wound discharge, wound gaping, or abnormal vaginal discharge.

Keywords: Antibiotics, both short- and long-term, and elective caesarean sections

Introduction

A Caesarean section is a surgical operation that produces a sterile and uncontaminated cut. The main objective of providing antibiotics is to reduce the occurrence of postpartum infections and their related effects^[1]. As a result, this technique causes a reduction in the frequency of adverse health effects and mortality after a surgical treatment. The use of antibiotics before surgery is primarily aimed at reducing the occurrence of wound infections after the operation^[2,3]. The administration of antibiotics at the beginning of treatment might be classified as anticipatory, presumptive, or empiric. Effective prophylactic antibiotics indicate effectiveness against the majority, although not all, potential illnesses, usually including endogenous flora. Although there have been tremendous advancements in the fields of diagnosis, medical care, and antimicrobial therapy, sepsis during the puerperium remains a major cause of maternal death. The literature research indicates that there are multiple factors that are considered to contribute to the heightened vulnerability to severe sepsis with immediate organ failure. An insufficiently rigorous sterile method can be a contributing cause to unfavourable results in medical operations^[4].

The mortality rate of a pregnant woman, which includes both during childbirth and in the period after giving birth, is a source of great concern for healthcare professionals and government agencies. Obstetric haemorrhage, delayed obstructed labour, eclampsia, and puerperal infection are the main factors contributing to maternal mortality in impoverished countries. Aside from maternal death, puerperal sepsis can lead to long-lasting morbidity, which includes issues including secondary infertility, ectopic pregnancy, and chronic pelvic pain^[5,6].

The aim of this study was to assess and contrast the effectiveness of a brief course of antibiotics with a longer conventional course of antibiotics in avoiding post-operative infections among

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patients who are having elective caesarean section. In order to assess the relative efficacy of various treatment protocols in terms of infectious morbidity, such as fever morbidity, wound induration, wound discharge, wound gaping, and abnormal vaginal discharge.

Material and Methods

This study was performed as a prospective interventional study. The current investigation included a total of 150 subjects who were randomised at random to 2 distinct groups. Each group consists of 75 persons. The study was conducted at the Department of Obstetrics and Gynaecology, Surabhi Institute of Medical Sciences, Siddipet, India. The study was conducted from March 2020 to February 2021 lasting for a period of one year.

Inclusion Criteria

- Women who undergo regular prenatal care.
- A tranquil prenatal period.
- Female patients opting for elective caesarean sections.

Exclusion Criteria

- Hypertension;
- Antibiotic therapy beginning two weeks before surgery.
- PROM presence;

The participants were given a detailed description of the study, which included information about its objectives and procedures. In addition, the study results were conveyed to the participants. Ultimately, we obtained written informed consent from every participant. A test dose of Cefotaxime was administered intradermally on the forearm to evaluate for any possible allergic

responses. Patients with a documented allergy to cefotaxime delivered via injection were not included in the experiment. The women in group 1 were administered cefotaxime intravenously, with a dosage of 1 gram me, within one hour of the start of the surgery. If the surgical procedure lasted longer than two hours, the dose was injected once more. A second dose of medication is given to the same patient 12 hours after the previous dosage. The aforementioned regimen is often known as the short course. The second group of individuals were administered intravenous cefotaxime at a dosage of 1 gram me twice daily for a period of 3 days.

Results

Table 1: Distribution of ages between the two research groups

		Groups		Total
		Group I	Group II	
Age range	20yrs.	03	02	5
	21-25yrs.	40	40	80
	26-30yrs.	20	20	40
	31-35yrs.	10	10	20
	Above35yrs.	02	03	05
Total Count		75	75	150

Table 2: Wound leukocytosis count details

		Groups		Total
		Group I	Group II	
Wound	No Count	38	37	75
	Yes Count	37	38	75
Total		75	75	150

Table 3: Organisms cultured from the wound discharges

			Groups		Total
			Group I	Group II	
Organism Cultured	E. coli	Count% within Groups	03	03	06
			2%	2%	4%
	Klebsiella	Count% within Groups	02	02	04
			1.3%	1.3%	2.6%
	Pseudomonas	Count% within Groups	00	02	02
			0.0%	1.3%	1.3%

Escherichia coli were the most commonly found bacterium in the individuals who had wound discharge. The patient population at our hospital primarily comprises patients from a lower socioeconomic background, who have nutritional difficulties and have a lower level of educational achievement. Consultants in government hospitals reflect a general concern about the limited usage of antibiotics. This study seeks to examine the relative efficacy of the underutilised short course regimen compared to the commonly employed long course regimen. The excessive and protracted use of antibiotics does not yield any additional benefits, but instead adds to the financial burden and worsens the growing problem of antibiotic resistance in the community.

Discussion

According to the studies stated earlier, it can be generally concluded that the occurrence rate of wound infection varies between around 3% and 5%. The study conducted by Robinson *et al.* investigated the correlation between risk factors and wound infection. The results suggested that individuals with severe obesity had a higher vulnerability to wound infection compared to individuals who were neither obese or those with

moderate obesity [7]. The Caesar trail was a multicentric 2x2x2 pragmatic study that intended to ascertain the comparative efficiency of various procedures of caesarean section. The main goal of the study was to evaluate the occurrence of infectious diseases and their impact on the health of mothers [8]. The study results indicated that the overall likelihood of maternal infectious morbidity was 17%. [11, 12].

During this analysis, we found no notable disparity in the length and amount of antibiotic treatment in relation to the occurrence of infectious diseases. No statistically significant difference was seen between the administration of a short course of antibiotics and a lengthy course of antibiotics. Within Group 1, roughly eight individuals displayed indications of fever, but in Group 2, around ten patients encountered fever [9]. The patients had a fever after their surgery, with a temperature above 38°C. This fever often appeared within 24 hours after the elective caesarean procedure and generally lasted for a period of 3 to 5 days. The patients had simultaneous abdominal wound infections, which led to the gathering and submission of a wound swab for examination of pus culture and sensitivity. The antibiotics were adjusted accordingly based on the circumstances [9].

Among the initial group, a total of nine patients solely encountered wound induration. Five patients experienced wound induration three days after the surgical procedure, whereas six patients experienced wound induration five days after the surgical surgery. None of these individuals received any further antibiotics. The serrati peptidase tablets were administered thrice daily for a duration of three consecutive days^[10]. All nine patients experienced complete resolution of wound induration, and the sutures were extracted on the seventh day following the surgery. Out of the participants in group 2, 11 patients showed only wound induration. Three patients developed wound induration on the third day after surgery, six patients on the sixth day after surgery, and two patients developed wound induration on the fifth day after surgery. For these individuals, cefotaxime was given through a vein at a dose of 1 gram me, and this treatment was continued for an extra two days. In addition, a tablet containing serrati peptidase was given three times a day for a period of three days. The wound's inflammation diminished^[10].

Out of the patients in group 1, a total of five individuals showed the presence of serous wound drainage. Three patients experienced serous wound discharge on the third day after surgery, whereas two patients experienced serous wound discharge on the fifth day after surgery. An antibiotic injection, namely cefotaxime 1g IV BD, was administered empirically to all patients in question. In addition, the wound discharge was gathered for analysis, while a thrice-daily dose of Tablet serrati peptidase was administered for a period of 3 days. No presence of bacteria was seen in any of the wound swab cultures. All five patients experienced complete resolution of the serous wound drainage, and the suture was removed on either the eighth- or ninth-day post-operation. Among the second group, precisely six people displayed wound induration as the sole symptom^[11]. Two patients displayed wound induration on the third day post-surgery, whereas three patients encountered this symptom on the sixth day. Furthermore, a single patient had wound induration on the fifth day post-operation. For these individuals, the intravenous cefotaxime dosage of 1 gramme was prolonged for an extra two days. In addition, the doctor ordered a regimen of oral serrati peptidase tablets to be taken three times a day for a period of three days. The existence of serous wound drainage. The sutures were extracted on the 7th to 9th day after the surgical procedure^[11].

The bacteria *Pseudomonas* demonstrated resistance to cefotaxime, necessitating a shift in antibiotic therapy to the administration of piperacillin-tazobactam by injection. The alternate antibiotic regimen was continued for a period of five days. All six people who showed signs of purulent wound drainage subsequently experienced wound gaping. The wound dressing was conducted daily, at a frequency of twice daily. Once the purulent discharge had been resolved, these patients were then scheduled for the procedure of re-suturing the wound. After performing the wound restoring surgery, the administration of the same antibiotic was extended for an extra period of three days +. The dressing was taken off on the third day after the surgical procedure, following the re-stitching of the wound. Moreover, the patient was released from the hospital the same day. The patients were observed as outpatients, and the sutures were later taken out on the 10th day after the incision was stitched again. All six patients' wounds showed satisfactory healing after being re-sutured, with no additional complications. Among the patients in group 2, only two individuals displayed abnormal vaginal discharge, while none of the patients in group 1 showed this symptom. Both patients experienced atypical vaginal discharge for a period of two days, notably on the third

and sixth days after the surgery. Nevertheless, on the fifth day after the operation, the anomalous discharge had disappeared. Furthermore, there was an absence of uterine pain or fever^[12].

Conclusion

Based on the findings of this study, it may be inferred that a short course of antibiotics is equally effective as a long course of antibiotics. No statistically significant differences were observed between the two groups in terms of febrile morbidity, wound induration, serous wound discharge, purulent wound discharge, wound gaping, or atypical vaginal discharge. The increasing prevalence of antibiotic resistance has become a significant concern, necessitating the prioritising of the use of more limited medications. The abbreviated treatment regimen is more economically efficient in comparison to the extended course of antibiotics, as it involves a smaller amount of antibiotics used for a shorter period of time. The shortened antibiotic regimen is considered to be both safe and effective, providing convenience and resource efficiency by minimising the requirement for substantial labour. Thus, by employing this method, the incidence of irregularity in drug administration can be prevented. Therefore, it can be a practical substitute for the usual method of administering intravenous antibiotics for three days, and then switching to oral antibiotics, which is frequently done at a government healthcare facility.

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Conflict of interest

Nil

References

1. Anorlu RI, Maholwana B, Hofmeyr GJ. Methods of Delivering the placenta at caesarean section. *Cochrane Database Syst Rev.* 2008;3:CD004737.
2. National Nosocomial Infections Surveillance (NNIS) System: National Nosocomial Infections Surveillance (NNIS) System Report, data summary from January 1992 through June 2003, issued August 2003. *Am J Infect Control.* 2003;31:481-498.
3. Šumilo D, Nirantharakumar K, Willis BH, Rudge G, Martin J, Gokhale K, *et al.* Long-term impact of giving antibiotics before skin incision versus after cord clamping on children born by caesarean section: protocol for a longitudinal study based on UK electronic health records. *BMJ Open.* 2019 Sep 1;9(9):e033013.
4. Shiffman ML, Keith FB, Moore EW. Pathogenesis of ceftriaxone-associated biliary sludge. *In vitro* studies of calcium-ceftriaxone binding and solubility. *Gastroenterology.* 1990;99:1772.
5. Wild SM. Antibiotic prophylaxis at caesarean section. *Lancet.* 2002;360:724.
6. Meyer NL, Hosier KV, Scott K, Lipscomb GH. Cefazolin vs cefazolin plus metronidazole for antibiotic prophylaxis at cesarean section. *South Med J.* 2003;96(10):992-995.
7. Nicolau DP, Patel KB, Quintiliani R, Nightingale CH. Cephalosporin-metronidazole combinations in the management of intra-abdominal infections. *Diagn Microbiol Infect Dis.* 1995;22(1-2):189-194.
8. Roberts S, Maccato M, Faro S, Pinell P. The microbiology of post-cesarean wound morbidity. *Obstet Gynecol.* 1993;81(3):383-386.
9. Bendesky A, Menéndez D, Ostrosky-Wegman P. Is

- metronidazole carcinogenic? *Mutat Res.* 2002;511(2):133-144.
10. Elliott JP, Flaherty JF. Comparison of lavage or intravenous antibiotics at cesarean section. *Obstet Gynecol.* 1986;67(1):29-32.
 11. Passmore CM, McElnay JC, Rainey EA, D'Arcy PF. Metronidazole excretion in human milk and its effect on the suckling neonate. *Br J Clin Pharmacol.* 1988;26(1):45-51.
 12. Matsuda S. Transfer of antibiotics into maternal milk. *Biol Res Pregnancy Perinatol.* 1984;5(2):57-60.