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Comparative Study on Short Term and Long Term Antibiotic Prophylaxis in Obstetrics and Gynaecological Surgeries

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A B S T R A C T

***Background*:** Postoperative infections remain a significant challenge in obstetrics and gynecological surgeries, leading to increased hospital stays and healthcare costs. Antibiotic prophylaxis aims to reduce microbial colonization during surgery. This study compares the effectiveness of short-term and long-term antibiotic regimens in preventing infections following elective caesarean sections and abdominal hysterectomies. ***Methods*:** An interventional prospective study was conducted over a year with 100 participants. Group 1 (50 patients) received a short-term regimen of ceftriaxone, while Group 2 (50 patients) underwent a long-term regimen. Key metrics, including wound infection rates, febrile morbidity, duration of hospital stay, and the need for additional antibiotics, were analyzed. ***Results*:** Wound infections were more frequent in Group 1 (14%) compared to Group 2 (2%), with febrile morbidity similarly higher in Group 1 (16% vs. 4%). The mean hospital stay was significantly shorter for Group 1 (3.12 days vs. 5.24 days). However, Group 2 demonstrated better infection control overall. ***Conclusion*:** While both regimens were effective, the short-term regimen was associated with reduced hospital stay and costs but increased infection rates. Long-term antibiotics offered superior infection control but at the expense of prolonged hospitalization and higher risk of nosocomial infections. Patient selection remains critical in determining the appropriate prophylactic approach.

Keywords: Antibiotic Prophylaxis, Surgical Site Infections, Short-term vs. Long-term Antibiotics.

INTRODUCTION

Postoperative infection is one of the most serious and common complication after surgery. It is associated with prolong hospital stay and results in increased medical cost. The purpose of antibiotic prophylaxis in surgical procedures is not to sterilize tissues but to reduce the colonization of microorganisms introduced at the time of operation [1]. Surgical site infections (SSI), which accounts for 15-20% of all healthcare-associated infections, is the second most common preventable adverse outcome of major surgery. The incidence of SSI, which differs according to surgical procedure, is highest for gastrointestinal interventions [2].

Prophylactic antibiotics decrease the bacterial inoculum burden on the skin and makes the operative site less hospitable to the growth of bacteria [3]. The incidence of SSI may be influenced by factors such as pre-operative care, the theatre environment, post-operative care and the type of surgery [4]. International and ICMR guidelines on antimicrobial use recommend use of surgical antimicrobial prophylaxis (SSAP) by administering a single dose of antibiotic in women undergoing elective surgeries [5]. The use of prophylactic antibiotics to reduce post-cesarean section febrile morbidity has been advocated since 1968 [6], although prophylactic antibiotics during cesarean section have been extensively reviewed and generally found to be effective in preventing infection, surveys suggest the inconsistent and variable application of recommendations for its use [7].

Prophylactic antibiotics reduce surgical site infections and evidence-based national guidelines recommend their administration prior to surgical incision [8]. Programs that reduce the incidence of SSI can substantially decrease morbidity and mortality and reduce the economic burden for patients and hospitals [9].

Finally, surgeon-controlled factors such as sterile technique, blood loss and the operative time, and use of prophylactic antibiotics are important determinants of wound infection rates. The rate of wound infection serves as a useful measure of the adequacy of sterile precautions and adherence to surgical techniques and principles [10].

Based on these backgrounds, this study was planned to compare the efficacy of short term antibiotic usage, to that of long termantibiotics usage in patients undergoing elective major obstetrical and gynecological surgery.

AIMS AND OBJECTIVES

To compare the effectiveness of short course regimen of antibiotic usage with that of the long term course of antibiotic prophylaxis in controlling infections in caesarean section and abdominal hystrectomy at NMCH & RC, Raichur.

MATERIALS AND METHODS

Study design: Interventional prospectivestudy

Study period: 1 year

Sample size: 100 samples

Inclusion Criteria:

1. Women who are willing to participate in study with an informed valid consent .
2. Patients undergoing elective or emergency caesarean section.
3. Women undergoing abdominal hysterectomy

Exclusion Criteria:

1. Any antibiotic treatment 2 weeks prior to surgery.
2. Presence of premature rupture of membranes >6hours.
3. Prone to infection (uncontrolled diabetes mellitus, cardiac diseases, any infective focus)
4. Mild, moderate and Severe Anemia.
5. Immuno-compromised state and on patients on immunosuppressive therapy.
6. Prolonged preoperative hospitalization in previous caesarean section.
7. Women allergic to antibiotics.

Group I:50 cases will be given injectable antibiotics ceftriaxonewithin 1hr of commencement of surgery. Another dose is given 12 hrs after first dose is considered as short course regimen.

Group II: 50 cases will be given same injectable antibioticsafter commencement of surgery, twice a day for 5 days. This will be considered as the long course regime.

After the approval of institutional ethical committee for the study and obtaining written informed consent from each patient, women will be explained about the nature of the study

A test dose of antibiotic will be administered intradermally in the forearm to test for any allergies, thorough assessment including history, laboratory investigations was done to evaluate any infections before and after surgery andselection of antibioticto be donebased on sensitivityto decrease postoperative infectious morbidity and mortality. The presence of temperature, Urinary Tract Infection, Respiratory Tract Infection, abdominal wound infection, wound induration, wound discharge,wound gaping need for additional antibiotic and the period of hospital stay will be noted.

Postoperatively for patientswith wound discharge, wound swab is collected and sent for culture and sensitivity and results on each groups were compared.

RESULTS

Table 1: Age distribution chart of both groups

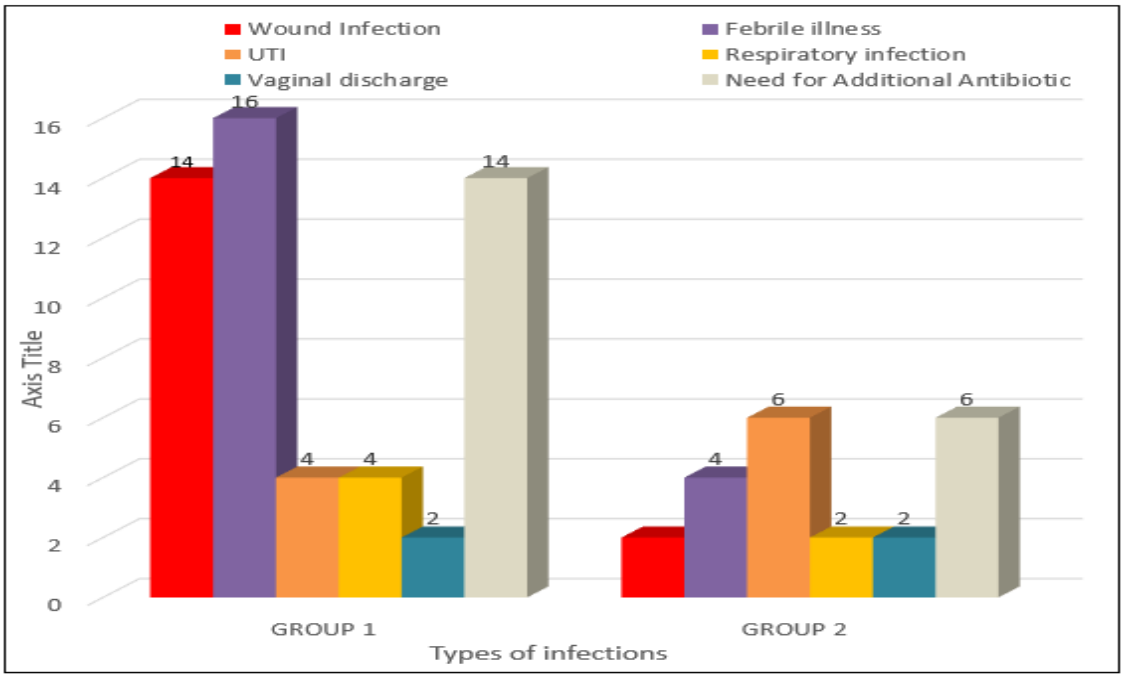
	Group 1		Group 2	
	N	%	N	%
<30 years	20	40	21	42
31-40 years	5	10	6	12
41-50 years	15	30	13	26
51-55 years	10	20	10	20

Table 1 shows no significant difference in agewhen both groups are compared.

Table 2: Types of infections

	Group 1		Group 2		
	N	%	N	%	
Wound infection	7	14	1	2	0.026
Febrile illness	8	16	2	4	0.045
Urinary tract infection	2	4	3	6	0.646
Respiratory tract infection	2	4	1	2	0.557
Vaginal discharge	1	2	1	2	1.000
Need for additional antibiotic	7	14	3	6	0.021

Table 2 shows statistical significant difference in wound infection and febrile illness when both group1 and group 2 are compared.

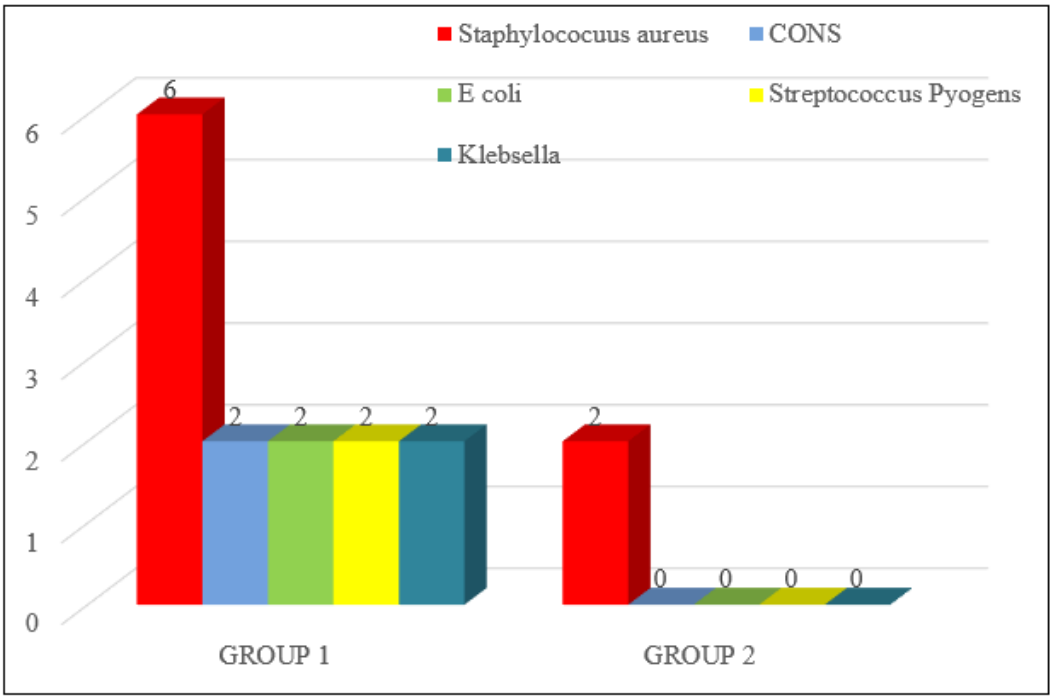


Graph 1: Bar graph showing types of infections when both groups are compared

Table 3: Percentageof organisms isolated from SSI

	GROUP 1		GROUP 2	
	N(7)	%	N(1)	%
Staphylococcus aureus	3	6	1	2
CONS	1	2	0	0
E coli	1	2	0	0
Streptococcus pyogens	1	2	0	0
Klebsella	1	2	0	0

Table 3 showing staphalococcus organism is most common organismisolated from SSI.

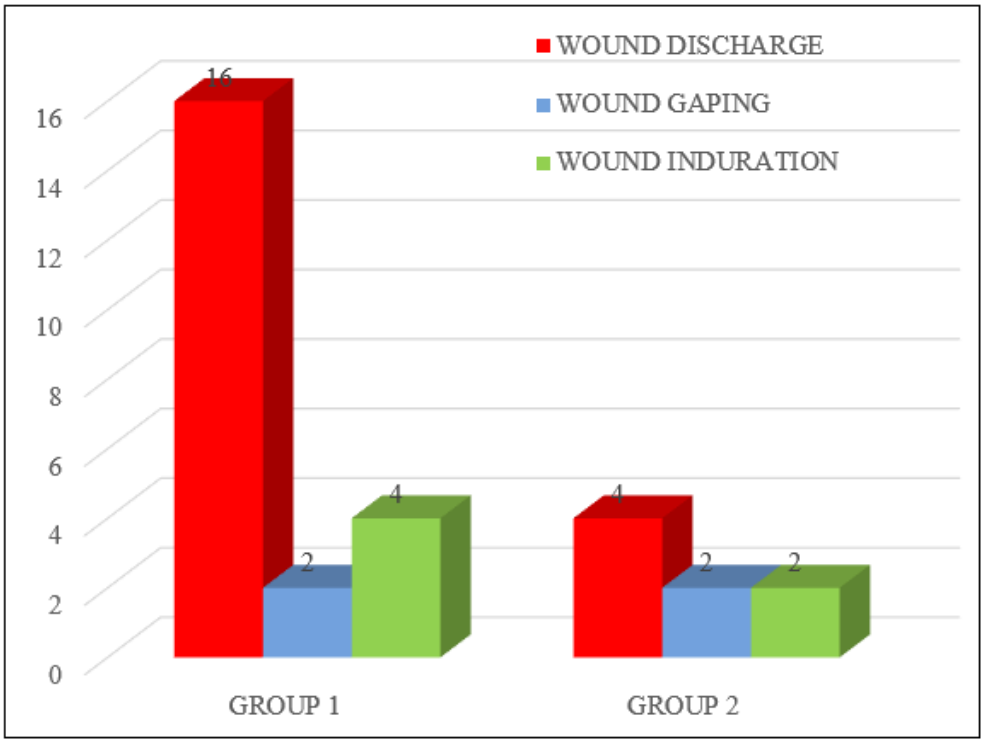


Graph 2: Showing type of organisms isolated from SSI

Table 4:Distribution showing presence of wound sepsis

	Group 1		Group 2	
	N	%	N	%
Wound discharge	8	16	2	4
Wound gaping	1	2	1	2
Wound induration	2	4	1	2

Table 4 shows there is significant difference noted in wound discharge when group 1 and group 2 are compared.



Graph 3: Showing distribution of wound sepsis

Table 5: Duration of hospital stay

	Group 1	Group 2	P value
Hospital stay	3.12 +1.2 days	5.24+2.3days	<0.001

Table5 showsmean length of hospital stay shows statistical significant difference when both groups are compared.

DISCUSSION

In present study age in both the groups were similar and of no statistical significance. In present study, comparision of wound infections in group 1(14%) and group 2 (2%) was statistically significant (p-0.026) due to better wound infection control in long term antibiotic course group.

In Jabeen *et al*., study statistically analysed 306 patients which showed there was no significant difference in post operative wound infection in both the groups [1].

In our study, comparision of febrile morbidity in group 1 (16%) and in group 2 (4%)(p -0.045) with significant difference in both the groups which showed febrile morbidity is more in short term course.

Tahseen *et al*., study of febrile morbidity is observed in 12 patients 5 in group 1 and 7 in group 2, this findings were not statistically significant [2].

In present study wound dischargeand duration of hospital stay shows statistical significant difference when short term and long term cousegroups are compared

In a study by S. H. Huam *et al*., also showed thestatistical significant difference (p= <0.001) whenboth the groups are compared [3].In microbiological growth staphylococcus aureus was seen in majority of cases which was followed by CONS.

CONCLUSION

Present study conclude that, Both Short term and long termcourse of antibiotic are effective, patient selection isdone carefully and categorised post operative infections morbidity not only depends on antibiotic usage but, also many others factors like age, nutritional status, hygiene conditions, anaemic status, duration of operation, blood loss during surgey.

Short term course has advantage of lesser hospital stay, they are less prone for opportunistic infections, cost effective with lesser side effects with good patient compliance but has disadvantages of increase in wound infections, decreased hygiene and care.

Long course of antibiotics has lesser incidence of wound infection but has disadvantage of long stay in hospital making them prone for nosocomial infections and cross contaminations.

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