



ORIGINAL RESEARCH PAPER

General Surgery

STUDY COMPARING PREOPERATIVE PROPHYLACTIC SINGLE DOSE INTRAVENOUS ANTIBIOTIC VS INTRA INCISIONAL ANTIBIOTIC IN SURGICAL SITE INFECTION

KEY WORDS:

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BACKGROUND

Surgical site infection (SSI) continues to be a major cause of post-operative morbidity and mortality since time immemorial. SSIs affect between **2% and 5% of patients** undergoing surgery. They also result in **increased** post-operative pain, poor wound healing, longer hospital stays, increased ICU admissions, increased costs and as patient psychological suffering. **Many methods** have been evolved to combat wound infection including concept of antiseptics and use of intravenous antibiotics. But the **rate of SSI has been static** over the past few decades. **Prophylactic antibiotic infiltration** into the wound ensured a high concentration of antibiotic at the incision site and was shown to give systemic cover through antibiotic absorption from the incision site.

AIM

To compare the **efficacy of preoperative cefotaxime infiltration at the incision site with that of Intravenous cefotaxime only** in preventing surgical site infection in all laparotomy surgeries taken in elective manner and measuring the drug concentration in serum and incisional tissue drain fluid.

METHODOLOGY

Study type: Randomized Control trial- 2 arm.
Study setting: Department of General Surgery Meenakshi Medical College & Research Institute
Sampling unit: Patients undergoing clean elective surgeries
Duration: 18 months
Sampling: Randomization using computer generated numbers
Sample size: 100 (50 in each group)

Inclusion Criteria

1. Age more than 18 years
2. Both sexes
3. Undergoing clean elective surgeries
4. Patients not allergic to cefotaxime test dose

Exclusion Criteria

1. Infected surgeries
2. Emergency surgeries
3. Patients with co-morbid conditions like Diabetes Mellitus, elevated urea creatinine, liver disease
4. Immunocompromised patients

Total number of patients are 100. They were divided into two groups. Group A who receives local infiltration of cefataxime at the incision site. Group B who receives IV cefataxime the outcome measures are incidence of surgical site infection, number of dressings, duration of hospital stay, need for additional antibiotic/re-suturing, culture and sensitivity finding.

Data entered into Microsoft excel and analyzed using SPSS software Summarized using mean (standard deviation) or frequency (percentage) Graphical representation using pie chart, clustered column chart Chi-square and independent t test used to compare groups P value of less than 0.05 considered significant.

RESULT

More than half of the patients were in the age group of 41-60 years and majority were males in both the groups. About two-third of the patients belonged to ASA class II in both the groups. The distribution of all the pre-operative vitals were similar in both group ($p > 0.05$). The duration of surgery in majority of the patients in our study were less than an hour.

Surgical site infection	Group, n(%)		p value
	A(n=50)	B(n=50)	
Present	1(2%)	7(14%)	0.026*
Absent	49(98%)	43(86%)	

*p value by chi-square test

The **incidence of SSI was significantly ($p < 0.05$) higher in group B** on comparison with group A.

Culture and sensitivity findings	Group, n(%)		P value
	A(n=50)	B(n=50)	
No growth	49(98%)	43(86%)	0.045*
E.coli	0	2(4%)	
pseudomonas	0	1(2%)	
Staph.MRSA	1(2%)	4(8%)	

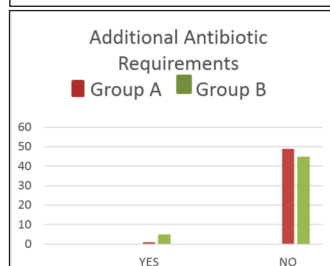
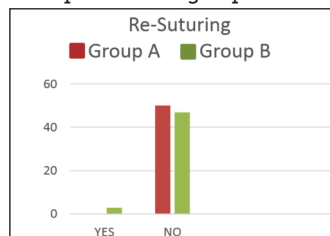
*-p value by chi-square test

The **culture growth was significantly ($p < 0.05$) higher in group B** on comparison with group A.

	Group, mean (± SD)		p value
	A(n=50)	B(n=50)	
Hospital stay (days)	3.13(±0.43)	3.67(±0.62)	<0.001
Cost of treatment (Rs)	21750(±1861)	23197(±2145)	<0.001

*-p value by independent test

The **cost of treatment and the duration of hospital stay were significantly ($p < 0.05$) higher in group B** (IV antibiotics) on comparison with group A.



The need for re-suturing and additional antibiotic requirement was significantly ($p < 0.05$) higher in group B on comparison with group A.

Dressings	Group, mean (\pm SD)	
	A(n=50)	B(n=50)
mean \pm SD	2.48 \pm 0.57	2.85 \pm 0.69
't' value	2.923	
'p' value	0.004*	

*-p value by independent t test

The mean number of dressings was significantly ($p < 0.05$) higher in group B on comparison with group A.

DISCUSSION

Samir Anand et al. found that the rate of surgical site infection was more in intravenous antibiotic than intra-incisional antibiotic group (25% vs. 8.33%).

Study by Dixon and Armstrong done with Cefamandole, found intra-incisional infiltration to be more efficacious than intravenous administration.

On the other hand, study done by Greenall et al where the effect of intravenous and intra-incisional Cephaloridine was compared, and they found to be equally efficacious.

A study with Amoxicillin/Clavulanic acid as antibiotic also found incidence of SSI was considerably lower in the group given the antibiotics in the abdominal wall.

CONCLUSION

Intra-incisional antibiotic delivery is more effective at preventing surgical site infection than using simply intravenous antibiotics.

The emergence of a complication in the form of SSI lengthens the patient's stay in the hospital and increases the cost of care.

Additionally, this may help to lessen the patient's morbidity (requirement of additional antibiotics, re-suturing).

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