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"TO STUDY THE EFFECT OF SINGLE DOSE ANTIBIOTIC PROPHYLAXIS VERSUS CONVENTIONAL ANTIBIOTIC THERAPY IN ELECTIVE CASE OF CLEAN SURGERY"

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ABSTRACT

Introduction: Antibacterial drugs are considered as powerful tools to prevent infections in different settings. Various analysis which have been done on the antibiotic choice and timing of antibiotics have agreed that first dose of the antibiotic has to be given half- one hour before surgery, and also that a long acting antibiotic is preferred. The conventional use of antibiotics for prolonged period often result in high cost to the patient, hence our intention is to study the effect of single dose prophylactic antibiotic an hour before a surgical intervention with the chosen standard antibiotic with regard to the conventional use of same antibiotics for 3 days. **Aims and Objectives: Aim:** Study the effect of single-dose antibiotic prophylaxis versus conventional antibiotic therapy in elective cases of clean surgeries. **Objectives**

1. To evaluate Southampton wound grading system in single dose antibiotic group
2. To evaluate Southampton wound grading system in conventional dose antibiotic group
3. To compare the cost of antibiotic in both these group

Material and Method: A study was prospective type and was done in the Surgery Department, JNMC and the patients were randomly assigned into group 1 and group 2.
Group 1 is defined as the single dose antibiotic group Group 2 is defined as the conventional dose antibiotic group.
Discussion: Antibiotic therapy is administered to the surgical patient to prevent post- operative wound infection. In order to decrease post-operative infection, the antibiotics have been used over-zealously, resulting in increasing incidence of antibiotic resistance and additional burden of cost in the path of recovery of the patient. In the present study, only clean procedures were included, that means wound is not contaminated by flora of the viscera. Hence, to cover the contamination by skin commensals, cephalosporin was used. Present study includes 100 patients and divided into two groups consisting of 50 patients each. The patients who were given single dose antibiotic prophylaxis were included in group 1 and those given conventional therapy of antibiotics were included in group 2.

KEYWORDS: Conventional antibiotic therapy, single dose antibiotic, post operative infection, Southampton grading.

INTRODUCTION

Antibacterial drugs are considered as powerful tools to prevent infections in different settings. But unwise usage of these antibiotics has become a source of argument amongst people. Clear and sensible antibiotic use is thought as the aftermath of excessive usage of antibiotics which led to increase of resistance towards the antibiotics used and thus has risen the expenses in medical support.[1]

Resistance towards antibiotics is a world-wide dangerous phenomenon, so, WHO in the year 2012 had raised a clarion call for the reduction of the usage of antibiotics and thereby raising measures to avoid the resistance towards antibiotics.[2]

Antibiotics when used in prophylaxis, prevent the complications arising due to infections in therapies. The usage of antibiotics conventionally, is usually for fixed period of time after a procedure which is done therapeutically to prevent infections.[3]

Different methods of administrations of antibiotics like timing, nature and number of drugs were analysed by different studies. A report was then prepared on basis of the collected data and a randomized regulated conduct

for antibiotic prophylaxis of each procedure was then published.[4]

Keighley demonstrated that the rate at which a wound is infected following the administration of a singular dose of cephalosporin before surgery is less (3.2%) compared to a postoperative antibiotic therapy given for three days (5.5%). Before or during an operative procedure, the first dosage of any broad-spectrum antibiotics should be given, as it is observed that incised wound is less likely to be contaminated thereafter. Hence antibiotic therapy plays a very vital role in the prevention of wound infection.[5]

A coagulum of blood and fibrin is impenetrable to the bacteria, and its formation time is 48-72 hours. Thus if the wound could be kept free from micro-organism till the coagulum formation, there would not be any infection subsequently.[6]

With respect to the usage of antibiotics, vital for infection control are careful surgical skill, handling tissues properly, a clean environment, good preparation done preoperatively, friendly theatre setting, and good care of wounds; which are now being given less priority.[7]

Many studies including the Cochrane data, show that there is no necessity in the prolonged usage of antibiotics.

There has been in observation, that in public hospitals where the patient load is more, in relevance to the emergence of surgical site infections, the antibiotics have been used for prolonged period of at least 7-10 days. This has led to the increased expenditure and in the rise of new strains of organisms which are being resistant to the traditional antibiotics administered and thus leading to the usage of higher antibiotics. Infections of surgical sites depend on the type and number of the organisms. Wound sepsis is unlikely when there is a count of less than 10 organisms/ml. Growth of bacteria is influenced by the organism's virulence, the patient's age, patient's glycaemic status, obesity, patient's immune status, and co-existing diseases.[8]

The study done by Chambers in 2001 recommended that first generation cephalosporin be the drugs of choice for the prophylactic use for general surgical interventions.[9]

Post-operative wound infection is defined as surgical site infection from 0-30 days after surgery, or infection to surgical site till one year in cases of implants like mesh, vascular grafts and prosthesis.[10]

Naz et al conducted a comparative study between a single dose of cephalosporin as the chosen antibiotic and the traditional dose of antibiotics in gynaecological interventions and concluded that single dose antibiotic prophylaxis is acceptable when the surgical principles are being followed.[11]

A study conducted by Wideman and Matthijssen on the usage of cefazolin versus cefotaxime as the therapeutic antibiotic in around 118 patients undergoing hysterectomy, stated that cefotaxime and cefazolin are useful equally in every aspect and their use depends upon the expense and accessibility to the drug.[12]

Various analysis which have been done on the antibiotic choice and timing of antibiotics have agreed that first dose of the antibiotic has to be given half- one hour before surgery, and also that a long acting antibiotic is preferred.[13]

Many randomized clinical trials have been conducted to observe the role of antimicrobial therapies to decrease incidence of wound infections post-surgery.[14,15] Currently, in "clean-contaminated" surgeries such prophylaxis is recommended and in some clean operations.[16] However, it was observed that as the antibiotics were not administered at the proper time, the therapeutic concentration levels could not be attained in the operative period.[17]

In conventional antibiotic therapy, antibiotics were administered for a fixed period of time (3 days post-operatively and a single pre-operative prophylactic dose) to prevent post-surgical infection.[18]

With the advancing methods of asepsis, the role of antibiotics was becoming questionable for various surgeries. However, in public hospitals despite the adherence of all sterile precautions, the contamination during the surgical procedure can lead to increase in the bacterial load in the blood, can leads to the use of antibiotics for long period, to cover the postoperative infection. The conventional use of antibiotics for prolonged period often result in high cost to the patient, hence our intention is to study the effect of single dose prophylactic antibiotic an hour before a surgical intervention with the chosen standard antibiotic with regard to the conventional use of same antibiotics for 3 days.

AIM AND OBJECTIVES

Aim

Study the effect of single-dose antibiotic prophylaxis versus conventional antibiotic therapy in elective cases of clean surgeries.

OBJECTIVES

1. To evaluate Southampton wound grading system in single dose antibiotic group
2. To evaluate Southampton wound grading system in conventional dose antibiotic group
3. To compare the cost of antibiotic in both these group

MATERIAL AND METHOD

The study was performed in the teaching health care center- Acharya Vinobha Bhave Rural Hospital (AVBRH), Sawangi (Meghe), Wardha.

A study was prospective type and was done in the Surgery Department and the patients were randomly assigned into group 1 and group 2.

Group 1 is defined as the single dose antibiotic group Group 2 is defined as the conventional dose antibiotic group.

All surgical interventions were carried out in similar operative backgrounds, and with identical preoperative methods of safety, and care given post-operatively is followed for all patients.

Study duration: From June 2016 to October 2018.

Study population: AVBRH, Wardha.

Ethical aspect
Ethical Committee of our institution approved the proposed study. An informed consent was obtained from all participant after the explanation of all the aspects of study.

Inclusion Criteria
- Age limits-15 to 85 years
- Clean surgeries like Hydrocele, Inguinal Hernia Fibroadenoma and lipoma were included.

Exclusion criteria
- Patients with history of cephalosporin group hypersensitivity.
- Patients having existing comorbidities like uncontrolled diabetes, hypertension, renal, cardiac and hepatic diseases
- Patients with history of treatment with steroids and those drug classified to cause immune deficiency.
- Patients unwilling for the study.
- Females with pregnancy.
- Unclean wounds and patients with history of malignancy.
- Patients on prophylactic antibiotics for other diseases.

Sample size: 50 patients in each group.

The guidelines for antibiotic usage are preordained as follows
Group-1
- Single dosage of Injectable Ceftriaxone 50 mg/kg body weight intravenous stat (as per Centres for Disease Control and Prevention Guidelines) after a test dose given an hour before the surgical intervention.

Group-2
- Single dosage of Injection Ceftriaxone 50 mg/kg body weight to be given as a stat dose intravenously, after a test dose given 60 min prior to surgery (as per CDC and Prevention Guidelines) followed by post-operative intravenous antibiotics. Injection ceftriaxone 50 mg/kg/day IV twice daily for the first 3 days.
- At any time, patient shows wound gap, wound infection, redness, induration treatment can change.
- Patients were given admission 1 day before surgical procedure and required tests were carried out. Shaving of the operative area was done on the night previous of the procedure and patients were instructed to bath in the morning on the day of the operation.

Infection grading in post-operative patients
On the third, fifth and the seventh days post operatively, based on Southampton scoring system the wound was seen and grading of the infection was done.

Southampton scoring system grading
0 – Wound healing normally
1 - Mild erythema with Bruising
2 – Inflammatory signs and Erythema 3 - Serous (or) clear discharge
4 – Formation of pus
5 – Deep seated and severe wound infections.

Follow up
All wounds were examined on the third, fifth and seventh day post operatively as per the Southampton wound grading system and removal of sutures were done on the 7th day during follow up.

OBSERVATIONS AND RESULTS

Age

Table 1: Number of patients in two groups with respect to age.

Age	Group one	Group two	ϰ2-value
≤20 yrs	6(12%)	5(10%)	2.47 p=0.78,NS
21-30 yrs	5(10%)	10(20%)	
31-40 yrs	13(26%)	10(20%)	
41-50 yrs	11(22%)	11(22%)	
51-60 yrs	6(12%)	7(14%)	
>60 yrs	9(18%)	7(14%)	
Total	50(100%)	50(100%)	
Mean±SD	43.50±16.51	41.80±16.21	
Range	16-85	15-70	

Age distribution of the patients varied from ≤20 years to ≥60 years. The age group which was most common was 31-40 years. There was an insignificant difference between Groups 1 and 2 based on age as in the group 1, mean ± SD was 43.5± 16.51 and the range was found to be 16-85 and in the group 2, the mean ± SD was found to be 41±16.21 and the range was found to be 15-70 and p value of 0.33 which is not significant.

Gender

Table 2: Number of patients in two groups with respect to gender.

Gender	Group one	Group two
Male	38(76%)	38(76%)
Female	12(24%)	12(24%)
Total	50(100%)	50(100%)

In group 1, males were 76% and Females were 24%, in group -2, Males were 76% and Females were 24%. There were more males in both the groups as compared to the females. Again there was no significant difference between both the groups in sex wise distribution of cases.

Weight

Table 3: Number of patients in two groups with respect to weight.

Weight(kg)	Group one	Group two	ϰ2-value
41-50 kg	19(38%)	8(16%)	6.32 p=0.09,NS
51-60 kg	12(24%)	16(32%)	
61-70 kg	12(24%)	18(36%)	
71-80 kg	7(14%)	8(16%)	
Total	50(100%)	50(100%)	
Mean±SD	58.66±9.97	61.58±8.17	
Range	45-80	47-74	

Weight distribution of the patients ranges from 41 kgs to 80 kgs. The most common weight range in group 1 was 41-50 kgs (38%) and in group 2 was 61-70 kgs (36%). There was no dissimilarity between the Groups 1 and 2 based on weight as p value of 0.09 which is not significant.

Diagnosis

Table 4: Number of patients in two groups with respect to diagnosis.

Diagnosis	Group one	Group two	ϰ2-value
Hydrocele	27(54%)	27(54%)	0.14 p=0.98,NS
Fibroadenoma	10(20%)	9(18%)	
Inguinal Hernia	8(16%)	8(16%)	
Lipoma	5(10%)	6(12%)	
Total	50(100%)	50(100%)	

The most common diagnosis was hydrocele (54%) in both group. There was no dissimilarity between the Groups 1 and 2 based on diagnosis as p value was 0.98 which is not significant.

Surgical Procedure

Table 5: Number of patients in two groups with respect to surgical procedure.

Surgical procedure	Group one	Group two	ϰ2-value
Eversion of SAC	27(54%)	27(54%)	0.14 p=0.98,NS
Excision of Fibroadenoma	10(20%)	9(18%)	
Hernioplasty	8(16%)	8(16%)	
Excision of Lipoma	5(10%)	6(12%)	
Total	50(100%)	50(100%)	

The most common surgical procedure was eversion of sac (54%) in both group. There was no dissimilarity between the Groups 1 and 2 based on surgical procedure as p value was 0.98 which is not significant.

Type of Anaesthesia

Table 6: Number of patients in two groups with respect to type of anesthesia.

Type of anesthesia	Group one	Group two	ϰ2-value
Local	15(30%)	15(30%)	-
Spinal	35(70%)	35(70%)	
Total	50(100%)	50(100%)	

The most common anesthesia was spinal anesthesia (70%) in both group. There was no dissimilarity between the Groups 1 and 2 based on type of anesthesia.

Duration of Surgery

Table 7: Number of patients in two groups with respect to duration of surgery.

Duration of surgery(minutes)	Group one	Group two	ϰ2-value
25 minutes	1(2%)	0(0%)	3.27 p=0.35,NS
30 minutes	16(36%)	15(30%)	
45 minutes	2(7%)	0(0%)	
60 minutes	31(62%)	35(70%)	
Total	50(100%)	50(100%)	
Mean±SD	49.10±14.38	51±1.88	
Range	25-60	30-60	

The most common duration of surgery was 60 minutes in both group (group 1 had 62% and group 2 had 70%). There was no dissimilarity between the Groups 1 and 2 based on duration as p value was 0.35 which is not significant.

Haemoglobin Percentage

Table 8: Number of patients in two groups with respect to heamoglobin.

Hb gm%	Group one	Group two	t-value	p-value
Male(13.5-17.5 gm%)	13.51±1.45	13.74±1.27	0.71	0.47,NS
Female(12-15.5 gm%)	10.90±2.00	12.09±1.19	1.76	0.09,NS

Hemoglobin percentage of the patients varied from 13.5-17.5 gm% in males and 12-15.5 gm% in females. The hemoglobin percentage was found to be more in males as compared to the females. There was no dissimilarity between the Groups 1 and 2 based on hemoglobin as p value was not significant.

Plasma Protein

Table 9: Number of patients in two groups with respect to plasma proteins.

Group	No of cases	Mean plasma protein	Std. Deviation	Std. Error Mean	t-value
Group one	50	7.52	0.57	0.08	1.29
Group two	50	7.66	0.54	0.07	p=0.19,NS

The mean plasma protein in group 1 was is 7.52 and in group 2 was 7.66. There was no dissimilarity between the Groups 1 and 2 based on plasma protein as p value of 0.19 which is not significant.

Post-Operative Antibiotics

Table 10: Number of patients in two groups with respect to post-operative antibiotics.

Postoperative antibiotics	Group one	Group two
Day 1	0(0%)	50(100%)
Day 2	0(0%)	50(100%)
Day 3	0(0%)	50(100%)

The patients in group 1 were not given any antibiotics post-operatively and in group 2, 50 patients were given post-operative antibiotics on day 1, 49 patients were given antibiotics on second day post-operatively, 50 patients were administered antibiotics on third day post-operatively. There was no dissimilarity between the Groups 1 and 2 based on post-operative antibiotics.

Adverse Effect of Antibiotics

Table 11: Number of patients in two groups with respect to adverse effects of antibiotics.

Adverse Effect	Group 1	Group 2
Yes	0(0%)	0(0%)
No	50(100%)	50(100%)
Total	50(100%)	50(100%)

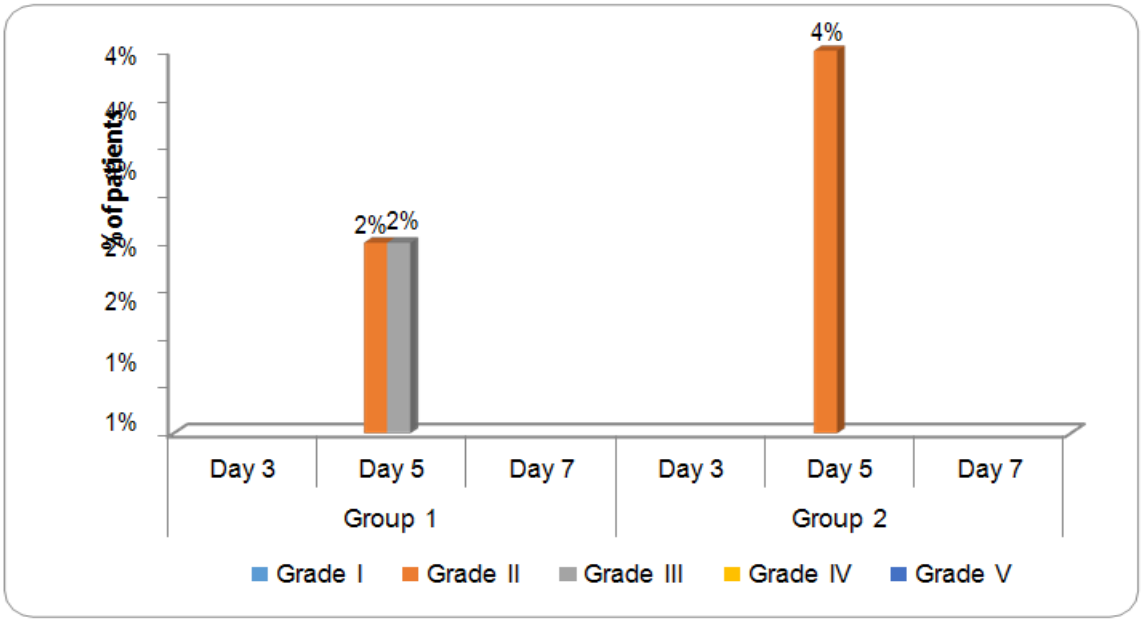
None of the patients developed any adverse reactions to the antibiotics in patients of group1 and group 2. There was no significant difference between both the groups with respect to distribution of patients according to adverse effect of antibiotics.

Southampton Grade of Post-Operative Infection

Table 12: Number of patients in two groups with respect to Southampton grade of post-operative infection.

Southampton Grade	Group 1			Group 2		
	Day 3	Day 5	Day 7	Day 3	Day 5	Day 7
Grade I	-	-	-	-	-	-
Grade II	-	1(2%)	-	-	2(4%)	-
Grade III	-	1(2%)	-	-	-	-
Grade IV	-	-	-	-	-	-
Grade V	-	-	-	-	-	-
χ2-value	1.33,p-value=0.24,NS					

Patients were assessing after the surgery according to Southampton grading. In group 1, 1 patient was having wound in form of grade II on post-operative day 5 and 1 patient was of grade III on the fifth day post-operatively. In group 2, 2 patients were having wound infection in form of grade II on post-operative day 5. There was no dissimilarity between the Groups 1 and 2 with respect to Southampton grade of post- operative infection, as given by the p value which was 0.24 which was not significant. The data is tabulated in table No. 12.



Graph 12: Number of patients in two groups with respect Southampton grade of post-operative infection.

Cost of Antibiotics

Table 13: Number of patients in two groups with respect to cost of antibiotics.

Group	Group 1	Group 2	t-value
Cost of antibiotics	Rs 47/patient	Rs. 278/patient	61.50 p=0.0001,S

In group 1 the cost of antibiotics was found to be Rs 47/ patient and in group 2, the cost of antibiotics was found to be Rs 278/ patient. There was no significant difference between both the groups with respect to cost of antibiotics as the p value was 0.0001 which was not significant

Analysis of the statistical data thus collected was performed using descriptive statistical methods and inferential statistical methods like chi-square test and Student's unpaired t test and software used in the analysis was SPSS 22.0 version and Graph Pad Prism 6.0 version

and the p of less than 0.05 is taken as level of significance.

DISCUSSION

Antibiotic therapy is administered to the surgical patient to prevent post- operative wound infection. In order to decrease post-operative infection, the antibiotics have been used over-zealously, resulting in increasing incidence of antibiotic resistance and additional burden of cost in the path of recovery of the patient.[125] In the present study, only clean procedures were included, that means wound is not contaminated by flora of the viscera. Hence, to cover the contamination by skin commensals, cephalosporin was used. Present study includes 100 patients and divided into two groups consisting of 50 patients each. The patients who were given single dose antibiotic prophylaxis were included in group 1 and those given conventional therapy of antibiotics were included in group 2.

In present study the age distribution of the patients ranges from 16 years to 85 years. Most common was 31-40 years (group 1-26%, group 2- 20%). There was no correlation found between the age of the patient and the post-operative wound infection in present study. But a definite correlation was found between age and efficacy of antibiotics was found in a study which involved around 9016 patients showing increasing age was associated with a reduced efficacy of the antibiotic.[126] Other study done by Haley R.W. et al investigated a random sample of around 71,200 surgical patients undergoing surgery in different 338 hospitals throughout the United States of America and found that patients with increased age had decreased efficacy of the antibiotics.[127] Explanations for this was increased immune dysfunction and co-existing comorbid conditions with increase in age.[128,129] As already stated, this type of correlation was not found in present study probably as sample size of the present study was small when compared with studies and patient with comorbid conditions were excluded from present study.

Both male and female patients were included in this study. In both group 1 and group 2, 76% were males and 24% were females. The population of male patients was predominant in both groups. There is no correlation between the gender and efficacy of antibiotics in this study. A study conducted by Corinna Langelotz et al[130] rate of Surgical site infection (SSI) for women was 1.74/100 procedures, and in males was 2.26/100 surgeries. Romana-Souza B et al reported that androgens have proinflammatory effect on wounds; where they impair the process of re- epithelialization, while the oestrogens had an anti-inflammatory effect[131] and study showed a significant difference in the rates of post-operative infections between males and females.

In this study the range of weight of the patients varied from 41 kgs to 80 kgs. The most common weight range was 41-50 kgs (38%) in group 1 and 61-70 kgs (36%) in group 2. In present study, there was no correlation between the weight of the patients and post-operative wound infection. Mullen et al[132] reported that the wound complications in obese persons were greater than non obese patients in the postoperative period. Obese patients require a greater amount of oxygen to be inspired to achieve the same oxygen tension as that of the normal weight patients thus predisposing them to SSI.[133] In obese patients dose required to reach the same plasma drug concentration is higher than normal weight patients.[134] The present study did not observe any correlation between weight and post-operative wound infection as the weight of patients included in this study was within normal range.

Two type of anesthesia were used in this study, local-30% in both group and spinal-70% in both the group. The most common anesthesia administered in group 1 and in group 2 was spinal anesthesia (70%). There were no dissimilarities observed between the Groups 1 and 2 based on type of anesthesia and there was no correlation found in between anesthesia used and post-operative infection. A study done by Svena M. Johnson the local anaesthetics reduces post-operative infection as they are bactericidal in nature.[135]

In the present study the duration of surgery ranges from 20 minutes to 60 minutes. Average duration of surgery was 60 minutes. Group 1 had 62% of patients and Group 2 had 70% of patients of 60 minutes. In this study, there was no significant difference between the Groups 1 and 2 based on duration of surgery. There have been multiple studies performed to show the relevance of the duration of surgery with regard to the wound infection. A review of 57 observational studies[136] in 2013 was done which reported that the increased duration of surgery was found consistently to be associated with wound infection. It was found in another study that when the operative time was 15% or greater than the mean (i.e., >3 h), the incidence of infections was found to be increased by two-fold.[137] The duration of surgery in my study was found to be an insignificant factor in association with post-operative wound infection.

In this study the percentage of hemoglobin in the patients varied from 13.5-17.5 gm% in males and 12-15.5 gm% in females. The hemoglobin percentage was found to be more in males as compared to the females. There was no variation observed between the groups based on hemoglobin with regard to post-operative wound infection. In all steps of wound healing like inflammation, granulation, neo-angiogenesis, and tissue modelling, the oxygen which is transferred by haemoglobin plays an important role.[138] One of the main factors for the development of wound infections is decreased oxygen supply. In chronic infections, the decrease in tissue oxygen tension of the surrounding tissue seems to be a major driving cause for their persistence.[139] In our study, we found that the levels of haemoglobin was found to be insignificant in the

outcome of the surgery as the study population chosen had normal levels of haemoglobin seen.

In this study the average plasma protein in group 1 was is 7.52 and in group 2 was 7.66. There was no association observed between plasma protein and the wound infection. Various study demonstrated that increased postoperative morbidity and mortality was associated with decreased Serum protein levels.[140] A study done by Nagachinta et al[141] was found that decreased serum protein levels lead todevelopment of wound infection. In our study, the level of serum protein did not have a convincing role in determining the outcome of surgery as the serum protein level in the patients taking part in the study were within the normal limits.

Southampton wound grading system was used in our study as this grading system was found to be effective in the assessment of post-operative infections. Wounds were graded by assessing the patient on the third, fifth and the seventh day after surgery in both groups.

In this study, patients were graded after the surgery according to Southampton grading. In group 1, 1 patient was graded as grade II wound infection on post-operative day 5 and 1 patient was graded as grade III on the fifth day post-operatively. In group 2, 2 patients were graded as grade II on post-operative day 5. Significant difference was not observed between the Groups 1 and 2 with respect to Southampton grade of post- operative infection. In present study (group1) 50 patients were administered antibiotics 60 minutes prior to the surgery and (group2) 50 patients were given single dose of antibiotics prior to the surgery and twice daily for three consecutive day after surgery. In our study we found no difference in the effects of administering single dose pre-operative antibiotic prophylaxis as compared to conventional antibiotic therapy.

A research conducted by H Bangaru and others, with the help of Southampton wound grading, there was no significant difference between their study and control groups in comparison to the administration of single dose antibiotics versus conventional antibiotic prophylaxis[142] in post-operative infection.

Following authors also have demonstrated the efficacy of single dose antibiotics in the prevention of infections.[143]

Numbers	Workers	Infection percentage	YEAR
1	Sanchez	5.6%	1958
2	Johnstone	8.7%	1962
3	Snider	2.3%	1968

The above quoted studies support the current study that pre-operative single dose prophylaxis is as effective as conventional antibiotic therapy according to Southampton grade of post-operative infection.

The study done by Burke reveals the results given by preoperative administration of antibiotics were more promising than post-operative administration of antibiotics.[144,145] Also the same has been recommended by the American society of health system pharmacist about the use of cephalosporin as prophylaxis for elective surgical cases.[146]

One dose of cephalosporin given before the surgery is as efficient as multiform- dose treatment and is a trust-worthy method of treatment in cases posted for surgery electively was demonstrated in studies done by Ranjan et al.[147] However in one study by Andrizal Yoesoef et al, it was reported that there was not any necessity for the usage of pre-operative antibiotic prophylaxis.[148]

A study done by Jayalal et al[149] demonstrated that administration of a single dose of antibiotics prior to the surgery gives similar results as that of the conventional therapy. Study done by Girish Gopinath, demonstrated that post-surgical antibiotics was as efficient as singular dose of parenteral antibiotic given before surgery in the prevention of infections in clean surgeries.[150] Both the studies had demonstrated similar results as our study. In studies conducted by Choi et al, Le et al[151,152], they found no difference in the effect of administration of single dose pre-operative antibiotics versus the administration of conventional prophylactic doses of antibiotic which were consistent with the findings of our study.

In this study, patient in group 1, the cost of antibiotics was found to be Rs 47 per patient and in group 2, the cost of antibiotics was found to be Rs 278 per patient. A study was done by Fernandez Arjona et al to know the economic feasibility between the administration of single dose prophylactic antibiotics and administration of conventional 7 days antibiotics. 5260 patients were analysed in a hospital in Taiwan concluded that the use of only the pre-operative antibiotics for surgical patients resulted in a gain of around 1500000$ for public funds.[153]

A sententious gain is observed economically in the present study, when the single dose antibiotic was administered over the traditional post-operative antibiotics.

The present study thus concludes that the cautious use of antibiotics will be beneficial to the patients in terms of better compliance and low cost and in the long run will avert the evolution of strains of microbial organisms resistant to antibiotics.

CONCLUSION

Thus, these points could be concluded after the observation of our study.

1. Age did not play a factor in determining the efficacy of either single dose antibiotics or conventional dosing of antibiotics.
2. Antibiotic showed similar effects irrespective of the gender.

3. Weight of the patients did not significantly influence the outcome.
4. Irrespective of the diagnosis of the patient, the efficacy of both the single dosage antibiotic and the conventional dosage antibiotics of the antibiotics was same irrespectively.
5. With respect to the anesthesia either spinal or local, did not influence the outcome of patient undertaken in this study.
6. The duration of the surgery was found to be insignificant outcome in the form of post-operative infection in this study.
7. As the levels of haemoglobin was normal in this study population, haemoglobin levels were insignificant in influencing the outcome.
8. There was found no significant association between the serum protein levels and the effect of single dose antibiotic prophylaxis and conventional dose antibiotic prophylaxis in this study as the levels of serum protein were normal in this study population.
9. This study showed equal efficacy of antibiotics between both groups.
10. Present study has shown a significant economic gain in the use of a single dosing of the antibiotics pre-operatively over the traditional dosing of antibiotics.
11. An equal efficacy in preventing surgical site infection with both single dose antibiotic and conventional antibiotic regimens was demonstrated in present study.

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