

Comparison of surgical site infection after single dose antibiotic prophylaxis at different time interval in patients undergoing elective laparoscopic cholecystectomy

¹Dr. Suneet Katoch, General Surgeon, MGMSC, Khaneri, Rampur (HP)

²Dr. Mukesh Kumar Jamwal, General Surgeon, Civil Hospital Thural, Palampur (HP)

³Dr. Sanjay Kumar, General Surgeon, MGMSC, Khaneri, Rampur (HP)

Corresponding Author: Dr. Mukesh Kumar Jamwal, General Surgeon, Civil Hospital Thural, Palampur (HP)

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Abstract

Background: In this study we compare the SSI after single dose antibiotic prophylaxis at different time interval in patients undergoing elective laparoscopic cholecystectomy

Methods: The present study was conducted at Department of Surgery, Dr RPGMC Kangra at Tanda. The 50 patients admitted for elective laparoscopic cholecystectomy, aging less than 75 years of both the genders were included

Results: Incidence of SSI at post-operative day-2, at the time of discharge, at the day of suture removal (post-operative day-8), and post-operative day-30 was nil in both groups

Conclusion: In the present study, incidence of SSI was nil in both groups

Keywords: SSI, Cholelithiasis, Cholecystectomy.

Introduction

Cholelithiasis is one of the most common abdominal diseases of adults.^{1,2} Cholecystectomy is the universally accepted method to manage symptomatic uncomplicated cholelithiasis and other benign

gallbladder diseases because it can cure the disease and has low morbidity and mortality. Approximately 115 patients undergo a cholecystectomy for every 100,000 of the world’s population for benign gallbladder disease annually.

The most frequent complication in patients undergoing cholecystectomy is surgical site infections (SSIs). An SSI is defined as an infection that occurs at or near a surgical incision within 30 days of the procedure or within one year if an implant is left in place. SSIs are the second most common cause of nosocomial infections to the surgical world.³ Though the post-Listerian era is enriched with many advances in field of asepsis and surgical and antiseptic techniques, SSIs are still threat to the surgical world. In hospitalized patients, SSIs are the third most frequently reported infection and often account for 12–16% of all nosocomial infections.⁴

Material And Methods

Study Area: Department of Surgery, Dr RPGMC Kangra at Tanda

Study Duration: One Year Sample size fifty patients

Preoperatively same antibiotic was given to all patients.

Inclusion Criteria

The patients admitted for elective laparoscopic cholecystectomy, aging less than 75 years of both the genders were included.

Exclusion Criteria

Patients were excluded on the following basis

- Day care surgery
- Contradictions for study drugs, in particular penicillin type I allergy
- Pre-existing antibiotics therapy within 14 days of surgery
- Indication for SAP other than cefuroxime
- Patients with co-morbid conditions like diabetes mellitus, jaundice, uraemia, neoplasia, immunosuppressed patients, pregnant or lactating women, patients on antibiotic therapy, cephalosporin allergy, conversion to open cholecystectomy, and patients with infective focus in the body

Randomization

The study comprised of 50 patients admitted for elective laparoscopic cholecystectomy. The patients were randomized according to computer-based randomization.

Group A: Twenty-five patients undergoing elective laparoscopic cholecystectomy were given a single dose of injection cefuroxime 1.5 gm IV outside the operation theatre in the wards minimum 30 mins before surgery.

Group B: Twenty-five patients undergoing elective laparoscopic cholecystectomy were given a single dose of injection cefuroxime 1.5 gm IV after the test dose just before the induction of anaesthesia within 30 mins of surgery.

Method

The surgical site was prepared inside the operation theatre. Three coats of 5% betadine paint were applied to the abdominal skin. The standard aseptic precautions were followed at each step. Post-operatively, the wounds were examined on second day, at time of discharge, and at the day of sutures removal (8th day post-operatively), and on 30th day (hospital visit or telephonic interview).

Antibiotic prophylaxis was given:

- On OT table
- In pre-operative room/ward

Data Collection

After admission, detailed history, examination and basic investigations were performed for all subjects. All the participants were asked to give their written informed consent after they had been made aware of the purpose of the study.

Statistical Analysis

Statistical analysis was performed using SPSS v21. Data were presented as frequency, percentages, mean, and standard deviation. Student t-test was used to compare quantitative variables between two groups. Non-normally distributed data were compared using Mann Whitney U test. Categorical variables between 2 groups were compared using Chi square test with or without Yate's correction. P value <0.05 was considered statistically significant.

Results

In the present study, mean age of the patients in group A and group B was 43.52±12.37 years and 44.96±16.06 years. Our study also observed that mean age was not statistically significant different between group A and group B (P=0.724).

Table 1: Comparison of SSI

	Group A (n=25)	Group B (n=25)
Day-2 post-operatively	0	0
At time of discharge	0	0
Day of suture removal (Day-8 post-operatively)	0	0
Day-30 post-operatively	0	0

Data were expressed as frequency

Incidence of SSI at post-operative day-2, at the time of discharge, at the day of suture removal (post-operative day-8), and post-operative day-30 was nil in both groups.

Discussion

SSI is the most common healthcare-associated infection^{5,6} and contributes to increased length of hospitalization and healthcare costs.⁷ Cholecystectomy is the most commonly performed abdominal surgery and one of the most common abdominal surgery procedures performed in the United States.^{8,9}

Antibiotic prophylaxis is recognized as one of the most important preventive measures to reduce the incidence of SSI. It is indicated in clean-contaminated and contaminated surgeries and in some special cases of clean surgery (e.g. implants, immunosuppression and risky operative location such as neurosurgery and cardiac surgery).¹⁰

Antibiotic prophylaxis should ensure an adequate bactericidal antibiotic concentration in serum and in the surgical bed; therefore, doses of the drug should be repeated in case of prolonged surgery or haemodilution. However, the preoperative dose is

considered to be sufficient in most cases, but if a repeated antibiotic dose is needed, it should be administered up till 24-48 hours from surgery. Antibiotic choice should be based on the spectrum of microorganisms most frequently involved in each surgical location, opting for the safer, cheaper and less likely to favour the emergence of drug-resistance bacteria. In order to ensure the effectiveness of antibiotic prophylaxis, its administration is usually protocolized, being not indicated in the case of a low risk gallbladder surgery.¹¹

However, a recent meta-analysis has revealed that antibiotic prophylaxis is not mandatory to prevent incident of SSI after laparoscopic cholecystectomy.¹²

Conclusion

In the present study, incidence of SSI was nil in both groups

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