

Role of Prophylactic Antibiotic in Elective Laparoscopic Cholecystectomy

Dr. Surendra Pathak, Dr. JPS. Shakya, Dr. Sheetal, Dr. Bhupesh Gogia

Abstract: *The study was conducted to study the role of prophylactic antibiotic in elective cases of laparoscopic cholecystectomy. Total of 60 patients were selected for the study and divided randomly into 2 groups. Group A in which antibiotic (ceftriaxone+salbactam 1.5gm) prophylaxis given and Group B in which antibiotic prophylaxis not given. Patients were followed for one month period and a significant difference in post-operative period complication between 2 groups was noted. CONCLUSION: A single dose of prophylactic antibiotic in laparoscopic cholecystectomy surgery is found to be significant in preventing post-operative infectious complication.*

Keywords: Laparoscopic cholecystectomy, antibiotic prophylaxis, complication

1. Introduction

Gallstone is the most common biliary pathology especially in females' age around 40 years. Cholesterol gallstones are most common among in Asia public because of environmental and dietary habits. Only 10% of patients with gallstones are symptomatic. Most gallstones are cholesterol stone but in Asia, it is pigmented stones. In India gall stones disease is more frequent in north India.

Cholecystectomy is one of the most common surgeries done today and laparoscopic cholecystectomy is the gold standard procedure. In 1882, Karl Lange bunch, a noted German surgeon performed the first successful cholecystectomy. In 1987, Philippe Moure performed the first laparoscopic cholecystectomy in a human.

Surgical antimicrobial prophylaxis refers to a very brief course of antimicrobial agent initiated 1 hour before an operation begins. It is used to reduce the microbial burden of intraoperative contamination to a level that will not overwhelm host defense. The concept of prophylactic antibiotics was introduced in the early 1960s.

Antibiotic prophylaxis includes the pre-operative administration of a wide spectrum antibiotic against the most frequent bacteria involved in surgical site infections. SSI occur anytime from 0 to 30 days after the operation or up to 1 year after a procedure. Surgical site infections are the 3rd most common post op infection in surgical patients after urinary tract and respiratory tract infections. Most SSIs are caused by skin-derived gram-positive cocci, including *Staphylococcus aureus*, coagulase-negative staphylococci (usually *Staphylococcus epidermidis*), and *Enterococcus spp.* The choice of antibiotic should be guided by four principles: Safety, narrow spectrum coverage of relevant pathogens, no general use for treatment of infection, and short-duration administration (ideally, a single dose given one to two hours before surgery; certainly for no more than 24 hours (48 hours for cardiac surgery). Cephalosporins are preferred agents for most patients.

2. Material and Methods

A Prospective randomized control study was conducted on patients admitted in the surgery department of S. N.

Medical College, Agra with diagnosis of cholelithiasis in 2 years (2019-2021).

Inclusion criteria:

- Patient with radiologically diagnosed case of cholelithiasis.
- Patients of age 15-60 years.
- Patients with no previous abdominal surgery.
- Patient with Body Mass Index <40
- Patient with normal leukocyte count.

Exclusion criteria:

- Patient who did not give consent.
- Antibiotic intake within 7 days prior to surgery.
- Acute cholecystitis within 6 months prior to surgery.
- Evidence of cholangitis and/or obstructive jaundice and biliary pancreatitis
- ASA score >2
- Conversion to open cholecystectomy.
- Age more than 60 years.
- Patient with rheumatic heart disease
- Patients with comorbidities like RHD/ HBsAg, HCV and HIV infection.

3. Methods of Study

Patients undergoing elective laparoscopic cholecystectomy were selected as suitable subjects for the study protocol. All the patients were examined clinically and investigated accordingly. Informed written consent was taken from all the patients participating in the study. Patients were randomly divided into the study group (Group A) and the control group (Group B). Antibiotic dose of ceftriaxone + salbactam 1.5gm was administered intravenously 2 hour before induction of anaesthesia for the patients in the study group – Group A (n = 30). No antibiotic was administered to the control group of patients– Group B (n = 30). Laparoscopic cholecystectomy was performed in all patients.

The postoperative course was monitored and any incidents, such as fever, infection of the trocar site, or intra-abdominal collection of pus, superficial or deep incisional soft tissue surgical site infection were noted.

The method of data collection is based on direct observation of the study population in the postoperative period.

All patients were followed up daily till discharge, then after few days (during stitch removal) and then 30 days following surgery to evaluate the surgical wound, and to look for signs and symptoms suggestive of any infection.

Patients were studied at any time within 30 days following surgery if they presented with signs and symptoms suggestive of any infection.

Statistical Analysis-All the quantitative variables like age, weight, duration of hospital stay, duration of surgery etc. ... were expressed using descriptive statistics like mean & standard deviation and 95% confidence interval. All qualitative variables like sex, ASA score, surgical site infections etc. ... were expressed in terms of proportion. Statistical analyses were performed using tables and bar graphs with significant value.

4.Result

In our study, Group A patients who received prophylactic antibiotic only 5 patients developed complication out of 30. While in Group B, patients who did not receive prophylactic antibiotic. 14 patients developed post-operative complication out of 30. Although the complication appeared to be mild but the difference between two groups was found to be significant with p value < 0.05.

5.Discussion

It is well documented that prophylactic antibiotic coverage of most 'clean contaminated' surgical procedures can significantly prevent infectious complications, including wound infections, thereby affecting the overall mortality and morbidity. However, the benefit of antibiotic prophylaxis in other 'clean surgical procedures, such as laparoscopic cholecystectomy, has been questionable. The low rate of wound infections and the straightforward treatment, if they occur at all, are the main arguments against routine antibiotic coverage during laparoscopic cholecystectomy. Laparoscopic cholecystectomy is an elective clean operation, and the post-operative wound infections would be very low. Prophylaxis in clean operations has been shown to be of value in other areas of surgery such as trauma and vascular surgery but in laparoscopic cholecystectomy, its benefits remains uncertain. Due to the unknown impact on bacterial resistance, Wald Vogel and associates suggested that the routine use of antibiotic prophylaxis should be discouraged.

The aim of the study was to assess the antibiotic therapy in preventing post-operative complications in laparoscopic cholecystectomy. The mean age of the study is 32 years in study group and 33 years in control group. The percentage of the females in the study group is 66.67% and, in the control, group is 53.33%. The percentage of males in the study group is 33.33% and, in the control, group is

46.67% symptomatic cholelithiasis is most commonly present in the 4th decade with significant female preponderance. Pain abdomen was the commonest presenting symptom which occur 56.67% in the study group and 50% in the control group. In my study 13.33% of patients in study group and 20% of patients in the control group were diabetic and 13.33% of patients in the study group and 20% of patients in the control group were hypertensive. There are several risk factors that are significantly associated with an increased incidence of infective complications in patients who undergo elective laparoscopic cholecystectomy; one of them is the presence of diabetic mellitus. Out of 60 patients in the study group 2 of them developed pus discharge from port site with incidence of about 6.67% and in the control group 5 patients out of 30 patients are developed pus discharge from port site with incidence of about 16.67%. All others had completely healed wound. Post-operative pain and hospital stay appear to be more in Group B. These differences yielded a P < 0.05 which is statistically significant, thereby illustrating that the rates of wound infection in patients given shot of iv antibiotic, and in patients given continuous post-operative iv antibiotics is statistically significant.

6.Summary

In our study the rate of post-operative infectious complication was found significantly lower in group A patients who received prophylactic antibiotic than those of group B who did not receive prophylactic antibiotic.

7.Result

Hence the prophylactic antibiotic has a significant role in clean contaminated surgery like laparoscopic cholecystectomy.