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To compare the incidence of surgical site infection in single dose intravenous antibiotic prophylaxis over no antibiotic prophylaxis in the prevention of wound infection following Lichtenstein tension free inguinal hernioplasty

[1]Dr. Prteet Negi, MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P India
[2]Dr. Priyanka Thakur , MD, Department of Anaesthesia, Indira Gandhi Medical College, Shimla HP India
[3]Dr. Ramesh Bharti, MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P India
[4]Dr. Amar Verma, MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P India
[5]Dr. Rajesh Sharma, MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P India
[6]Dr. Abhinav Sharma, MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P India

Corresponding Author: Dr. Priyanka Thakur, MD, Department of Anaesthesia, Indira Gandhi Medical College, Shimla HP India

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Abstract

Background: The role of antibiotic prophylaxis in mesh repair of inguinal hernia is unclear. We conducted a study to compare the incidence of surgical site infection in single dose intravenous antibiotic prophylaxis over no antibiotic prophylaxis in the prevention of wound infection following Lichtenstein tension free inguinal hernioplasty

Methods: This prospective study was conducted in the Department of Surgery, Dr. Rajendra Prasad Government Medical College Kangra at Tanda from May 2018 to December 2019after being approved by institutional protocol review committe and ethics committee.50 patients were included in the study.These patients were randomised into two groups i.e. Group A (Antibiotic Group) and Group B (Non-antibiotic Group).

Results: In Antibiotic group (Group-A), there was only one patient who had surgical site infection which was Deep Surgical Site Infection (DSSI). In Non-antibiotic group (Group-B) there were two patients of Superficial Surgical Site Infection (SSSI).

Conclusion: In our study, we concluded that statistically insignificant difference was found in the incidence of SSI in Antibiotic and Non-antibiotic Group

Keywords: SSI, Antibiotic, Pre-operative

Introduction

Prophylactic administration of antibiotics preoperatively has become a very important aspect of

care in surgical patients. Recommendations in literature are clear for their use in contaminated and clean—contaminated cases but picture is not so clear in clean surgical cases. Open Inguinal hernia repair using prosthetic mesh is an example of such cases where the preoperative use of antibiotics is debated.[1]

Wound infection is most common complication encountered in any surgical procedure. Reported rates of wound infection following inguinal hernia surgery vary from 0%-14%.[2]

The role of antibiotic prophylaxis in mesh repair of inguinal hernia is unclear. Few clinical trials have addressed this issue. One trial showed a significant (10-fold) decrease in wound infection with intravenous antibiotic prophylaxis in mesh repair [3]; 2 others did not[4].

Material And method

This prospective study was conducted in the Department of Surgery, Dr. Rajendra Prasad Government Medical College Kangra at Tanda from May 2018 to December 2019after being approved by institutional protocol review committe and ethics committee.50 patients were included in the study.These patients were randomised into two groups i.e. Group A (Antibiotic Group) and Group B (Non-antibiotic Group).

Inclusion criteria

- All Patients of both genders above the age of 18yearswith unilateral or bilateral inguinal hernia.

Exclusion criteria

- Patients with recurrent or strangulated inguinal hernia.
- Femoral hernia and giant scrotal hernia with massive defect.
- Below 18 years of age.
- Allergic to injection Amoxicillin+ Clavulanic acid.
- With systemic diseases like diabetes mellitus.
- Liver or renal impairment.
- Patients on steroid or antibiotic therapy within a week before surgery.
- Pregnant or lactating women.
- Immunocompromised patients will be excluded from the study.

Characteristics of the study

- **Participants**: 50 patients who underwent inguinal mesh hernioplasty.
- **Group**: Group A (Antibiotic Group) and Group B (Non-antibiotic Group)
- **Type of study**: Randomized control clinical study.
- **Randomization**: By alternate method
- **Intervention**: Surgery-Lichtenstein tension freeinguinal mesh hernioplasty
- **Medication**: Group A (Antibiotic Group): Injection Amoxicillin+ Clavulanic acid 1.2gram single dose was given within one hour before skin incision in antibiotic group. The administration of the drug was done intravenously in the pre- operating room. No more antibiotic was given to these patients in the post-operative period.
- Group B (Non -antibiotic group):10millilitre normal saline was given in non-antibiotic group.

Statistical analysis

Data were expressed as frequency, percentage, mean and standard deviation. Diagnostic values were calculated using MedCalc for Windows, version 19.1.17(Med Calc Software, Ostend, Belgium).

Results

The socio-demographic variable in both groups were comparable.

Table 1: Postoperative surgical site infection

Infection	Antibiotic group (Group-A) n=25	Non-antibiotic group (Group-B) n=25	Total n=50	P-value
Present	1(4%)	2(8%)	3(6%)	0.353
Absent	24(96%)	23(92%)	47(94%)	

Out of total 50 patients, 3(6%) patients developed surgical site infection. Out of these 3 cases of surgical site infections, 1(4%) was from Antibiotic group (Group-A) and 2(8%) patients belonged to Non-antibiotic group (Group-B).

There was no statistically significant difference in the incidence of surgical site infection between two groups (p=0.353), even though incidence of surgical site infection was less in Antibiotic group (Group-A) as compared to Non- Antibiotic group (Group-B).

Table 2: Comparison of surgical site infection in Antibiotic group (Group-A) & Non-antibiotic group (Group-B).

Groups	SSSI	DSSI	Total n=50	Percentage
Antibiotic group (Group-A)	0	1	1	2%
Non-antibiotic group (Group-B)	2	0	2	4%
Total	2	1	3	6%

In Antibiotic group (Group-A), there was only one patient who had surgical site infection which was Deep Surgical Site Infection (DSSI). In Non-antibiotic group (Group-B) there were two patients of Superficial Surgical Site Infection (SSSI).

Discussion

The present study was aimed to evaluate the role of single dose antibiotic prophylaxis in elective open inguinal mesh hernioplasty to prevent surgical site infection in the patients admitted in department of surgery, Dr. Rajendra Prasad Government Medical College Kangra at Tanda, during 1year period from May 2018 to December 2019. Total50 patients were enrolled into the study after fulfilling the inclusion and exclusion criteria.

Though elective hernia surgery is a clean surgery, various studies have reported that risk of wound infection increases after introduction of prosthetic material in the body, which is attributed to the detrimental effect of the prosthesis on the host defence mechanism.[5] The fear of infection of the prosthetic mesh raised the question of the potential role of antibiotic prophylaxis. It has been shown that administration of prophylactic antibiotics may inhibit the adherence of bacteria to the prosthesis and subsequently their growth rates[6]

Yerdel et al [7] concluded that there was a significant (10-fold) decrease in overall wound infections when single-dose, intravenous antibiotic was used during Lichtenstein hernia repair. Deep infections and wound infection-related readmissions were also reduced by the use of antibiotics. Sanabria et al[8]concluded thatuse of antibiotic prophylaxisin patients subjected to mesh inguinal hernioplasty decreased the rate of surgical site infection by almost 50%.Similarly, Jian-Fang Li [9] following a meta-analysis proposed that antibiotic prophylaxis use in patients undergoing tension-free hernioplasty decreases the rate of incisioninfection by 55%.

Conclusion

In our study, we concluded that statistically insignificant difference was found in the incidence of SSI in Antibiotic and Non-antibiotic Group.

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