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THE EFFICACY OF ANTIBIOTIC PROPHYLAXIS IN PREVENTING SURGICAL SITE INFECTION IN PATIENTS UNDERGOING LICHENSTEIN'S HERNIOPLASTY : A STUDY OF 80 CASES

Dr Narendra Wankhade Affiliation: Department of surgery, Dr.Panjabrao Deshmukh medical memorial college, Amravati, Maharashtra, India.

Dr Yogendra P Chidrawar* Affiliation: Department of surgery, Dr.Panjabrao Deshmukh medical memorial college, Amravati, Maharashtra, India. *Corresponding Author

ABSTRACT

Background: Inguinal hernia surgery is one of the commonest surgery performed worldwide. Wound infection is the most common complication encountered in inguinal hernia surgery. Antibiotic prophylaxis for open inguinal hernioplasty in minimizing wound infection has been a subject of debate since the beginning of mesh repair.

Methods: This study is a randomized control trial (double blind study) designed to study the efficacy of antibiotic prophylaxis in preventing SSI (surgical site infection) in patients undergoing Lichenstein's hernioplasty at our tertiary care centre.

Results: The overall SSI incidence was found to be 10% in the study population. Among the placebo group, SSI was observed in 5 patients (12.5%) and in the patients in whom antibiotic prophylaxis was administered, SSI was observed in 3 patients (7.5%).

Conclusions: Antibiotic prophylaxis was associated with decreased incidence of wound infection when compared to control group, but the difference was not statistically significant. This study only gives a baseline data about the status of SSI associated with hernia repair in our tertiary care centre highlighting the need for further research in this field.

INTRODUCTION

Inguinal hernia repair is one of the most common procedures performed by general surgeons. It is estimated that 3,000,000 inguinal herniorrhaphies are performed per year in the United States, Europe and Asia [1]. Inguinal hernia repair is considered as a clean surgery, where prophylactic antibiotics do not have any role, at least in non-mesh repairs. Even though hernia is classified as a clean surgery, the reported incidence of wound infection varies from 0% to 9% [2]. As more and more surgeries are done as day care procedures, many of these infections are often recognized first in the outpatient setup, after discharge from the hospital [3]. The role of prophylactic antibiotics in mesh repair of inguinal hernia is unclear.

However, subsequent trials have produced varied results. A Cochrane meta analysis on this topic in 2004 concluded that antibiotic prophylaxis in mesh repair of inguinal hernias can neither be recommended nor discarded [4]. Hence, we designed this study to define the role of prophylactic antibiotics in prevention of wound infection in mesh inguinal hernia repair and to analyze the risk factors for wound infection in mesh inguinal hernia repair.

METHODS

After informed consent from patients enrolled in the study population, this randomized control trial (double blind study was conducted over a period of six months from January 2019 to June 2019 at Dr Panjabrao Deshmukh Memorial Medical college, Amravati, Maharashtra, India. All the adults who presented at our tertiary care centre, with unilateral Inguinal hernia requiring Lichenstein's hernioplasty were included in our study.

80 patients (40 placebo group and 40 antibiotic prophylaxis administered group).

Inclusion criteria

All the Patients older than 15 years admitted with unilateral inguinal hernia planned for Lichenstein's hernioplasty were included in our study.

Exclusion criteria

- Patients with recurrent inguinal hernia
- Patients who are immunocompromised
- Patients with bilateral inguinal hernia
- Patients with history of antibiotic intake within last 5 days before operation
- Existing indication for antibiotic prophylaxis (valvular heart disease and post splenectomy patients).

In this prospective randomized controlled trial, placebo group and prophylactic antibiotic administered group were chosen by double blinding. The patients in the prophylactic antibiotic group were given a single dose of Inj. Cefatoxime 1g 30 minutes before the time of induction and the cases were given placebo (Inj. saline). Post operatively the surgical site was inspected from 2nd day till discharge and after 10th day, 20th day and 30th day.

RESULTS

This study was conducted in 80 patients who underwent Lichtenstein's hernia repair. Main objective of our study was to analyze the usefulness and necessity of prophylactic antibiotics in inguinal hernioplasty.

All patients were randomized into two groups, antibiotic group and placebo group. 40 patients were included in each group. Both males and females were included in both groups. All patients were distributed among different age groups from 15 to 75 years of age. There were 76 male and 4 female patients.

Table 1: Distribution according to age group

Age group	Placebo group	Antibiotic group
15 – 30 years	10	11
31 – 50 years	14	17
51 – 75 years	16	12

The inguinal hernia distribution was more on the right side, among both the groups in the present study.

Table 2: Distribution according to side of inguinal hernia

Side of Inguinal Hernia	Placebo group	Antibiotic group
Right side	27	29
Left Side	13	11

Among 80 subjects, who underwent Lichenstein's hernioplasty 46 patients had direct type of hernia and 34 patients had indirect type.

Table 3: Distribution according to type of inguinal hernia

Type of Inguinal hernia	Placebo group	Antibiotic group
Direct type	24	22
Indirect type	16	18

The overall surgical site infection (SSI) incidence was found to be 10% in the study population Among the 40 patients who underwent Lichenstein's hernioplasty without antibiotic prophylaxis (placebo group), SSI was observed in 5 patients. In the patients in whom antibiotic prophylaxis was administered, SSI was observed in 3 patients. All SSI were superficial. Though the number of infected patients was less in the antibiotic group. There was no statistically significant difference in the incidence of wound infection between the two groups operated with and without antibiotic prophylaxis.

Table 4: Distribution according to SSI

SSI	Placebo	Antibiotic group
Superficial SSI	5	3
Deep SSI	0	0

DISCUSSION

The overall SSI incidence was found to be 10% in the study population. This incidence is slightly higher than the other studies. But a few other studies show an incidence of 8.33% and 8.7% respectively [5,6]. The present study may play a role in enlightening us the reality about SSI in developing countries. The incidence of surgical site infection following mesh repair of inguinal hernia has been ranging from 0% to 9% [7], Such a wide range on SSI rates is due to the fact that studies differed in various aspects like difference in study design (retrospective, non-randomized versus prospective, randomized), surveillance methods (surgical team versus independent observer), duration of follow-up, type of operation (mesh repair versus non-mesh repair) [8]. The association of incidence of SSI with other risk factors like age, duration of surgery, person performing surgery could not be observed in our study. Out of 10 patients with SSI, all were managed by wound dressing with or without removing a suture and daily dressing. Among the 10 patients who developed SSI, 2 patients had wound gaping after two weeks. Both of them were in placebo group.

The incidence of SSI in the present study was slightly higher than the study done by Yerdel MA et al and Aufenacker TJ et al [9,10] Both the studies showed lower incidence of SSI than the present study, which could be attributed due to smaller study population.

Regarding the usage of prophylactic antibiotics in open inguinal hernioplasty, there is still considerable debate. Aufenacker et al showed that the incidence of SSI was 1.8% in the control group and 1.6% in the antibiotic group [10], we concluded that prophylactic antibiotics did not prevent SSI in open mesh repair of inguinal hernias from our study. The SSI rates reported by Perez et al were 3.3% and 1.7% in the control and antibiotic group respectively and we did not find any benefit with prophylactic antibiotics [11]. A similar conclusion was drawn by Tzovaras et al, where the incidence of SSI in control and antibiotic groups were 4.7% and 2.6% respectively [12].

CONCLUSION

In the present study, surgical site infection rates were high both in the antibiotic and the Placebo group, compared to the incidence of SSI in hernia mesh repair, reported worldwide. In our study, even though the rates of SSI were high in both the antibiotic and control groups, the difference was not statistically significant. Based on our results we conclude that routine use of prophylactic antibiotic does not decrease the incidence of SSI in mesh hernia repair. The present study highlights the need for further research with larger study group and the correlation of associated risk factors with SSI. This will be of great benefit to check unwarranted administration of antibiotics, which may further lead to drug resistance and at the same time, will increase the cost of treatment per patient in a developing country like India with limited resources.

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