

# Surgeons' Perspectives on the Use of Prophylactic Antibiotics in Inguinal Hernia Repair: A Cross-sectional study

Shahnwaz Leghari<sup>1</sup>, Kashif Ali Shah<sup>2</sup>, Habib ur Rehman Khan Toor<sup>3</sup>, Shahida Baloch<sup>4</sup>, Lal Shah<sup>5</sup>, Mamona<sup>6</sup>

1. Shahnwaz Leghari, Assistant Professor of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [drsnleghari@gmail.com](mailto:drsnleghari@gmail.com)
2. Kashif Ali Shah, Associate Professor of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [surgeonshah110@yahoo.com](mailto:surgeonshah110@yahoo.com)
3. Habib ur Rehman Khan Toor, Associate Professor of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [dr\\_habibtoor@yahoo.com](mailto:dr_habibtoor@yahoo.com)
4. Shahida Baloch, Assistant Professor of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [drtahirhussaintalpur@yahoo.com](mailto:drtahirhussaintalpur@yahoo.com)
5. Lal Shah, Senior Medical officer of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [drlalshah@gmail.com](mailto:drlalshah@gmail.com)
6. Mamona, Women Medical officer of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [mamonadr@gmail.com](mailto:mamonadr@gmail.com)

**Corresponding author:** Shahnwaz Leghari, Assistant Professor of Surgery, People's University of Medical and Health Sciences Nawabshah Pakistan. email: [drsnleghari@gmail.com](mailto:drsnleghari@gmail.com)

## Abstract

**Aim:** To understand how surgeons perceive surgical site infection and how this influences their clinical practice in order to improve patient care.

**Study design:** A cross-sectional study

**Place and Duration:** This study was conducted at Peoples University of Medical & Health Sciences for Women (PUMHS-W) Nawabshah Pakistan from April 2019 to April 2020.

**Methodology:** A survey of general surgeons was conducted at our hospital and included those who undertake inguinal hernia surgeries.

**Result:** There were 81 responses from surgeons who did about 75 hernia repairs every year, mostly through open surgery. The study found 36 surgeons (44.4%) routinely avoid prophylactic antibiotic use, 40 surgeons (49.5%) selectively use antibiotics, and only five surgeons (6.2%) do not use antibiotics at all. The five surgeons not using antibiotics prophylactically claim that their infection rate is 1% and that they have never removed a mesh from a hernia site that was infected. A clear distinction could not be seen between individuals who used prophylactic antibiotics routinely and those who used them selectively since their mesh explanation experiences were comparable (56% vs 55% of those who had 2–10 meshes removed, respectively). The vast majority (77 percent) of surgeons believed that a new set of precise recommendations are necessary.

**Conclusion:** According to the findings of this study, most surgeons use prophylactic antibiotics because they believe there is a possibility of surgical site infection or because they had personal experience with surgical site infection. It is necessary to develop new guidelines for using prophylactic antibiotics in the repair of inguinal hernia, as well as a new set of standards.

**Keywords:** repair, prophylactic, antibiotics, inguinal hernia

## Introduction

The United Kingdom performs more than 71,000 surgical repairs for first and recurrent inguinal hernias each year, making it one of the most common surgeries. (1) It is a clean surgical technique that does not require prophylactic antibiotics, but mesh implantation involves the placement of a foreign body that may have severe consequences if infected. Surgical site infection (SSI) is documented in between 1% and 9% of patients after inguinal hernia surgery. (2) Prophylactic antibiotics in mesh surgery for inguinal hernias are still controversial. Antibiotic prophylaxis was observed to reduce SSI rates in a recent meta-analysis study;(3) however, this was not judged substantial enough to suggest its implementation.

Another meta-analysis from 2012 revealed that using preventive antibiotics lowered infection rates considerably. (4) Conflicting rules from significant organizations further complicate the subject. Prophylactic antibiotics are recommended by the National Institute of Clinical Excellence for clean operations involving the insertion of a foreign body. Prophylactic antibiotics, on the other hand, are not currently recommended for routine use after inguinal hernia repair, according to the European Hernia Society (5). The purpose of this study was to find out how surgeons feel about SSI while giving prophylactic antibiotics to inguinal hernia surgery patients.

## Methodology

Data was collected through a survey of general surgeons undertake inguinal hernia surgeries was done on questionnaire performed. Surgeons were contacted through the WhatsApp, Data was analysed on statistical package of social sciences.

## Results

There were a total of 81 responses that were fully completed. Male surgeons constituted a larger percentage of those who responded to the study (53/81, or 65 percent). Surgical consultants (54/81, or 67 percent) and senior trainees (27/81, or 33 percent) both provided responses. There were about 75.4 hernia repairs done by each clinician every year, with a median of 60 procedures. A total of 53 percent of responders (43/81) solely did open surgery, with the remaining 47 percent (38/81) also conducting various kinds of laparoscopic surgery at varying levels.

Throughout the survey period, According to Table 1, respondents were distributed whether or not prophylactic antibiotics were provided to all patients, selected patients, or no patients. Physicians who did not provide antibiotic prophylaxis reported an infection rate of less than one percent. For those who provide antibiotics to all patients, 56 percent (20/36) reported an infection rate of less than one percent, while 42 percent (15/36) reported an infection rate ranging from one percent to five percent. Table 2 lists the justifications for the selective use of antibiotic prophylaxis that have been advanced.

All surgeons who did not give any of their patients' antibiotics had no prior experience with mesh explantation due to infection. A considerably higher percentage (7/36, or 18 percent) of those who provide regular antibiotic prophylaxis to all patients have had more than five mesh explantations, compared to those who do not (As shown in Table 3).

Only 37 (46 percent) of the surgeons said that they were aware of the standards already in place. An overwhelming majority of surgeons (95 percent, or 77/81) who responded to the poll agreed that a new set of explicit standards is needed.

**Table 1: Surgical site infections (SSI) and prophylactic antibiotic use are categorized among surgeons.**

Perceived SSI	Routine antibiotics	Selective	None
<1%	56%	38%	100%
1-5%	42%	60%	0
>5%	2%	2%	0

**Table 2 shows giving antibiotics to selected patients**

Reasons for antibiotics	No of surgeons
Immunosuppression	26
Recurrent hernia	18
Complex hernia	11
Laparoscopic approach	11
Significant co-morbidities	4
No reason provided	4
Patient self-shaven preoperatively	3
Open approach	3

**Table 3 Prophylactic antibiotic use and the number of mesh removals owing to infection**

Mesh	Routine antibiotics	Selective	None
5-10	17 %	5%	0
2-5	39 %	50 %	0
1	39%	28 %	0
0	5 %	18 %	100%

## Discussion

The American Society of Surgery conducted a survey in which it reported that surgeons using antibiotic prophylaxis judiciously perceive SSI risks of between 1 percent and 5 percent. Prophylactic antibiotics are still being debated in inguinal hernia surgery, and the published recommendations are often in conflict. The 2008 SIGN national clinical recommendations include information about the need for prophylaxis prior to any operation.(6) According to the specialists,

antibiotic prophylaxis is not required for either open or laparoscopic hernia repair procedures. (7) The European Hernia Society, on the other hand, defines individuals at high risk based on the likelihood of wound infection or "surgical variables." Prophylactic antibiotics should be administered in any clean operation that includes the insertion of a foreign body, according to the most current NICE recommendations, which were advised in 2008.

The survey's results are constrained by the minimal number of replies. The responders, on the other hand, were persons who are interested in hernia surgery and who seem to do a considerable number of procedures each year. With regard to the use of preventive antibiotics in inguinal hernia surgery, this study clearly demonstrates that surgeons are pragmatic when it comes to doing so, with 49.4 percent (40/81) of those who participated using them on an as-needed basis. According to the study, five surgeons (6.2%) did not use antibiotics and never removed an infected mesh at the site of a hernia.

There is no discernible difference between individuals who take prophylactic antibiotics frequently and those who use them selectively. Both groups had comparable experiences with mesh explantation, with 56 percent having 2–10 meshes removed and 55 percent having 2–10 meshes removed, respectively. Similarly, just 2% of each group believes the SSI rate after hernia surgery is more than 5%.

According to Aufenacker et al. the current per patient cost is £11.86 for prophylaxis, which has been raised to a value of £11.86.(8) The cost of treating an SSI after an inguinal hernia surgery is predicted to be £480.72(9). Another important factor to consider is Concerns about the bacterial resistance. Antibiotic prophylaxis is becoming more popular Scrutiny. As a consequence, there must be a compelling purpose for their usage, as well as a decrease in relative risk. In part due to the fact that the majority of hernia repairs are performed as outpatient operations, numerous serious side effects have been recorded during follow-up sessions or in General Practitioner clinics.(10). As a result, there is an unknown degree of antibiotic prescription that is not taken into account when analyzing antibiotic usage. The combination of antibiotics and wound dressings is often prescribed after surgery, especially if there are signs of infection in the wound. Therefore, this additional practice must be reviewed. (11) The existing recommendations are contradictory and do not provide doctors clear direction on how to utilize antibiotic prophylaxis. This study offers a significant incentive for such a development, with 95 percent of doctors saying that a new set of recommendations is necessary.

## Conclusion

According to the findings of this study, most surgeons use prophylactic antibiotics because they believe there is a possibility of surgical site infection or because they had personal experience with surgical site infection. New guidelines for the use of prophylactic antibiotics in inguinal hernia surgery, as well as the establishment of a new set of standards, are needed.

## References

1. Statistics HE. <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=205>.
2. Stephenson BM. Complications of open groin hernia repairs. *Surgical Clinics*. 2003;83(5):1255-78.

3. Sanchez- Manuel FJ, Seco- Gil JL. Antibiotic prophylaxis for hernia repair. *Cochrane Database of Systematic Reviews*. 2004(4).
4. Li J-F, Lai D-D, Zhang X-D, Zhang A-M, Sun K-X, Luo H-G, et al. Meta-analysis of the effectiveness of prophylactic antibiotics in the prevention of postoperative complications after tension-free hernioplasty. *Canadian journal of surgery*. 2012;55(1):27.
5. Simons M, Aufenacker T, Bay-Nielsen M, Bouillot J, Campanelli G, Conze J, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. Springer; 2009. p. 343-403.
6. Jha A, Agrawal M, Hishikar R, Jha HS. Surgical Antimicrobial Prophylaxis—Where Do We Stand? *Annals of the National Academy of Medical Sciences (India)*. 2021;57(03):102-6.
7. Pawlak M, Tulloh B, de Beaux A. Current trends in hernia surgery in NHS England. *The Annals of The Royal College of Surgeons of England*. 2020;102(1):25-7.
8. Aufenacker TJ, van Geldere D, Van Mesdag T, Bossers AN, Dekker B, Scheijde E, et al. The role of antibiotic prophylaxis in prevention of wound infection after Lichtenstein open mesh repair of primary inguinal hernia: a multicenter double-blind randomized controlled trial. *Annals of surgery*. 2004;240(6):955.
9. Davey PG, Nathwani D. What is the value of preventing postoperative infections? *New Horizons (Baltimore, Md)*. 1998;6(2 Suppl):S64-71.
10. Zamkowski MT, Makarewicz W, Ropel J, Bobowicz M, Kąkol M, Śmietański M. Antibiotic prophylaxis in open inguinal hernia repair: a literature review and summary of current knowledge. *Videosurgery and Other Miniinvasive Techniques*. 2016;11(3):127.
11. Perez AR, Roxas MF, Hilvano SS. A randomized, double-blind, placebo-controlled trial to determine the effectiveness of antibiotic prophylaxis for tension-free mesh herniorrhaphy. *Journal of the American College of Surgeons*. 2005;200(3):393-7.