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Original research article

An experimental analysis of incisional hernia treatment and repair

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Abstract

Introduction and Objectives: Between 5% and 11% of patients who have had abdominal procedures have been found to have incisional hernia, which is a common surgical disease. The goal of this study is to assess the severity of this problem and the various procedures that can be used in our specific setting to surgically repair mesh.

Methods: This is a prospective study of 40 patients with incisional hernia who sought care in the emergency room and outpatient department (OPD) at the Department of Surgery, K.M.C/M.G.M Hospital, Warangal, Telangana, India, between the months of May 2021 to April 2022. The patients voluntarily provided their data for the study.

Results: When the patients first presented, the majority of them had an incisional hernia in the area beneath the umbilicus. While the patients who underwent overlay mesh repair did not experience a recurrence, two of the patients who had undergone inlay mesh repair had their incisional hernias return. In comparison to inlay repair, overlay mesh repair appears to be unquestionably superior because there was no recurrence during the comparative follow-up period of three to twelve months.

Conclusions: The research's conclusions indicate that for the treatment of incisional hernias, overlay mesh repair is preferable to inlay mesh repair.

Keywords: Hernia, incision, overlay, inlay, mesh

Introduction

Any abdominal wall gap with or without a bulge in the area of a postoperative scar that is detectable or palpable by clinical examination or imaging is considered an incisional hernia. The problem is frequently recurring, putting even the most experienced surgeons to the test [1, 2]. In contrast to other types of abdominal wall hernias, which occur at anatomical points of weakness, incisional hernias occur at the site of abdominal wall closure [3].

Since there are many different types of incisional hernias, there may be a need for various repair techniques depending on the defect or location. The open technique has special benefits, such as the ability to treat domain loss by separating the components and restoring the anatomy and function of the abdominal wall. No one technique can be called the "best," but having knowledge of a wide range of surgical options that can be used by surgeons with various levels of skill is the best course of action [4].

Obesity, genetic conditions, pregnancy, trauma to the bowel area, and routine heavy lifting are risk factors for ventral hernias [5, 6]. Internal organs frequently pierce the abdominal wall, resulting in localized pain or discomfort. The most likely cause of hernia recurrence in patients who undergo surgical treatment is a disorder of collagen metabolism and weakening of suture tension over time [6]. To solve this issue, a lot of research is put into creating better biomaterials and scaffolds.

Methodology

This prospective study was conducted in the Department of Surgery, K.M.C/M.G.M Hospital, Warangal, Telangana, India, between the months of May 2021 to April 2022. The institutional ethical committee authorized the study. After receiving complete information, patients and patient attendants both gave their consent. Data collection for an investigation into the outcomes of 40 distinct cases of incisional hernias that will be treated at Hospital.

Inclusion criteria

- All incisional hernia patients, regardless of gender, who are at least 18 years old and under 60 years old will be included in this study.
- This will cover both electively performed and urgently operated incisional hernia cases.

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Exclusion criteria

- Patients with end-stage liver disease and co-morbid conditions like abdominal cancer and cirrhosis have incisional hernias.
- Patients in pregnancy with incisional hernias.
- Patients who are over 60 years old and under the age of 18.
- Patients who frequently develop incisional hernias.

Results

Patients between the ages of 30 and 60 were found to have the highest incidence of incisional hernias. Females outnumbered males 4:1, with females being more prevalent in general. the development of the gynecological incision. When the patients first presented, the majority of them had an incisional hernia in the area beneath the umbilicus. 25 patients underwent the surgery while under spinal anesthesia, while 15 patients were under general anesthesia. 40 patients with incisional hernias received treatment; 24 underwent overlay mesh repair and 16 underwent inlay repair. Regardless of the severity of the hernial defect or the patient's weight, patients were chosen at random. The majority of patients received Redivac drains, and in every case, separate incisions were needed to remove the drains (Table 1).

Table 1: Surgical technique used for treatment of incisional hernia

Sr. No	Type of repair	Kings north		Present study	
		No. of Cases	%	No. of Cases	%
1.	Sublay	34	85	0	0
2.	Overlay	17	42.5	24	60
3.	Inlay	2	5	16	40
4.	Ramirez abdomino plasty	3	7.5	0	0

The most frequent risk factor for wound failure is still an infection of the wound. While the patients who underwent overlay mesh repair did not experience a recurrence, two of the patients who had undergone inlay mesh repair had their incisional hernias return. In comparison to inlay repair, overlay mesh repair appears to be unquestionably superior because there was no recurrence during the comparative follow-up period of three to twelve months. The potential complications that can occur after an incisional hernia repair are listed in Table 2.

Table 2: Post-operative complications of incisional hernia repair

Sr. No.	Complication	Inlay repair (N = 16)	Overlay repair (N=24)	IL VS. OL P-value*
1.	Seroma	4 (25%)	5 (20.8%)	0.364, NS
2.	Wound Dehiscence	2 (12.5%)	-	0.400, NS
3.	Recurrence	3 (18.75%)	-	0.152, NS
4.	Total	9 (56.2%)	5 (20.8%)	0.184.NS

Discussion

Wound infection and wound gaping were responsible for 40% of the total. Obesity, diabetes mellitus, and postoperative respiratory complications together accounted for twenty percent of the cases, sixteen and a half percent, and sixteen and a half percent, respectively. In 18.75% of the patients [7, 8], there were no problems found.

A review of the patients' medical histories revealed that 13% of them had an incisional hernia within six months of their most recent operation. Within a year of surgery, 23% of patients reported swelling at the operated site; within three years, 30% of patients reported swelling. Incisional hernias were developed in roughly 53.3% of patients within three years of surgery, according to this statistic. 25 patients underwent the surgery while under spinal anesthesia, while 15 patients were under general anesthesia. An overlay mesh repair was used to treat 24 of the 40 patients with incisional hernias, and an inlay mesh repair was used on the remaining 16. Regardless of the severity of the hernial defect or the patient's weight, patients were chosen at random. Redivac drains were typically placed in patients, and they were always taken out through a second incision [9-11].

Five patients had postoperative coughs that required treatment with benzyl inhalation, chest physical therapy, and cough medicine. One patient had a Foley catheterization procedure because they needed to be treated for urinary retention. Three patients who had inlay mesh repair, two patients who had overlay mesh repair, and one patient who had both procedures underwent drainage and dressing to treat seroma collection in the suture line. This result had no statistically significant (P=0.364, NS) value. One patient undergoing inlay repair developed wound dehiscence (F=0.400, NS), which was treated with secondary suturing. There were no reports of dangerous wound infections. No deaths that could be linked to surgical procedures occurred in this study. In two patients who underwent inlay mesh repair, recurrent incisional hernias were noted (p = 0.152; not significant). None of the patients who underwent overlay mesh repair showed any signs of a recurrence. In line with the findings of the JB Shah series, my

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research showed a recurrence rate of 18.75%. Less than a year after the procedure, there were two recurrences. Given the short follow-up period, it was impossible to make any conclusions about the actual recurrence rate. For the purposes of my study, polypropylene mesh and the same type of suture material were used to repair incisional hernias [12]. This was accomplished because polypropylene mesh, which is the material that is currently most frequently used for the repair of all types of hernias, satisfies the criteria for an ideal prosthesis. A mesh overlay repair was completed in 18 of the 30 cases, and an inlay repair was completed in 12 of the cases. In each group, there were two patients who experienced seroma collection in the suture line following surgery. With the proper drainage and wound dressings, these patients received care. When a patient's wound dehisced after receiving primary suturing, secondary suturing was needed to address the problem.

In this particular study, two patients in the inlay mesh corrected group had their incisional hernias recur. None of the patients in the group that underwent overlay mesh repair went on to develop a recurrence. According to Roland *et al*. study, mesh repair patients had a recurrence rate of 18.75 percent. The recurrence rate was found to be statistically significant in Roland and colleagues' investigation. The results of my research indicated that they were not statistically significant. However, the follow-up period was erratic and inadequately long to draw any firm conclusions about the actual recurrence rate [13-15].

The use of inlay mesh repair in incisional hernia repair procedures increased the amount of contact between the prosthesis and the viscera, which caused wound infections, wound dehiscence, and subsequent wound recurrence. After the issue was resolved, there was no recurrence because overlay repair offers a tension-free closure and makes treating infections easier. Incisional hernia can be prevented from recurring by overlay mesh repair rather than inlay repair, according to the findings of my study.

Conclusion

Avoiding incisions in the midline, especially in the infra umbilical region, is one of the best ways to prevent incisional hernias, which are iatrogenic and caused by medical intervention. In addition to having deft hands perform the surgery, it is equally important to follow an exact aseptic procedure and carefully close the abdominal wound. Equally important is making sure those who are at high risk have the proper preoperative training to lessen the possibility of recurrence. Overlay mesh repairs are preferable to inlay mesh repairs when it comes to keeping incisional hernias from recurring in patients who have already had them fixed.

Conflict of Interest

None

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None

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