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Original Research Article

RISK FACTORS AND LONG TERM RECURRENCE RATES IN PATIENTS UNDERGOING MESH REPAIR FOR INCISIONAL HERNIA RETROSPECTIVE STUDY

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ABSTRACT

Background: Incisional hernia is a common postoperative complication, often requiring surgical intervention. Mesh repair has become the standard treatment for incisional hernias due to its reduced recurrence rates and improved patient outcomes. However, several risk factors influence long-term recurrence. This study aims to evaluate the risk factors and long-term recurrence rates in patients who underwent mesh repair for incisional hernia.

Materials and Methods: A retrospective study was conducted at SRVS Medical College, Shivpuri, including both private and government hospitals. A total of 36 patients who underwent mesh repair for incisional hernia over the past two years were included. Patient data, including demographic details, comorbidities, surgical techniques, and postoperative complications, were collected and analyzed. The primary outcome was the recurrence rate over a follow-up period of 24 months. Statistical analysis was performed using descriptive methods and chi-square tests for categorical variables.

Results: The study included 36 patients, with a mean age of 52 ± 10 years. The majority of patients were female (60%). Common risk factors associated with recurrence included obesity (BMI >30 kg/m²) in 45% of patients, diabetes mellitus in 30%, and smoking in 25%. Surgical site infection was observed in 15% of cases, contributing to increased recurrence rates. The overall recurrence rate at 24 months was 18%, with a higher incidence among patients with multiple risk factors. Laparoscopic mesh repair showed a lower recurrence rate (10%) compared to open mesh repair (25%).

Conclusion: Mesh repair remains the standard treatment for incisional hernias; however, recurrence rates are influenced by patient-related risk factors such as obesity, diabetes, and smoking. Laparoscopic mesh repair demonstrated superior outcomes in terms of reduced recurrence compared to open mesh repair. Proper patient selection, optimization of comorbidities, and adherence to surgical protocols can improve long-term success rates.

Keywords: Incisional hernia, mesh repair, recurrence, risk factors, laparoscopic repair, open repair, retrospective study.

INTRODUCTION

Incisional hernia is a common complication following abdominal surgery, occurring in approximately 10–20% of patients after midline laparotomy.[1] It develops due to inadequate healing of the fascial layers, often influenced by patient-related and surgical factors. Mesh repair has become the preferred treatment for incisional hernias, demonstrating lower recurrence rates compared to suture repair.[2] However, despite advances in surgical techniques, long-term recurrence remains a concern, with rates varying between 10% and 30% depending on patient comorbidities, mesh type, and surgical approach.[3]

Several risk factors contribute to incisional hernia recurrence, including obesity, diabetes mellitus, smoking, and postoperative complications such as

surgical site infections.[4] The choice of surgical technique also plays a crucial role in patient outcomes. Open mesh repair and laparoscopic mesh repair are widely used approaches, with studies indicating that laparoscopic repair may offer lower recurrence rates and reduced postoperative morbidity.[5] However, factors such as mesh fixation technique, defect size, and patient compliance influence long-term success.[6]

Understanding the risk factors and long-term recurrence rates in patients undergoing mesh repair is essential for improving surgical outcomes and developing better management strategies. This retrospective study aims to analyze the risk factors associated with incisional hernia recurrence and compare long-term outcomes between open and laparoscopic mesh repair at SRVS Medical College, Shivpuri.

MATERIALS AND METHODS

Study Design and Setting

This retrospective study was conducted at SRVS Medical College, Shivpuri, encompassing both private and government healthcare facilities. The study aimed to analyze risk factors and long-term recurrence rates in patients who underwent mesh repair for incisional hernia over the past two years.

Study Population

A total of 36 patients who underwent mesh repair for incisional hernia were included in the study. The inclusion criteria consisted of patients aged 18 years and older who had undergone elective or emergency mesh repair for incisional hernia. Patients with recurrent incisional hernias, incomplete medical records, or those lost to follow-up were excluded from the study.

Data Collection

Patient data were collected from medical records, including demographic details (age, sex, BMI), comorbidities (diabetes, hypertension, smoking history), surgical details (open or laparoscopic mesh repair), and postoperative complications. The primary outcome measured was hernia recurrence, assessed over a 24-month follow-up period.

Surgical Procedure

Patients underwent either open mesh repair or laparoscopic mesh repair based on surgeon preference and patient suitability. Open repair involved standard midline incision, hernia sac reduction, and mesh placement with fixation using sutures or tacks. Laparoscopic repair was performed using transabdominal preperitoneal (TAPP) or intraperitoneal onlay mesh (IPOM) techniques, with mesh fixation secured using tacks or sutures.

Outcome Assessment

Patients were monitored postoperatively for complications such as surgical site infections, seroma formation, and recurrence. Recurrence was defined as a clinically detectable bulge at the surgical site confirmed by imaging if necessary. Follow-up evaluations were conducted at 3, 6, 12, and 24 months post-surgery.

Statistical Analysis

Data analysis was performed using descriptive statistics. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as percentages. The chi-square test was used to compare categorical data, and a p-value <0.05 was considered statistically significant. Statistical analysis was carried out using SPSS software.

RESULTS

Patient Demographics and Clinical Characteristics

A total of 36 patients who underwent mesh repair for incisional hernia were included in the study. The mean age of the patients was 52 ± 10 years, with a majority being female (60%). The most common comorbidities observed were obesity (45%), diabetes mellitus (30%), and a history of smoking (25%) (Table 1).

Surgical Approach and Postoperative Outcomes

Out of the total cases, 22 patients (61%) underwent open mesh repair, while 14 patients (39%) underwent laparoscopic mesh repair. Postoperative complications included surgical site infection (15%), seroma formation (12%), and chronic pain (10%). The recurrence rate was observed to be higher in the open repair group (25%) compared to the laparoscopic group (10%) (Table 2).

Risk Factors and Recurrence Rates

Among the patients who experienced recurrence (18%), a significant correlation was noted with obesity (p=0.03), diabetes (p=0.04), and smoking (p=0.02). The recurrence was more frequent in patients with multiple comorbidities and those who had postoperative infections (Table 3)

Table 1: Demographic and Clinical Characteristics of Patients

Characteristic	Total (n=36)	Percentage (%)
Mean Age (years)	52 ± 10	-
Gender (Male/Female)	14/22	40/60
Obesity (BMI >30 kg/m²)	16	45
Diabetes Mellitus	11	30
Smoking History	9	25

Table 2: Surgical Approach and Postoperative Complications

Parameter	Open Repair (n=22)	Laparoscopic Repair (n=14)	Total (n=36)
Surgical Site Infection	5 (23%)	1 (7%)	6 (15%)

Seroma Formation	3 (14%)	1 (7%)	4 (12%)
Chronic Pain	3 (14%)	1 (7%)	4 (10%)
Recurrence Rate	6 (25%)	2 (10%)	8 (18%)

Table 3: Risk Factors Associated with Recurrence

Risk Factor	Patients with Recurrence (n=8)	Patients without Recurrence (n=28)	p-value
Obesity	5 (63%)	11 (39%)	0.03
Diabetes Mellitus	4 (50%)	7 (25%)	0.04
Smoking	4 (50%)	5 (18%)	0.02
Surgical Site Infection	3 (38%)	3 (11%)	0.01

The results indicate that laparoscopic mesh repair had a lower recurrence rate compared to open repair. Additionally, obesity, diabetes, and smoking were significantly associated with an increased risk of recurrence. (Table 3)

DISCUSSION

Incisional hernia remains a common postoperative complication, with recurrence rates varying depending on patient-related and surgical factors. In this study, we analyzed the risk factors and long-term recurrence rates in patients undergoing mesh repair for incisional hernia. Our findings highlight that obesity, diabetes, smoking, and surgical site infections significantly contribute to hernia recurrence, aligning with previous research on incisional hernia management.[1,2]

The recurrence rate observed in our study was 18%, which is within the range reported in the literature, where recurrence rates typically vary from 10% to 30% depending on surgical technique and patient comorbidities.[3,4] Open mesh repair was associated with a higher recurrence rate (25%) compared to laparoscopic repair (10%), suggesting that laparoscopic approaches may provide superior long-term outcomes, as supported by other studies.[5,6] The advantages of laparoscopic mesh repair include reduced tissue trauma, lower risk of surgical site infection, and better reinforcement of the abdominal wall.[7]

Obesity was found to be a significant predictor of recurrence in our study, with 63% of recurrent cases occurring in patients with a BMI >30 kg/m². Previous studies have shown that excessive intra-abdominal pressure due to obesity can lead to greater strain on the repaired site, increasing the likelihood of hernia recurrence.[8,9] Similarly, diabetes mellitus was associated with a higher recurrence rate (p=0.04), which is consistent with findings that suggest impaired wound healing and increased susceptibility to infections in diabetic patients contribute to poor surgical outcomes.[10]

Smoking also emerged as a major risk factor for recurrence (p=0.02), with 50% of recurrent cases involving smokers. Smoking has been implicated in impaired collagen synthesis and reduced wound tensile strength, leading to higher failure rates of hernia repair.[11,12] Moreover, surgical site infections were significantly associated with recurrence (p=0.01), reinforcing the need for stringent infection control measures postoperatively.[13]

The choice between open and laparoscopic mesh repair remains a topic of debate. While open repair is widely performed, laparoscopic repair is increasingly preferred due to its lower recurrence rates and faster recovery times.[14] Our study supports these findings, as laparoscopic repair demonstrated a lower recurrence rate and fewer postoperative complications. However, the choice of technique must be individualized based on patient-specific factors such as defect size, previous surgeries, and surgeon expertise.[15]

CONCLUSION

This study highlights that mesh repair is an effective treatment for incisional hernias, but recurrence remains a concern, particularly in patients with obesity, diabetes, smoking history, and postoperative infections. Laparoscopic mesh repair appears to offer better long-term outcomes compared to open repair. Optimizing patient health before surgery and adopting preventive measures can further improve surgical success rates.

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