

Outcome of Umbilical Hernia Mesh Repair in Open and Laparoscopic Surgeries: A Descriptive Study

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Abstract

Introduction: Umbilical hernias are commonly managed through mesh repair via open or laparoscopic surgery. Open surgery involves a larger incision, while laparoscopic surgery offers smaller incisions and quicker recovery. This study compares outcomes like complications and recurrence rates to inform clinical decisions and enhance patient care.

Methods: The methodology involved detailed history-taking, physical examinations, and various investigations to assess umbilical hernia repair outcomes. Patients were randomly assigned to open or laparoscopic mesh repair groups. Variables like age, sex, BMI, and postoperative complications were meticulously documented to analyze factors affecting surgical outcomes and inform patient management strategies.

Results: Sixty participants were evenly divided into meshplasty and laparoscopic repair groups. Meshplasty group had 50% aged 40-60, male-female ratio 1.5; laparoscopic repair group had 50% aged 20-40, male-female ratio 2. Postoperative stays and return to activities significantly favored laparoscopic repair ($P < 0.01$).

Conclusion: Age and gender distribution were similar between meshplasty and laparoscopic repair groups, postoperative outcomes favored laparoscopic techniques due to shorter stays and faster recovery. Comparable rates of seroma formation and recurrence highlight the effectiveness of both approaches, with laparoscopy offering superior patient satisfaction.

Keywords: Surgical Approach, Outcomes, Hernia Repair, Laparoscopic, Meshplasty.

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Introduction

Umbilical hernias are a common condition characterized by the protrusion of abdominal contents through a weakened area near the umbilicus. Surgical repair, particularly through the use of mesh, has become a standard approach to effectively manage this condition. Both open and laparoscopic techniques are employed in this regard, each with its own set of advantages and potential complications. [1, 2]

Open surgery, the traditional method, involves making a larger incision near the hernia site to access and reinforce the weakened abdominal wall with mesh. [3] Conversely, laparoscopic surgery utilizes smaller incisions and specialized instruments to access the hernia site, often resulting in reduced postoperative pain and shorter recovery times. However, the choice between these

techniques depends on various factors, including the size of the hernia, patient characteristics, and surgeon preference. [1, 4]

This study analyzes a cohort of patients who underwent umbilical hernia repair with mesh, comparing outcomes such as postoperative complications, recurrence rates, pain levels, and recovery times between the open and laparoscopic approaches. [3] Understanding these outcomes is crucial for informing clinical decision-making and optimizing patient care. This descriptive study aims to explore and compare the outcomes of umbilical hernia repair using mesh, focusing on both open and laparoscopic approaches.

Methods

It was a prospective study, conducted in the department of General Surgery, GSL Medical

College, Rajahmundry. Study was conducted between December 2020 to January 2022. Study protocol was approved by the Institutional Ethics Committee. Informed written consent was taken from the study members.

Patients aged above 18 years in both sexes were included in the study. Those undergoing elective open and laparoscopic umbilical hernia mesh repair were enrolled. The exclusion criteria comprised patients under 18 years of age and those with groin, epigastric, or incisional hernias, as well as those presenting with incarcerated umbilical hernias.

The methodology entailed detailed history-taking and thorough physical examinations based on a prepared proforma. Parameters such as duration of hospital stay, mobilization, postoperative complications, surgical site infections, and recurrence were meticulously documented. Routine blood and urine investigations were conducted, along with specific tests to confirm the diagnosis of umbilical hernia. Patients with umbilical hernias were randomly allocated to undergo either open or laparoscopic mesh repair. Investigative procedures included complete blood picture analysis, bleeding and clotting time assessment, blood grouping and typing, random blood sugar measurement, renal function testing, viral marker screening, and abdominal ultrasound. Study variables encompassed age, sex, BMI, comorbidities, umbilical hernia defect size, past history of similar complaints, duration of hospital stay, mobilization status, surgical site mesh infection, and recurrence rates. These methodologies were employed to comprehensively evaluate the outcomes and associated factors of umbilical hernia repair using mesh, providing valuable insights into patient management strategies.

Statistical analysis: All statistical analyses were conducted using SPSS software trial version 20.0 and MS Excel-2010. The Chi-square test was employed to evaluate associations among categorical variables. A P value of <0.05 was deemed statistically significant, indicating meaningful associations between variables.

Results

Total 60 members were included, 30 in each group. In meshplasty group (MG), 50% (15) aged 40 – 60, male female ratio was 1.5. In laparoscopic repair (L) 50% (15) aged 20 – 40 years, male female ratio was 2; no statistical significance. In the open umbilical hernia MG, surgery durations varied with 67% lasting 1-2 hours. Postoperative stays were predominantly >4 days (73%). A significant difference ($p = 0.004$) was noted in postoperative stays compared to laparoscopic repairs, where 67% stayed ≤ 4 days. Regarding return to daily activities, 67% of open repair patients required >3 days, while laparoscopic repair showed a quicker recovery with

70% returning in ≤ 3 days ($p = 0.009$). Seroma formation occurred in 10% of open repair cases, while 6% experienced it in laparoscopic repair, although statistically insignificant ($p = 1$). Surgical site infections were absent in laparoscopic repair ($p = 0.23$). Recurrence rates were similar between open (10%) and laparoscopic (3%) repairs ($p = 0.60$). Patient satisfaction favored laparoscopic repair significantly ($p = 0.039$), with 73% rating it excellent compared to 37% in open repair.

Discussion

In this study, 60 participants were evenly divided into meshplasty and laparoscopic repair groups, with similar age distributions and male female ratios. While 50% of meshplasty patients were aged 40 – 60, in laparoscopic repair, 50% were aged 20 – 40. The male-to-female ratio was 1.5 in meshplasty and 2 in laparoscopic repair, showing no statistical significance. These findings align with previous research highlighting age and gender as factors in hernia repair outcomes, although not always significant determinants. [5, 6] Understanding these demographics aids in tailoring surgical approaches and predicting potential postoperative complications. [7]

The observed differences in postoperative outcomes between open umbilical hernia meshplasty and laparoscopic repairs highlight the importance of surgical approach selection. Open repairs tended to have longer surgery durations and postoperative stays, consistent with previous literature suggesting a slower recovery compared to laparoscopic techniques. [8, 9] This could be attributed to the larger incisions and tissue trauma associated with open procedures, leading to increased pain and delayed mobilization (3). Conversely, laparoscopic repairs are known for their minimally invasive nature, resulting in shorter operative times and quicker recovery. [10, 11]

The significant discrepancy in postoperative stays between the two approaches underscores the potential benefits of laparoscopic repair in reducing hospitalization costs and enhancing patient satisfaction. [12] Moreover, the faster return to daily activities associated with laparoscopic repairs emphasizes the importance of considering patient convenience and quality of life in treatment decision-making. [13, 14] Seroma formation rates were comparable between open and laparoscopic umbilical hernia repairs, with 10% and 6%, respectively, experiencing it. This aligns with previous studies reporting similar rates of seroma formation regardless of surgical approach. [15, 16]

The absence of surgical site infections (SSIs) in laparoscopic umbilical hernia repairs aligns with existing evidence highlighting the lower SSI rates associated with laparoscopic techniques compared to open procedures. [10, 12] Conversely, recur-

rence rates were similar between open and laparoscopic repairs, consistent with previous studies suggesting comparable long-term outcomes regarding hernia recurrence. [17] However, patient satisfaction significantly favored laparoscopic repair, with 73% rating it excellent compared to 37% in open repair. This finding echoes prior research demonstrating higher patient satisfaction levels with laparoscopic approaches due to reduced post-operative pain, faster recovery, and improved cosmesis. [13]

In conclusion, while age and gender distribution were similar between meshplasty and laparoscopic repair groups, postoperative outcomes favored laparoscopic techniques due to shorter stays and faster recovery. Co

parable rates of seroma formation and recurrence highlight the effectiveness of both approaches, with laparoscopy offering superior patient satisfaction.

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