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Comparison of Post-Operative Port Site Pain Following Laparoscopic Cholecystectomy: Umbilical Port versus Epigastric Port Retrieval

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ABSTRACT:
This study aims to compare post-operative port site pain associated with gallbladder retrieval through the umbilical port versus the epigastric port following laparoscopic cholecystectomy. Laparoscopic cholecystectomy is the gold standard for managing symptomatic gallbladder disease; however, the choice of retrieval site may influence post-operative pain and recovery.
A randomized controlled trial was conducted with 100 patients undergoing elective laparoscopic cholecystectomy. Patients were equally assigned to two groups: one with gallbladder retrieval via the umbilical port and the other via the epigastric port. Post-operative pain was assessed using a visual analog scale (VAS) at 24 hours, 48 hours, and one week post-surgery.
Results indicated that patients in the umbilical port retrieval group experienced significantly lower pain scores at 24 hours (3.2 vs. 5.1, $p < 0.01$) and 48 hours (2.5 vs. 4.3, $p < 0.05$) compared to those in the epigastric port group. By one week, the pain difference was negligible. These findings suggest that umbilical port retrieval may be associated with less post-operative pain in the immediate post-operative period, potentially enhancing patient recovery.
Keywords: laparoscopic cholecystectomy, post-operative pain, umbilical port, epigastric port, gallbladder retrieval.

Introduction

Laparoscopic cholecystectomy has become the gold standard for the surgical management of symptomatic gallbladder disease due to its minimally invasive nature and favorable outcomes (1). This technique, which involves the removal of the gallbladder through small incisions, has led to reduced postoperative pain, shorter hospital stays, and quicker recovery times compared to open cholecystectomy (2). However, even within laparoscopic surgery, variations in technique and approach can significantly impact post-operative experiences, including pain management and recovery.

One critical consideration during laparoscopic cholecystectomy is the method of gallbladder retrieval. Traditionally, gallbladders are removed through an epigastric port or a separate incision, but retrieval through the umbilical port has gained popularity (3). The umbilical port, being centrally located, potentially allows for a

more concealed scar and reduced visibility of the incision, which can be aesthetically preferable for patients. Additionally, it is hypothesized that retrieval through the umbilical port may be associated with less post-operative pain compared to the epigastric approach due to the anatomical differences in tissue layers traversed (4).

Post-operative pain management is a significant factor influencing patient satisfaction and overall recovery. Previous studies have suggested that different port sites can lead to varying pain experiences, with some reporting higher pain levels associated with epigastric port retrieval (5). Understanding the impact of retrieval site on pain can inform surgical practice and improve patient outcomes.

While some research has explored port site pain in laparoscopic procedures, studies specifically comparing the umbilical and epigastric ports during laparoscopic cholecystectomy are limited. The existing literature primarily focuses on broader outcomes such as operative time and complication rates rather than the nuances of pain management associated with different retrieval methods (6, 7).

This study aims to address this gap by comparing the post-operative port site pain experienced by patients undergoing laparoscopic cholecystectomy with gallbladder retrieval via the umbilical port versus the epigastric port. By analyzing pain levels at multiple postoperative intervals, we hope to provide clearer insights into the implications of retrieval site choice on patient recovery and comfort.

Aim and Objectives

Aim: To compare post-operative port site pain between umbilical and epigastric port retrieval during laparoscopic cholecystectomy.

Objectives:

1. To evaluate and compare post-operative pain scores at 24 hours, 48 hours, and one week following surgery.
2. To assess patient satisfaction related to the surgical approach and recovery experience.

Materials and Methods

This randomized controlled trial was conducted at a tertiary care hospital over a six-month period. Inclusion criteria included adults aged 18-65 years undergoing elective laparoscopic cholecystectomy for symptomatic gallbladder disease. Exclusion criteria encompassed patients with contraindications for laparoscopy, prior abdominal surgeries affecting port placement, and those with chronic pain conditions. Patients were randomized into two groups: one undergoing gallbladder retrieval via the umbilical port and the other via the epigastric port. Post-operative pain was assessed using a visual analog scale (VAS) at 24 hours, 48 hours, and one week post-surgery. Statistical analysis was performed using SPSS software, with a p-value of <0.05 considered statistically significant.

Results

Table 1: Post-Operative Pain Scores at Different Time Intervals

Time Interval	Umbilical Port Group (Mean VAS)	Epigastric Port Group (Mean VAS)	p-value
24 hours	3.2	5.1	<0.01
48 hours	2.5	4.3	<0.05
1 week	1.5	1.8	NS

Table 2: Patient Satisfaction Scores

Group	Satisfied Patients (%)	p-value
Umbilical Port	85	<0.05
Epigastric Port	70	

The results demonstrate that patients in the umbilical port retrieval group experienced significantly lower pain scores at 24 and 48 hours post-operatively. Patient satisfaction was also higher in the umbilical port group, indicating a preference for this technique.

Discussion

This study provides compelling evidence that gallbladder retrieval through the umbilical port is associated with reduced post-operative pain compared to the epigastric port approach. The significant differences in pain scores at 24 and 48 hours suggest that the anatomical considerations of the umbilical port may contribute to decreased discomfort in the immediate post-operative period (8).

Previous studies have similarly indicated that retrieval site can influence pain outcomes, with many patients reporting higher satisfaction levels when the umbilical port is used (9, 10). The lower pain scores observed in our study align with findings from other surgical fields where umbilical access is utilized (11). These results may encourage surgeons to adopt umbilical retrieval techniques as a standard practice in laparoscopic cholecystectomy, enhancing the overall patient experience.

Additionally, the high patient satisfaction rates in the umbilical group underscore the importance of not only clinical outcomes but also the aesthetic and comfort-related aspects of surgical interventions (12). While long-term pain outcomes did not significantly differ by one week, the early post-operative period is critical for patient recovery and satisfaction, suggesting that strategies aimed at optimizing pain control in this timeframe should be prioritized.

Despite the positive findings, limitations of the study include the single-center design and the potential for bias in patient reporting of pain. Future studies should include larger, multi-center trials to validate these results and explore long-term outcomes associated with different port retrieval methods (13).

In conclusion, this study highlights the advantages of umbilical port retrieval in laparoscopic cholecystectomy, demonstrating lower post-operative pain and higher patient satisfaction compared to the epigastric port. As laparoscopic techniques continue to evolve, optimizing surgical approaches based on patient-centered outcomes remains essential for enhancing recovery and overall surgical experience.

Conclusion

Gallbladder retrieval through the umbilical port during laparoscopic cholecystectomy is associated with significantly lower post-operative pain and higher patient satisfaction compared to retrieval via the epigastric port. These findings support the adoption of umbilical port retrieval as a preferred technique in clinical practice, contributing to improved recovery experiences for patients undergoing this common surgical procedure.

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