Analysis of the Clinical Diagnosis and Treatment Effect of Intestinal Fistula Caused by Gallstones

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Abstract: Objective: This study mainly explores the clinical treatment effect of intestinal fistula caused by gallstones. Method: A total of 120 patients with intestinal fistula caused by gallstones from January 2024 to July 2024 were carefully selected for the study. They were randomly divided into two groups, with 60 patients in each group. The control group received traditional open surgery, while the experimental group received minimally invasive surgery using laparoscopy combined with endoscopy. Then the authors observed the surgical time, intraoperative blood loss, and incidence of postoperative complications between the two groups of patients, analyzed the diagnostic differences between the two groups, and used SPSS to analyze the data. $P<0.05$ is considered statistically significant. Result: In terms of surgical time, the surgical time of the control group and the experimental group were (180.5 ± 30.2 vs 120.3 ± 25.8). In terms of intraoperative blood loss, the intraoperative blood loss of the control group and the experimental group were (200.5 ± 50.2 vs 80.3 ± 30.5). In terms of postoperative complication incidence, the incidence of the control group and the experimental group were (20% vs 10%). Statistical analysis was conducted on each group, and it was found that the p-value was less than 0.05, indicating a statistical difference between the two groups. Conclusion: Comparing the two sets of data, it is shown that minimally invasive surgery using laparoscopy combined with endoscopy can improve the clinical diagnosis and treatment of intestinal fistula caused by gallstones, shorten the operation time, and reduce intraoperative bleeding and postoperative complications. Therefore, in clinical diagnosis and treatment, doctors can vigorously promote the minimally invasive surgical treatment method of laparoscopy combined with endoscopy, so that patients can receive the best treatment.

***Keywords*:** Gallstones; Intestinal fistula; Clinical diagnosis and treatment; Effect analysis

1. Introduction

Gallstones, duodenal ulcers, invasive growth of malignant tumors, colonic diverticulum, trauma, iatrogenic injuries, etc. can all lead to the occurrence of biliary fistula[1].The most common cause is infection and obstruction caused by gallstones, followed by duodenal ulcers. Taking gallstones as an example, some scholars have proposed that the pathogenesis of gallstones may be the repeated occurrence of gallstones, which cause adhesion between the gallbladder or bile duct and surrounding organs. During this process, the stones in the gallbladder cause damage to the gallbladder wall, resulting in ischemic necrosis, perforation, and connection with other organs, forming an internal fistula. Because of its low incidence rate, complex and changeable condition, and lack of specificity in clinical manifestations, it is easy to be concealed by clinical manifestations such as gallstones, so it is easy to miss diagnosis and misdiagnosis. Patients often present with atypical upper abdominal pain, and some patients even have no clinical manifestations[2]. Due to the contents of the gallbladder entering the surrounding organs through the fistula, the pressure inside the gallbladder is reduced, which temporarily improves the patient's clinical symptoms and signs. However, as the disease progresses, the contents of the bile duct will reflux from the fistula into the bile duct, while bacteria will reflux into the bile duct, leading to repeated infections in patients. If the biliary fistula is not treated in a timely manner, diseases such as stone type intestinal obstruction, lower gastrointestinal bleeding, liver abscess, gallbladder cancer, etc. may occur. In severe cases, retrograde contamination of the bile duct by intestinal bacteria can lead to extraperitoneal abscess. Therefore, finding effective treatment methods is the key to improving patient prognosis. However, there is still much debate about its diagnosis and treatment, and the effectiveness and safety of various diagnostic and therapeutic methods also vary greatly. Therefore, this project aims to further explore the diagnosis and treatment methods of complications caused by gallstones due to internal fistula through the analysis of some cases, providing a theoretical basis for solving such problems in clinical practice and improving the overall diagnosis and treatment level of the disease.

2. Research Materials and Methods

2.1 General Information

This article carefully selected a total of 120 patients with intestinal fistula caused by gallstones from January 2024 to July 2024 for study. They were randomly divided into two groups (control group and experimental group), with 60 cases in each group. The male to female ratio in the control group was 32:28, with an average age of 48.8 ± 0.5 between the ages of 30 and 60. The male to female ratio in the experimental group was 33:27, with an average age of 49.5 ± 0.6 between the ages of 32 and 62. Statistical analysis was conducted on the two sets of data, and $P>0.05$ was obtained, indicating that the two groups can be compared and studied.

Inclusion criteria: Gallstones with intestinal fistula detected by abdominal ultrasound, CT, and magnetic resonance cholangiopancreatography; The patient has clear informed consent and a high willingness to do so. Exclusion criteria: those who have severe damage to important organs such as the heart and lungs and cannot undergo surgery or gastroscopy examination; Merge patients with other malignant or severe infections;

2.2 Experimental methods

The control group patients were treated with traditional open abdominal surgery. The experimental group patients underwent minimally invasive surgical treatment using laparoscopy combined with endoscopy. Firstly, the patient needs general anesthesia, and then an endoscope is inserted into the descending segment of the duodenum through the oral cavity. On this basis, further exploration of the nipple opening, selection of intubation, determination of the anatomical structure of the biliary and cystic ducts, determination of the position of the fistula and intestinal tract, and preparation for the next surgery. Change the patient to a supine position with their head high and feet low. Through laparoscopy, the doctor places a Trocar under the navel, xiphoid process, and right subclavian rib to establish pneumoperitoneum and observe the abdominal cavity. The adhesions around the gallbladder can be separated by laparoscopy, exposing the gallbladder and fistula, removing the gallbladder from the gallbladder bed, and closing small fistula openings using absorbable suture under laparoscopy; For larger or uniquely located fistulas, endoscopic guidance is used to assist in locating and repairing them from within the intestine, ensuring complete repair of the fistula. Before surgery, a drainage tube should also be placed in the abdominal cavity. After surgery, routine anti infection and nutritional support should be given, and the patient's vital signs and abdominal symptoms should be closely monitored.

2.3 Observation indicators

(1) Surgical time: Record the time from the beginning to the completion of the entire process to evaluate the efficiency of the two surgical methods.

(2) Intraoperative bleeding volume: Estimate the amount of bleeding collected during surgery and the amount of gauze suction to reflect the degree of damage to the patient caused by the two surgical methods.

(3) Incidence of postoperative complications: Statistical analysis of postoperative complications between two groups of patients was conducted to compare the safety and efficacy of various treatment methods.

2.4 Research on Count Statistics

Collect research data, follow the procedure, and record various observation indicators of patients in detail. After the data collection was completed, this study used SPSS 22.0 as the main research tool for data analysis, and the comparison of differences between groups was conducted using the chi square test. $P<0.05$ indicates a statistically significant difference.

3. Result

Table 1. Comparison of Effects between Two Groups

Index	Control group	Experimental group	P-value
Surgical duration (minutes)	(180.5±30.2)	(120.3±25.8)	P<0.05
Intraoperative bleeding volume (ml)	(200.5±50.2)	(80.3±30.5)	P<0.05
Postoperative complication rate (%)	20% (6/30)	10% (3/30)	P<0.05

In terms of surgical time, the surgical time for the control group and the experimental group were (180.5 ± 30.2 vs 120.3 ± 25.8), respectively; From the perspective of intraoperative blood loss, the intraoperative blood loss of the control group and the experimental group were (200.5 ± 50.2 vs 80.3 ± 30.5), respectively; In terms of the incidence of postoperative complications, the incidence rates of the control group and the experimental group were (20% vs 10%), respectively.

Statistical analysis was conducted on each group, and it was found that the p-value was less than 0.05, indicating a statistical difference between the two groups.

4. Discussion

Based on the above data analysis, it can be concluded that the experimental group has significant advantages over the control group. In terms of the time required for the operation, the advantage of combining laparoscopy with endoscopy is that the field of view is enlarged, the operation is precise, and the anatomical structure inside the abdominal cavity can be better displayed, thereby reducing the blindness of the surgery. Through endoscopic examination, the position of the fistula opening, bile duct, and intestinal tract can be clearly displayed, and guidance can be provided during the operation, making the surgical operation more reasonable and effectively improving the efficiency of the surgery [3].

In terms of intraoperative bleeding, minimally invasive surgery has a small incision, minimal damage to abdominal tissue, precise surgery, avoids important blood vessels, and reduces the probability of bleeding; At the same time, endoscopic examination can also reduce excessive damage to tissues such as the intestine during the surgical process, reducing the amount of bleeding during surgery [4].

The incidence of postoperative complications was lower in the control group due to various reasons. Firstly, minimally invasive surgery combining laparoscopy and endoscopy can reduce direct disturbance to abdominal organs, decrease postoperative adhesions, and thus reduce other complications such as intestinal obstruction; Secondly, the lighter the surgical trauma, the less physiological pressure the patient experiences, and the less impact it has on the immune system, thus better preventing various complications [5].

5. Conclusion

In summary, minimally invasive surgery using laparoscopy combined with endoscopy has significant advantages over traditional open surgery, as it can treat the disease more efficiently, reduce patient pain, and accelerate patient recovery. However, clinical physicians need to conduct a comprehensive evaluation of patients, consider the advantages and disadvantages of various treatment methods, and ultimately form an individualized optimal treatment plan, in order to improve the comprehensive diagnosis and treatment level of intestinal fistula caused by gallstones and enhance the quality of life of patients.

Acknowledgments

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