



A COMPARATIVE STUDY OF LAPAROSCOPIC VERSUS OPEN CHOLECYSTECTOMY.

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ABSTRACT

Background: Cholecystectomy, the surgical removal of the gallbladder, is a common procedure primarily indicated for gallstone disease and its complications. Over the past few decades, the advent of minimally invasive techniques has significantly transformed the landscape of abdominal surgeries. Among these, laparoscopic cholecystectomy (LC) has emerged as the gold standard, gradually replacing the traditional open cholecystectomy (OC) in many clinical settings. Laparoscopic cholecystectomy offers several potential advantages over the open approach, including reduced postoperative pain, shorter hospital stays, quicker return to daily activities, and improved cosmetic outcomes. However, it also presents challenges such as a longer learning curve, potential for intraoperative complications, and limited accessibility in resource-constrained environments. In contrast, open cholecystectomy, though more invasive, remains a vital surgical option in complicated cases or where laparoscopic facilities and expertise are lacking.

Methods: The comparative study was conducted between april 2023 and March 2025 and comprised 18 cases, regardless of age group, of both males and females. In this period I have selected 9 cases of laparoscopic cholecystectomy to compare with 9 cases of open cholecystectomy. Common indications for surgery were chronic calculous cholecystitis, acalculous cholecystitis, cholelithiasis, biliary colic and acute cholecystitis. The following aspects of open and laparoscopic cholecystectomy are contrasted:

The surgical technique
The duration of the procedure
Pain following surgery
Needs for analgesics
Length of time antibiotics are administered
Post-operative and intraoperative complications
Returning to a regular diet
Hospital stay following surgery
Get back to your regular activities
The Cosmesis

Results: This study included 18 patients: 10 (55.5%) females and 8 (44.5%) males, with an average age of 55 years (range 40-70). Out of these 18 cases, one was converted to open due to multiple adhesions. The average hospital stay for open and laparoscopic procedures was 10 and 5, respectively. Antibiotics were administered for an average of 7 days in open cases and 4 days in laparoscopic cases. **Conclusion:** In summary, laparoscopic cholecystectomy is the gold standard due to its advantages in recovery, pain management, and overall outcomes for most patients. Open cholecystectomy, while still relevant in certain complex or emergent cases, is increasingly reserved for situations where laparoscopic surgery is not feasible or safe. Both approaches offer good long-term results, but the minimally invasive nature of laparoscopy remains a significant benefit in the majority of cases.

KEYWORDS : Cholelithiasis, Laparoscopy, Cholecystitis, Post Operative.

INTRODUCTION

Laparoscopic cholecystectomy is the current gold standard for surgical treatment of symptomatic cholelithiasis and associated gallbladder disorders. Since its introduction in the late 1980s, the minimally invasive method has largely replaced open cholecystectomy, providing major benefits such as less postoperative pain, a shorter hospital stay, faster recovery, and better cosmetic outcomes.

The gallbladder (1,2) is a pear-shaped organ that lies beneath the liver in the right upper quadrant of the abdomen, nestled in the gallbladder fossa between the right and quadrate lobes. It links to the biliary tree by the cystic duct, which meets the common hepatic duct to form the common bile canal. During laparoscopic cholecystectomy, identifying Calot's triangle—formed by the cystic duct, common hepatic duct, and inferior surface of the liver—is critical for safe dissection and avoiding bile duct injury. This triangle contains essential structures such as the cystic artery, which originates from the right hepatic artery.

Understanding the anatomical differences of the cystic duct, cystic artery, and biliary tree is critical for reducing intraoperative problems. Achieving the "critical view of safety" prior to transecting the cystic duct and artery is a widely regarded strategy for ensuring surgical safety.

As surgical techniques and technology advance, laparoscopic cholecystectomy remains a cornerstone of general surgery, with continuous research aimed at improving safety, particularly in cases with complex anatomy or acute inflammation.

MATERIALS AND METHODS

This study covered 18 individuals, both male and female, who had been underwent lap and open cholecystectomy in a surgical ward, regardless of age category, and was carried out at Department of General Surgery, KIMS, Amalapuram between April 2023 and March 2025.

- The following aspects of open and laparoscopic cholecystectomy are contrasted:

1. The surgical technique
2. The duration of the procedure
3. Pain following surgery
4. Needs for analgesics
5. Duration of time antibiotics
6. Post-operative and intraoperative complications
7. Returning to a regular diet
8. Hospital stay following surgery
9. Get back to your regular activities
10. The Cosmesis

• Indication for Conversion to open:

1. Inability to recognize anatomy.
2. Adhesions.
3. Severe inflammation.
4. Bleeding.
5. Spillage of stones.
6. Cystic duct stone has been impacted.
7. Mass near the gallbladder.
8. Stomach injury.

RESULTS

This study included 18 patients: 10 (55.5%) females and 8 (44.5%) males, with an average age of 55 years (range 40-70). Out of these 18 cases, one was converted to open due to multiple adhesions. The average hospital stay for open and laparoscopic procedures was 10 and 5, respectively. Antibiotics were administered for an average of 7 days in open cases and 4 days in laparoscopic cases.

The average time of operation in open patients was 90 minutes, whereas in laparoscopic cases it was slightly longer, at 100 minutes.

The postoperative analgesic consumption in laparoscopic has been extremely reduced as compared to open instances where the analgesic usage persisted until postoperative day 6 and the post-op resumption of diet was very quick in lap cases within 3 days on average, but in open cases it required 5 days.

DISCUSSION

Based on preoperative history, clinical examination, ultrasound, and liver function test results, I have chosen surgical candidates for our study. Using LFT, ultrasonography, and clinical symptoms, we rule out common bile duct stones. The quality of life for patients undergoing laparoscopic and open surgery is the primary metric used to compare their relative benefits and drawbacks.

The study yielded the following results:

Laparoscopic surgery offers improved visualization and magnification of operative anatomy compared to conventional surgery. Two of the nine laparoscopic cholecystectomies required open surgery due to adhesions and difficulty identifying anatomy.

Laparoscopic cholecystectomy(3,4,5) takes an average of 120 minutes, which is 30 minutes longer than the usual open approach (90 minutes). Laparoscopic patients performed better than open surgery in terms of post-operative morbidity, including pain, recuperation time, and ambulance transport from bed.

Surgical trauma, including major open abdominal operations, can cause an inflammatory state, resulting in the release of proinflammatory cytokines like IL-1B, IL-6, IL-8, and TNFalpha, as well as temporary increases in acute phase proteins like C-reactive protein. Additionally, surgical manipulation can reduce cell-mediated immunity by altering the recruitment, activation, and function of circulating lymphocytes, monocytes, and other cells.

post-operative day. Laparoscopic patients did not suffer pain in the early post-operative period due to reduced acute phase reactions and port site infiltration of bupivacaine. No patients needed analgesics on the fourth post-operative day.

Regarding intra-operative complications Bleeding has occurred in three open and one laparoscopic cholecystectomy patients. There was no bile duct injury during either open or lap cholecystectomy. Bile leaks through drains were observed in two open and one lap patients as a post-operative complication. All three patients were treated conservatively and recovered, most likely due to bile leakage from the gall bladder bed in the liver. In open cholecystectomy, 3 out of 18 cases developed wound infections, while lap cholecystectomy had no such occurrences.

Laparoscopic cholecystectomy(6) is less likely to cause long-term pain compared to open surgery. In our investigation, neither group of individuals experienced any pulmonary problems. Other studies indicate that lap cholecystectomy(7) causes less impairment in pulmonary function compared to open cholecystectomy. The open approach had an overall complication rate of 16%, while the lap method had only 6%.

The post-operative study in the hospital lasted 10 days for open technique patients and only 5 days for lap patients. The lap approach provided speedy and cost-effective (8) mobility and return to normal activity.

Lap cholecystectomy provides the most benefits in terms of cosmesis compared to open methods.

INTRAOP COMPLICATION	OPEN	LAP
BLEEDING	3	2
BILE DUCT INJURY	0	0
BOWEL INJURY	0	0
OTHERS	0	0

POSTOP COMPLICATIONS	OPEN	LAP
BLEEDING	0	0
BILE LEAK THROUGH DRAINAGE	2	1
WOUND INFECTION	3	0
JAUNDICE	0	0

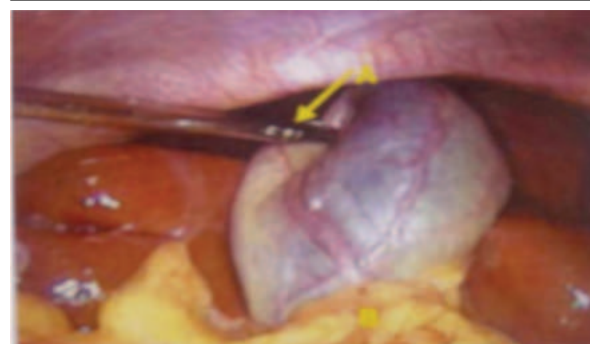


Image:1 A.cranial Retraction Of Gallbladder B.omenta Adhesions

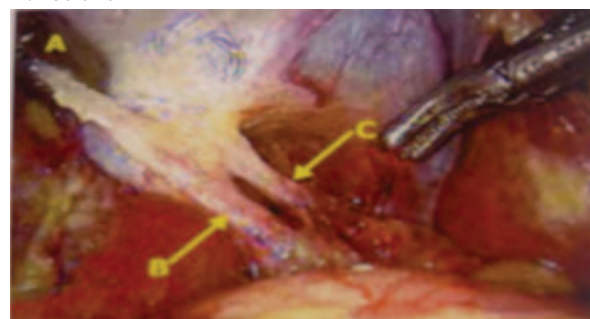


Image:2 A.lateral Traction Of Infundibulum B.cystic Duct. C.cystic Artery

Open surgery patients required analgesics even on the sixth



Image:3 A.gallbladder B.stones

Limitations

- Patients are unsuitable for general anaesthesia. Generalized peritonitis has been observed.
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- Patient with Pregnancy
- Patients unwilling to the study.

CONCLUSION

In conclusion, Our study found that laparoscopic cholecystectomy is more effective than open cholecystectomy for the following reasons:

Surgical anatomy can be better visualized and magnified.

Reduced post-operative morbidity.

Analgesic needs are reduced over time.

Antibiotics are required for less time.

Reduced wound infection.

Improved ambulance response times, more compliance, and faster return to routine activities.

Rapid restoration of usual diet.

Shorter post-operative hospital stay.

best cosmesis.

Additionally, we have discovered that in cases where laparoscopic surgery is unable to handle difficulties, the conversion to open cholecystectomy should be performed promptly and without hesitation.

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