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Original Research Article

USG Abdomen can predict possible complication biliary leakage after Laparoscopic Cholecystectomy.

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Abstract:
Introduction: Gallstone is very common in our region due to high fat content in our diet. Mostly patient present in emergency department in acute presentation which was managed conservatively and planned for interval laparoscopic Cholecystectomy. Biliary leakage is dangerous complication which increase cost of treatment ,morbidity and mortality.
Methods: This study was conducted on 200 consecutive patients admitted in J.A. group of hospital and G.R. Medical College, Gwalior during the period of September 2018 to September 2021 . Out of 05 patients developed significant biliary leakage.

Result: -

- The factors showing definitive association with increased post and intra operative complication in LC were thickened GB, contracted GB on USG while other finding peri cholecystic collection, impacted gallstones failed to show any significant association with biliary leakage.

Conclusion: Identify the variables for difficult laparoscopic cholecystectomy and timely conversion to open cholecystectomy to decrease the morbidity & mortality to the patients and financial burden.

KEY WORDS :- Biliary leak, Laparoscopic cholecystectomy, Gall bladder

1. INTRODUCTION

Cholelithiasis is common disease encountered in emergency as well as routine OPD in general surgery department Development from large incision to small incision and then open to laparoscopic procedure.
There are four major risk factor for development of gallstone formation like Supersaturation of bile, concentration of bile in gallbladder, crystal nucleation, Biliary stasis, gallbladder dysmotility[1]
The clinical presentation of acute cholecystitis are RUQ pain, fever, nausea , vomiting, anorexia, murphy sigh, RUQ tenderness, raised ESR, raised TLC. USG is first and most important investigation in acute setting with sensitivity of 89%and
specificity of 88%[2]

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Laparoscopic cholecystectomy is most common minimally invasive modality for treatment of symptomatic or asymptomatic gallbladder stone with its risk factor. This modality has been gain popularity among surgeons and patients due to shortened incision size, shortened recovery time, decreased post-operative pain, decreased size of incision, shortened hospital stay and regain the early routine activity.

Post-cholecystectomy biliary leaks can occur from injury to the common bile duct, cystic duct stump, or small ducts that drain from the gallbladder fossa directly into the biliary system,aberrant arterial or biliary anomaly . Most of them are managed conservatively.However Other modalities for biliary leakage are pigtail drainage, re exploration, ERCP stenting or need to send to higher centre

Our Aim of the study is to find out the finding of USG Abdomen to predict difficult cholecystectomy than we can reduce the incidence of biliary leakage and alert for timely conversion to open cholecystectomy.

AIMS AND OBJECTIVES

- To study the finding of USG Abdomen to predict difficult laparoscopic cholecystectomy and biliary Leakage

2. MATERIAL AND METHODS

This study was conducted on 200 consecutive patients admitted in Department of General Surgery J.A. group of hospital and G.R.Medical College, Gwalior during the period of September 2018 to September 2021 . Out of which 5 patients developed significant biliary leakage.

Study Design: Retrospective observational study

INCLUSION CRITERIA

We have included available patient USG Abdomen finding to significant biliary leakage in following points distended or contracted gallbladder, pericholecystic collection ,stone impacted in neck of gallbladder ,single or multiple gallstone

EXCLUSION CRITERIA

We have exclude those patients case record they underwent for cholecystectomy as a part of some primary operation like Whipple's operation, biliary-enteric anastomosis & where comparable USG finding not available.

STATISTICAL ANALYSIS

All Statistical calculations were done with the help of Chi–Square test with degree of significance <0.5% with SPSS software version 22.0

Results were tabulated and represented by suitable graphs and compared with other similar studies.

OBSERVATION & RESULTS

Following observations were made :-

Pre-operative USG abdomen finding

Findings	**Number of Patients**	**Percentage**	**Biliary Leakage Patients**	**Percentage**
Thickened gallbladder	36	18	03	8.3%
Pericholecystic collection	40	20	03	7.5%
Impacted gallstone at neck	40	20	04	10

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Gallbladder distended or contracted	24	12	04	16.6%
Single Stones	26	13 %	02	7.6%
Multiple Stones	174	87 %	03	1.7%

The most common variables associated biliary leakage after laparoscopic cholecystectomy is contracted gallbladder. In these scenarios, the decision for conversion is prudent step for patient safety and should be taken according to the experience and expertise of the operating surgeon.

3. DISCUSSION

The proportion of post operative complication was 11 % . Biliary leakage was found in 2.5 % in our institute which was higher to Lukas Krähenbühl et al (0.3% higher to 3 percent in severe cholecystitis

We have also compared the preop USG finding with biliary leakage of other author.In our study we have found

- **36** patients had thickened GB wall on USG. Out of them, 03 (8.3%) patients underwent biliary leakage. On analyzing these observations with chi-square test, the p-value obtained was0.08 >0.001 suggesting that no significant association existed between thickened GB and biliary leakage after LC.Contrary to **Ammori et al [3]** also concluded in their study that thickened GB wall was associated with significantly prolonged duration of surgery. **Daradekh et al [4]** also observed that GB wall thickness was a significant factor in predicting a difficult LC
- **40** patients had pericholecystic collection on USG. Out of them, 2 (5%) patients underwent biliary leakage after LC. On analyzing these observations with chi-square test, the p-value obtained was 0.54 suggesting that no significant association existed between pericholecystic collection and difficulty during LC.
- 46 patients had impacted gallstones on USG. Out of them, 04 (10%) patients underwent a biliary leakage after LC. On analyzing these observations with chi-square test, the p-value obtained was **0.46** suggesting that no significant association existed between impacted gallstones and difficulty during LC.
- 24 patients had contracted gallbladder on USG. Out of them, 05 (20 %) patients underwent biliary leakage after LC. On analyzing these observations with chi-square test, the p-value obtained was 0.01 suggesting that no significant association existed between contracted gallbladder and difficulty during LC
- Out of the total 200 patients in the study, 26 were single stone and 174 were multiple stone in the USG abdomen. Among them, 1 had single stone (7.6 %) and 4 had multiple stone (1.7 %) underwent biliary leakage after LC. On chi-square analysis of these observations, the p-value obtained was 0.01Therefore patients had multiple stone had significant association was present on this study .

Other studied sonological parameters like pericholecystic collection, impacted gall stones and contracted gallbladder showed no statistically significant association with difficulty encountered during LC. This was in consistence with findings of **Robinson et al [5]** as explained above.

4. CONCLUSION

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This study was done to investigate the association of certain pre-operative USG Abdomen variables to predict difficulty encountered during LC for gallstone disease and prediction of complication like biliary leakage. The results of the present study can be summarized as following

- The factors showing definitive association with increased post and intra operative complication in LC were thickened GB,contracted GB, single gallstone on USG while other study variable impacted stone in neck of gallbladder pericholecystic collection failed to show any significant association.
- The most common variables for prediction of biliary leakage was contracted Gallbladder.

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