ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 12 | December - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPARISON OF INCIDENCE OF PORT SITE INFECTION IN ENDOBAG VERSUS NON-ENDOBAG MEDIATED RETRIEVAL OF GALL BLADDER IN LAPAROSCOPIC CHOLECYSTECTOMY – AN OBSERVATIONAL STUDY

General Surgery

Dr. Rakshit Pancholi* Junior Resident - III, Department Of General & Minimal Access Surgery, Jaipur Golden Hospital, New Delhi *Corresponding Author

Dr. Kapil Sethi Professor, Department Of General & Minimal Access Surgery, Jaipur Golden Hospital, New Delhi

Dr. Nepash Kacker Professor, Department Of General & Minimal Access Surgery, Jaipur Golden Hospital, New Delhi

Dr. Subodh Gupta Professor & Head, Department Of General & Minimal Access Surgery, Jaipur Golden Hospital, New Delhi

ABSTRACT

Background And Objectives: Existing literature provides some insights into the utility of endobag in laparoscopic cholecystectomy, still the opinion is ambiguous about their clinical role in gall bladder retrieval in cholecystectomy. Most of the literature in this domain is from the western world and very few empirical studies exist which address the findings in Indian sub-population. Therefore, to further our understanding about the role of endobag in our setup and contribute to the limited pool of literature focussed on Indian subpopulation, we decided to conduct this study. The aim of the study was to compare the incidence of port site infection in endobag versus non-endobag mediated retrieval of gallbladder in laparoscopic cholecystectomy. **Materials And Methods:** The present prospective observational study was conducted in Department of General and minimal access surgery in Jaipur Golden Hospital. Participants were divided into two groups: the endobag group (Group A) and the non-endobag group (Group B) with 105 patients in each group undergoing laparoscopic cholecystectomy for acute calculus cholecystitis. All patients were reviewed immediately after surgery and at the end of first, second and third week post operatively to evaluate port site infection. **Results:** The study found a statistically significant difference in the incidence of Port site infection between the two groups. Group A demonstrated a lower incidence of PSI compared to Group B. Specifically, the port site infection rate at week 1, week 2 and week 3 were 1.90% vs 8.57%, 2.85% vs 9.52% and 0% vs 5.70% respectively for the endobag versus non-endobag groups, suggestive of statistically significant benefit associated with the use of an endobag. Additionally, the use of an endobag was associated with a shorter duration of surgery & a shorter hospital stay. The port site spillage and accidental perforation were also lower as compared to the non-endobag group. **Conclusion:** The use of an endobag for gall bladder retrieval in laparoscopic cholecystectomy significantly reduces the incidence of port site infections. The overall trend aligned with the major published literature in this domain, both national and international. Findings of this study need to be validated further by larger studies in this domain conducted in a more multicentric setting for the adoption of endobag-mediated retrieval as a standard practice to enhance patient outcomes in laparoscopic cholecystectomy.

KEYWORDS

Port site infection (PSI), Endobag, Laparoscopic cholecystectomy, Gall bladder retrieval, Minimally invasive surgery

INTRODUCTION

Gallstone prevalence varies greatly from place to place. The prevalence in India is estimated to be around 4 % [(1)]. In 1992, National Institutes of Health (NIH) consensus development conference concluded that laparoscopic cholecystectomy is a safe and effective treatment for the majority of patients with symptomatic gallstones [(2)]. Laparoscopic cholecystectomy or small incision cholecystectomy are both safe procedures with mortality rates ranging from 0.1 to 0.7% [(3)]

One of the major steps in LC is the extraction of the gallbladder from the abdominal cavity to prevent bile and stone spillage into the abdominal cavity which can result in the formation of adhesions, abdominal abscesses, and peritoneal cystic masses. The two major techniques to extract the gall bladder are direct extraction of the gall bladder and endobag or retrieval bag mediated removal. It has been seen that direct extraction is often associated with bile spillage in the intra-abdominal cavity, leading to post-operative complications. The gall bladder is directly taken out through the port site, which often leads to port site complications as well. On the contrary, endobag or retrieval devices are seen to enable safe extraction of the gall bladder. One of the major disadvantages of endobag mediated retrieval is the increased cost and risk of widening the port site [(4)].

Although the literature provides some insights into the utility of endobag in laparoscopic cholecystectomy, still the opinion is ambiguous about their clinical role. Most of the literature in this domain is from the western world and very few empirical studies exist which address the findings in Indian sub-population. Therefore, to further our understanding about the role of endobag in our setup and contribute to the limited pool of literature focussed on Indian subpopulation, we decided to conduct this study.

Aim & Objectives

To compare the incidence of port site infection in endobag versus non-endobag mediated retrieval of gallbladder in laparoscopic cholecystectomy.

MATERIALS AND METHODS

Study Design: Prospective Observational Study

Sample Size: 105 patients in each group (n=210 patients), diagnosed as a case of acute calculus cholecystitis admitted in Department of General and Minimal Access Surgery at Jaipur Golden Hospital were included in the study.

Inclusion Criteria:

Patients aged 18 years or older admitted to the Department of General and Minimal Access Surgery, Jaipur Golden Hospital with the diagnosis of acute calculus cholecystitis undergoing laparoscopic cholecystectomy.

Exclusion Criteria:

The following exclusion criteria were used to exclude the patients.

1. Any patient in whom any other surgery is being combined with laparoscopic cholecystectomy.
2. Patients in septicaemia
3. Patients under 18 years of age
4. Patients with uncorrected coagulopathy
5. Patients with any other systemic disease

Conduct Of Study:

1. Two groups of 105 patients each (one with endobag and one without endobag) were formed, and patients underwent laparoscopic cholecystectomy as per standard practice procedures. A sterile latex glove made endobag was used as retrieval device.
2. An assessment of the baseline demographic parameters and operative parameters like duration of surgery and overall hospital stay were noted down.
3. All the patients were evaluated for the intraoperative outcome parameters like accidental perforation and port site spillage.

4. Follow-up assessment at week 1, week 2, and week 3 were conducted to check for port site infection and other related complications.

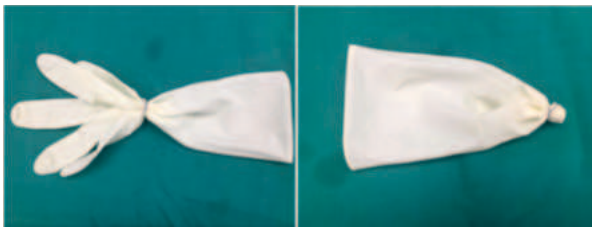

Figure 1. Glove Endobags

RESULTS

1. Accidental Perforation

*-Chi square test

Table 1. Accidental perforation

Parameter	Endo Bag +	No Endo Bag	P Value
No	103 (98.10%)	101 (96.20%)	0.4092
Yes	2 (1.90%)	4 (3.80%)	
Total	105	105	

2. Port Site Spillage

*-Chi square test

Table 2. Port site spillage

Parameter	Endo Bag +	No Endo Bag	P Value
No	105 (100%)	102 (97.14%)	0.0816
Yes	0 (0%)	3 (2.86%)	
Total	105	105	

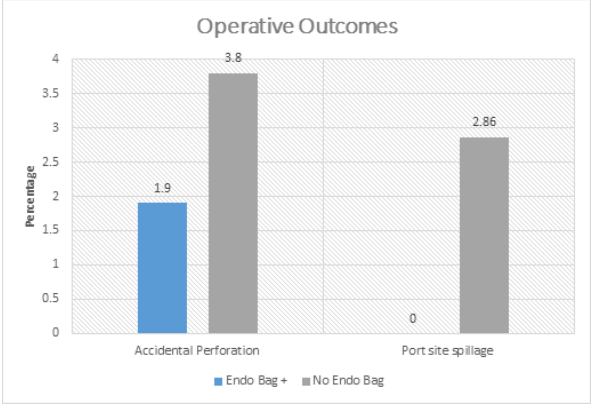

Figure 2. Accidental perforation and Port site spillage

3. Port site Infection

*-Chi square test

Table 3. Port site infection

Parameter	Endo Bag +	No Endo Bag	P Value
At week 1	2 (1.90%)	9 (8.57%)	0.0304
At week 2	3 (2.85%)	10 (9.52%)	0.0396
At week 3	0	6 (5.70%)	0.0133

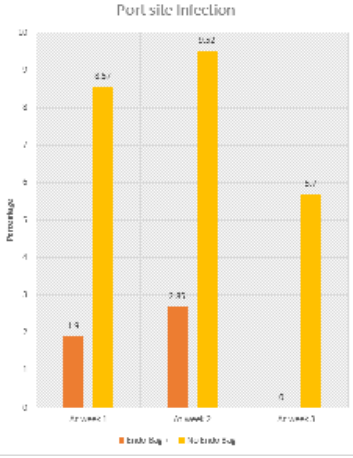

Figure 3. Port site infection

DISCUSSION

In our study, the average age of patients across both the groups was 41 years (41.75 ± 15.08 years in the endobag group and 41.59 ± 15.99 years in the non-endobag group). There was a female preponderance across both the study groups, with the endobag group having 66.67% females and the non-endobag group having 70.48% female patients.

We found that the duration of hospital stay was either 2 or 3 days for most of the patients across both the groups. A higher proportion of patients in the non-endobag group had a stay of 3 days compared to the endobag group and this trend was significant statistically (P=0.0015).

The average duration of procedure was significantly shorter for patients where an endobag was used. The procedure duration was 53.88 ± 8.61 minutes in the endobag group compared to 64.64 ± 9.02 minutes in the non-endobag group, with the difference being significant statistically (P<0.0001).

Overall, only 6 patients (2.85%) had accidental perforation in the study. 4 patients (3.80%) belonged to the non-endobag group, while the endobag group had only 2 patients (1.90%) with accidental perforation. This difference in the rates of accidental perforation across both the groups was not significant statistically (P=0.4092).

3 patients in the study overall had port site spillage (1.42%). All these patients belonged to the non-endobag group with none of the patients in the endobag group having port site spillage. The difference in port site spillage rate was close to significance statistically (P=0.0816).

In terms of the port site infection, the endobag group had lower infection rate compared to the non-endobag group. The port site infection rates post operatively at week 1, week 2 and week 3 were 1.90% vs 8.57%, 2.85% vs 9.52% and 0% vs 5.7% respectively for endobag versus non-endobag groups suggestive of significant benefit associated with endobag mediated retrieval of the gall bladder.

JP Shakya et al 2018 [5] study showed that endobag use was associated with a mean operative time of 1 hour as compared to 1.3 hours taken in procedure without using an endobag. Mean hospital stay was of 3.45 days and only 2% of patients had port site infections in cases with endobag as compared to 3.6 days and 10% of patients had port site infections in cases without an endobag. **Mumtaz et al 2023** [6] In Group A(Endobag), 4 (2%) patients had port site infection, while in Group B 13(6%) patients had port site infection.

The study was able to show that the post-operative and intraoperative outcomes were better with GB retrieval via an endobag in the laparoscopic cholecystectomy. These trends were significant statistically. The overall trend was in line with the major published literature in this domain both national and international.

CONCLUSION

The study was able to conclude that the post-operative and intraoperative outcomes were better with GB retrieval via an endobag in laparoscopic cholecystectomy. Endobag mediated GB retrieval in laparoscopic cholecystectomy was associated with a shorter duration of surgery and a shorter hospital stay. The port site infection in the endobag group was significantly lower in comparison to the non-endobag group. Additionally, port site spillage and accidental perforation rates were lower in the endobag group, though these differences were not statistically significant due to the small number of events. But the overall trend was in line with the major published literature in this domain, both national and international. Findings of this study need to be validated further by larger studies in this domain conducted in a more multicentric setting.

REFERENCES

1. Tendon R. Diseases of gallbladder and biliary tract. API Textbook of Medicine. 7th Ed. Jaypee Brothers Medical Publishers. 2003:642-4.
2. National Institutes of Health (US). Office of Medical Applications of Research. Gallstones and laparoscopic cholecystectomy. National Institutes of Health, Office of Medical Applications of Research; 1992.
3. Atta HM, Mohamed AA, Sewefy AM, Abdel-Fatah AF, Mohammed MM, Atiya AM. Difficult laparoscopic cholecystectomy, and trainees: predictors and results in an academic teaching hospital. Gastroenterology research and practice. 2017 Jun 5;2017.
4. Mohamed HK, Albendary M, Wuheb AA, Ali O, Mohammed MJ, Osman M, Elshikhawoda MSM, Mohamedahmed AY. A Systematic Review and Meta-Analysis of Bag Extraction Versus Direct Extraction for Retrieval of Gallbladder After Laparoscopic Cholecystectomy. Cureus. 2023 Feb 26; 15(2):e35493.

5. Shakya JP, Yadav C, Kumar A, Shukla S. A comparative study of retrieval of gall bladder during laparoscopic cholecystectomy with endobag versus without endobag in terms of benefits and complications. Indian journal of applied research. 2018; 8(11):5-10
6. Mumtaz N, Malik AH, Khan SU, Khan A, Nisar M, Muhammad S. Comparison of gall bladder removal with and without endobag during laparoscopic cholecystectomy in term of port site infection. Journal of Population Therapeutics and Clinical Pharmacology. 2023 Nov 27;30(18):2750-6.