

Comparison between Gall Bladder Extraction from Epigastric versus Umbilical Port Site in Laparoscopic Cholecystectomy in Tertiary Health Center

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Abstract

Aim: To compare gall bladder extraction from epigastric versus umbilical port site in terms of port site infection and postoperative pain in Laparoscopic cholecystectomy.

Methods: A prospective randomized study was done from June 2019 to December 2019 at Mysore Medical College and Research Institute, Mysore in which 50 cases of cholelithiasis were considered. Cases were randomly selected and allocated into two group, group A(gallbladder extraction from epigastric port; n=25 cases) and group B(gallbladder extraction from umbilical port; n=25 cases). VAS score for postoperative pain at port site, and surgical site infection was assessed and data was analyzed.

Results: Port site pain was higher when gallbladder was extracted from epigastric port over umbilical port site. Surgical site infection was noted in 2 cases, 1 in each group.

Conclusion: Umbilical port site is better for gall bladder extraction than epigastric port with respect to post-operative port site pain.

Keywords: Epigastric port, Umbilical port, Port-site pain.

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I. Introduction

Laparoscopic cholecystectomy is the gold standard procedure for managing patients with symptomatic gall stone diseases.¹ The commonest event that increases hospital stay following laparoscopic cholecystectomy is post-operative pain.² Pain after laparoscopic cholecystectomy depends on various factors like use of carbon-dioxide for creating pneumoperitoneum, traumatic traction of nerves, trauma to abdominal wall during port insertion, hemoperitoneum, method of gall bladder extraction etc.^{2,3} It is reported that incisional pain is more than visceral pain and is dominant during the first 48 hours after laparoscopic cholecystectomy.⁴

Gallbladder extraction is an important terminal event of laparoscopic cholecystectomy and is thought to be one of the factors affecting postoperative port site pain and infection. Gallbladder is extracted either from epigastric or umbilical port. Both the ports have been recommended for gall bladder extraction and are always selected as per surgeon's preference.^{5,6,7} Abbas *et al*⁸ preferred subxiphoid port for gallbladder retrieval due to the surgeon's ease and also as there was no need to change the position of the telescope. Siddiqui *et al*⁹ however showed the superiority of umbilical port in terms of postoperative port-site pain. To date, there is no level 1 evidence or meta-analysis to support the superiority of one technique over the other for gallbladder extraction in terms of postoperative port-site pain.

This trial is undertaken to determine whether gall bladder extraction from umbilical port is associated with more pain and infection or from epigastric port, in adult patients undergoing four port elective laparoscopic cholecystectomy at a tertiary health care hospital.

II. Materials And Methods

To achieve the objective, a Randomized Control trial was carried out at surgical floor of Mysore Medical College and Research Institute, Mysore from 1st June 2019 to 30th December 2019, 50 patients who fulfilled the inclusion criteria were included after an informed consent.

Inclusion criteria: 20-70 years old cases with cholelithiasis who were planned for elective laparoscopic cholecystectomy.

Exclusion criteria: Pregnant ladies, suspicious or proven gallbladder malignancy, bleeding diatheses, obstructive jaundice, and acute pancreatitis or in whom port-site extension was done.

The mandatory investigations like abdominal ultrasonography, liver function tests, viral profile for hepatitis B and other baseline investigations that include CBC, Xray chest, ECG, Blood urea, Serum creatinine and Blood sugar level were done.

Included patients were randomly divided into two groups by random number generation.

In Group A- The gallbladder was extracted through the epigastric port.

In Group B- The gallbladder was extracted through umbilical port.

Postoperative analgesia was standardized in both the groups. All patients were kept nil per oral and on parenteral fluids till their bowel recovered. They were closely monitored in the post-operative period taking special care to degree of pain, time taken for gallbladder extraction and wound infection.

Pain was assessed in both the group using VAS score at 1 hour, 6 hours, 12 hours and 24 hours at epigastric and umbilical port in both the groups. In cases with clinical evidence of wound infection the stitches were urgently removed and swab was taken for culture and sensitivity. Time taken for gall bladder extraction was defined as time taken from completion of preliminary steps (i.e. dissection of Calot's triangle, clipping of cystic artery and cystic duct, dissection of gall bladder from liver bed, hemostasis and irrigation/suction till its removal through one of the two ports) to completion of the procedure.

Collected data was analyzed and statistical difference student t-test in both groups was applied in pain score and operative time. A value of $p < 0.05$ was considered as significant. A pre-designed proforma was filled for each case to record the demographic and study variables.

III. Results

The following baseline variables were comparable between the two groups as shown in Table 1. In study conducted, female constituted 76% and male constituted 24% which is statistically significant. Female:Male in both the groups was 3.16:1 to avoid bias.

Table 1: Comparison of different baseline variables

Variables	Group A	Group B
Number of cases	25	25
Mean age	42+/- 10	44+/- 12
Sex (female:male)	3.16:1	3.16:1

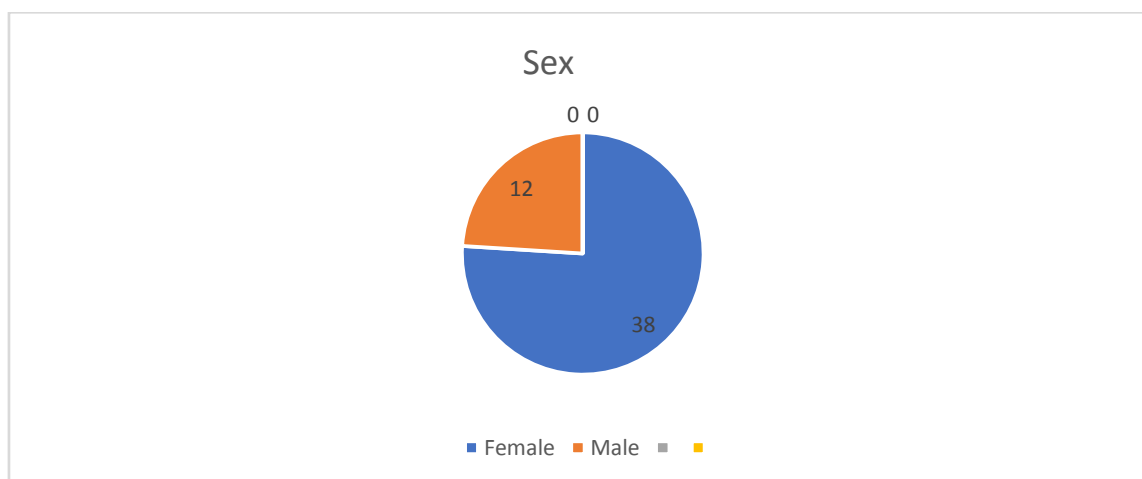


Figure 1: Sex distribution in study group

In the study conducted cases in which gallbladder was extracted from epigastric port, pain in epigastric port was significantly higher than umbilical port. (p value < 0.05)

Table 2: VAS score for epigastric and umbilical ports at different postoperative hours in Group A

Pain score	Epigastric port	Umbilical port	P value
At 1 hour	7.20+/-1.23	4.52+/-1.26	< 0.0001
At 6 hours	6.84+/- 1.22	3.62+/-1.12	< 0.0001
At 12 hours	6.22+/-1.24	2.98+/-1.26	< 0.0001
At 24 hours	5.55+/- 1.02	2.07+/-1.25	< 0.0001

In the study conducted cases in which gallbladder was extracted from umbilical port, pain in epigastric port was significantly higher than umbilical port. (p value < 0.05)

Table 3: VAS score for epigastric and umbilical ports at different postoperative hours in Group B

Pain score	Epigastric port	Umbilical port	P value
At 1 hour	4.01+/-1.02	5.52+/-1.32	<0.0001
At 6 hours	3.45+/-1.40	5.24+/-1.26	<0.0001
At 12 hours	2.75+/-1.24	4.42+/-1.22	<0.0001
At 24 hours	2.20+/-1.24	3.86+/-1.32	<0.0001

In the study conducted on comparing VAS score for epigastric port in Group A and umbilical port in Group B showed significantly higher VAS score in Group A epigastric port.

Table 4: VAS score for specified port-site pain at different postoperative hours between the groups

Pain score	Group A (Epigastric port)	Group B (Umbilical port)	P value
At 1 hour	7.20+/-1.23	5.52+/-1.32	<0.0001
At 6 hours	6.84+/- 1.22	5.24+/-1.26	<0.0001
At 12 hours	6.22+/-1.24	4.42+/-1.22	<0.0001
At 24 hours	5.55+/- 1.02	3.86+/-1.32	<0.0001

In the study conducted on comparing time taken for gallbladder extraction between two groups showed significant longer duration in Group B.

Table 5: Time taken for gallbladder extraction in Group A and Group B

Variable	Group A	Group B	P value
Time (minutes) taken to extract gallbladder	3.5+/-0.5	4.5+/-0.5	<0.0001

In the study conducted, both groups showed equal rate of postoperative port site infection.

Table 6: Postoperative port site infection in Group A and Group B

Variable	Group A (Epigastric port)	Group B (Umbilical port)
Port site infection	1	1

IV. Discussion

Laparoscopic cholecystectomy is now the gold standard of treatment for symptomatic gallbladder pathology. Various modification has been adopted to decrease the postoperative morbidity. One of the methods to decrease post-operative pain is port via which gallbladder is extracted. There are a lot of controversies regarding the better port during extraction of gall bladder. Retrieval of gall bladder through a particular port is also associated with further tissue trauma at port site and hence considerable degree of post-operative port site pain. Therefore, the ideal port for this purpose will be the one with lesser post-operative port site pain and where less port site infection is seen.

In our study, post-operative pain, in terms of VAS was significantly higher in epigastric port over umbilical port in both groups, and on comparing VAS score between epigastric port in group A and umbilical port in group B showed significantly more pain in group A.

This is in support of the results by Siddique et al who considered umbilical port to be the better port in terms of VAS. In their randomized control trial of 120 patients, patients were randomized to either group A (n = 60, gallbladder retrieval through epigastric/sub xiphoid port) or group B (n = 60, gallbladder retrieval through umbilical port). VAS for pain was assessed by a registered nurse at 1, 6, 12, 24 and 36 h after surgery. The VAS for pain at umbilical port was less than subxiphoid port at 6, 12, 24 and 36 h after surgery (5.9±1.1 versus 4.1±1.5, 4.6±0.94 versus 3.5±1.05, 3.9±0.85 versus 2.4±0.79, 3.05±0.87 versus 2.15±0.87, respectively) and the difference was statistically significant (p-value < 0.001).

This result is contradictory to the results of the study by Bashir et al where post-operative pain score in the study came out 3.54±1.034 in sub xiphoid group while 3.11±1.368 in umbilical group on visual analogue scale of 10 with 10 as worst pain. The difference in 24-hour postoperative pain score was statistically non-significant (p value = 0.089)

Similarly, it is also contradictory to the study by Ahmad et al where post-operative pain score in their study came out 3.70±1.02 in Sub xiphoid Group while 3.37±1.3 in umbilical group on visual analogue scale of 10 with 10 as worst pain. The difference in 24-hour postoperative pain score was statistically non-significant (p = 0.28).

In our study, a total of two patients out of 50 cases suffered port site infections amongst which each group had one case.

In our study on comparing the time duration for gallbladder extraction group B had significantly longer duration than group A. Longer duration in group B was due to change telescope to epigastric port and gallbladder retractor to umbilical port.

V. Conclusion

Laparoscopic cholecystectomy is the gold standard procedure for cholecystectomy for minimal postoperative morbidity over open procedure. Port site pain was most distressing complaint for patients following procedure. Here we have compared umbilical versus epigastric port for gallbladder extraction and associated VAS score for each group. Our study showed significant pain reduction, when gallbladder was extracted from umbilical port without any other postoperative complication. Our study also showed gallbladder extraction from umbilical port a longer duration of the procedure over the routine method. But time duration for surgical procedure can be neglected for the patient postoperative comfort. Hence, we conclude that umbilical port can be used to extract the gallbladder without any major complications and less postoperative pain.

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