



Gall Bladder Retrieval through Umbilical versus Epigastric Port in Conventional Four Port Laparoscopic Cholecystectomy.

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ABSTRACT... Objectives: Both approaches are compared for their pros and cons regarding post-operative pain at site of removal. **Study Design:** Randomized control study. **Setting:** Department of surgery of Allama Iqbal medical college/ Jinnah hospital Lahore. **Period:** August 2017 to February 2018. **Material & Methods:** To compare mean post-operative pain in gall bladder retrieval through umbilical versus xiphoid port in four ports laparoscopic cholecystectomy for acute cholecystitis. Patient were divided in two equal groups with first group had their gall bladder retrieved through umbilical port while the other underwent retrieval through xiphoid port. Standard analgesia was used in both groups and post-operative outcome was noted. **Results:** A total 70 patient with equal distribution in two groups were enrolled to compare post-operative pain at port site comparing umbilical versus xiphoid process. Mean post-operative pain visual analogue scale (VAS) was as lower ($p < 0.0001$) at 1, 6, 12 & 24 hrs. In umbilical port group as compared to xiphoid port group. **Conclusion:** Mean post-operative pain in gall bladder retrieval umbilical port give advantage in post-operative period regarding significantly reduced pain when compared with xiphoid port in four ports laparoscopic cholecystectomy for acute cholecystitis in selective cases.

Key words: Cholecystitis, Cholecystectomy, Gall Bladder, Laparoscopic, Pain, Umbilical, Xiphoid.

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INTRODUCTION

Incidence of gallstones in adults is almost 10-15% but only 1- 4 % of these are symptomatic.¹ Open cholecystectomy has become second line of surgical treatment after establishment of safety of laparoscopic cholecystectomy, later has become gold standard surgical treatment for both acute and chronic cholecystitis.^{2,3} Conventionally the procedure was carried out through four ports. However, now there is a trend of reducing the number and sizes of port sites.⁴

Traditional way of removed gall balder in laparoscopic surgery is through umbilical port.⁵ In this approach, surgeon has to change his position and telescope has to be changed in xiphoid port. Another approach to remove the gallbladder is through 10mm xiphoid port without changing position of telescope and surgeon.^{6,7}

Both approaches are compared for their pros and cons regarding time to retrieve gall bladder, post-operative pain at site of removal, difficulty in removal, and port site infection. Siddiqui NA et al when compared post-operative pain in xiphoid and umbilical port, it showed that there is less pain in retrieving specimen from umbilical post on visual analogue scale (VAS) as 5.9+1.1 vs 4.1+1.5 at 1 hour; 4.6+0.94 vs 3.5+1.05 at 6 hours; 3.9+0.85 vs 2.4+0.79 at 12 hours and 3.05+0.87 vs 2.15 +0.87 at 24 hours with significant $p < 0.001$.⁸ He concluded gall bladder removal through umbilical port causes less post-operative pain. However, another study by Azhar Bashir et al VAS at xiphoid port site was 3.54+1.034 and at umbilical port site was 3.11+1.368 (P value >0.005). These authors believe that both ports are equally effective in terms of postoperative pain.⁹ Although many surgeons have compared gallbladder retrieval

through umbilical and xiphoid approach but still data lacks the establishment of superiority of one on other. Both above mentioned studies have shown different results in terms of postoperative pain which needs to be probed the situation further in order to establish hospital protocol and would ultimately a contribution to the national guidelines as standard procedure.

MATERIAL & METHODS

This randomized control study was done in department of surgery of Allama Iqbal Medical College/ Jinnah Hospital Lahore from Aug 2017 to Feb 2018 and total of 70 cases were selected. Non probability/ consecutive sampling. A sample size of 70 patients, (35 in group I and 35 in group II) is calculated with 80% power of test, 5% level of significance and taking mean pain score of umbilical port as $2.15+0.87$ and xiphoid port as $3.05+0.87$.⁸

Inclusion Criteria

- Both male and female gender
- Proven echographic acute cholecystitis. (annexure attached) as per operational definition
- grade 1 acute cholecystitis (annexure for severity attached)
- ASA 1 and 2 patients(annexure attached)
- Age between 18years to 50years
- No history of laparotomy diagnosed on history and examination

Exclusion Criteria

- Pregnancy diagnosed on dip stick
- leukocytes more than 11000
- perforated cholecystitis diagnosed on examination and ultrasonography
- Peritonitis diagnosed on examination and ultrasonography
- Diagnosed cases of common bile duct dilatation (>8 mm in diameter on ultrasound), choledocholithiasis, pancreatitis and mass in gallbladder on ultrasound abdomen.

After proper prepping and draping, and preparing laparoscopic instruments, and a final sign out call; an infraumbilical 1.5cm vertical incision is made on skin and deepened deep down until linea Alba

is approached which is holded and retracted in upward direction and is incised. Two lips of linea Alba are then secured in an absorbable suture and is retracted to expose peritoneum. Peritoneum is lifted in an artery forceps and an incision is made on it for safe entry into abdomen using Hasson's port and is secured with stay sutures. Pneumoperitonium with 15 mmHg pressure is created.

Diagnostic laparoscopy is a standard step before proceeding with xiphoid port. This port is chosen by internal visualization and external pressure technique, and a safe entry site through 10-12mm skin incision is made to introduce a 10mm port through it. Two more 5mm trocars are placed at appropriate sites on lateral wall keeping in view good ergonomics for functional azimuth and manipulation angle.

Gall bladder is retracted in cephalad position towards ipsilateral shoulder and cholecystectomy is performed. Once dissection is complete, gall bladder is then placed in sub phrenic space while holding it in grasper through 5mm ports. Camera is shifted to epigastric port and a retrieval bag is introduced through umbilical port for removal of gall bladder. Abdomen is washed if needed and a final look for hemostasis is given in a neutral bed position.

All ports are removed under direct vision with an aim to remove hasson's port in the end which is then closed with stay sutures taken in the start. Rest of the ports are closed with absorbable sutures, followed by skin adhesive tape or glue.

Port site herniation is a known complication after minimally invasive laparoscopic procedures. Although the incidence is low but should be considered for closure. Tonouchi et al¹⁰ recommended to close all port sites bigger than 10mm as they found an incidence port site herniation as 0.65-2.8%.

Cases fulfilling the inclusion criteria were selected from surgical out door department Jinnah hospital Lahore. Informed consent was taken, procedure was explained to patient and

the patient was assured that his/her data was kept confidential. Ethical approval was obtained. All data was collected in pre designed proforma (attached). We randomly divided patients in two groups by using random number table as, group I in which gallbladder retrieved through umbilical port and patients in group II had their gallbladder retrieved through xiphoid port. All patients had standard post-operative care including standard analgesia, Nalbuphine 0.1mg/kg I/V X 8 Hourly and Diclofenac Na 75mg I/M BD for 2 days. Post-operative pain was assessed by visual analogue scale at 1,6,12,24 and 48 hours.

Patient's data was entered and then analyzed using SPSS V. 20. Quantitative data like age and post-operative pain was described as mean and standard deviation while gender was presented as frequency and percentage. Both groups were compared through t test. Effect modifiers such as age, gender, BMI and educational status were addressed by stratification of patients in both groups. Independent sample T-test was applied for age and post-operative pain. P value was considered significant if < 0.05 .

RESULTS

A total of 70 patients, (35 in group I and 35 in group II) fulfilling the inclusion/exclusion criteria were enrolled to compare mean post-operative pain in gall bladder retrieval from two different locations, either umbilical port or xiphoid port in conventional laparoscopic cholecystectomy with

four ports for acute cholecystitis.

Age distribution of the patients was done, it shows that 20%(n=7) in Group-I and 34.29%(n=12) in Group-II were between 18-30 years of age whereas 80%(n=28) in Group-I and 65.71%(n=23) in Group-II were between 31-50 years of age, mean + sd was calculated as 36.17+5.88 years in Group-I and 33.86+6.01 years in Group-II. (Table-I)

Gender distribution shows that 37.14%(n=13) in Group-I and 40%(n=14) in Group-II were male whereas 62.86%(n=22) in Group-I and 60%(n=21) in Group-II were females. (Table-II)

Mean post-operative pain visual analogue scale (VAS) was calculated as 4.14+0.77 v/s 5.26+0.66, p value 0.0001 at 1 hour in Group-I & II, 3.40+0.50 v/s 4.09+0.82, p value 0.0001 at 6 hour in Group-I & II, 2.49+0.51 v/s 3.34+0.48, p value 0.0001 at 12 hour in Group-I & II, 2.34+0.48 v/s 2.97+0.51, p value 0.0001 at 24 hour in Group-I & II, 1.94+0.42 v/s 2.49+0.49, p value 0.0001 at 48 hour in Group-I & II. (Table-III)

Effect modifiers such as age, gender, BMI and educational status were addressed by stratification of patients in both groups. Independent sample T-test was applied for age and post-operative pain. P value was considered significant if < 0.05 . (Table-IV-VII).

Age (in years)	Group-I (n=35)		Group-II (n=35)	
	No. of Patients	%	No. of Patients	%
18-30	7	20	12	34.29
31-50	28	80	23	65.71
Total	35	100	35	100
Mean + SD	36.17+5.88		33.86+6.01	

Table-I. Age distribution (n=70).

Gender	Group-I (n=35)		Group-II (n=35)	
	No. of Patients	%	No. of Patients	%
Male	13	37.14	14	40
Female	22	62.86	21	60
Total	35	100	35	100

Table-II. Gender distribution (n=70).

Post- operative Pain (hours)	Group-I (n=35)		Group-II (n=35)		P-Value
	Mean	SD	Mean	SD	
1	4.14	0.77	5.26	0.66	0.0001
6	3.40	0.50	4.09	0.82	0.0001
12	2.49	0.51	3.34	0.48	0.0001
24	2.34	0.48	2.97	0.51	0.0001
48	1.94	0.42	2.49	0.56	0.0001

Table-III. Comparison of mean post-operative pain in both groups after gall bladder retrieval after conventional laparoscopic cholecystectomy with four ports. (n=70)

Post- operative Pain	Group-I (n=35)		Group-II (n=35)		P-Value
	Mean	SD	Mean	SD	
	1.91	0.44	2.46	0.58	0.0001

Table-IV. Stratification for comparison of mean post-operative pain (at 48 hours) in both groups in regards to age. (n=70).

Age: 18-30 years.

Post- operative Pain	Group-I (n=35)		Group-II (n=35)		P-Value
	Mean	SD	Mean	SD	
	1.93	0.40	2.51	0.55	0.0001

Table-V. Stratification for comparison of mean post-operative pain in both groups in regards to gender (n=70)

Age: 31-50 years

Post- operative pain	Group-I (n=35)		Group-II (n=35)		P-Value
	Mean	SD	Mean	SD	
	1.90	0.40	2.44	0.51	0.0001
	1.95	0.43	0.43	0.55	0.0001

Table-VI. Stratification for comparison of mean post-operative pain in both groups with regards to BMI. (n=70).

Male & Female

Post- operative Pain	Group-I (n=35)		Group-II (n=35)		P-Value
	Mean	SD	Mean	SD	
	1.95	0.43	2.46	0.55	0.0001
	1.96	0.44	2.48	0.56	0.0001

Up to 30 >30

Post- operative Pain		Group-I (n=35)		Group-II (n=35)		P-Value
		Mean	SD	Mean	SD	
	Illiterate	1.91	0.43	2.47	0.55	0.0001
	Primary	1.93	0.40	2.46	0.58	0.0001
	Middle	1.93	0.45	2.46	0.55	0.0001
	Matric & above	1.90	0.43	2.46	0.58	0.0001

Table-VII. Stratification for comparison of mean post-operative pain in both groups regards to educational status (n=70).

DISCUSSION

laparoscopic cholecystectomy is now the gold standard treatment for the symptomatic

cholilithiasis all over the world. In conventional laparoscopic cholecystectomy, traditional way of gall bladder removal is through umbilical

port. In this approach surgeon has to change his position and telescope has to be changed in xiphoid port. Another approach to remove the gallbladder is through 10mm xiphoid port without changing position of telescope and surgeon. Both approaches are compared for their pros and cons regarding time to retrieve gall bladder, post-operative pain at site of removal, difficulty in removal and infection.

Although many surgeons have compared gallbladder retrieval through umbilical and xiphoid approach but still data lacks the establishment of superiority of one on other. Both above mentioned studies have shown different results in terms of postoperative pain which makes us to probe the situation further.

In this study, out of 70 cases (35 in each group), mean age was 36.17 ± 5.88 years in Group-I and 33.86 ± 6.01 years in Group-II, 37.14% (n=13) in Group-I and 40% (n=14) in Group-II were male whereas 62.86% (n=22) in Group-I and 60% (n=21) in Group-II were females, mean post-operative pain visual analogue scale (VAS) was calculated as 4.14 ± 0.77 v/s 5.26 ± 0.66 , at 1 hour in Group-I & II, 3.40 ± 0.50 v/s 4.09 ± 0.82 , at 6 hour in Group-I & II, 2.49 ± 0.51 v/s 3.34 ± 0.48 , at 12 hour in Group-I & II, 2.34 ± 0.48 v/s 2.97 ± 0.51 , at 24 hour in Group-I & II, 1.94 ± 0.42 v/s 2.49 ± 0.49 , at 48 hour in Group-I & II.

We compared our results with Siddiqui NA who compared post-operative pain in xiphoid and umbilical port it showed mean post-operative pain higher in earlier than later on visual analogue scale (VAS) as 5.9 ± 1.1 vs 4.1 ± 1.5 at 1st hour, 4.6 ± 0.94 vs 3.5 ± 1.05 at 6 hours, 3.9 ± 0.85 vs 2.4 ± 0.79 at 12 hours and 3.05 ± 0.87 vs 2.15 ± 0.87 at 24 hours with significant $p < 0.001$.⁸ He concluded gall bladder removal through umbilical port causes less post-operative pain. Our results correspond to these findings.

In another study of Azhar Bashir VAS at xiphoid port site was 3.54 ± 1.034 and at umbilical port site was 3.11 ± 1.368 (P value 0.089). According to authors, both ports are equally effective in terms of post-operative pain⁹, these findings do not

match with our results.

Our results are further supported by Jugendra Pal Singh Shakya and others¹⁵ who reported that the rate of pain and infection in gall bladder retrieval through epigastric port was less when compared with gall bladder retrieval from umbilical port. They reported that the post-operative pain at 24 hours, in terms of VAS (0-10) was significantly higher ($p = .000048$) 3.67 ± 1.42 in Group-A while 2.47 ± 1.17 in Group-B. They concluded that gall bladder retrieval through umbilical port is a better way in terms of post-operative pain and port site infection in conventional four port laparoscopic cholecystectomy as compared to its counterpart of epigastric port extraction. Our study also suggest that the gall bladder extraction via umbilical port is a better technique as compared to using epigastric port for this job. However, we did not compare infection in both techniques which may be done in coming trials.

The result of our study justifies the hypothesis that "there is difference in mean pain score with gallbladder retrieval through umbilical versus xiphoid ports in four ports laparoscopic cholecystectomy in terms of post-operative pain" which may be validated through some other multicenter trials.

CONCLUSION

We concluded that mean post-operative pain had significantly reduced when gall bladder was retrieved from umbilical port instead of xiphoid port in conventional laparoscopic cholecystectomy for acute cholecystitis was done with four ports.





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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Gul e Lala	Provision of study Material, Data assembly, Manuscript writing.	
2	Sajid Malik	Admin support, Data analysis, Manuscript writing.	
3	Mian Umar Javed	Data collection, Concept and study design.	
4	Kamran Zaib Khan	Data collection, Concept and study design.	
5	M. Tauqeer Aslam	Data collection, Concept and study design.	