

Comparison of Gallbladder Retrieval through Umbilical Port Versus Subxiphoid Port in Laparoscopic Cholecystectomy

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ABSTRACT

Aim: To compare gall bladder retrieval through umbilical versus subxiphoid port in patients undergoing laparoscopic cholecystectomy in terms of time taken and postoperative pain.

Methods: After informed consent and ethical approval, using simple random sampling, 94 patients with diagnosis of chronic cholecystitis on list for cholecystectomy were randomly assigned for delivery of gall bladder either through umbilical or subxiphoid port. Immune compromised patients and patients with BMI >40kg/m² or suspicion of carcinoma of were excluded.

Results: 94 patients with mean age 47.43±6.619 years were included and randomly assigned. There came out significant difference in Time for Gall Bladder delivery (p value 0.032) whereas for post-operative pain score at 24 hours in both groups was non-significant (p value=0.089).

Conclusion: It is concluded that both ports are equally efficient in terms of time taken and comparable in postoperative pain score reduction.

Keywords: Laparoscopic cholecystectomy; gall bladder retrieval; umbilical port; sub-xiphoid port.

INTRODUCTION

Open cholecystectomy was once gold standard operation for cholecystitis and cholelithiasis is no more a routine practice^{1,2,3,4}. Laparoscopic cholecystectomy has replaced it as the gold standard treatment for symptomatic gall stone disease². Over the years it has gone through the evolutionary process in terms of various modifications, thus conventional technique of laparoscopic cholecystectomy has constantly been refined. Conventionally the procedure was carried out through four ports. However several researchers have reported favorable results with a new trend of reducing the number and sizes of port sites^{3,4,5,6,7}.

Perforation of the wall of gall bladder during the extraction, spillage of bile in wound are all messy things which may make a fuss of a straight forward cholecystectomy^{8,9,10,11,12}. After successfully dissecting, clipping and dividing the cystic duct and artery, gall bladder is dissected of the liver bed and its retrieval constitute the terminal step of laparoscopic cholecystectomy, and gallbladder is traditionally taken out through the umbilical port^{5,11}. In this approach some intervention has been made, surgeon has to change his position as well as telescope's and telescope is passed through the subxiphoid port. Practically gall bladder can also be removed from 10 mm sub xiphoid port. Refinements in techniques and following certain principles during dissection like for example strict adherence to critical view of safety

during the procedure have reduced the incidence of serious complications like injury to extra hepatic biliary channels, but port-site complications still remain the hazard. Port-site infection is highly frustrating for patient as well as the surgeon. Minor infections settle with removal of sutures but deep seated infections involve the tract of ports. The problem is much more troublesome for the epigastric port since it is difficult to clear the infection from this site⁴.

This current study aims to explore a better port for gallbladder retrieval in three port laparoscopic cholecystectomy in terms of pain outcome, as patient perceives and time taken for delivery of gall bladder out of abdomen. According to one study⁴ which prefer subxiphoid port for gall bladder retrieval due to ease for surgeon as in there is no need to change the position of telescope and readjustment of position of surgeon and other study shows superiority of umbilical port in terms of pain. Our study will help to find an evidence for better port for retrieval of gall bladder in laparoscopic cholecystectomy both in terms of post operative port site pain and time taken for the retrieval of gall bladder, so based on our results we may be able to recommend better port for gall bladder retrieval.

MATERIALS AND METHODS

To achieve the objective, a Randomized Control trial was carried out at surgical floor of Mayo Hospital Lahore from 13th September 2013 to 13th March 2014, 94 patients who fulfilled the inclusion criteria were included after an informed consent. The

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mandatory investigations were abdominal ultrasonography, liver function tests, viral profile for hepatitis B and C and other baseline investigations that include CBC, Xray chest, ECG, Blood Urea, Serum creatinine and Blood sugar level. Senior and experienced consultants under general anaesthesia carried out all the operations. Included patients were randomly divided into two groups by random number generation i.e. one group in which gallbladder of patients was retrieved through umbilical port and in second group through epigastric/subxiphoid port gallbladder in standard three port laparoscopic cholecystectomy. Time taken for gall bladder retrieval was defined as time taken after 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, haemostasis and irrigation/suction till its removal through one of the two ports. In patients with clinical evidence of wound infection the stitches were urgently removed and swab was taken for culture and sensitivity Postoperative perceived pain was measured by visual analogue scale at 24 hours postoperatively by a registered nurse.

Collected data was analysed by using the SPSS version 17. To determine statistical difference student t-test in both groups was applied in pain score and operative time. A value of $p \leq 0.05$ was considered as significant. A pre-designed proforma was filled for each case to record the demographic and study variables.

RESULTS

In our sampled population 94 patients were stratified into sub xiphoid and umbilical group with mean age 47.94 ± 7.394 years and 46.84 ± 5.640 years respectively. P value resulted into non-significant value ($p=0.425$). However distribution of these groups in gender resulted in significant p value ($p=0.026$). 17 male patients were included in sub xiphoid group while 25 males were part of umbilical group. In females, 33 female patients belonged to sub xiphoid groups while rest of 19 females were in umbilical group (Table I).

We performed independent sample Test to study the comparison of mean time taken for delivery of gall bladder between treatment groups, P value was 0.032 which gave us significant result. 50 patients of group sub xiphoid took mean time of 10.62 ± 4.611 with standard mean error of 0.652. However 44 patients of umbilical groups took mean time 8.64 ± 4.182 with mean standard error 0.631. (Table II)

In Comparison of post-operative pain in terms of mean VAS Score in treatment groups mean Vas

Score value for 50 patients of sub xiphoid group was 3.54 ± 1.034 . While in 44 patients umbilical group mean Vas Score value was 3.11 ± 1.368 . Using Independent Samples Test and assuming Equal variances P value=0.089 (Non-significant). (Table III).

Table I: Descriptive statistics

		Sub xiphoid Group	Umbilical Group	P value
Age	Mean \pm SD	47.94 \pm 7.394	46.84 \pm 5.640	.425
Gender	Male	17	25	.026
	Female	33	19	

Table II: Comparison of mean time taken for delivery of gall bladder

Treatment Groups	N	Mean	Std. Deviation	Std. Error Mean
Sub xiphoid	50	10.62	4.611	.652
Umbilical	44	8.64	4.182	.631
Using Independent Samples Test and assuming Equal variances, P value=0.032 (significant)				

Table III: Comparison of post-operative pain in terms of mean VAS Score

Treatment Groups	N	Mean	Std. Deviation	Std. Error Mean
Sub xiphoid	50	3.54	1.034	.146
Umbilical	44	3.11	1.368	.206
Using Independent Samples Test and assuming Equal variances P value=0.089 (Non-significant)				

DISCUSSION

Laparoscopic cholecystectomy is a common procedure in routine surgical practice. And we come across variety of problems during this procedure^{8,9,10,11}. One of such problems or questions is which one is the standard port for the delivery of gall bladder out of abdominal cavity? There are lots of controversies in literature regarding this issue Some studies have reported sub xiphoid port better in terms of ease for surgeon⁵ and less time is taken during the retrieval process through this port. others testified umbilical port as better one for delivery of gallbladder⁴. Retrieval of gall bladder through a particular port is also associated with further tissues 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 less post operative port site pain and where less time is taken during the delievery process of gall bladder through it. However, studies are scarce in the literature regarding this issue, most of studies did not consider postoperative pain and retrieval time both together. Current study addressed both issues at a time.

Age distribution ranged from 29 to 62 years showing even an early incidence of symptomatic cholelithiasis in Pakistani population. Age was equally distributed between both types of procedures. Random selection of patients reduced the effect modification which might be produced by different distribution of age in both groups. Cholecystitis is more common in female population^{2,6,12} as generally observed and similar are results of our study. More female underwent cholecystectomy during our study period. Gender distribution was equal in umbilical and sub xiphoid ports for delivery of gallbladder in both groups.

In our study mean time for gall bladder delivery was 10.62±4.611mins in sub xiphoid group while 8.64±4.182 in umbilical group showing a significant difference in both groups (p value= 0.032) when we applied independent sample T-test. This also shows that difficulty level for delivery of gall bladder is almost equal from surgeon prospective. Regarding mean time taken for delivery of gallbladder in our study, our results matches those presented by Abbas et al⁴ who showed average time taken in delivery of gall bladder varied from 2 to 12 minutes for umbilical port group and 3-16 min for sub xiphoid port group. The difference was statistically insignificant (p=.909)⁴.

Similarly post-operative pain score in our study came out 3.54±1.034 in Sub xiphoid Group while 3.11±1.368 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) (Table II). This is contradictory to the results by Siddique et al⁵. In a randomized control trial of 120 patients by Siddique et al, who were randomized to either group A (n=60, GB retrieval through epigastric/sub xiphoid port) or group B (n=60, GB 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 vs. 4.1±1.5, 4.6±0.94 vs. 3.5±1.05, 3.9±0.85 vs. 2.4±0.79, 3.05±0.87 vs. 2.15±0.87, respectively) and the difference was statistically significant (p-value < 0.001)⁵.

Limitation of current study is that we did not address the effect of acute cholecystitis neither included nor excluded. A relatively short duration of follow-up i.e. 24 hours was used. The study has evaluated only right-handed surgeon, scenario may be different for left-handed surgeons.

CONCLUSION

It is concluded that three ports laparoscopic cholecystectomy gall bladder retrieval through

umbilical versus subxiphoid port are equally efficient in terms of time taken and comparable in postoperative pain score reduction. The surgeon may choose in terms of his ease and practice.

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