



LAPAROSCOPIC CHOLECYSTECTOMY; THREE PORT LAPAROSCOPIC CHOLECYSTECTOMY OUTCOME OF MIDLINE, AN EXPERIENCE AT LIAQUAT UNIVERSITY HOSPITAL JAMSHORO

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INTRODUCTION

Gallstones are significant health problem worldwide, affecting 10% to 15% of the adult population.¹⁻⁴ Limited data is available within country and one study shows it is 3rd commonest cause of admissions (10.7%).⁵ Philip mouret of France was the first person who performed laparoscopic cholecystectomy in 1987. While performing a gynaecologic procedure on woman who also had symptomatic gallstones, upon finding easy gall bladder he removed it laparoscopically and patient recovered without any complication.^{6,7} Laparoscopic cholecystectomy was further established by Dubois who performed first animal experiments, then performed his first LC in April 1988 at Paris. Dubois and Perissat established

ABSTRACT...: With surgeon's growing experience and advancement of technology laparoscopic cholecystectomy has gone thru many modifications including reduction in number and size of ports. Midline three port laparoscopic cholecystectomy is not performed extensively and is technically possible. Aim of our study is to see outcome of midline three port laparoscopic cholecystectomy. **Study Design:** Descriptive study. **Period:** January 2013 to December 2013. **Setting:** Surgical unit I, Liaquat University Hospital Jamshoro. **Materials and Methods:** Midline three port laparoscopic cholecystectomy was performed in 75 patients. Outcome of procedure included patient's safety, procedure's duration, quantitative analgesic requirement, post-operative pain assessed on 10cm visual analog scale after 24 hours, post-operative hospital stay and post-operative complications. **Results:** Total of 75 patients underwent midline three port LC with majority of females 84%. Mean age being 43.62 ± 6.85 years. Mean operative time was 41.30 ± 6.38 minutes. Mean post-operative pain assessed on visual analog scale after 24 hours was 2.5 ± 0.45 . Maximum site of tenderness was at 10mm subxiphisternal port. 47 patients (62.66%) tolerated post-operative pain on NSAID (injection diclofenac), while remaining 28 patients (37.33%) required additional opiate (injection Nalbuphine). Mean post-operative hospital stay was 1.186 ± 0.60 days. 1 patient (1.33%) had port site infection. **Conclusion:** Midline three port laparoscopic cholecystectomy prevents one extra scar of traditional 4port laparoscopic cholecystectomy. This technique is safe, efficient and feasible. This technique can be used as an alternative approach to traditional 4 port laparoscopic cholecystectomy in uncomplicated cases.

Key words: Midline three port laparoscopic cholecystectomy, three port laparoscopic cholecystectomy.

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work today known as the French technique.⁸ Today laparoscopic cholecystectomy is the gold standard procedure in gall stone disease.⁹⁻¹¹ Laparoscopic cholecystectomy is preferred surgical procedure because of less morbidity, mortality, shorter hospital stay and recovery time and smaller less visible incisions.¹²⁻¹⁵ Standard laparoscopic cholecystectomy is performed by using four ports into the abdomen with different approaches like French and North American approach.¹⁰ The fourth lateral port is used for grasping the fundus of the gallbladder to expose the calot's triangle.^{9,16} Several studies show that LC can be performed safely without using fourth lateral port.¹⁷⁻²² Reduction in the number and size of the ports did not affect safety of LC and offers

potential for shorter operative time and post-operative hospital stays, less need for narcotic analgesia, early recovery and better cosmetic results than conventional LC.²³⁻²⁴ Three port LC can be performed with different approaches, midline three port LC is performed by placement of all three ports in midline from subxiphisternum to umbilicus.²⁵ Three port midline LC is performed on limited scale. We investigated the technical feasibility, safety and measured other parameters of midline three port LC such as operative time, post-operative pain on VAS, quantitative analgesic requirement, post-operative hospital stay and post-operative complications. Feasibility of Procedure was considered as performance of procedure without much technical difficulty by using the midline three port technique. Procedure was considered to be safe when performed without major complications like major vascular bleeding, injury to the common bile duct, hollow viscous injury or any major viscera damage. Need for the introduction of 4th port or conversion of midline technique to open procedure was considered as a failure of midline three port technique.

MATERIALS AND METHODS

In this descriptive study data were collected from 75 randomized patients from January 2013 to December 2013 who underwent elective midline laparoscopic cholecystectomy in surgical unit 1, Liaquat university hospital Jamshoro. All Procedures were performed by single surgeon who has experience of more 500 conventional LC. All patients were explained about the procedure and written consent was taken before the operation. Exclusion criteria were Hepatitis B and C positive patients, empyema gall bladder, history of jaundice, history of gall stone pancreatitis, malignancy of gall bladder, liver and patients who were not fit for general anesthesia. In this study we investigated procedure's safety, technical feasibility and measure other parameters on a standardized proforma included demographic information, procedure's duration, post-operative pain assessed on 10cm visual analog scale (VAS), post-operative analgesic requirement, post-operative hospital stay and post-operative complications. Operative time was recorded from

first incision up to the closure of last skin stitch. All patients post operatively were given NSAID injection diclofenac 75mg I/M 12hourly for pain control, those patients who were unable to tolerate post-operative pain on injection diclofenac alone were given additional opiate (injection Nalbuphine) for pain control. Overall Post-operative pain was assessed on 10cm visual analog scale (VAS) ranging from 0 (no pain) to 10 (worst pain imaginable) recorded after 24 hours by resident doctor on a standardized proforma. Patients were discharged when they were confident to take diet orally without much problem and tolerate post-operative pain on oral medicines. In case of procedure related complications patients were advised to visit OPD. Follow up records were maintained up to 6 months post operatively.

RESULTS

Total of 75 patients underwent midline three port LC with majority of females 63 (84%) and 12 (16%) males. Age range was between 25 to 65 years, mean age being 43.62 ± 6.85 years. Mean operative time was 41.30 ± 6.38 minutes. Operative time was considered from first incision up to last skin stitch. Post-operative pain was evaluated on 10cm visual analog scale (VAS). Mean post-operative pain on Visual Analog scale after 24 hours was 2.5 ± 0.45 , median being 2.5 and range was between 2 to 4. Maximum site of tenderness was at 10mm subxiphisternal port followed by 10mm infraumbilical port and 5mm midport. In 47 patients (62.66%) post-operative pain was controlled by NSAID (injection diclofenac 75mg) I/M 12hourly, while remaining 28 patients (37.333%) required opiate (injection Nalbuphine) along with NSAID (injection diclofenac 75mg) for pain control (Figure-1). Mean post-operative hospital stay was 1.186 ± 0.60 days, median being 1 day. Majority of patients 66 patients (88%) discharged on 1st post-operative day (Figure-2). 6 patients (8%) discharged on 2nd post-operative day. 2 patients (2.666%) discharged on 3rd post-operative day. 1 patient (1.333%) discharged on 5th post-operative day. 1 patient (1.333%) had port site infection as a post-operative complication. Infection was superficial and confined to subxiphisternal port (Table-I).

Demographic information	Females = 63 (84%) Males = 12 (16%) Mean age = 43.62 ± 6.85 years
Operative Time	41.306 ± 6.38 minutes
Post-operative Pain after 24 hours on 10cm VAS	Mean 2.5 ± 0.45 Median 2.5
Post-operative analgesics required	7 patients (62.666%) tolerated post-operative pain on NSAID (injection diclofenac sodium 75mg) 12 hourly. 28 patients (37.333%) required additional opiate (injection nalbuphine)
Post-operative hospital stay	Mean post-operative hospital stay was 1.186 ± 0.60 days Median post-operative hospital stay was 1 day. 66 patients (88%) discharged on 1st post-operative day. 6 patients (8%) discharged on 2nd post-operative day. 2 patients (2.666%) discharged on 3rd post-operative day. 1 patient (1.333%) discharged on 5th post-operative day
Post-operative Complications	1 patients (1.333%) developed port site infection at subxiphisternal port.

Table-I. Outcome of Midline 3 Port Laparoscopic Cholecystectomy (n = 75)

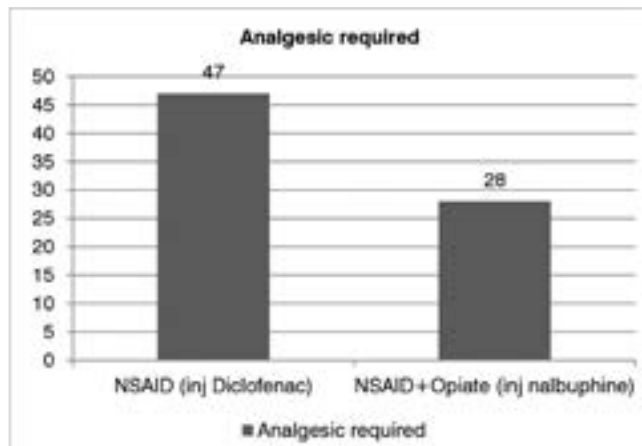


Figure-1. Analgesic required

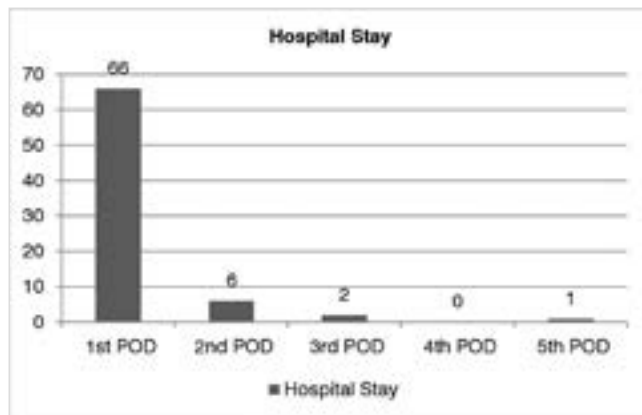


Figure-2. Hospital stay:

DISCUSSION

In modern period of laparoscopic surgery early post-operative recovery, less operative pain and better cosmetic results are ultimate goals for both surgeon and patient. Laparoscopic cholecystectomy is the gold standard procedure

in gallbladder surgery all over the world.⁹⁻¹¹ Any port incision has its potential complications, which varies with the port size and type of trocar used.²⁶ Port complications may include bleeding from abdominal wall vessels, bowel injury, wound infections and port site hernias.²⁷⁻²⁹ Reducing the number of ports from 4 to 3 will obviously reduce these complications. Several studies demonstrate that reduction in either number or size of ports are associated with less post-operative pain and better cosmetic results.^{18,30-33} Three port laparoscopic cholecystectomy can be performed safely without using fourth lateral port which is used for retraction of the fundus of gall bladder.²⁹⁻³³ Three port LC can be performed with different approaches including midline approach.²⁵ In this descriptive study we analyzed procedure's safety, technical feasibility and measure other parameters of midline three port LC such as procedure's duration, post-operative pain on 10cm visual analog scale (VAS), post-operative quantitative analgesic requirement, post-operative hospital stay and post-operative complications. All cases were performed by a single surgeon who has experience of more than 500 conventional LC. We found midline three port LC technique to be safe and feasible. There were no common bile duct injury, major vascular bleeding, abdominal wall bleeding, hollow viscous injury, damage to nearby viscera or any other major intraoperative complication during procedure. All cases were performed without any technical difficulty. Several studies claim that three port

LC is a safe procedure and did not compromise patient's safety.^{34,35} Midline 3 port LC is formed on limited scale. Study of Jaime Ruiz-Tovar at el²⁵ shows that three-midline-ports approach is a feasible, safe and easy to implement. Need for the introduction of 4th port or conversion to open was considered as a failure of midline three port technique, which may be needed in conditions like empyema gall bladder because of gall bladder's fragility, adhesions in operative field or difficult anatomy. Mean operative time was 41.306 ± 6.38 minutes, which is shorter and does not correlate with study of Jaime Ruiz-Tovar at el²⁵ on three-midline-ports technique in which mean operative time was 65.9 ± 17.03 minutes.²⁵ Midline three port LC reduces time required for establishment and subsequent closure an additional 4th port. Mean post-operative pain evaluated on 10cm visual analog scale (VAS) after 24 hours was 2.5 ± 0.45 , median being 2.5 which correlates with study of Jaime Ruiz-Tovar at el²⁵ on three -midline-ports technique in which median post-operative pain was also 2.5. All patients post operatively were given NSAID (injection diclofenac 75mg) I/M 12 hourly for pain control. Majority of the patients 47 patients (62.666%) tolerated post-operative pain on injection diclofenac alone. While remaining 28 patients (37.333%) additionally required opiate (injection Nalbuphine) along with NSAID (injection diclofenac 75mg) I/M 12 hourly for pain relief. Maximum site of tenderness was at 10mm subxiphisternal port followed by 10mm infraumbilical port and 5mm midport between subxiphisternal and infraumbilical port, which does not correlate with study of Jaime Ruiz-Tovar at el²⁵ in which maximum site of tenderness was 10mm subumbilical port. Mean post-operative hospital stay was 1.186 ± 0.60 days. Median post-operative hospital stay was 1 day which nearly correlates with previous study of Jaime Ruiz-Tovar at el in which median hospital stay was 1.5 days. Patients were discharged when they were confident to take diet orally without much problem and tolerate post-operative pain on oral medicines. Study of Memon W at el³⁶ and study of Mirza at el³⁷ show port site infection in 1.8% and 1.7% of patients respectively. In our study 1 patient (1.333%) had port site infection as post-

operative complication which nearly correlates with above studies. Infection was superficial and confined to subxiphisternal port possible reason behind this may be extraction of gall bladder thru this port. Infection was superficial and treated with daily dressing and antibiotic according to sensitivity. Study of Plaus WJ³⁸ shows trocar site hernia occurred from 1 week to 4 months post operatively only in the abdominal midline. Another study of Azurin DJ at el³⁹ shows 0.7% incidence of trocar site hernia and all trocar site hernia occurred thru umbilical site. In our study none of patient reported to have trocar site hernia in a follow up period of 6 months.

CONCLUSION

Midline three port laparoscopic cholecystectomy prevents one extra scar of traditional 4port laparoscopic cholecystectomy. This technique is safe, efficient and feasible. This technique can be used as an alternative approach to traditional 4 port laparoscopic cholecystectomy in uncomplicated cases.

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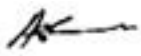
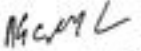
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2	Dr. Ahsan Ali Laghari	Statistical expertise	
3	Dr. Syed Asad Ali	Drafting of the article	