



## CLIPLESS LAPAROSCOPIC CHOLECYSTECTOMY: THREE PORT ACCESS.

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### INTRODUCTION

Gallstone diseases, is a common problem nowadays, trend towards minimal invasive surgery played a pivotal role in treatment of symptomatic gallstones. Laparoscopic cholecystectomy is the gold standard procedure throughout the world for the treatment of symptomatic cholelithiasis.<sup>1,2</sup> Many centers have special “short-stay” units or “23-hour admissions” for postoperative observation following this procedure.<sup>1</sup> Whereas it is true that no operation has been more profoundly affected by the advent of laparoscopy than cholecystectomy has, it is equally true that no procedure has been more instrumental in ushering in the laparoscopic age than laparoscopic cholecystectomy has.<sup>3</sup>

Four ports access (two 10mm and two 5mm) and applying titanium clips on cystic duct and cystic artery remained the central methodology in laparoscopic cholecystectomy.<sup>4,5</sup> Clips are foreign bodies and are expensive. Clip migration and stone formation are an infrequent but

**ABSTRACT... Objectives:** Use to ultrasound vibrations instead of electric current makes Harmonic Scalpel a safer and more efficient instrument for dissection during laparoscopic surgeries. To evaluate the efficacy of harmonic scalpel in laparoscopic cholecystectomy in terms of number or parts and post operative recovery. **Study Design:** Prospective Study. **Setting:** This study was conducted in Department of surgery Quaid e Azam Medical College Bahawalpur. **Period:** Dec, 2015 to Dec, 2017. **Material & Methods:** 60 patients undergoing laparoscopic cholecystectomy 3 ports were introduced one 10mm and two 5mm. the dissection and division of both cystic artery and duct was done by a single instrument, Harmonic Scalpel after tying the cystic duct with 2/0 extracorporeal knot. **Results:** None of the patients developed Major or Minor bile leaks or hemorrhage. **Conclusion:** Harmonic scalpel provides a safe alternative for dissecting and division of cystic duct and may replace the more widely used clip technique. The number of ports can be reduced to 3 and size reduced from 10mm to 5 mm. Harmonic scalpel technique eliminates the time wasted during changing of instruments per-operatively and also reduces the risk of remote electric injury.

**Key words:** Clip less, Cholecystectomy, Harmonic Scalpel.

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nevertheless documented complications.<sup>6</sup> Single incision laparoscopic cholecystectomy even though showed much promise but failed to gain much popularity due to poor ergonomics.<sup>7</sup>

While patient protection remains same for both 3 port and 4 port approach to laparoscopic cholecystectomy<sup>8</sup>, lessening the number and size of ports improved post-operative pain and hospital stay.<sup>9</sup> The advent of Harmonic scalpel has made a drift of surgeons choosing Harmonic over the traditional Maryland and Hook dissector as it saves time and is less injurious to surrounding tissue.<sup>10,11,12</sup>

We undertake this study to use this technology of Harmonic Scalpel to reduce the number of ports and decrease the 10mm epigastric port to a 5mm one for better post-operative recovery.

### MATERIAL & METHODS

Study conducted in surgical ward 2, Bahawal

Victoria Hospital, from 2015 to 2017. 60 patients who are diagnosed as symptomatic gallstone disease were admitted in the hospital, routine investigations such as CBC, Serum Electrolytes, RFTS, LFTS were done. Pre op Anesthesia fitness were taken. During surgery first port was introduced by open method using umbilical stalk technique. Pneumoperitoneum created with CO<sub>2</sub> and intraabdominal pressure maintained at 12mmHg. Epigastric port of 5mm introduced under vision. Third port of 5mm introduced in Right Hypochondrium under vision. Gall bladder grasped and lifted. Cystic duct dissected and identified. Thread of Vicryl 2/0 passed through the window and brought out. An extracorporeal Roeder's knot created and tied on cystic duct. Cystic duct divided with harmonic ace distal to ligature. Cystic Artery dissected sealed and cut with harmonic ace. Gall bladder dissected, removed from liver bed and taken out from umbilical port. Post operatively Patients were evaluated for any clinical signs of bile leak or bleeding in the form of tachycardia, tachypnea, pain and abdominal distension. All patients were evaluated at bedside by ultrasound after 24 hours to assess any collection. All patients were discharged from the ward as early as possible. All patients were followed after 7 days for clinical assessment of bile leakage and ultrasonography for collection.

## RESULTS

The mean demographic of the patients operated are depicted in Table-I. The patients' clinical parameters Pulse, Blood Pressure, Respiratory Rate, Temperature, unproportionate pain and abdominal distension were monitored postoperatively, Table-II summarizes the findings. All patients were vitally stable Table-III. Patients developed abdominal distension which lasted for 24 hours and resolved spontaneously. Ultrasound after 24 hours didn't show any collection in any patients. The mean length of hospital stay after surgery was 27 hours. Clinical Assessment and ultrasonography after 7 days didn't show any clinical sign of bile leakage or hemorrhage.

Variable	Number	Percentage
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Total patients	60	
Age in years: median (range)	47 (27-69)	
Sex: Male:Female	18:42	30:70

**Table-I. Demographic Distribution of patients.**

Variable	Median (Range)
Pulse	88/min (69-111)
Blood Pressure (systolic)	140mmHg (100-170)
Respiratory Rate	17/min (12-25)
Temperature	99F (98-100)
Unproportionate Pain	None
Abdominal Distension	3 Patients

**Table-II. Clinical Parameters.**

Variable	No. of Patients with Collection
After 24 hours	None
After 7 days	None

**Table-III. Ultrasound Findings.**

## DISCUSSION

Laparoscopic Cholecystectomy (LC) has been the gold standard for acute and chronic cholelithiasis for decades now.<sup>1,2</sup> Newer tweaks to improve the results has always been the goal of surgeons around the world. 4 port technique is widely used, with two 10mm ports (umbilicus and Epigastrium) and two 5mm ports, for laparoscopic cholecystectomy.<sup>4,5</sup> Development of better equipment and increasing experience of surgeons has led to the standardization of 3 port LC with similar results for the procedure while producing better post-operative results in terms of pain management.<sup>13,14</sup> Even in the 3-port technique a 10mm port has to introduced in the epigastrium (other than the 10mm umbilical port) for clip applicator. Incidence of pain is more marked at the epigastric site rather than the umbilicus.<sup>15</sup> Use of Harmonic scalpel may render the need for this epigastric 10mm port unnecessary.

Titanium clips has been the go-to method for sealing cystic duct and artery. Although rare but late complications of these clips have been reported. Complications like slippage of clip and, a more concerning, migration of clip into CBD with subsequent stone formation<sup>16</sup> has been

studied upon by some authors who concluded that these ultimately increase health cost<sup>17,18</sup> and legal fees.<sup>19</sup>

The Ultrasound technology of Harmonic Scalpel is one of the latest inventions in laparoscopic surgery. While harmonic scalpel has successfully managed to control the cystic artery a more contemporary approach is to divide the cystic duct with Harmonic which showed promising results with minimal to no bile leakage eliminating the need of metal clips.<sup>11,20,21,22,23</sup> While these results are hopeful but still there is considerable debate about the safety of sealing cystic duct with harmonic. Some authors have recommended that cystic duct should be safely ligated before using Harmonic to avoid bile spillage.<sup>24</sup> While 2/0 silk has been used by some authors to secure the cystic duct,<sup>25</sup> we used 2/0 vicryl extracorporeal knot followed by sealing of distal cystic duct with Harmonic scalpel with encouraging results.

Using Harmonic scalpel and a single extracorporeal knot reduced the need of titanium clips and clip applicator altogether while at the same the 10mm epigastric port can be reduced to 5mm. Improved training of surgeons leading to intracorporeal knots can further improve the procedure by decreasing operating time.

## CONCLUSION

Using a harmonic scalpel to seal and divide the cystic duct after securing the proximal portion with vicryl 2/0 is a safe and easy option for laparoscopic cholecystectomy. This method ultimately reduced the number to ports to 3 and the size of epigastric port from 10mm to 5mm and eliminating the need for titanium clips. The use of harmonic scalpel also reduces the risk of remote injury.




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### AUTHORSHIP AND CONTRIBUTION DECLARATION

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