Comparative Study between Clipless (CL) Laparoscopic Cholecystectomy Using Harmonal Scalpel Vs Traditional Cholecystectomy (TM) Using Electrocautery and Titanium Clips

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ABSTRACT
Aims: To compare the various laparoscopic techniques that include clipless laparoscopic cholecystectomy using hormonal Scalpel (HS) Vs Traditional method [TM] laparoscopic cholecystectomy by using titanium clips.

Methods: This prospective study was carried out in Surgical Department, Nishtar Hospital, Multan from January 2013 to June 2013. A total of 100 patients were included in this study. Patients were divided into two equal groups.

Results: HS provides a shorter operative duration than TM (33.21±9.6 vs 51.7±13.70) respectively and less rate of conversion to open cholecystectomy which is significantly less in HS (29+ 30 vs 47.7±31 P=0.001).

Conclusion: HS was found to be best suitable and save alternative to standard clipping of cystic duct and cystic artery.

Keywords: Laparoscopic, cholecystectomy, Hormonal scalpel.

INTRODUCTION
This study was designed as a safe alternative to electrocautery for the haemostatic dissection of the tissue. The ultrasonically activated hormonal scalpel was introduced into clinical use nearly a decade ago. Since its inception, the hormonal scalpel has gained significant clinical acceptance and application.1,2

Uses now range widely to include surgery of the head and neck, chest, liver, spleen, kidney, adrenal glands, colon, rectum, gastro-oesophageal junction and others. Furthermore, total hormonal scalpel dissection in the performance of a laparoscopic cholecystectomy is a technique described in the literature.3

Laparoscopic cholecystectomy is a commonly performed operation for patients diagnosed with gall stones. The harmonic scalpel was previously used for the division of the cystic artery and liver-bed dissection. Recent advances in harmonic scalpel technology now provide safe division and closure of the cystic duct up to 6 mm in diameter.4,5,6,7,8 So total Harmonic scalpel dissection in the performance of a laparoscopic cholecystectomy was described.9 It tackles the concerns regarding smoke production, and inadvertent injuries to the abdominal organs and structures.9 Moreover, it shortens the operative time and decreases the rate of accidental bile spillage.10

The objective of the study was to compare the various laparoscopic techniques that include clip less laparoscopic cholecystectomy using hormonal Scalpel (HS) Vs Traditional method [TM] laparoscopic cholecystectomy by using titanium clips.

MATERIAL AND METHODS
This study was carried out in Surgical Department, Nishtar Hospital, Multan from January 2013 to June 2013. A total of 100 patients were included in the study. Patients were divided into two equal groups. In group -1, 50 patients in whom LC was conducted using harmonic scalpel (HS) for closure and division of both cystic duct and artery and dissection of gall bladder from liver bed by HS. In group -2, 50 patients in whom LC was conducted by traditional method by using clipping of both cystic duct and artery and dissection of the gall bladder for liver bed by electrocautery. They were all fit and well apart from gall stones. Main symptoms was intermittent pain in right hypochondrium, dyspepsia, bloating and intermittent nausea, the intraoperative and postoperative parameters were collected including duration of operation, postoperative pain and complications.

RESULTS
The patient ages were 30-70 years. HS provides a shorter operative duration than TM (33.21±9.6 vs 51.7±13.79) respectively (P=0.001) with no gall bladder perforation and less rate of conversion to open cholecystectomy. The amount of postoperative drainage is significantly less in HS (29±30 vs 47.7±31

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P = 0.001). No postoperative bile leakage was encountered in HS but it happened in 29% of patients in TM. VAS in HS at 12 hours postoperatively was 3.25 ± 1.84 vs 5.01 ± 1.2 (P = 0.001) and 24 hours postop was 3.12 ± 1.64 vs 4.48 ± 1.89 (P = 0.001).

Table 1: Demographic characterization of patients

<table>
<thead>
<tr>
<th></th>
<th>TM-LC</th>
<th>HS-LC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range</td>
<td>20-70</td>
<td>20-70</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>41.43 ± 12.67</td>
<td>45.93 ± 14.19</td>
</tr>
<tr>
<td>Male</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>26.72 ± 5.28</td>
<td>25.32 ± 2.14</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bronchial asthma</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

P value = not significant

Table 2: Incidence of operative time, postoperative complications and length of hospital stay in both groups

<table>
<thead>
<tr>
<th></th>
<th>TM-LC</th>
<th>HS-LC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation time range</td>
<td>20-37</td>
<td>12-36</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>27.37 ± 5.11</td>
<td>24.13 ± 6.51</td>
</tr>
<tr>
<td>PO complication</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Port site infection</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>LHS</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
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P value = not significant

DISCUSSION

Ever since Philips Mouret performed the first video laparoscopic cholecystectomy in Lyous France, this procedure is gaining popularity day by day and has achieved gold standard level for symptomatic gall stones. There has been a lot of changes in the techniques and the technology used, as introduction of hormonal scalpel is one of them. This study demonstrates, the use of hormonal scalpel is not only gaining popularity but it is quicker, best suitable technology to divide cystic duct and associated with less complications in comparison with traditional cholecystectomy using titanium clips.

REFERENCES
