Mini-Cholecystectomy under Local Anesthesia for Symptomatic Gallstone Patients Unfit for General Anesthesia

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INTRODUCTION

Mini-Cholecystectomy (MC) was first described more than two decades ago by Dubois and Berthelot, and their favorable results were reported at the same time laparoscopic Cholecystectomy (LC) was introduced into the UK in 1990. Subsequently, four randomized clinical trials have compared laparoscopic Cholecystectomy (LC) and Mini-
Cholecystectomy (MC) in the elective treatment of gallbladder stones. More recently, Mini-Cholecystectomy (MC) has been shown to be an effective surgical procedure for an inflamed gallbladder regardless of the degree and type of inflammation.

Both Mini-Cholecystectomy (MC) and laparoscopic Cholecystectomy (LC) are usually performed under general anesthesia. However, it is likely that in suitable patients or in those who are unwilling to have general anesthesia or have severe contraindications to narcosis, the gallbladder can be excised under local anesthesia through a very small incision. The aim of this study was to report our experience of Mini-Cholecystectomy (MC) under local anesthesia in old aged patients unfit for general anesthesia, and to propose our criteria for case selection.

**PATIENTS AND METHODS**

Ninety patients with symptomatic gallstone disease who were scheduled for Mini-Cholecystectomy (MC) under local anesthesia (LA) between April 2009 and October 2013 were included in this study.

Patients were scheduled for Mini-Cholecystectomy (MC) under local anesthesia if they fulfilled the following criteria: (1) high-risk for general anesthesia; (2) history of recurrent attacks of acute calculus cholecystitis; and (3) gave written informed consent.

Operation

All procedures were performed by a single surgeon and two assistants, anesthetic management involved the combination of intravenous administrations of fentanyl (0.001–0.002 mg/kg) and midazolam (0.05–0.1 mg/kg) and local anesthesia in the area of skin incision by means of infiltration and injection of 1% xylocaine without adrenaline, to include skin, subcutaneous tissue and rectus abdominal muscle.

The incision was started approximately 3 cm to the right of the midline and ran obliquely parallel to and 3 cm below the right costal margin. The length of the incision was either 3 or 4 cm, mostly depending on the size of the patient. The rectus muscle was spitted without muscle cutting.

After entering the abdominal cavity, 1–2 mL of 1% xylocaine without adrenaline was injected into the tissue in the area of Calot’s triangle in order to prevent any discomfort caused by traction of the gallbladder. All patients had retrograde or “cystic duct-first” Cholecystectomy, and the stumps of the cystic duct and cystic artery were ligated with non-absorbable suture material. The term “operative time” was defined as the period starting at “knife to skin” and finishing at “last stitch”.

Cholecystostomy was performed in 18 patients because of the severe adhesions that rendered cholecystectomy very difficult & because of pain intolerance; the procedure consisted of evacuating the gallbladder from its contents including the stones through a small opening in the gallbladder, which is closed over a Foley catheter left for 2 weeks then removed.

**RESULTS**

There were 73 women, with a median age of 70 years (range, 50–90), and 17 men, with a median age of 66 years (range, 52–86). The median operative time was 45 minutes (range, 35–70).

Local anesthesia was converted to general anesthesia in seven patients owing to the severe discomfort caused by lysis of dense adhesions around the gallbladder as shown in table(1). Cholecystectomy was done successfully in 65(72.23%) patients, while cholecystostomy was performed in the remaining 18 (27.77%) patients because of the difficulties present in performing Cholecystectomy as shown in table(2). The median hospital stay was 2.6 days (range, 2–7).

Mini-Cholecystectomy (MC) was performed successfully in most of patients without the need to extend the incision. However, general anesthesia was applied in seven patients because of the severe discomfort caused by lysis of dense adhesions around the gallbladder; hence the success rate of Mini-Cholecystectomy (MC) and cholecystostomy under local
anesthesia was 96.5%. The median operative time was 45 minutes (range, 35–70), and median hospital stay was 2.6 days (range, 2–7).

**Table (1): Percentage of patients according to age**

<table>
<thead>
<tr>
<th>Age of patients</th>
<th>No of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>50----60 year</td>
<td>5</td>
<td>5.5%</td>
</tr>
<tr>
<td>61y----70 year</td>
<td>25</td>
<td>27.7%</td>
</tr>
<tr>
<td>71y----80 year</td>
<td>57</td>
<td>63.4%</td>
</tr>
<tr>
<td>81y----90 year</td>
<td>3</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Table 1 shows that 57 (63.4%) patients their age were ranged (71-80) year, 25 patients their age ranged (61-70) year, 5 patients their age ranged (50-60) year and 3 patients their age ranged (81-90) year.

**Table (2) Types of operations in the studied patients**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Number of patients</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystectomy under local anesthesia</td>
<td>65</td>
<td>72.22%</td>
</tr>
<tr>
<td>Cholecystostomy under local anesthesia</td>
<td>18</td>
<td>20%</td>
</tr>
<tr>
<td>Cholecystectomy under general anesthesia</td>
<td>7</td>
<td>7.78%</td>
</tr>
</tbody>
</table>

Table 2 shows that Sixty five patients (72.22%) were undergo cholecystectomy under local anesthesia, 18 patients (20%) were undergo cholecystostomy under local anesthesia and 7 patients (7.78%) were undergo cholecystectomy under general anesthesia.

**Table (3) Risks for doing mini Cholecystectomy under local anesthesia**

<table>
<thead>
<tr>
<th>Types of disease</th>
<th>No of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>chronic obstructive airway disease</td>
<td>22</td>
<td>24.5%</td>
</tr>
<tr>
<td>severe heart failure</td>
<td>35</td>
<td>38.8%</td>
</tr>
<tr>
<td>uncontrolled hypertension</td>
<td>28</td>
<td>31.2%</td>
</tr>
<tr>
<td>uncontrolled or severe asthma</td>
<td>5</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Table 3 shows that the main reasons for being the patients at high-risk for general anesthesia were severe heart failure in 35 patients (38.8%), uncontrolled hypertension in 28 patients (31.2%), chronic obstructive airway disease in 22 patients (24.5%) & uncontrolled or severe asthma in 5 patients (5.5%) as shown in table(3)

An oral diet was started within 24 hours of operation in all but the seven patients with general anesthesia were routinely given intravenous pethidine after surgery and, on average; each patient was given 1.6 doses of intravenous pethidine. There was neither operative mortality nor surgery-related complications.

**DISCUSSION**

More than 2,000 cases of Mini-Cholecystectomy (MC) have been reported worldwide without any deaths or major common bile duct injuries since the first report in 1982.\(^{1–3,5,7–12}\) Although three randomized controlled trials showed better results for Local anesthesia (LC) than Mini-Cholecystectomy (MC) with gallbladders that were not acutely inflamed, in terms of shorter hospital stay, reduced postoperative analgesic requirements or earlier return to normal activities,\(^{5–7}\) a more recent study from andruos\(^{1,8}\) and colleagues showed that Local anesthesia (LC) took longer to perform than Mini-Cholecystectomy (MC) and did not have significantly better recovery\(^{8}\) It is therefore reasonable to conclude that the two procedures have been accepted as effective minimally invasive surgical procedures for non-acute gallbladder disease. However, none of these reports involved surgery under local anesthesia. Considering that laparoscopic Cholecystectomy LC has to be done under general anesthesia,
Mini-Cholecystectomy (MC) might be beneficial to patients who are unwilling to have general anesthesia or who have a contraindication to narcosis (e.g. chronic obstructive pulmonary disease), or who are at high risk for general anesthesia; if it can be done effectively under local anesthesia as shown in our series.

Although a transverse incision in the right upper quadrant is the most popular approach for Mini-Cholecystectomy (MC)\(^5\,^8\,^{13}\,^{14}\) and is less painful than a vertical incision,\(^{15}\,^{16}\) we prefer to use a small oblique incision without muscle cutting and less tissue dissection. According to our protocol, intravenous pethidine was routinely given to patients after Cholecystectomy. The average doses of pethidine for patients who underwent Mini-Cholecystectomy (MC) under local anesthesia and standard conventional open Cholecystectomy were 1.6 and 3.4.

The median operative time of 45 minutes for Mini-Cholecystectomy (MC) in the present study was in accordance with that in previous reports of 40–74 minutes,\(^5\,^8\,^{13}\,^{17}\) but postoperative stay was slightly longer. It should be pointed out that patients who reside in the rural areas prefer to remain in hospital until they feel that their symptoms, particularly those of pain, have disappeared or much improved. Therefore, the length of stay in this series did not truly reflect the necessity for hospitalization.

**CONCLUSIONS:**

1. Mini-Cholecystectomy (MC) can be performed effectively under local anesthesia for symptomatic gallstone disease;
2. A 4–5 cm right subcostal incision is the appropriate choice for Mini-Cholecystectomy (MC) under local anesthesia;
3. Mini-Cholecystectomy (MC) can be done without the use of special instruments.

**RECOMMENDATION:**

It is recommended to study a larger sample for long period to evaluate the late complications of the operation.

**REFERENCES**