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

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Abstract:

Background & Objectives: Reports of open-cholecystectomy (OC) or laparoscopic cholecystectomy (LC) under general anaesthesia (GA) in the surgical treatment of gallbladder disease are common, but those performed under local anaesthesia (LA) are much more limited, especially for old aged patients unfit for GA. This study tried to determine the safety and success of Mini-Cholecystectomy under local anaesthesia for symptomatic gallstone disease in old aged patients unfit for GA.

Patients & Methods: Since January 2009 to October 2012, eighty-five patients with gallstone disease scheduled for Mini-Cholecystectomy under local anaesthesia were included in this prospective study in Azadi teaching hospital. Sixty-three (74.1%) patients were females, with a median age of 76.5 years (range, 67–93). All of the patients had evidence of acute cholecystitis on ultrasonic examination. MC was performed by a standardized technique and under the combination of local anaesthesia (1% xylocaine without adrenaline) and intravenous administrations of fentanyl (0.001–0.002 mg/kg) and midazolam (0.05–0.1 mg/kg).

Results: The median operative time was 40 minutes (range, 35–64). Most of the patients underwent the operation successfully without significant discomfort. Cholecystectomy was done successfully in 83 (97.6%) patients, giving a success rate of 97.6%. while cholecystostomy was performed in the remaining 2 (2.4%) patients because of the severe adhesions that rendered mini-cholecystectomy very difficult. The median hospital stay was 2.6 days (range, 2–7).

Conclusions: Mini-Cholecystectomy under local anaesthesia is an effective surgical procedure for old aged patients with symptomatic gallstone disease who are unfit for GA.

Key Words: gallstones, local anaesthesia, mini-cholecystectomy.

Introduction:

Mini-cholecystectomy (MC) was first described more than two decades ago by Dubois and Berthelot,[1] and their favorable results were reported at the same time laparoscopic cholecystectomy (LC) was introduced into the UK in 1990.[2–4] Subsequently, four randomized clinical trials have compared LC and MC in the elective treatment of gallbladder stones.[5–8] More recently, MC has been shown to be an effective surgical procedure for an inflamed gallbladder regardless of the degree and type of inflammation.[9]

Both MC and LC are usually performed under general anaesthesia. However, it is likely that in suitable patients or in those who are unwilling to have general anaesthesia or have severe

contraindications to narcosis, the gallbladder can be excised under local anaesthesia through a very small incision. [10] The main objective of this study was to report our experience of MC under local anaesthesia in old aged patients unfit for GA, and to propose the criteria for case selection.

Patients and methods:

Eighty-five patients with symptomatic gallstone disease who were scheduled for MC under LA between January 2009 and October 2012 were included in this study. Sixty-three (74.1%) patients were females, with a median age of 76.5 years (range, 67–93), and 22 (25.9%) was men, with a median age of 69 years (range, 66 – 85); table (1). The median operative time was 40 minutes (range, 35–64). Cholecystectomy was done successfully in 83 (97.6%) patients, while cholecystostomy was performed in the remaining 2 (2.4%) patients because of the difficulties present in performing cholecystectomy. The median hospital stay was 2.6 days (range, 2–7).

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

The main reasons for being the patients at high-risk for general anaesthesia were severe heart failure, uncontrolled hypertension, chronic obstructive airway disease, & uncontrolled or severe asthma; table (2).

Operation:

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

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 4 or 5 cm, mostly depending on the size of the patient. The rectus muscle was splitted 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 Callot'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 2 patients because of the severe adhesions that rendered mini-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:

Mini-Cholecystectomy was performed successfully in 83 (97.6%) patients without the needto extend the incision. The common intraoperative findings during performing mini-cholecystectomy are shown in table (3).
However, cholecystostomy was performed in two patients because of the severe and dense adhesions around the gallbladder which rendered cholecystectomy impossible; hence the success rate of MC under local anaesthesia was 97.6%. The median operative time was 40 minutes (range, 35–64), and median hospital stay was 2.6 days (range, 2–7).
An oral diet was started within 24 hours of operation in all patients with MC. Patients were routinely given intravenous pethidine after surgery and, on average; each patient was given 1.6 doses of intravenous pethidine. All patients had smooth post-operative period with no significant surgery-related complications.

Table 1: Demography of the patients (n= 85).

	Male	Female
Age range (years) Mean	66 – 85 69	67 – 93 76.5
Number of patients Percentage of patients	22 (25.9%)	63 (74.1%)
Weight (kg) Mean weight (kg)	45 – 88 61	48 – 98 64

Table 2: Main reasons for being the patients at high-risk for general anaesthesia:

Reason	NO. of patients	%
severe heart failure,	18	21.1
uncontrolled hypertension,	24	28.2
chronic obstructive airway disease	12	14.2
uncontrolled or severe asthma	20	23.5
Refusal by the patient	11	13
Total	85	100

Table 3: Mini – cholecystectomy: intraoperative findings

	Mini- cholecystectomy (no = 83)	%
Tensely distended gallbladder	27	32.5
Pericystic /subhepatic adhesions	22	26.5
Hydrops	11	13.2
Empyema	8	9.5
Localized necrosis	7	8.4
Pericystic abscess	6	7.5
Perforated gallbladder	1	1.2
Gangrene	1	1.2

Discussion:

More than 2,000 cases of MC have been reported worldwide without any deaths or major common bile duct injuries since the first report in 1982.[1,2,3,5,7,8,9,10,11,12] Although three randomized controlled trials showed better results for LC than 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 Majeed and colleagues showed that LC took longer to perform than 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 anaesthesia. Considering that LC has to be done under general anaesthesia, MC might be beneficial to patients who are unwilling to have general anaesthesia or who have a contraindication to narcosis (e.g. chronic obstructive pulmonary disease), or who are at high risk for general anaesthesia; if it can be done effectively under local anaesthesia as shown in our series.

Although a transverse incision in the right upper quadrant is the most popular approach for 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 MC under local anaesthesia and standard conventional open cholecystectomy were 1.6 and 3.4 respectively.

The median operative time of 40 minutes for MC in the present study was in accordance with that in previous reports of 40–74 minutes, [10] 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.

Conclusion:

This study concluded that: (1) MC can be performed effectively under local anaesthesia for symptomatic gallstone disease; (2) a 4–5 cm right subcostal incision is the appropriate choice for MC under local anaesthesia; (3) MC can be done without the use of special instruments.

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