



## Letter to the Editor

## Simplifying minilap cholecystectomy

Dear Editor,

### 1. Introduction

Apropos the recent article on minilap cholecystectomy by Chalkoo et al.<sup>1</sup> We share our technique which might simplify this surgery further.

### 2. Technique

Three to five centimeter midline incision is made (Fig. 1) and the peritoneal cavity is entered to the right of falciform ligament. Air is allowed to enter the supra-hepatic space to facilitate manipulation of liver/gallbladder. Gallbladder fundus is held up and an abdominal swab is pushed into the wound (Fig. 1). With the bladder retractor and tongue depressor in place, Hartmann's pouch is pulled upward and laterally whilst the fundus is swept under the abdominal wall, away from operation site, to expose the Calot's triangle optimally (Fig. 2). Two ligatures each, around cystic duct and artery, are tied sufficiently apart using fingers (Fig. 3). When space restricts tying sutures apart, then solitary ligatures are tied individually around cystic duct and artery. Hartmann's pouch is then released and fundus is pulled back into operating field (Fig. 4). Gallbladder is sharply dissected off liver and excised by cutting between the ligatures (Figs. 4 and 5). When cystic duct and artery are secured using solitary ligatures, the gallbladder is excised by clamping its neck and cutting between the clamp and ligatures.

### 3. Discussion

#### 3.1. Midline approach

Numerous techniques of performing minilap cholecystectomy are described.<sup>1–3</sup> Most are muscle cutting/splitting approaches, employing diverse incisions, such as, subcostal oblique; subcostal transverse; and paramedian.<sup>1–3</sup> Midline approach, although described, has been avoided owing to speculation regarding greater incidence of incisional hernia and post-operative pain.<sup>3</sup> These fears have been conclusively unfounded.<sup>4</sup>

Philosophies behind preferring midline approach are several.

(a) Calot's triangle, being a midline structure, is exposed best through midline incision, minimizing chances of inadvertent injury.

(b) Approach through fibrous linea alba avoids division of muscles, vessels and nerves, hence is bloodless and rapid.<sup>5</sup>  
(c) Hepatic flexure of colon is conveniently avoided.

(d) Under spinal anesthesia, midline incisions prove advantageous by evading the muscles, which contract violently when cut using diathermy, enhancing operative ease whilst avoiding muscle soreness, resulting in lesser post-operative pain.  
(e) Midline incisions are easier and faster to extend and close.<sup>5</sup>

#### 3.2. Retractors

Other techniques involve use of special instruments, retractors and illumination, such as, complex surgical kit, hooks and ring/litghted retractors.<sup>1,3</sup> We prefer ubiquitous bladder retractor and tongue depressor, which have broad powerful handle for firm grip and long narrow blade for retraction at depth. Excellent exposure provided obviates the need for special instruments/illumination (Fig. 2). Both retractors can well be handled by single assistant.

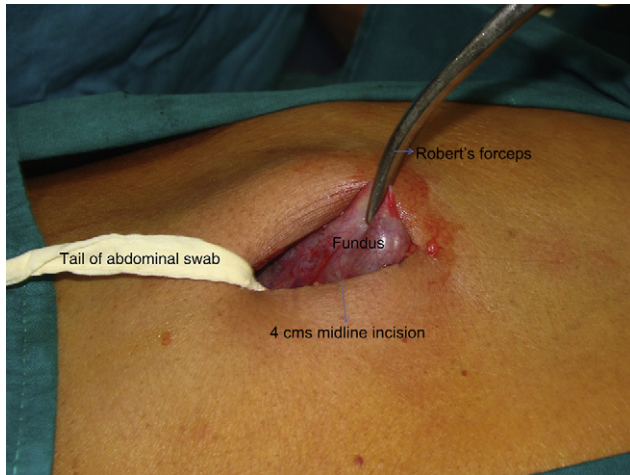
#### 3.3. Decompression

Tense mucocoeles/pyocoeles necessitate decompression for optimal exposure and manipulation. However, decompression is unnecessary for distended gallbladders which may conveniently be swept away under the abdominal wall for unhindered vision (Fig. 2). Distended gallbladders are easier to dissect off liver, whilst proving less messy (Figs. 4 and 5)

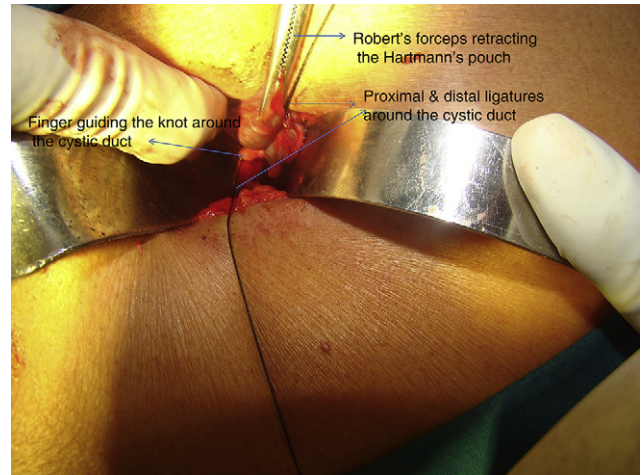
#### 3.4. Ligatures

Using long hemostats for ligating cystic duct/artery carries the risk of unsecure knotting/shearing due to insufficient or excessive force, owing to lack of tactile feedback. This may prove injurious in friable tissues of acute cholecystitis. We prefer using fingers for this reason (Fig. 3).

Cutting duct/artery between ligatures is undoubtedly ideal when situation permits ligatures to be sufficiently apart. However, short ducts and shrunken gallbladders, in obese patients, preclude placing ligatures ideally apart. Cutting between ligatures, in such situations, predisposes to erroneously fraying/cutting either ligature. Single secure ligature each, around cystic duct and artery is all that is necessary. On completion of dissection, gallbladder may safely be excised by clamping the gallbladder neck and cutting between the clamp and ligatures.



**Fig. 1.** Four centimetre long midline incision through which gallbladder fundus held up and abdominal gauze pushed in, leaving its tail hanging outside.



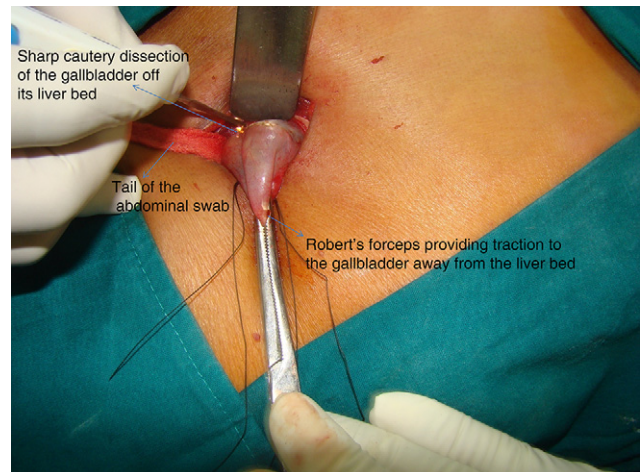
**Fig. 3.** Use of fingers for ligating cystic duct.

### 3.5. Gallbladder dissection

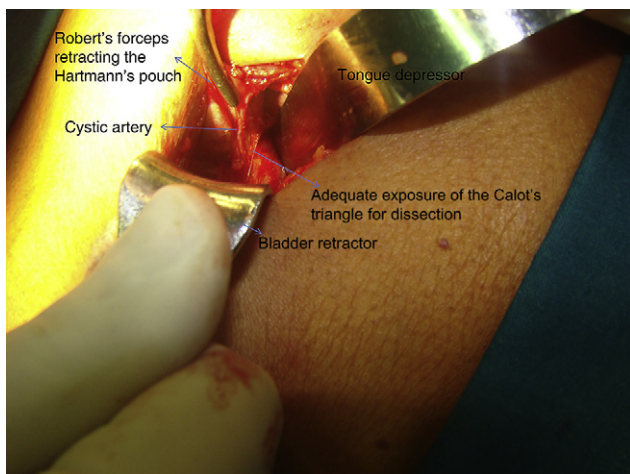
Using fingers to dissect gallbladder bluntly off liver entails risk of bleeding, especially, in acute cholecystitis. Sharp cautery dissection of cystic plate minimizes bleeding, rendering drains unnecessary. Dissection is facilitated by firm traction and counter traction to the gallbladder and liver, respectively (Fig. 4).

### 3.6. Our experience

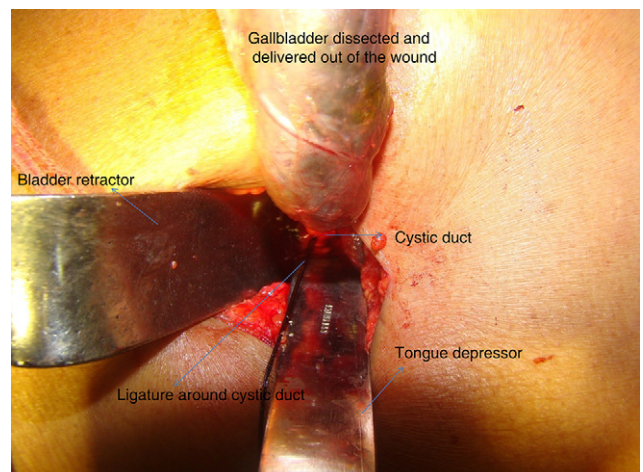
Eighty-five patients (76 females: 9 males) in age range of 24–76 yrs (median: 39 yrs) underwent open cholecystectomy (78 under general anesthesia and 7 under spinal anesthesia) between Sep 2009 and Feb 2010 for cholecystitis (2 acalculous cholecystitis; 7 acute calculous cholecystitis; 76 chronic calculus cholecystitis). Minilap cholecystectomy was successful in 79 patients. Incidental detection of malignancy necessitated conversion to radical cholecystectomy in 2 patients. Dense adhesions necessitated extension of incision in 4 patients. Median operative time was 30 min (range: 20–60 min). None needed drains. Two patients developed surgical site infection which resolved with suture removal, drainage and antibiotics. Post-operative pain ranged between 15 and 40 by



**Fig. 4.** Sharp dissection of gallbladder off liver bed.



**Fig. 2.** Gallbladder fundus swept under abdominal wall and retractors placed for optimal exposure of Calot's triangle.



**Fig. 5.** Completely dissected gallbladder hanging by its pedicle ready for excision.

Verbal Response Score (median: 25) which could be managed using Non-Steroidal Anti Inflammatory Drugs. Oral fluids could be commenced after 6 h of surgery in all patients except 4, who experienced nausea and vomiting till next day. Patients were fit for discharge within 24 h of surgery.

#### 4. Conclusion

Midline minilap cholecystectomy is efficacious, safe and incredibly simple.

#### Acknowledgements

Interest in approaching gallbladders through midline was kindled by Colonel RPS Gambhir.

#### Conflict of interest

None declared.

#### References

1. Chalkoo M, Ahangar S, Durrani AM, Chalkoo S, Shah MJ, Bashir MI. Mini-lap cholecystectomy: modifications and innovations in technique. *Int J Surg* 2009;**8**(2):112–7.
2. Purkayastha S, Tilney H, Georgiou P, Athanasiou T, Tekkis P, Darzi A. Laparoscopic cholecystectomy versus mini-laparotomy cholecystectomy: a meta-analysis of randomised control trials. *Surg Endosc* 2007;**21**(8):1294–300.
3. Shulutko AM, Kazaryan AM, Agadzhanov VG. Mini-laparotomy cholecystectomy: techniques, outcomes: a prospective study. *Int J Surg* 2007;**5**:423–8.
4. Seiler CM, Deckert A, Diener MK, Knaebel HP, Weigand MA, Victor N, Buchler MW. Midline versus transverse incision in major abdominal surgery: a randomized, double blind-equivalence trial. *Ann Surg* 2009;**249**(6):913–20.
5. Burt BM, Tavakkolizadeh A, Ferzoco SJ. Incisions, closures and management of abdominal wound. In: Zinner MJ, Ashley SW, editors. *Maingot's abdominal operations*. 11th ed. New York, NY: McGraw Hill; 2006. p. 73–102.

Ramanathan Saranga Bharathi\*

Department of Surgery, 60 Parachute Field Hospital, MG Road, Agra Cantonment, Agra, Uttar Pradesh 281001, India

\*Corresponding author.

E-mail addresses: [sarangabharathi@rediffmail.com](mailto:sarangabharathi@rediffmail.com), [sarangabharathi@gmail.com](mailto:sarangabharathi@gmail.com) (R.S. Bharathi)

Dronacharya Routh, Saurabh Singh

Department of Surgery, Military Hospital, Agra Cantonment, Agra, Uttar Pradesh 282002, India

Araunava Chakladar

Department of Anesthesia, Military Hospital, Agra Cantonment, Agra, Uttar Pradesh 282002, India

Vasudevan Baskaran

Department of Minimally Invasive and Gastro-Intestinal Surgery, BL Kapur Memorial Hospital, Pusa Road, New Delhi, India

Available online 4 August 2010