Austin Journal of Surgery

Austin Publishing Group

Open Access Full Text Article

Editorial

Laparoscopic Cholecystectomy is Still Evolving

Yoshiaki Mizuguchi*

Department of Surgery, Nippon Medical School Hospital, Japan

***Corresponding author:** Yoshiaki Mizuguchi, Department of Surgery, Nippon Medical School Hospital, 1-1-5 Sendagi, Bunkyo-Ku, Tokyo, Japan, Email: yoshi1224@gmail.com

Received: September 01, 2014; **Accepted:** September 03, 2014; **Published:** September 05, 2014

Almost every organ in the abdominal cavity is accessible in a minimally invasive manner. Laparoscopic surgery affords significant advantages compared to conventional open surgery. The magnification afforded by modern optical devices, and the unique visualization of target organs, facilitates delicate procedures including cutting and tissue division. Additionally, operative views are shared by all attendees (however experienced), affording maximal educational efficacy by allowing surgeons to develop their visual skills. Such surgery has several important advantages: the scar length and postoperative pain level are reduced, and the cosmetic results improved, as compared to the outcomes of open surgery [1].

In the time since the introduction of the technique in the 1980s [2], laparoscopic cholecystectomy (LC) has become recognized as the surgical procedure of choice for elective surgery patients. The biliary tract, including the gallbladder, is located in a remote right-sided bodily region, distant form the surgical opening, and the visual field is thus poor when open cholecystectomy is performed. Hence, it is very useful to use a laparoscope to better define the visual field.

Standard LC traditionally employed four trocars (two 10-mm and two 5-mm in length); one trocar is for the camera, one for instruments, and two allow manipulation of the gallbladder to afford adequate exposure of the surgical field (including Calot's triangle) [3]. Improvements in laparoscopic techniques, and advances in surgical experience, have led to surgeons suggesting that the fourth trocar was unnecessary. Commencing in the late 1990s, surgeons found that LC was safely performed using less than four access ports [4-6]. The first paper on single-port LC, performed in 30 patients, was published in 1997 by Navarra et al. [7] and other authors subsequently described "transumbilical" single-port LC [8,9]. The technique has become commonly adopted in recent years. Initially, safety concerns were raised, but two meta-analyses showed that single-port LC was safe; no significant difference between conventional and single port LC was evident in terms of complications (including bile duct injury) [10,11]. A further meta-analysis found that single-port LC afforded better cosmetic satisfaction, and reduced postoperative pain, at a cost of longer operative time, as compared to multiple-incision LC [3,12]. Finally, the first report on transvaginal natural orifice transluminal endoscopic surgery (NOTES), used for cholecystectomy, appeared in 2007, and found that access trauma was minimized and no visible scars created [13].

Contemporaneously, mini-laparoscopic cholecystectomy (mini-PLC), using smaller ports and incisions (<5 mm), became possible via manufacturing improvements in surgical instruments, particularly forceps stiffness. In a meta-analysis of 43 RCT studies, Li et al. compared single-port LC, two-port LC, three-port LC, four-port LC, and mini-four-port LC, and found that four-port LC was associated with the highest level of postoperative pain, the longest hospital stay, and the lowest cosmetic score. The mini-four-port LC had the highest cosmetic score and the lowest level of postoperative complications; single-port LC was associated with the lowest level of postoperative pain and the shortest hospital stay.

However, ascending the learning curve for laparoscopic techniques, which requires development of depth perception (screen views are obviously two-dimensional); working while lacking tactile sensation; and an understanding of how forceps range varies under different circumstances, requires time and (considerable) effort in a clinical context [14-16]. Historically, many innovations in digestive surgery were first evaluated by performing cholecystectomies in humans. Consideration of both surgical expertise and learning curve parameters are important when a new approach is planned. Pre-clinical training using live animals, or a dry box, is usually needed. A randomized controlled trial study showed that such training, using porcine organs, significantly improved the operating room performance of surgical residents, as compared to those not so trained; skills were transferred from the laboratory to the theater [17].

Dedicated surgeons and those who develop new medical technology will always advocate the development of new approaches to cholecystectomy. The design of appropriate instruments, ports. And optical devices facilitating such efforts, is a major research field.

References

1. Keus F, de Jong JA, Gooszen HG, van Laarhoven CJ. Laparoscopic versus open cholecystectomy for patients with symptomatic cholecystolithiasis. Cochrane Database Syst Rev. 2006; CD006231.
2. Perissat J, Collet DR, Belliard R. Gallstones: laparoscopic treatment, intracorporeal lithotripsy followed by cholecystostomy or cholecystectomy--a personal technique. Endoscopy. 1989; 21 Suppl 1: 373-374.
3. Li L, Tian J, Tian H, Sun R, Wang Q, Yang K, et al. The efficacy and safety of different kinds of laparoscopic cholecystectomy: a network meta analysis of 43 randomized controlled trials. PLoS One. 2014; 9: e90313.
4. Gurusamy KS, Vaughan J, Rossi M, Davidson BR. Fewer-than-four ports versus four ports for laparoscopic cholecystectomy. Cochrane Database Syst Rev. 2014; 2: CD007109.
5. Trichak S. Three-port vs standard four-port laparoscopic cholecystectomy. Surg Endosc. 2003; 17: 1434-1436.
6. Kagaya T. Laparoscopic cholecystectomy via two ports, using the "Twin-Port" system. J Hepatobiliary Pancreat Surg. 2001; 8: 76-80.
7. Navarra G, Pozza E, Occhionorelli S, Carcoforo P, Donini I. One-wound laparoscopic cholecystectomy. Br J Surg. 1997; 84: 695.
8. Bresadola F, Pasqualucci A, Donini A, Chiarandini P, Anania G, Terrosu G. Elective transumbilical compared with standard laparoscopic cholecystectomy. Eur J Surg. 1999; 165: 29-34.

Citation: Mizuguchi Y. Laparoscopic Cholecystectomy is Still Evolving. Austin J Surg. 2014;1(6): 1029.

9. Piskun G, Rajpal S. Transumbilical laparoscopic cholecystectomy utilizes no incisions outside the umbilicus. J Laparoendosc adv surg Tech A. 1999; 9: 361-364.

10. Trastulli S, Cirocchi R, Desiderio J, Guarino S, Santoro A, Parisi A, et al. Systematic review and meta-analysis of randomized clinical trials comparing single-incision versus conventional laparoscopic cholecystectomy. Br J Surg. 2013; 100: 191-208.

11. Pisanu A, Reccia I, Porceddu G, Uccheddu A. Meta-analysis of prospective randomized studies comparing single-incision laparoscopic cholecystectomy (SILC) and conventional multiport laparoscopic cholecystectomy (CMLC). J gastroint surg. 2012; 16: 1790-1801.

12. Arezzo A, Scozzari G, Famiglietti F, Passera R, Morino M. Is single-incision laparoscopic cholecystectomy safe? Results of a systematic review and meta-analysis. Surg Endosc. 2013; 27: 2293-2304.

13. Marescaux J, Dallemagne B, Perretta S, Wattiez A, Mutter D, Coumaros D. Surgery without scars: report of transluminal cholecystectomy in a human being. Arch surg. 2007; 142: 823-826.

14. Figert PL, Park AE, Witzke DB, Schwartz RW. Transfer of training in acquiring laparoscopic skills. J Am Coll Surg. 2001; 193: 533-537.

15. Peters JH, Fried GM, Swanstrom LL, Soper NJ, Sillin LF, Schirmer B, et al. Development and validation of a comprehensive program of education and assessment of the basic fundamentals of laparoscopic surgery. Surgery. 2004; 135: 21-27.

16. Friedman RL, Pace BW. Resident education in laparoscopic cholecystectomy. Surg Endosc. 1996; 10: 26-28.

17. Bansal VK, Raveendran R, Misra MC, Bhattacharjee H, Rajan K, Krishna A, et al. A prospective randomized controlled blinded study to evaluate the effect of short-term focused training program in laparoscopy on operating room performance of surgery residents (CTRI /2012/11/003113). J surg educ. 2014; 71: 52-60.

Austin J Surg - Volume 1 Issue 6 - 2014
ISSN : 2381-9030 | www.austinpublishinggroup.com

Citation: Mizuguchi Y. Laparoscopic Cholecystectomy is Still Evolving. Austin J Surg. 2014;1(6): 1029.