LEADING ARTICLE

LAPAROSCOPIC CHOLECYSTECTOMY

M Chellappa

SINGAPORE MED J 1993; Vol 34: 199-200

After the first performance of Mouret in 1987 in France, laparoscopic cholecystectomy has had an unprecedented success in the history of General Surgery. Never before has any new surgical technique created such a significant enthusiasm. Over the years, increasing number of surgeons have started to perform Laparoscopic Cholecystectomy and this is reflected by the fact that up to 80% of cholecystectomy procedures are being conducted through laparoscopy in USA. More than 20,000 cases have been reported in the world forums and the advantages of the procedure in terms of short hospital day, early return to work, quicker postoperative recovery have been established. The concomitant advances in the development of surgical instrumentation have made it possible to extend the laparoscopic approach to other procedures such as repair of hernia, peptic ulcer surgery and bowel procedures. Tangible benefits and efficacy comparable with the conventional techniques are yet to be proven in these conditions and hence caution is required before their unreserved recommendation. This is very much so especially in bowel surgery where application in malignant conditions need to be carefully evaluated with prospective studies before submitting the patients to this new approach.

The introduction of laparoscopic cholecystectomy has been a "cultural shock" to the large general surgical community. Traditional concepts of wide incisions, and tactile feedback on dissection have to be replaced with key hole accesses and surgical decisions based on the magnified visual images and team deliberations.

Although laparoscopic cholecystectomy is emerging as the most suitable method for the management of gallstones, extension of indication beyond symptomatic gall stones should not be entertained. Resolving pancreatitis, and nonfunctioning symptomatic gall bladder would form the rest of the indications. Evidence of marked degree of cirrhosis, portal hypertension and bleeding disorders would contraindicate this procedure. Patients with morbid obesity, on the other hand, are best dealt with by laparoscopic cholecystectomy[1]. Still the major contraindication to this procedure is an untrained, enthusiastic, over zealous surgeon.

Patients with either history of jaundice or proven common bile duct stones are best dealt with by preoperative Endoscopic Retrograde Cholangiopancreatography followed by laparoscopic cholecystectomy. Currently, exploration of the common bile duct either through the cystic duct or through an opening in the common bile duct is possible using specially designed instruments including a fine choledochoscope[2].

Duration of this procedure, although a major concern during the learning curve, settles down after the initial 40-50 cases and does not differ much from the open cholecystectomy. It is true that even after prolonged laparoscopic procedures (as it happens in difficult cases with extensive adhesions) the recovery of the patient postoperatively is remarkably similar to short haul procedures. Even then, it is better to instill a time discipline while embarking on the technique as a new comer.

Apart from minor complications such as wound infection, the major complications following laparoscopic cholecystectomy are broadly divisible to the ones related to instrumentation and the ones related to the procedure itself. Instrument related problems mainly occur as a result of inadvertent electrocautery to bowel and accidental trocar injuries. A recent report from the State of New York, USA (MDDI Report)[3] highlighted this problem quite significantly resulting in a tighter credentialling of surgeons to perform this procedure. Electrosurgery can be a lethal weapon especially if there is no proper care of the instrumentation to ensure the integrity of the insulation. Bipolar cautery is becoming increasingly advocated and would play an increasing role with the introduction of newer instruments. Proponents of lasers highlight the problems associated with electrocautery to their advantage, but lasers do require a basic training protocol to ensure their application with safety. Trocar injuries have been considerably minimised with the use of the modern disposable trocars with protective sheaths. Inexperienced laparoscopists resort to open laparoscopy using Hassan's trocars to avoid trocar related complications. Constant monitoring of the carbon dioxide concentration has excluded problems related to pneumoperitoneum although patients with major decompensated cardio-respiratory disorders are still not suitable to undergo this procedure.

Bile duct injuries are a cause of concern in laparoscopic cholecystectomy[4]. The incidence of major bile duct injuries varies from 5 to 10% at this moment and is closely associated with the learning curve of the surgeon. As the whole procedure has to be done under video control, changes in the perceptions of the anatomy of the gall bladder contribute a lot to such an incidence of bile duct injuries. In addition, biliary tract anatomy is well known for its high incidence of variations. Meticulous dissection, use of intraoperative cholangiography, and early conversion to open technique in case of difficulty would help to reduce the incidence of bile duct injuries. In a personal series of over 600 cases, no bile duct injury was encountered and the incidence of morbidity was less than 1%. A surgeon should have at least 50 cases in his bag in order to be comfortable to do this procedure with greater degree of safety.

The paper from Toa Payoh Hospital in this issue exemplifies the cautious approach in this field and it is laudable that they have achieved a low complication rate of 4.5% at the expense of a slightly higher conversion rate (9.1%)[5].

Is laparoscopic cholecystectomy cost effective? Although the surgical procedure costs may be higher than open cholecystectomy, the cost of the "total burden of illness" is considerably less in laparoscopic cholecystectomy and this has been borne out in a number of scientific presentations[6]. Early return to work plays a significant part in achieving this and this is beneficial both in the young and the elderly.

The unprecedented success of laparoscopic cholecys-

3 Mt Elizabeth #14-15
Mt Elizabeth Medical Centre
Singapore 0922

M Chellappa, MBBS, FRCS(Edin), FACG, FACS, FAMS
Consultant Surgeon

tectomy has created issues related to training and credentialling for laparoscopic surgery. Although the growing demand for training can be met with courses where didactic lectures, live surgery and training in animate modes are given, a formalised program of preceptor training would ensure less complications during the procedure[7]. Eventually, teaching of laparoscopic techniques would have to be incorporated in the surgical training program of the residents.

References

1. Schirmer BD, Dix J, Edge SB, Hyser MJ, Hanks JB, Aguilar M. Laparoscopic Cholecystectomy in the obese patient. Ann Surg 1992;216:146-52.
2. Carroll BJ, Phillips EH, Daykhovsky L, Grundfest WS, Gershman A, Fallas M, et al. Laparoscopic Choledochoscopy: an effective approach to the common duct. J Laparoendosc Surg 1992;2:15-21.
3. Nenner RP, Imperatro PJ, Alcorn CM. Serious Complications of laparoscopic cholecystectomy in New York State. N Y State J Med 1992;92:179-81.
4. Moossa AR, Easter DW, Van Sonnenberg E, Casola G, D'Agostino H. Laparoscopic injuries to the bile duct. A cause for concern. Ann Surg 1992;215:203-8.
5. Chng HC, Chia KH, Ng FC. Experience with laparoscopic cholecystectomy at the Toa Payoh Hospital. Singapore Med J 1993, 34:209-11
6. Larson GM, Vitale GC, Casey J, Evans JS, Gilliam G, Heuser L, et al. Multipractice analysis of laparoscopic cholecystectomy in 1,983 patients. Am J Surg 1992;163:221-6.
7. Dent TL. Training, credentialling and evaluation in laparoscopic surgery. Surg Clin North Am 1992;72:1003-11.