LAPAROSCOPIC CHOLECYSTECTOMY

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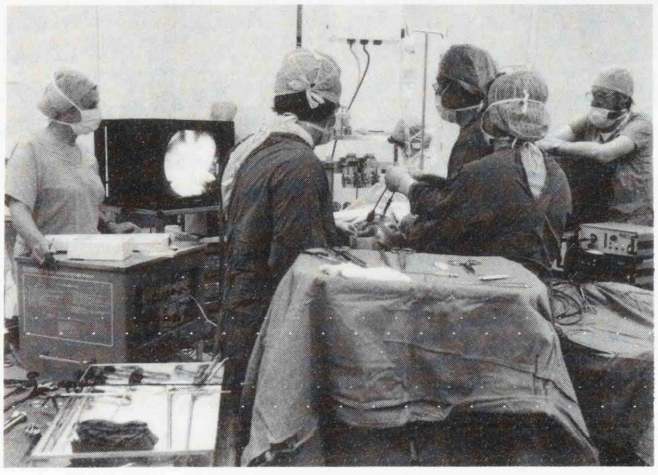
The laparoscope has been used as a diagnostic tool for many years by gynaecologists, who also use it to carry out a considerable number of ovarian, tubal and even uterine operations. Surgeons have been slow to use the instrument as other investigative modalities (ultrasound, gastro-intestinal endoscopy and CT scanning) have advanced rapidly, making the diagnostic use of the laparoscope of limited value.

However, pioneers have continued to investigate its potential, particularly focussing on the treatment of gall bladder disease. The advent of small video cameras attached to the laparoscope has revolutionised the technique because everyone concerned with an operation can watch and assist in the procedure and the surgeon no longer has to control the viewing scope.

The first cholecystectomy using the laparoscope was performed in 1987 in France. Since the end of 1988, surgeons in Europe and America have developed the technique and the instrumentation so that it is applicable to the majority of patients with gall bladder disease. Only those unfit for any form of surgery, the grossly obese or those who have had previous surgery which has lead to severe adhesions are unlikely to be suitable for this technique.



Operating by television

Its advantages are:

1 the four simple puncture wounds cause very little discomfort and heal quickly, just as in gynaecological laparoscopy, and are cosmetically more acceptable than the large scars of open operation.

2 patients are fit to be discharged from hospital within twenty-four to forty-eight hours

3 patients can return to normal activities within one to two weeks and do not suffer from the debility which follows an open operation.

The contra-indications to this form of operation are if:

1 the patient is unfit for conventional surgery

2 the patient has stones in the common bile duct which cannot be removed by ERCP (endoscopic retrograde choledochopancreatography)

3 the patient has had multiple previous abdominal operations.

The latter is a relative contra-indication because the adhesions may prevent the safe insufflation of the abdomen and insertion of instrument cannulae. Similarly, acute inflammation may make the operation more difficult and dangerous but this is not always true.

The disadvantages are principally for the surgeon. This is a new technique demanding new skills (operating remotely) and it can take longer than the open operation (table 1). However, of the first seventy operations, only the first took more than two hours and most have taken forty to ninety minutes. We anticipate that the average time will gradually be reduced, as familiarisation with equipment improves and it may take no longer than the quickest open operation. The prolongation of the operation has no evident effect on the patient. The day after the operations, the patients have an abdominal ache, occasionally some nausea and also neck and right shoulder tip pain, as is not uncommon after gynaecological laparoscopy. Although the first patients were kept in hospital for forty-eight hours, the majority have felt perfectly fit to return home within twenty-four hours. In a small number of patients, technical difficulties may force the surgeon to revert to the open operation and every patient must be prepared for this. In institutions with a large experience, young patients are even being treated as day cases.

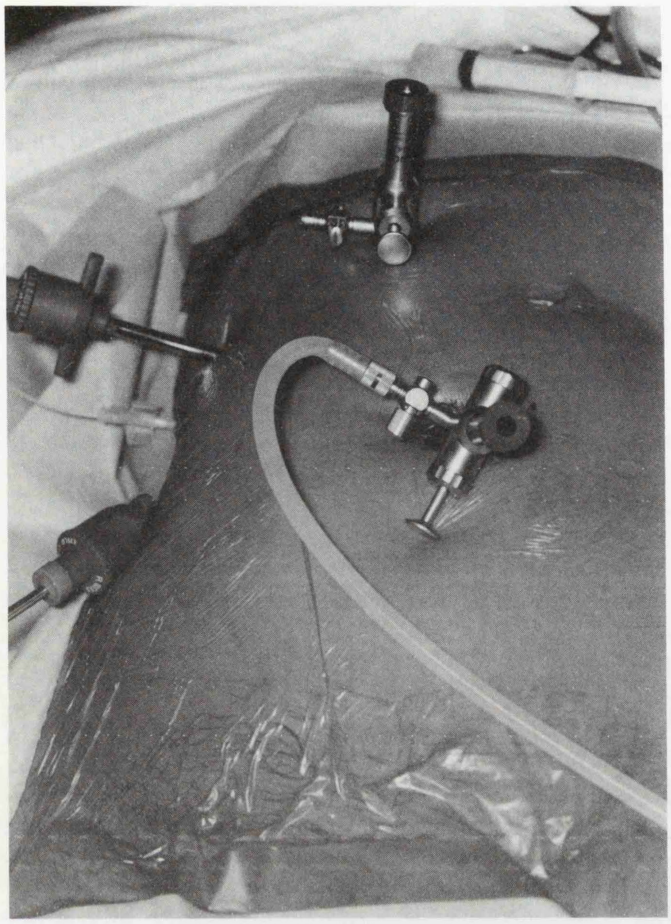
SUMMARY OF CHOLECYSTECTOMIES SEPTEMBER 1990 – JANUARY 1991

Open cholecystectomy	5
Laparoscopic cholecystectomy	70
Conversion to open surgery	6
Operating time	2½ hours to 30 minutes
Operating time (average)	1 hour 10 minutes

Table 1

How is it done ?

After the patient has been anaesthetised, a naso-gastric tube and urinary catheter are passed to decompress the stomach and the bladder. These are both removed at the end of the operation. A pneumoperitoneum is induced, using a Verres



Operating cannulae in place

needle inserted at the umbilicus. A 10mm cannula is inserted at the umbilicus, through which the laparoscope, attached to a video camera, is inserted. Under direct vision on the television screen, a further 10 mm cannula is inserted in the midline close to the rib margin, a 5 mm cannula is inserted in the mid clavicular line and one in the mid axillary line, all these just under the costal margin.

Through these three ports, the gall bladder is manipulated with grasping instruments and dissected with scissors and diathermy or a contact laser. The cystic artery is usually ligated with metal clips and the cystic duct treated similarly or also ligated with special ligatures. Suturing can also be carried out through the cannulae.

Cholangiography can be performed as easily as at open operation and is a great help in defining anatomical problems or identifying previously unsuspected common bile duct stones. A decision can then be made to proceed to open removal of the stones or removal by endoscopic means at a later date. We have only performed cholangiography where the cystic duct is particularly large.

After the gall bladder is excised from the liver bed and haemostasis confirmed, the gall bladder is removed through the umbilical port. Very large stones may require a slight extension of the umbilical incision. All the wounds are closed using standard techniques.

The intravenous infusion is removed within a few hours. The patients are usually given a single dose of an opiate and occasionally an anti-emetic. Our patients confirm the experience of others that only Panadol or similar oral analgesics are needed subsequently.

If a drain is used in the abdomen, this is removed the morning after surgery. It is our experience and that of others that bleeding is much less than would be expected with an open cholecystectomy. Because the surgeon has a greatly magnified view of the operating field, arterial bleeding can be dramatic but the source is also magnified and therefore usually easily controlled. Venous bleeding is lessened by the pressure of the pneumoperitoneum.

A laparoscopic cholecystectomy service was introduced at Lancaster in September 1990 by the four general surgeons. An all comers policy was adopted from the outset. Patients with suspected common bile duct stones underwent initial ERCP.

During the first four months of this service, we have carried out seventy laparoscopic cholecystectomies. During the same period, five other patients underwent open cholecystectomy (two who required more extensive abdominal exploration, one who required removal of an ovarian cyst at the same time and one with angina who was felt to require a quick operation when we were inexperienced). Six patients required conversion to open cholecystectomy during the procedure because of dense adhesions (2), haemorrhage (2) and minor injury to the hepatic duct (1).There have been no anaesthetic complications.

Ninety percent of patients were discharged home within twenty-four to forty-eight hours and most returned to full activity within two weeks. Two patients were re-admitted with non-specific abdominal pain which settled on conservative treatment.

Our initial experience leads us to believe that the majority of patients with gall bladder disease are suitable for laparoscopic cholecystectomy, even many with acute cholecystitis. In very obese patients, the laparoscopic operation can be easier than the open operation and we have operated without problems on patients of up to 19 stones in weight.

Post operative wounds

The Royal Lancaster Infirmary, the Westmorland County Hospital and the Lancaster and Lakeland Nuffield Hospital each has its own set of equipment and the staff of all three hospitals are familiar with the technique.

We are proud to be the first District General Hospital in the North West to introduce this technique as a service for all patients and now that we have confirmed its advantages, it has become the preferred method of cholecystectomy.

We are very grateful to the Lancaster District Health Authority and the Friends of Westmorland County Hospital for

recognising the potential advantages of this operation and agreeing to fund the immediate purchase of the equipment. We are also grateful to the Lancaster and Lakeland Nuffield Hospital for freely providing the quiet, relaxed theatre atmosphere in which the anaesthetists, surgeons and theatre staff of the Royal Lancaster Infirmary, the Westmorland County Hospital and the Nuffield Hospital could become familiar with the apparatus and techniques, during the first ten operations performed in this District.

I am personally very gratefully to Dr Bob Fitzgibbons of Creighton University in Omaha, USA, whose skill and enthusiasm fired my own for this operation. We must also acknowledge the great help given by Dr Bob Santoscoy, my Registrar, who was Dr Fitzgibbon's assistant and who guided us through our first few operations, smoothing out many of the technical hitches which normally accompany the introduction of such high-tech surgical programmes.

The great advantages of this technique for the patients and the economic advantages for local health services should lead to the development of general surgical laparoscopy and we believe that there will be many other conditions which we can treat using this technique over the next few years.