

Elective cholecystectomy via a 5 cm subcostal incision

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Abstract

This report describes a technique whereby elective cholecystectomy is performed through a 5 cm abdominal incision. Initial results in 18 patients compared with 112 historical control patients undergoing conventional cholecystectomy suggest an encouraging reduction in postoperative hospitalisation time, analgesic requirements and period of recuperation. The procedure takes no longer to perform than conventional cholecystectomy and obesity is not a limiting factor, as originally thought. This technique deserves a place alongside laparoscopic and conventional cholecystectomy in future studies seeking the optimal method of managing symptomatic cholelithiasis.

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The subject of laparoscopic cholecystectomy has recently dominated surgical literature.^{1,3} Preliminary experience with this technique suggests that by comparison with standard cholecystectomy, a marked reduction in the duration of postoperative hospitalisation and recuperation can be achieved. Such a comparison has to date been uncontrolled and retrospective; final definition of the role of laparoscopic cholecystectomy awaits the results of prospective, randomised trials, as well as an analysis of the safety of the procedure in the hands of a wide cross-section of surgeons.

In the interim, re-evaluation of the practice of standard surgical cholecystectomy would seem appropriate. Since May 1990 the authors have adopted a policy of performing elective cholecystectomy through a 5 cm subcostal incision.

This report details experiences to date with this technique, commonly referred to as 'minicholecystectomy'.

Patients and methods

From May 1990 to October 1991, selected patients requiring surgery for symptomatic gallstones were offered the option of minicholecystectomy. Selection was on the basis of the patient being admitted to the care of one of the authors and the absence of clinical or ancillary evidence of acute cholecystitis or cholelithiasis. Initially, obesity was regarded as a contraindication to the procedure, but in the light of increasing experience, this restriction is no longer applied. All patients' percentages of expected weight, according to Metropolitan height and weight tables,⁴ was recorded pre-operatively.

Procedures were performed under general anaesthesia. A transverse subcostal incision not exceeding 5 cm was centred on the right lateral border of the rectus sheath. Splitting of the lateral abdominal musculature

and medial retraction of rectus abdominis obviated the need to transect muscle fibres. The gallbladder was freed fundus-first by a combination of scissor dissection and electrocautery. The cystic artery was secured and divided fairly high on the neck of the gallbladder. Thereafter the serosa covering the neck of the gallbladder and proximal cystic duct were readily teased away, allowing the gallbladder to be retracted into the wound. Cholangiography was performed routinely via the cystic duct. The cystic duct was ligated distal to the cannulation site and divided, thereby completing the cholecystectomy. The peritoneal covering of the gallbladder bed was restored with interrupted chromic catgut sutures and the wound closed in layers without drainage. Total operating time was noted in each instance.

Postoperatively an appropriate dosage of intramuscular opiate was prescribed for analgesia; the first dose was administered routinely on the patient's return to the ward and further doses were offered on a 6-hourly basis. Patients were discharged when they were afebrile, ambulant and tolerant of normal oral intake. On discharge, patients were requested to note the date on which they considered themselves fully recovered. This date was retrieved at a personal or telephonic interview 4 weeks postoperatively.

Comparable data, where available, were retrieved from the records of all patients undergoing elective conventional cholecystectomy at Tygerberg Hospital from September 1988 to April 1990.

Results

Minicholecystectomy was attempted 20 times during the study period. In 2 patients, the incision had to be converted to a conventional subcostal incision; 1 had a partially intrahepatic gallbladder situated high under the costal margin; in the other, a calculus in the distal portion of the cystic duct could not be retrieved through the 5 cm incision. These 2 patients, who had an uncomplicated postoperative course, are not included in the subsequent analysis.

Parameters recorded in the 18 patients in whom minicholecystectomy was successfully completed are compared with those in the 112 patients who underwent elective conventional cholecystectomy during the preceding 16 months (Table I). Patients undergoing minicholecystectomy were generally fit for discharge on the 2nd postoperative day; 4 of the more recent patients were discharged within 24 hours of surgery, while 3 patients remained in hospital 3 days postoperatively. Two were elderly patients who requested an additional day's hospitalisation in view of unsatisfactory domestic circumstances. A third patient, although not on medication at the time of surgery, had previously been diagnosed as having myasthenia gravis and was accordingly kept under observation for an additional 24 hours; her minicholecystectomy was also performed without the benefit of full muscular relaxation. The remaining patient, who had previously undergone pelvic floor surgery, developed urinary retention requiring repeated catheterisation. She was eventually discharged 6 days postoperatively.

Information regarding postoperative recovery time was not available for all patients undergoing conventional cholecystectomy; contact with individual patients,

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TABLE I.
Minicholecystectomy v. conventional cholecystectomy

| | Minicholecystectomy (N = 18) | | Conventional cholecystectomy (N = 112) | |
|--|---------------------------------|--------------|---|--------------|
| | Mean | Range | Mean | Range |
| Age (yrs) | 54,5 | 30 - 81 | 51,2 | 13 - 89 |
| Expected weight (%) | 112,5 | 71,7 - 173,5 | 122,8 | 64,1 - 204,0 |
| Operating time (min) | 74,4 | 45 - 125 | 69,7 | 24 - 142 |
| Postoperative analgesic doses | 2,9 | 1 - 5 | 5,6 | 3 - 10 |
| Postoperative discharge for uncomplicated procedures (days) | 1,9 | 1 - 3 | 5,2 | 2 - 11 |
| Postoperative recuperation (days) | 11,2 | 6 - 18 | Information not available | |
| Morbidity (number and percentage) | 1 | 5,5* | 5 | 4,5† |

94% of minicholecystectomy patients and 90,2% of conventional cholecystectomy patients were women.

* Urinary retention.

† Respiratory infection (2); wound sepsis (2); cerebrovascular accident (1).

as well as published data,⁵ suggests that recuperation is considerably longer in this group. Both minicholecystectomy patients employed at the time of their operations returned to work on the 17th day postoperatively. The 5 cm transverse subcostal incision consistently resulted in a cosmetically acceptable scar (Fig. 1).

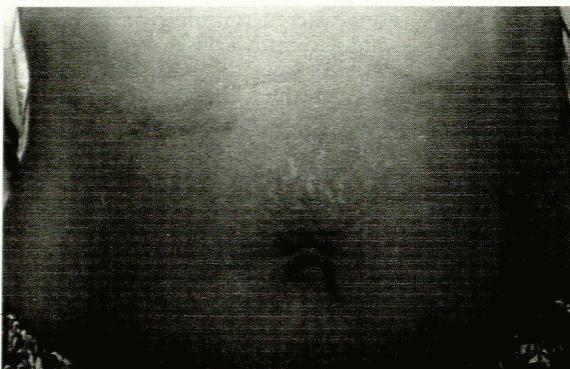


FIG. 1.
Appearance of minicholecystectomy scar at 1 year.

Discussion

Reports of cholecystectomy through limited incisions have appeared in the literature from time to time,⁶⁻⁸ but the procedure has not captured the imagination of the surgical community as laparoscopic cholecystectomy has. Minicholecystectomy is admittedly the less innovative procedure, but the advantages are that special equipment and training are not needed.

Further potential advantages of minicholecystectomy over the laparoscopic approach include suitability of the incision for regional anaesthesia in achieving postoperative pain control, easier delivery of the stone-laden gallbladder, unhindered access to the gallbladder in patients with adhesions resulting from previous upper abdominal surgery and less technical difficulty in catheter placement for operative cholangiography. It was initially thought that obesity would be a major factor limiting the applicability of minicholecystectomy, but experience with two markedly obese patients (weight > 150% of that expected) suggests that this is not necessarily the

case. Difficulty with access was, in fact, encountered more frequently in ectomorphic individuals, whose gallbladders tend to be situated some distance above the costal margin.

Our initial experience suggests that the results of cholecystectomy can be considerably improved by relatively simple adaptations of standard surgical techniques. These results also compare favorably with the first reported South African experience of laparoscopic cholecystectomy.⁹

A prospective randomised trial of laparoscopic versus open cholecystectomy in the management of symptomatic cholelithiasis is desirable;¹⁰ the promising results achieved with minicholecystectomy suggest that this procedure deserves inclusion as a separate arm in such a study. While several difficulties are likely to be encountered in mounting a trial of this nature,¹¹ it would appear to be the only method of objectively evaluating the true impact of the less invasive forms of cholecystectomy. Patient reluctance to undergo randomisation for fear of being allocated conventional cholecystectomy will need to be overcome, since this very perception that minimally invasive cholecystectomy is 'better' may be contributing to the apparently superior results achieved thus far.

REFERENCES

- Cuschieri A. The laparoscopic revolution — walk carefully before we run (Editorial). *J R Coll Surg Edinb* 1989; **34**: 295.
- Gadacz TR, Talamini MA, Lillemoe KD, Yeo CJ. Laparoscopic cholecystectomy. *Surg Clin North Am* 1990; **70**: 1249-1262.
- Perissat J, Vitale G C. Laparoscopic cholecystectomy: gateway to the future (Editorial). *Am J Surg* 1991; **161**: 408.
- Labadarios D, Haffjee A. *A Pocket Manual of Clinical Nutrition*. Durban: Saspem Publications, 1990: 35-40.
- Rothschild J G, Holbrook R F, Reinhold R B. Gallstone lithotripsy vs cholecystectomy: a preliminary cost-benefit analysis. *Arch Surg* 1990; **125**: 710-715.
- Goco I R, Chambers L G. Mini-cholecystectomy and operative cholangiography: a means of cost containment. *Am Surg* 1983; **49**: 143-145.
- Russell R C G, Shankar S. The stabilised ring retractor: a technique for cholecystectomy. *Br J Surg* 1987; **74**: 826.
- O'Dwyer P J, Murphy J J, O'Higgins N J. Cholecystectomy through a 5 cm subcostal incision. *Br J Surg* 1990; **77**: 1189-1190.
- McLauchlin G, Borman P C, Cullis S N, Nel P N, Terblanche J. Laparoscopic cholecystectomy — early experience at Groote Schuur Hospital (Abstract). *S Afr Med J* 1991; **80**: 48.
- Paterson-Brown S, Garden O J, Carter D C. Laparoscopic cholecystectomy (Editorial). *Br J Surg* 1991; **78**: 131-132.
- Neugebauer E, Troldi H, Spangenberg W, Dietrich A, Lefering R. Conventional versus laparoscopic cholecystectomy and the randomised controlled trial. *Br J Surg* 1991; **78**: 150-154.