

Training in laparoscopic colorectal surgery – experience of training in a specialist unit

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ABSTRACT

INTRODUCTION Laparoscopic colorectal surgery, although technically demanding, is an increasingly desirable skill for coloproctologists. We believe that trainees with adequate supervision from an experienced trainer may perform these procedures safely with good outcome.

PATIENTS AND METHODS Surgical logbooks of two senior trainees were reviewed over a 2-year period. A case note analysis was then undertaken. Patient data were recorded with regards to age, sex, operation type, American Society of Anesthesia (ASA) grade, conversion, length of hospital stay and complications. Lymph node yield, resection margins and grade of total mesorectal excision were recorded in oncological procedures.

RESULTS Over the 2-year period, trainees were involved in 140 resections (age range, 23–88 years; ASA grades I–III). Seventy patients were male. Trainees were first assistant in at least 20 cases prior to undertaking the procedures themselves. Trainees performed a total of 71 operations. Median hospital stay was 7 days (range, 2–48 days). There were three conversions. Anastomotic leaks developed in two patients, one requiring a laparotomy. One patient developed small bowel obstruction secondary to a port site hernia, which was repaired laparoscopically. There was one postoperative death. All oncological resection margins were clear with adequate lymphadenectomies. All total mesorectal excisions were Quirke grade III.

CONCLUSIONS Adequately trained and supervised trainees may perform major colorectal resections without compromising outcome.

KEYWORDS

Colorectal resection – Laparoscopy – Training

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Laparoscopic colorectal surgery was first introduced in the early 1990s.^{1,2} Although the technique can be technically demanding, the laparoscopic approach is now recognised as being applicable to the majority of colorectal resections, including those for malignant disease. Multicentre, randomised trials including COST, COLOR and CLASICC, have shown 5-year outcomes of recurrence and mortality to be equal to, or better than, those of open surgery, with similar emerging long-term data.^{3–5} In addition, the laparoscopic approach confers the benefits of a quicker recovery and an earlier return to normal daily activities.

Only a minority of UK surgical consultants currently perform colorectal procedures laparoscopically and concerns exist about training opportunities.⁶ We present the experience of two senior trainees working in a single laparoscopic unit and show that these techniques can be taught, and subsequently performed, safely and effectively by adequately trained and supervised specialist registrars,

with no histological oncological compromise and good clinical outcome.

Patients and Methods

The log-books of two consecutive specialist registrars working for the same consultant surgeon (RWM) between October 2002 and October 2003 and then October 2003 and October 2004 were reviewed. One trainee was in his penultimate, and the other in his final, clinical year. A case-note analysis was then undertaken. Patient data recorded prospectively included age, sex, American Society of Anesthesiology (ASA) grade, the nature of the operation performed, conversion to an open procedure, length of inpatient hospital stay and complications. For those patients undergoing resection for malignant disease, the histology was reviewed and data recorded included resection margins, lymph node yield, and, for rectal cancers, the quality

of the total mesorectal excision using Quirke's grading system.^{7,8}

Trainees were the first assistant in at least 20 cases before performing resections under supervision. Resections were performed under the close supervision of a single consultant surgeon (RWM). Towards the end of the 12-month period, trainees were able to perform right hemicolectomies and sigmoid colectomies with a more junior assistant. Senior help was always accessible and no pelvic dissection was undertaken without a senior assistant (RWM).

Results

Over the 2-year period, trainees were involved in 140 major laparoscopic colorectal procedures. Seventy patients were male with a median age of 65 years (range, 25–88 years). All patients were ASA grades I–III. Trainees performed 71 procedures having previously been the first assistant in at least 20 cases. The breakdown of the individual procedures is shown in Table 1.

The median hospital stay was 7 days (range, 2–48 days). Three patients required conversion to an open procedure (4%): one due to malignant invasion of the uterus from a rectal cancer, a second due to a large fistulating Crohn's mass with multiple interloop abscesses and a third due to dense adhesions caused by multiple previous laparotomies. Two patients had an anastomotic leak (3%). One had undergone a low anterior resection with a defunctioning loop ileostomy and was managed conservatively. The ileostomy was subsequently reversed without complication. The second patient underwent an ileocolic excision for recurrent Crohn's disease at the anastomotic site following a previous open right hemicolectomy. An enterocutaneous fistula and intra-abdominal abscess developed postoperatively requiring a laparotomy.

One patient bled after an abdominoperineal excision requiring a 4-unit blood transfusion. Subsequent attempted laparoscopic haemostasis proved unsuccessful and conversion to laparotomy was required. One port-site abscess required incision and drainage. One patient developed

small bowel obstruction a week postoperatively and was found to have a knuckle of small bowel incarcerated in a port-site hernia. This was repaired laparoscopically. There was one non-surgically related postoperative death from a myocardial infarction.

Patients undergoing resections for malignant disease all had clear resection margins. All rectal cancers had a total mesorectal excision (Quirke grade III). All had complete, clear circumferential and distal resection margins. The median number of lymph nodes identified in all resected specimens was 13 (range, 4–29). These results were comparable to those procedures performed by the supervising consultant (RWM) over the same time period.

Discussion

Laparoscopic surgery entered the realm of the general surgeon in 1987 when Mouret performed the first laparoscopic cholecystectomy.⁹ Since then, there has been a steady evolution in laparoscopic techniques and technology as the advantages over open surgery of less postoperative pain, shorter in-patient hospital stay, improved cosmesis with fewer wound complications, and an earlier return to normal activities have become increasingly apparent.⁹ Laparoscopic colorectal surgery was first attempted in the early 1990s.^{2,10} Initially, it appeared that this technique might only be suitable for benign disease as there were large numbers of port-site recurrences reported. However, subsequent large series have shown that the rate of port-site recurrence is similar to that seen in laparotomy incisions and the laparoscopic approach should be considered acceptable for both benign and malignant colorectal disease.¹¹ Despite this, less than 10% of colorectal operations are currently performed laparoscopically in the UK, and the techniques have been embraced less enthusiastically than in many other comparable countries world-wide. The reason for this is probably multifactorial. Undoubtedly, there is a learning curve and initially procedures take longer than the traditional open operations, placing a strain on an already large service commitment. Specialist equipment is

Table 1 Break down of the 71 procedures performed by trainees

Operation	Registrar A (n)	Registrar B (n)
Right hemicolectomy	14 (7 with junior assistant)	12 (5 with junior assistant)
Anterior resection	8	10
Sigmoid colectomy	6 (1 with junior assistant)	8 (1 with junior assistant)
Abdominoperineal excision	3	2
Total colectomy	1	1
Sutured rectopexy	4	2

Table 2 Laparoscopic assisted Surgery exposure prior to study

Procedure	Registrar A (n)	Registrar B (n)
Diagnostic laparoscopy	37	40
Laparoscopic cholecystectomy	> 100	> 100
Intra-operative cholangiogram	32	29
Laparoscopic appendicectomy	7	4
Transabdominal pre-peritoneal inguinal hernia repair	8	10
Incisional hernia repair	4	2
Major colorectal procedures (Observed)	15	11

required with an initial substantial financial outlay. There is also an understandable reluctance, perhaps with the more senior surgeons, to learn a totally new technique towards the end of their careers. Training opportunities in the UK, therefore, have been somewhat limited with many more trainees wishing to learn the techniques than trainers to train them. Attempts are being made to counteract this with the preceptorship programme within the UK, and various scholarships being introduced to allow a trainee the opportunity to spend a period of training in a specialist centre abroad. The NHS in England and Wales has launched the National Laparoscopic Colorectal Training scheme to address the issue of consultant training, but the effects will not be realised for around 5 years. As the number of trainers increases, so will the opportunities. However, trainers and the facilities will need to be assessed for suitability on the lines of other training programmes (colonoscopy/JAG).

The trainees performing the procedures were in their ultimate and penultimate clinical years of training and had some laparoscopic experience prior to commencing this year post. This experience is summarised in Table 2.

We believe that the exposure and experience offered to the colorectal trainees in this laparoscopic colorectal department to be the exception rather than the rule in the UK at the present time. These positions should be filled by senior trainees with sufficient previous laparoscopic experience so that maximum benefit may be gained. While both trainees were experienced laparoscopists and had been exposed to laparoscopic colorectal work, neither had previously performed any. The results achieved by trainees for both benign and malignant cases bare comparison with previously published results.^{12,15}

Conclusions

Allowing adequately trained and supervised trainees to perform major laparoscopic colorectal procedures is safe. Within a 12-month period, senior trainees can gain sufficient experience for appointment to consultant posts with the confidence and ability to undertake independent practice safely. With laparoscopic colorectal surgery becoming more commonplace in the UK, training opportunities should increase.

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