

LAPAROSCOPIC SURGERY FOR COLON AND RECTAL CANCER

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The use of laparoscopic techniques is now established in the treatment armamentarium of colon and rectal diseases. Furthermore, recent advances in laparoscopic surgical techniques and instrumentation have now made it feasible to resect and anastomose almost all parts of the large and small intestine without use of a long laparotomy incision. As the most common reason for surgery in colon and rectal disease is carcinoma, the most common indication for laparoscopic colorectal surgery was naturally for adenocarcinoma, as reported in three recent articles⁽¹⁻³⁾.

However, the safety and applicability of laparoscopic approaches to potentially curable colorectal cancer has been of great concern and dispute as colorectal cancer is a disease that may be cured completely in up to 50% of cases.

The theoretical benefits proposed for laparoscopic colon and rectal resection such as decreased pain, smaller incision and earlier recovery of post-operative ileus, remain unproven^(4,5) and will be nullified if laparoscopy is unable to perform an adequate cancer surgery.

What is adequate cancer resection for the large bowel? Most authorities will define this as: (1) resection of all known extent of cancer in the bowel wall and adjacent soft tissue, (2) resection of suitable margin of bowel wall above and below the cancer and, (3) resection of draining lymph nodes accompanying the major vascular pedicle to the involved bowel (mesocolon/mesorectum)^(6,7).

There are several recent reports stating the feasibility of a laparoscopic oncologic resection (using anatomical criteria) of colon and rectal cancer in the cadaver model^(8,9). However, the applicability of this model with the live patient is unanswered as cadavers do not bleed and dead tissues are more turgid and less friable.

There are other issues in laparoscopic colon and rectal cancer surgery that have also attracted some debate. Adequacy of margins in laparoscopic colon and rectal resection is one important consideration as this most closely correlates with the risk of anastomotic recurrence in cancer surgery. Generally, most colorectal surgeons would agree that a 2 - 5 cm margin of resection is adequate depending on tumour size, location and differentiation. Morson et al and Hoffman et al have in their individual series of laparoscopic versus conventional resection of colorectal cancer, found the 2 groups to have comparable

margins and specimen length^(3,10).

Another issue in laparoscopic surgery for colorectal cancer is the adequacy of lymphadenectomy. Colorectal surgeons excise lymph node-bearing tissue generously in conventional open surgery for colorectal cancer. Therefore the difference of lymph node harvests between laparoscopic and non-laparoscopic cancer operations were compared. To date, major series reported by Monson et al, Falk et al and Hoffman et al have found lymph nodal yields to be similar in both laparoscopic and non-laparoscopic groups^(3,10,11). However, the number of lymph nodes reported depends also on the pathologist's enthusiasm in searching for them in the pathologic specimen as well as surgical technique. Scott et al have reported that accurate staging of colorectal cancers depends on retrieval of at least 13 lymph nodes from the specimen⁽¹²⁾. A specific number of lymph nodes excised, however, does not assure that an oncologic resection has been successfully performed. This only allows the pathologist and surgeon to stage the tumour more accurately. Some would argue that the only lymph nodes which prove that an oncologic resection has been accomplished are the number of lymph nodes remaining at the base of mesenteric vessels which were ligated and not the number of lymph nodes that were removed!

Next is the issue of the potential risk of cancer cells shedding and subsequent implantation from the lumen of the bowel^(13,14). In the conventional open surgery, before transecting the rectum in surgery for cancer of the rectum, rectal irrigation is usually performed with a tumouricidal solution below a clamp applied distal to the tumour prior to firing the staples. This manoeuvre is not normally performed in the laparoscopic setting and till date have not been adequately addressed in most reported series in the literature.

A more recent concern has been the possibility of port and wound site recurrences following laparoscopic resection for colon and rectal cancer⁽¹⁵⁻¹⁷⁾. To date, less than 20 cases of port site recurrences of cancer have been reported. The majority of these port site recurrences were not colon or rectal cancer patients. Also these recurrences did not occur at the site of specimen retrieval. Additionally, most of these patients had advanced disease at the time of initial laparoscopy or at time of recurrence. The explanation for port site recurrence remains unclear. Why recurrence occurs at the site of a distant port rather than at the wound site used for delivery of the specimen is not fully understood. One possible mechanism for port site recurrences is the transfer of exfoliated tumour cell via the repetitive extraction and insertion of laparoscopic instruments. The small skin incision may provide a "fertile ground" for tumour cell implantation and multiplication. Yet another possible mechanism may lie in the effects of the carbon dioxide induced pneumoperitoneum on tissue cell concentration, activation and spread. To date, there is no specific data to strongly refute or reinforce these theories. More research should be performed to determine the causative mechanism of this phenomenon. Certainly, therefore, blind performance of laparoscopic surgery by surgeons for colorectal cancer should not occur till these recognised problems are

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resolved.

The primary goal in the surgical treatment of colorectal cancer remain as long-term cure, low loco-regional recurrence, low anastomotic problems and good functional outcome. These goals should not be compromised when adopting laparoscopic techniques for the cure of colon and rectal cancer.

The role of laparoscopic surgery for colorectal cancer remains to be determined. The use of intraoperative laparoscopic ultrasound may help to better stage the disease and compensate for the lack of tactile sensation. A major hurdle is also the issue of specimen retrieval which at present still necessitates the making of an incision. The possibility of specimen morcellation, thereby avoiding an incision altogether is also being looked into at present. An alternative intraoperative staging criterion to allow proper histopathological interpretation of the cancer will be needed for morcellation to be accepted.

The adequacy of laparoscopic colon resection for cancer is obviously of paramount importance. Long-term follow-up will be needed to determine if laparoscopic resection gives rise to the same morbidity, local recurrence, cure rate and overall mortality, as open colectomy.

Therefore, until some of these questions are answered, it will be difficult to advocate routine laparoscopic surgery for cure of colon and rectal cancer. Only by close scrutiny of carefully constructed trials will we be able to determine the benefits or otherwise of this new technique that will allow us to perform maximal cancer surgery with minimal invasion. The future of laparoscopy for colon and rectal diseases is encouraging for benign diseases but it remains at present under investigation for cancer.

REFERENCES

1. Philips EH, Franklin M, Carroll BJ, Fallas MJ, Ramos R, Rosenthal D. Laparoscopic colectomy. *Ann Surg* 1992;216:703-7.
2. Jacobs M, Verdeja JC, Goldstein HS. Minimally invasive colon resection (laparoscopic colectomy). *Surg Laparosc Endosc* 1991; 1:144-50.
3. Monson JR, Darzi A, Carey PD, Guillou PJ. Prospective evaluation of laparoscopic-assisted colectomy in an unselected group of patients. *Lancet* 1992;340:831-3.
4. Corbitt J. Preliminary results with laparoscopic-guided colectomy. *Surg Laparosc Endosc* 1992;2:79-81.
5. Fowler DL, White SA. Laparoscopic-assisted sigmoid resection. *Surg Laparosc Endosc* 1991;1:183-8.
6. Turnbull RB, Kyle K, Watson FR, Spratt J. Cancer of the colon : the influence of the no-touch isolation technique on survival rates. *Ann Surg* 1967;166:420-5.
7. Goligher JC. *Surgery of the anus, rectum and colon*. London : Balliere Tindall, 1975.
8. Eu KW, Milsom JW, Bohm B, Fazio VW. Is laparoscopic oncologic right colectomy feasible? (Abstract). Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Annual Scientific Session 1995.
9. Decanini C, Milsom JW, Bohm B, Fazio VW. Laparoscopic oncologic abdomino-perineal resection. *Dis Colon Rectum* 1994;37:552-8.
10. Hoffman GC, Baker JW, Claibourne WF, Vansant JH. Laparoscopic-assisted colectomy. *Dis Colon Rectum* 1993;36:28-34.
11. Falk PM, Beat RW Jr, Wexner SD. Laparoscopic colectomy : a critical appraisal. *Dis Colon Rectum* 1993;36:28-34.
12. Scott KW, Grace RH. Detection of lymph node metastasis in colorectal carcinoma before and after fat clearance. *Br J Surg* 1989;76:1165-7.
13. Umpleby HC, Fermon B, Symes MO, Williamson RCN. Viability of exfoliated colorectal carcinoma cells. *Br J Surg* 1984;71:659-63.
14. Skippes D, Jeffrey MJ, Cooper AJ, Alexander P, Taylor I. Enhanced growth of tumour cells in healing colonic anastomoses and laparotomy wounds. *Int J Colorectal Dis* 1989;4:172-7.
15. Alexander RJT, Jaques BC, Mitchell KG. Laparoscopically assisted colectomy and wound recurrence. *Lancet* 1993;341:249-50.
16. Fusco MA, Paluzzi MW. Abdominal wall recurrence after laparoscopic-assisted colectomy for adenocarcinoma of the colon—report of a case. *Dis Colon Rectum* 1993;36:858-61.
17. Nduka CC, Monson JRT, Menzies GWN, Darzi A. Abdominal wall metastases following laparoscopy. *Br J Surg* 1994;81:648-52.