Laparoscopic surgery for benign disease

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Benign colorectal disease is frequent and could represent an ideal indication for minimally invasive surgery. Aim: To review our experience with laparoscopic surgery for a wide range of benign diseases of the colon and rectum. Methods: Between October 1991 and July 1996, 195 consecutive laparoscopic procedures were attempted in our institution, of these 87 were for colorectal benign pathology and are reported in the present study. Conversion rate, conversion reasons, return to bowel activity, hospital stay and morbidity (minor and major) were analyzed. We also compared the laparoscopic completed group (LAP) with the converted to open group (CONV). Results: The study population comprised 44 males and 43 females, mean age 60±3 years. The most frequently performed operations were sigmoid resection 39%, right hemicolectomy 15%, and low anterior resection 14%. Additional procedures included were faecal diversion, rectopexy, left hemicolectomy, colotomy-polypectomy, and colostomy reversal. The most frequent pathologies were diverticular disease 43.68% and tubulovillous adenoma 21.84%. Additional pathologies included: villous adenoma, faecal incontinence, rectal prolapse and inflammatory bowel disease. The overall conversion rate was 9.2% (8/87). The minor morbidity rate was 24.14% (21/87) and the major morbidity rate was 8.05% (7/87). The causes of conversion and morbidity are discussed. When LAP patients were compared to CONV patients, LAP showed a statistically significant earlier return to bowel function (3.8 vs 4.6 days) and shorter hospital stay (5.1 vs 6.6 days). Conclusions: Laparoscopic colorectal surgery can be safely performed for a wide range of benign colorectal pathology offering the advantages of low morbidity rate and short hospitalization. Minimally invasive surgery may gain universal acceptance for the treatment of benign colorectal surgery as it did for benign biliary pathology.

Key words: Laparoscopic surgery, Benign colorectal pathology.

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The role of laparoscopic surgery in general and colorectal surgical specialty has been expanding since its initial success with biliary surgery. Laparoscopic cholecystectomy is now considered the standard of care with the well-known benefits of reduced postoperative pain, shorter hospital stay, and earlier return to daily activities (1-3).

Laparoscopic techniques are now being applied to a wide variety of other abdominal procedures including antireflux procedures, gynaecologic procedures, and herniorrhaphy. However, the laparoscopic approach to colorectal pathology has been slower to evolve. Controversy continues to exist regarding the use of laparoscopic surgery for colorectal malignancy (4). Currently the standards for laparoscopic surgery for benign colorectal disease are being established.

Methods

From October 1991 to July 1996, 195 laparoscopic operations were performed on the colon and the rectum, by the colorectal surgeons of the Colon and Rectal Clinic of Orlando. Of these, 87 were for benign pathology and constitute the subject of a current study. The concept of the laparoscopic data registry followed by us has been described in detail elsewhere (4). We have classified post-operative complications into two groups; early, defined as within 30 days of the operation; and late, defined as occurring after this time span. The techniques of laparoscopic operations have previously been described (5-9). Statistical analysis was performed with the SPSS software package (SPSS Inc., Chicago, IL, USA.), and p<0.05 was set as the level of significance.

Results

There were 43 females (49.4%) and 44 males (50.6%) in the series. The mean age was 60±3 years (range, 25 to 87). Fifty-two (59.8%) of the patients had an associated illness. Hypertension, Coronary artery disease, Diabetes mellitus, and chronic obstructive airways disease were the four most common associated
illnesses. The most frequently performed operations were sigmoid resection 39%, right hemicolecction 15%, and low anterior resection 14% (Table I). Additional procedures included were faecal diversion, rectopexy, left hemicolecction, colotomy-polypectomy, and colostomy reversal. The faecal diversion procedures were sigmoid colostomy in 5, transverse colostomy in 2, Hartmann’s operation in 1, and ileostomy in 1 patient. The most frequent pathologies were diverticular disease 43.68% and tubulovillos adenoma 21.84%. Additional pathologies included: villous adenoma, faecal incontinence, rectal prolapse, and inflammatory bowel disease (Table II). Eight patients (9.2%) required conversion of the surgical procedure to a conventional laparotomy. The conversion reasons were adhesions in six patients, adhesions due to endometriosis in one patient and the lesion was felt to be too low for resection in an additional patient. Comparisons were made between the laparoscopically successfully completed procedures (LAP Group) and the converted to formal laparotomy procedures (Converted Group). The LAP patients showed statistically significant earlier return to bowel function at 3.8 vs 4.6 days, p<0.05, and shorter hospital stay of 5.1 vs 6.6 days, p<0.05, as compared to the Converted patients. The minor morbidity rate was 24.14% (21/87) and the major morbidity rate was 8.05% (7/87). The minor and major complications encountered are shown in Table III. Two patients required reoperation following laparoscopic surgery for bleeding complications. One of these patients became hypotensive in the recovery room and was taken back to the operating room. The laparoscope was inserted again and clots were irrigated from the area of the inferior mesenteric artery. The stump of this artery was found to be bleeding as a result of the slipped staples. The stump was restapled and the operation was concluded. The patient, thereafter, made an uncomplicated recovery. In the other patient, postoperative bleeding was reactive and manifested on the 2nd postoperative day as unstable blood pressure and a drop in the haemoglobin. The source of the bleeding was confirmed to be from mesocolonic vessels on laparotomy. Two patients developed anastomotic leaks. One of these patients developed the leak on postoperative day 10, following sigmoid colectomy for diverticular disease; exploration by a laparoscope revealed a 3 mm rent on the posterior wall and this was treated with a laparoscopic end ileostomy. The second patient developed the leak on postoperative day 8, following laparoscopic low anterior resection for diverticular disease and was treated by laparotomy and conversion to Hartmann’s pouch. Both of these patients later made an uneventful recovery. One patient developed a left ureteric stricture postoperatively and this was felt to be a thermal injury due to the extensive diathermy dissection that was performed in the vicinity of the left ureter. There was
no mortality in the 30 immediate postoperative period. There were two deaths after this period (2.3%), however, none of the patients died from surgery-related causes. One death occurred 18 months postoperatively from a cardiac event while the other occurred 4 months postoperatively from metastatic prostate cancer (this patient had a rectovesical fistula and had undergone laparoscopic sigmoid colostomy).

**Discussion**

The role of laparoscopic surgery for colorectal pathology is being critically examined at this time. The minimally invasive approach of laparoscopy has the potential advantages of reduced post-operative pain, earlier ambulation, shorter hospital stay, cosmetic advantage, and patient satisfaction (1-3). The unresolved issues are the steep learning curve (10, 11), cost effectiveness (12) and uncertainties about oncological outcomes. The need to establish standards of care is well reflected by the statement of Wexner and Johansen (13) "... continue to review these (morbidity, mortality and long-term sequelae) parameters in a meaningful, prospective fashion in order to perform the necessary statistical evaluations needed to decide what role laparoscopic colonic surgery will have in our future armamentarium".

Our series reviews 87 consecutive laparoscopic operations for benign colorectal pathology, all performed by surgeons at the same colorectal clinic. During our first phase of the development of laparoscopic colorectal surgery programme we tended to consider all patients with benign pathology as candidates for laparoscopy and, therefore, did not have strict exclusion criteria. After the initial experience, obese patients were excluded, however, previous surgery was not considered a contraindication. We have performed a wide range of colorectal operative procedures for an equally wide range of benign pathology. The most frequently encountered pathology, in our experience was diverticular disease. In particular, all these patients presented with some complication of diverticular disease, such as stricture, repeated attacks of diverticulitis, or had stabilized after a major bleed. We have a noticeably low incidence of inflammatory bowel disease (IBD) in our series. In our practice most of the patients with IBD are referred with complicated previous surgical history and, therefore, usually are not candidates for laparoscopy. The reported conversion rates in the literature have varied from as low as 8 to as high as 48 (10, 15-18) percent. We needed to resort to open laparotomy in 9.2% (8/87) of the patients. Our most frequent reason for conversion was adhesions. We feel that previous abdominal or pelvic surgery or the mere presence of adhesions, is not, per se, a contraindication to laparoscopy. In all our cases with adhesions we attempted to release the bowel and identify the anatomy. However, if after approximately 30 minutes of lysis of adhesions, we feel that progress is not satisfactory or that anatomy is not clear, we elect to convert to a formal laparotomy. Specifically, the inability to identify the left ureter due to dense adhesions that could not be safely released was a frequent cause of conversion in our experience. In one case, the position of the lesion in the mid rectum did not allow a safe dissection with the laparoscopic instruments available at that time. In our opinion, conversion should be regarded not as failure of the technique but as good surgical judgement (4). Our total morbidity rate was 32.2% (28/87), major 8.05% (7/87), and minor 24.14% (21/87). Of these complications, a significant proportion are general medical complications (11.5%, 10/87) that may be expected to occur following any surgical procedure. This is not an unexpected observation since we are dealing with an elderly population with a mean age of 60 years and 60% of the patients had a preexisting medical illness. Our study focuses not only on the early but also the long-term outcome, since the complications have been recorded as the database was regularly updated with the mean follow-up period of 12.6 (range, 1 to 46) months. We have achieved a low incidence of major complications of 8.05% (7/87). Our morbidity rates are similar to those reported in the literature. Wexner et al. (14) reported an overall morbidity rate of 22% while Falk et al. (10) has reported a major morbidity rate of 24% and a minor morbidity rate of 29%. A combined intraoperative and postoperative morbidity rate of 34% is reported by Wexner et al. (11) after laparoscopic surgery on the colon and the rectum. We have no surgery-related mortality in our series.

A major concern with laparoscopic colectomy for cancer is the adequacy of oncologic resection and the occurrence of port site recurrences (19, 20). Laparoscopic surgery for benign colorectal pathology may offer advantages in these patients without fear of incomplete or unsafe dissection (21). In our own experience (4), laparoscopic surgery for malignant colorectal disease, when performed following strict oncologic criteria, does not appear to adversely affect the outcome.

**Conclusions**

Our experience shows that laparoscopic surgery is feasible for a wide range of benign colorectal diseases,
and can be successfully performed with an acceptable morbidity and mortality. Benign pathology may represent an ideal indication for the laparoscopic approach in colorectal practice. As experience and recognition is gained with laparoscopic colorectal surgery it may become an important option to offer to patients requiring an operation for benign disease.

References


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