Outcomes of elective laparoscopic colorectal operations in octogenarians at a district general hospital in South East England

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Abstract

Aim: To assess the outcomes of laparoscopic colorectal cancer resection in the octogenarian population at our institution.

Methods: Retrospective analysis of registry data accumulated prospectively were used in conjunction with the data obtained from patient notes to identify outcome data for octogenarians who had undergone elective laparoscopic colorectal cancer resection.

Results: Laparoscopic colorectal cancer resections were performed in 68 octogenarians between 2003 and 2011 at our institution. Four operations (6%) were converted to an open technique. There were twelve cases of morbidity (18%) and two cases of mortality (3%). The overall median hospital stay was 8 d. The median time for a patient to be deemed surgically fit for discharge was 5 d reflecting a delay in provision of social care or stoma education.

Conclusion: Our results support the view that laparoscopic surgery in octogenarians is safe, feasible and with a reduced length of stay. This is well reflected in our results which are compatible with United Kingdom national figures.

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Key words: Laparoscopic surgery; Colorectal disease; Octogenarian; Mortality; Morbidity

INTRODUCTION

It is well recognised that as a consequence of socioeconomic and healthcare factors, society is ageing and survival rates are rising. The ageing population can produce challenging clinical dilemmas with regard to appropriate management and in particular surgeons are often left with difficult decisions with regard to operative suitability. It has been reported that age alone, in the absence of other significant co-morbidities is not a prognostic factor in gastrointestinal surgery[1]. However, it is rare that such health is found amongst the octogenarian subgroup.

The rapid advancement of laparoscopic surgery has revolutionised colorectal surgery. Studies have shown that hospitalisation is shortened, post operative pain is reduced and post operative recovery is expedited[2,3]. Nevertheless, reservations about laparoscopic surgery in the elderly exist due to perceived longer operating times, and increased technical difficulty. Recent studies have demonstrated that laparoscopic colorectal surgery in octogenarians is safe, feasible, produces less blood loss and is associated with faster postoperative recovery[4,5]. Controversy...
exists with regard to complication rates and overall operating time. Studies demonstrate that operating time is significantly shorter in open colorectal operations\(^4,7\). There was no statistically significant difference in post-operative complications between open or laparoscopic cases. There is a marked variation between reported laparoscopic conversion rates to open surgery with figures ranging from 3%-25\%\(^4,7\). One of the key findings on laparoscopic colorectal surgery in the octogenarian population is the consistent finding of shorter hospital stay\(^4,6,7\).

Our institution is a district general hospital in South East England which has been undertaking laparoscopic colorectal resection since 2003. The study was designed to assess the outcomes of laparoscopic-assisted colorectal cancer resection in the octogenarian population at our institution.

**MATERIALS AND METHODS**

A prospective registry of all patients undergoing elective laparoscopic colorectal resection has been maintained at our institution since 2003. Demographics, Operative details and American Society of Anesthesiologists (ASA) grade are amongst the variables that are currently recorded. This list was utilised to identify patients >80 years who had undergone laparoscopic colorectal resection. No patient was excluded. Patient notes were then reviewed to ascertain indication for surgery, intra-operative complications, conversion rate, post-operative complications, length of hospital stay and morbidity and mortality rates. Retrospective analysis of the accumulated prospectively collated registry data were used in conjunction with the data obtained from patient notes.

**RESULTS**

Laparoscopic colorectal resections were performed in 68 octogenarians between September 2003 and September 2011 at our institution. All cases were elective procedures. The mean age was 84 years (range 80-91 years) and the male:female ratio was 31:37. Fifty-nine (87\%) patients had an operation with a curative intent of malignancy. Other indications included diverticulosis in eight patients and rectal prolapse in one patient. Preoperative assessment revealed that the majority of patients (56\%) were classified as American Society of ASA grade II, whereas 34\% and 10\% of patients were classified as ASA grade III and ASA grade IV respectively; Table 1 shows the types of resection performed in these 68 patients.

The operations took a mean operating time of 168 min (range 118-294 min). Of the 68 resections, four (6\%) were converted to an open technique. Ureteric injury was the cause in two operations, dense adhesions and iatrogenic small bowel injury was another reason for conversion and the need for en-bloc resection was the cause for the final conversion. There were no other intra-operative complications.

There were two cases of mortality in our series this producing an overall mortality rate of 3\%. The two cases of mortality were as a consequence of cardiovascular instability and severe respiratory sepsis. No association was found between mortality and the ASA grading in this series (\(P = 0.52\), Fisher’s exact test). Other postoperative morbidities are shown in Table 2. There were 12 postoperative complications giving an overall morbidity rate of 18\%. The overall mean hospital stay was 11 d. However, the mean time for a patient to be deemed surgically fit for discharge was 6 d reflecting a delay in provision of social care or stoma education.

**DISCUSSION**

Minimally invasive surgery has been reported to produce faster recovery times, reduced post-operative pain and shortened hospital stay in comparison to open surgery\(^4,5\). Such advantages are especially beneficial for the elderly population in whom often other co-morbidities are found and may have less physiological reserve to cope with the stresses of surgery. However, in order to produce results which reflect these advantages, surgeons need to be well experienced in laparoscopic surgery so that operative progression is achieved and the operation is not unnecessarily prolonged.

There are numerous issues with making accurate comparisons with data for open colorectal resection in the octogenarian population. Obtaining a matched population retrospectively in whom open resection took place is difficult as there is usually a particular reason as to why the operation was not done laparoscopically. For example an en-bloc resection might have been required or anaesthetic concerns may have encouraged an open technique. Consequently, using this group for comparison would have resulted in bias as any difference in morbidity or mortality could have been attributed to increased technical difficulty or more fragile patient population. There have been several studies that have produced data for elective open colorectal procedures in octogenarians. However, many of the studies are prior to the widespread

| Complication                  | No. of patients |
|-------------------------------|-----------------|
| Chest infection               | 6               |
| Collections/pelvic abscesses  | 2               |
| Urinary infection             | 2               |
| Ileus                         | 2               |
| Total                         | 12              |

| Type of laparoscopic resection | No. of patients |
|-------------------------------|-----------------|
| Right or extended right hemicolectomy | 13               |
| Left hemicolectomy            | 8               |
| Sigmoid colectomy             | 16              |
| Anterior resection            | 18              |
| Abdominoperineal resection    | 13              |
| Total                         | 68              |

### Table 1 Types of laparoscopic resection performed

### Table 2 Postoperative complications
use of laparoscopic surgery and are thus quite outdated.

Isbister in 1997 reported results of 86 patients with a mortality of 11%, respiratory complications in 15% and urinary complications in 36%, Vignali et al. conducted a case-matched control study in which the results of 61 patients who had undergone laparoscopic resection were compared to 61 patients undergoing open colorectal resection. There was no statistical difference in morbidity rates, 21.5% in the laparoscopic group and 31.1% in the open group. Two percent mortality was reported in the laparoscopic group. The mean hospital stay was 9.8 d in the laparoscopic group and 12.9 d in the open group. Our results are comparable in that our mortality rate is 3%, morbidity rate 18% and our mean hospital stay was 11 d.

Although respiratory complications seem to be consistently found in both laparoscopic and open patients we believe that our results are consistent with others in the literature in providing evidence that the risk of pulmonary complications is reduced by laparoscopic surgery perhaps reflecting the reduced post-operative pain.

In our study we found that although the mean length of hospital stay was 11 d, patients were surgically fit for discharge after a mean of 6 d. The discrepancy reflects time required for social planning or stoma education which is understandable in this patient population.

Our results, in combination with others in the literature provide further evidence to support the view that laparoscopic surgery is safe, feasible and more beneficial to the octogenarian population. In particular, shortened hospital stay and lower pulmonary complications are of especially pertinent. Our results also provide support for early involvement of stoma education and social provision planning.

**Research frontiers**

The rapid advancement of laparoscopic surgery has revolutionised colorectal cancer surgery. Nevertheless, reservations about laparoscopic surgery in the elderly exist due to perceived longer operating times and special positioning with consequent morbidity. This study was designed to assess the outcomes of laparoscopic colorectal cancer resection in the octogenarian population at the authors’ institution.

**Innovations and breakthroughs**

In this study the authors found that although the mean length of hospital stay was 11 d, patients were surgically fit for discharge after a mean of 6 d. The discrepancy reflects time required for social planning or stoma education which is understandable in this patient population.

**Peer review**

It is a current approach in the oldest-old people dealing with the feasibility of laparoscopic colorectal surgery with acceptable results in this group of patients.

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**COMMENTS**

**Background**

It is a current approach in the oldest-old people dealing with the feasibility of laparoscopic colorectal surgery with acceptable results in this group of patients. Nevertheless there is still associated stigma attached to laparoscopic surgery in the octogenarian subgroup due to perceived increased risks.