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ORIGINAL CONTRIBUTIONS

Abdominal Colon and Rectal Operations in the Elderly

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Sixty-seven abdominal operations for colon and rectal disorders were performed on 56 patients 80 years of age or older from January 1, 1984 to June 30, 1989. Nine patients required multiple operations. Sixty-two procedures (92 percent) were performed on patients in their ninth decade; two operations were performed on patients 95 years of age or older. Forty-five patients (80 percent) were operated upon for carcinoma. Operations included segmental colectomy (33 patients), low anterior resection (12 patients), total abdominal colectomy (3 patients) and abdominoperineal resection (2 patients). Forty patients were classified as ASA Class III; the majority were monitored in the surgical intensive care unit for a mean of 2.84 days. Thirty patients were monitored with arterial catheters and 21 with central invasive monitoring. Operative mortality was 7 percent (4 patients). Two patients died from diffuse carcinomatosis; one patient had a fatal myocardial infarction. The final death occurred from multisystem organ failure following anastomotic dehiscence. Twenty-seven operations were performed without postoperative complications; 18 operations were followed by a single minor complication. The average hospital stay was 18.96 days. All patients were admitted from home. Thirty-three returned home postoperatively; 16 were discharged to an extended care facility. In conclusion, elderly patients with colon and rectal disorders can be operated upon with acceptable morbidity and mortality. Age alone should not interdict surgical therapy. [Key words: Elderly; Octogenarians; Abdominal operations; Colon and rectal surgery]

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Elderly patients compose a steadily expanding portion of the population in the United States. Census data from 1930 showed that there were 6.6 million Americans over the age of 65 years; this represented 5.4 percent of the total population.[1] Today there are approximately 28 million people over 65 years of age, and by the year 2000 it is predicted that 13.6 percent of the population will be in this group.[2] This increase in elderly patients places an ever-increasing burden on the health care system. Elderly patients generally require prolonged hospitalization and often more extensive and expensive care after they are discharged from the hospital. These demands on the health care delivery system have caused a number of authors to question whether health care delivery to the aged should be curtailed.[3–5]

A number of issues must be addressed prior to making conclusions about the efficacy of surgical therapy in the elderly population. Surgical therapy must be performed safely, patients should be able to return to relatively productive lives, and the postoperative life expectancy should be improved, or at least not diminished, by the surgical procedure. If these criteria are met, then age alone should not interdict surgical therapy.

The present study is a retrospective review of a community-based colon and rectal surgical practice from January 1, 1984 through June 30, 1989.

MATERIALS AND METHODS

The charts of all patients who underwent abdominal operations from January 1, 1984 through June 30, 1989 were reviewed for age, diagnosis, operative procedure, perioperative monitoring, morbidity, mortality, intercurrent disease, and disposition. Patients who were 80 years of age or older at the time of the surgical procedure are the subject of this report.

RESULTS

Five hundred fifty-one abdominal operations were performed from January 1, 1984 through June 30, 1989. Fifty-six patients 80 years of age or older underwent 67 abdominal operations (12.2 percent of the total) during the 5.5-year study period. Nine patients required multiple operations. Only one operation was performed emergently; the remaining 66 were elective operations.

The vast majority (62/67) of the operative procedures were performed on patients in their ninth decade; three operations were performed in the 90- to 94-year age group, and two operations were performed in the over-95-year-old population (Fig. 1).

Nine of the 56 patients had no intercurrent disease. The remaining 47 patients suffered from a variety of degenerative diseases of the cardiovascular system (33 patients), central nervous system (8 patients), and musculoskeletal, rental, and pulmonary systems (7 patients each). Fourteen patients had poorly controlled hypertension. Two patients were diabetic, and four were immunocompromised by hematologic disorders (Table 1).

Forty-five operations were performed for primary carcinoma of the colon; there were four operations performed for small bowel obstruction secondary to widespread malignancy. The vast majority of patients presented with relatively advanced cancers, with 41 of the 47 classified as Dukes' B_2 or worse (Tables 2 and 3).

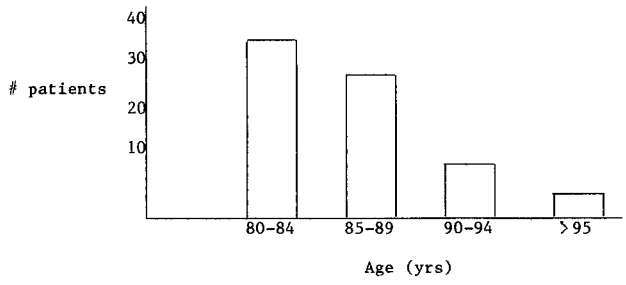

Figure 1. Age distribution of 56 patients.

Table 1.
Incidence of Intercurrent Diseases

Cardiovascular	33
CNS	8
Musculoskeletal	7
Renal	7
Pulmonary	7
Hypertension	14
Diabetes	2
Immunocompromised	4

Table 2.
Operative Diagnoses

Carcinoma	45
Diverticular disease	6
Small bowel obstruction	4
Colostomy closure	3
Other	9

Table 3.
Dukes' Classification (Astler-Coller Modification) of Patients with Carcinoma

A	1
B_1	5
B_2	25
C_1	3
C_2	6
D	7

The remainder of the operations were performed for a wide variety of reasons, including villous adenoma, ventral hernia, colonic stricture, and enterocutaneous fistula. Three total abdominal colectomies were performed for synchronous cancers.

The majority of patients (40/56) were classified as ASA Class III by the attending anesthesiologist, indicating the presence of severe systemic disease that limits activity but is not incapacitating. Most patients were monitored in the surgical intensive care unit in the postoperative period (mean, 2.84 days), although only 9 of 45 patients so monitored required more than 3 days of monitoring.

Approximately 50 percent (30 patients) were monitored with arterial lines perioperatively, while 21 patients had central invasive monitoring with either a pulmonary artery catheter or a central venous catheter. No patient had preoperative placement of a pulmonary artery catheter for the purpose of maximizing cardiopulmonary status.

Complications were classified as major or minor. There were 17 major complications, including two myocardial infarctions, four episodes of wound infection, six pneumonias, and two cerebrovascular accidents. There were also three anastomotic com-

plications. Minor complications included urinary tract infections and urinary retention (11 patients), atelectasis (9 patients), minor arrhythmias (3 patients), and mild fluid overload (4 patients). One patient suffered postoperative pancreatitis; one patient had mild upper gastrointestinal hemorrhage; and one patient had postoperative thrombophlebitis. Twenty-seven operations were performed without postoperative complications, and 18 operations were complicated by only a single, minor problem. Twenty operations were followed by major or multiple complications (Table 4).

Eleven patients were noted to have either hepatic metastases (6 patients) or widespread metastatic disease (5 patients) at presentation. All patients with hepatic metastases were offered chemotherapy; none underwent resection of the hepatic disease. Two patients are alive at early follow-up (6 months), while the other four have died from the disease (mean survival, 13 months). All patients with carcinomatosis have died. Three patients died during initial hospitalization (two in the perioperative period). Two patients with carcinomatosis were discharged to home following palliative surgery and survived 4 and 13 months, respectively.

There were four deaths in the perioperative period (7 percent). One patient died from a myocardial infarction on the 2nd postoperative day. An anastomotic dehiscence requiring reoperation resulted in multiple organ system failure and death on the 12th postoperative day in the final patient. These deaths were clearly related to the surgical procedure. One patient with widely metastatic adenocarcinoma of the rectum succumbed 13 days following an exploratory laparotomy and small bowel resection for abdominal carcinomatosis with a malignant small bowel obstruction. She weighed 66 pounds at her death and was severely malnourished. An autopsy was not obtained. The final death in this series was in a patient with abdominal carcinomatosis who died 30 days following the creation of a colostomy for a malignant colovesical fistula. No autopsy was obtained in this case. Neither of the final two patients suffered postoperative complications, and both were clinically felt to have died from the disease (Table 5).

Table 4.
Postoperative Complications

Major		Minor	
Pneumonia	6	Urinary	11
Wound infection	4	Atelectasis	9
Stroke	2	Arrhythmias	3
Myocardial infarction	2	Pulmonary edema	4
Anastomotic dehiscence	3	Other	3

Table 5.
Operative Mortality

Carcinomatosis	2
Myocardial infarction	1
Sepsis	1

The average duration of hospitalization in this elderly population was 18.96 days. This is almost 9 days longer than the mean hospitalization for the total patient population (10.08 days). All patients were admitted from home, and discharge information is available on 49 of the 56 patients. Thirty-three patients (67 percent) returned home, with seven requiring assistance from a visiting nurse or other home health agency. Sixteen patients (33 percent) were discharged to an extended care facility.

Thirty-seven patients are alive at the present time, with a mean survival of 21.5 months (range, 1–89 months). Nineteen patients have died, four in the perioperative period. Fifteen additional patients have died since the operation. Six died within the first postoperative year, while nine survived more than 1 year.

DISCUSSION

The elderly population in the United States is increasing steadily, and with this increase there is an associated rise in the incidence of age-related diseases. Colon and rectal cancer is currently the leading cause of cancer death in women over 75 years old and the third leading cause of cancer death in males. Almost 50 percent of deaths from colon and rectal cancers occur in patients over 75 years of age.[6] Clearly, surgeons will continue to be confronted with elderly patients with lesions of the colon and rectum requiring surgical intervention.

Prior to the 1930s, elderly patients were generally denied surgery because of their advanced age and presumed higher morbidity and mortality. In the 1930s, various authors reported their experience operating on patients over 70 years of age and demonstrated that these patients could undergo operative therapy with acceptable risk.[1] In 1948, Welch[7] published a large series on 140 abdominal operations on 129 patients over 70 years of age and reported a perioperative mortality of 20.7 percent. He felt that surgery was safe but that very old patients required greater precision in management if they were to survive the perioperative period.

The era of invasive monitoring began around 1960 with the introduction of arterial catheterization as well as the widespread use of intensive care units. It has been shown by a number of authors that intensive monitoring of the old patient in the perioperative period influences survival.[8] This was questioned by Ziffren,[9] who presented data comparing morbidity and mortality from before invasive monitoring (1951–1955) with those from a time when monitoring was available (1967–1977). He showed no decrease in complications or deaths for elderly patients undergoing colon resections and abdominoperineal resections in the two groups and suggested that improvements in survival would only be seen if the elderly were healthier.

Reports from the 1980s show continued improvement in patient survival. Elective operations on the elderly can be performed with a perioperative mortality of 1.9–2.0 percent. In studies where emergency and elective operations were compared, the risk of perioperative death was 1.5–2.5 times greater following emergency surgery.[10–12]

The present study evaluates the results of predominantly elective operations on a population of patients over 80 years of age. The majority have associated degenerative diseases of various organ systems and were classified as ASA Class III by their anesthesiologists. The morbidity and mortality in this series of relatively debilitated patients compare favorably with the data reported in the literature.

Patients with carcinomatosis represent a small portion of the study population. Three of the patients in the end stage of the disease died in the hospital; two were successfully palliated and survived 4 and 13 months, respectively. The number of patients is too small to make meaningful recommendations regarding the surgical management of patients with carcinomatosis.

Invasive monitoring with arterial and pulmonary artery catheters was employed at the discretion of the anesthesiologist in this series. Most patients were monitored in the intensive care unit for only 24 hours postoperatively and then transferred to the general surgical floor for the remainder of the hospital stay. The practice of obtaining preoperative physiologic profiles as advocated by Del Guercio and Cohn[8] was not performed and did not appear to result in increased morbidity or mortality.

The prolonged hospitalization noted for octogenarians in this study was significantly longer than that seen in the general population. The duration of hospital stay of 18.96 days was over twice the national average (9.4 days) based on published Diagnostic Related Groups (DRG) guidelines for uncomplicated colon resections (DRG 149).[13] The hospitalization was also longer than that noted for colon resections with complications or comorbidities (DRG 148: 13.9 days). These data suggest that the elderly may be less well-equipped to handle the stress of major abdominal surgery and that perhaps the average length of stay published in government guidelines should be increased for elderly patients.

Discharge information was available on 94 percent of the patients. Two-thirds were able to return home, with only a small number requiring home health aids or other assistance. Sixteen patients were discharged to an extended care facility. Robb *et al.*[3] report a slight decrease in elderly patients' ability to care for themselves, but no patient in their series of relatively minor operations required institutionalization. Our data compare favorably with the report by Morel *et al.*[11] from Switzerland in which 62 percent (72 of 115) of the patients who survived the operation were discharged to either a specialized home or a medical recovery center.

The available literature and the present study support the concept that surgery in the elderly can be performed with an acceptable margin of safety and that elderly patients can return to their homes and to relatively productive lives. Patients should not be denied surgical therapy on the basis of age alone.

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