

## Importance of Perioperative Management for Elderly Patients undergoing a Low Anterior Resection

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**Abstract:** The aim of this study was to evaluate the perioperative factors affecting the outcome in elderly patients undergoing a low anterior resection (LAR) for advanced rectal carcinoma. The subjects consisted of 57 patients who underwent LAR in our institution between January 1991 and January 2000. The patients were grouped according to age, those aged 75 years and above (group A, n=21) and those aged 65-74 years (group B, n=36). Preoperative complications, operative factors (operation time, bleeding volume) and postoperative morbidities were compared. There were no statistical differences between the groups regarding disease stages, operation time, or the amount of blood lost during surgery. There was no surgical mortality in group A. There was no difference between the groups regarding the length of hospitalization. In elderly patients it is particularly important to make a thorough evaluation before performing surgery and to also provide appropriate postoperative management, particularly regarding respiratory management.

**Key words :** Aging, Perioperative management, Low anterior resection

### Introduction

Recently, as the elderly population in Japan continues to increase, we have had an increased number of elderly patients undergoing surgery.<sup>1)</sup> Because elderly patients can often be associated with many complications before surgery, it therefore important to thoroughly evaluate such patients before surgery and to effectively manage these cases preoperatively. In addition, the postoperative morbidity and mortality seems to increase progressively with age.<sup>2)</sup> We retrospectively investigated the perioperative risk factors for elderly patients compared to younger patients by reviewing a low anterior resection (LAR) for elderly patients, and we also discuss how to appropriately manage elderly patients.

### Patients and Methods

Between January 1991 and January 2000, 212 patients who were preoperatively diagnosed to have advanced rectal cancer underwent LAR in our department. Twenty-one of these patients were from 75 years old to 87 years old (group A), including 13 men and 8 women with a mean age of  $79.3 \pm 3.6$  years old. In addition, 36 patients were from 65 years old to 74 years old (group B), including 21 men and 15 women with a mean age of  $69.2 \pm 2.7$

**Table 1.** Patient characteristics in group A and group B

	Group A	Group B
No. of patients	21	36
Sex (M/F)	13/8	21/15
Mean $\pm$ SD age (yr)	79.3 $\pm$ 3.6	69.2 $\pm$ 2.7

years (Table 1). The tumors were staged according to the Union Internacional Contra la Cancrum classification system. We performed electrocardiography and spiograms to make a preoperative evaluation in this study, the results were then compared between the groups. The operative factors, which included the operation time and the bleeding volume, were also compared. Postoperative factors, which included the number of days before the resumption of normal meals, the number of days until discharge after surgery, and the presence of complications were all evaluated. LAR was performed in all patients under general anesthesia with epidural anesthesia. When a cardiac dysfunction or abnormal lung function was present, the patient received treatment from the appropriate department on an outpatient basis before surgery. If necessary, the patients received medication or rehabilitation before surgery. All patients were ambulatory under epidural anesthesia within four or five days after surgery.

The numerical results are reported as the mean  $\pm$  standard deviation. The chi-square test was used for comparisons between groups, and quantitative data were compared by Student's *t*-test. A *p* value of less than 0.05 was considered to be significant.

### Results

The tumor stages of two groups are shown in

**Table 2.** Disease stages in each group

	Group A	Group B
stage I	7 (33.3%)	7 (33.3%)
stage II	10 (47.6%)	10 (47.6%)
stage III	4 (19.1%)	4 (19.1%)

*p*=0.85

**Table 3.** Preoperative complications

	Group A	Group B
Hypertension & angina	12 (57.1%)	13 (36.1%)
Cerebral vascular disease	3 (14.3%)	1 ( 2.8%)
Respiratory organs disorder	0 ( 0%)	4 (11.1%)
Diabetes mellitus	2 ( 9.5%)	4 (11.1%)

**Table 4.** Operative and postoperative factors in each group

	Group A	Group B	<i>p</i> -value
Operating time (min)	195.6 $\pm$ 67.5	224.2 $\pm$ 69.1	<i>p</i> =0.908
Breeding volume (mL)	428.9 $\pm$ 396.7	444.9 $\pm$ 290.5	<i>p</i> =0.861
Resumption of regular meals (days)	12.1 $\pm$ 8.1	9.7 $\pm$ 6.0	<i>p</i> =0.199
Hospitalization (days)	27.5 $\pm$ 10.7	26.3 $\pm$ 14.2	<i>p</i> =0.160

mean  $\pm$  SD

Table 2. The differences between the groups were not statistically significant

In group A, including repetitions, 13 patients had preoperative complications (62%), 12 had cardiovascular diseases, 3 had cerebral vascular disturbance, and 2 had diabetes mellitus. In group B 22 patients had preoperative complications (61%), 13 had cardiovascular diseases, 1 had cerebral vascular disturbance, 4 had diabetes mellitus, and 4 had respiratory organ disorder (Table 3).

### Preoperative factors

The mean ejection fraction before surgery was 72.0  $\pm$  10.2% in group A and 76.4  $\pm$  8.6% in group B. The mean vital capacity was 104.2  $\pm$  21.4% in group A and 111.1  $\pm$  15.0% in group B as determined by the lung function test. The mean forced expiratory volume in 1 sec was 76.6  $\pm$  14.9% in group A and 74.1  $\pm$  14.6% in group B. The differences between the groups were not statistically significant.

### Operation factors

The operation time tended to be longer for the patients in group B than in group A, group A was 195.6  $\pm$  67.5 minutes while group B was 224.2  $\pm$  69.1 minutes. However, the difference was not statistically significant. The bleeding volume for the patients in group A was 428.9  $\pm$  396.7 ml, while for the patients in group B it was 444.9  $\pm$  290.4 ml. The difference was not statistically significant (Table 4).

### Postoperative factors

There was no operative death in either group.

**Table 5.** Postoperative complications in each group

	Group A	Group B
Minor leakage	2 (9.5%)	3 (8.3%)
Ileus	1 (4.8%)	1 (2.8%)
Delirium	1 (4.8%)	0 (0%)
Wound infection	0 (0%)	1 (2.8%)

In group A, the postoperative complications totaled 4 (19%): delirium was observed in 1 patient, while 2 patients suffered minor leakage at the site of anastomosis, and 1 patient experienced ileus. In group B there were 3 patients with minor leakage, 1 patient with ileus, and 1 patient with a wound infection; the postoperative complications totaled 5 (13.9%) (Table 5).

The mean number of days until the resumption of regular meals was greater for patients in group A ( $12.1 \pm 8.1$  day) than for patients in group B ( $9.7 \pm 6.0$  day) but the difference was not statistically significant. The number of days to discharge after surgery was  $27.5 \pm 10.7$  days in group A and  $26.3 \pm 14.2$  days in group B, and the difference was not statistically different (Table 4).

### Discussion

The incidence of rectal carcinoma increases with age, and the population of Japan is continually growing older. The opportunity to treat elderly patients surgically is therefore increasing. There is no consistent definition of the elderly patient population. In this study, patients 75 years old and older were defined as elderly patients. Generally, the physical strength of each organ declines with age, and the respiratory function, circulation, and kidney function are particularly vulnerable, and related pathologies can increase the risk of postoperative morbidity and mortality in patients undergoing LAR.<sup>3)</sup>

We compared the results from patients of both groups and reviewed them. Patients in group A had preoperative complications in 62% while in group B the same rate was 61%, and no statistical difference was observed. The difference in the function of each organ by group was insignificant, and this was somewhat predictable considering the small age difference between the groups. There is a clear age-related difference when the function of

each organ is compared to the ratio of reported complications in younger persons.<sup>1)</sup>

Sufficient preoperative evaluations and treatment result in a better pre-operative status for such patients. Nakamura et al<sup>4)</sup> reported that an appropriate preoperative evaluation and treatment for cardiopulmonary function, supplementation, including the nutritional status, and postoperative management, are all factors that can increase the likelihood of a successful operation. Our findings lead us to agree with them.

There were slightly more patients in group A with postoperative complications than in group B, but no meaningful difference was recognized. No patients experienced any fatal complications.

Generally, the status of elderly patients can become more easily critical after surgery because the incidence of complications after surgery is high. Postoperative morbidity of the cardiovascular system, respiratory system, and cranial nerve system in abdominal laparotomy has been reported in 9.9%–12.6%, 6.1%–12.9% and 20% respectively.<sup>5)–8)</sup> Mortality from respiratory failure has also been reported to exceed 60% after surgery in elderly patients.<sup>9)</sup> We did not observe any instances of fatal respiratory failure in our series. To prevent respiratory complications after surgery, we thought it would be useful for each patient to quit smoking, do breathing training, and undergo inhalation therapy. Patients in group A did not have any preoperative complications, and therefore no postoperative complications occurred. Regarding postoperative management, we used epidural anesthesia to control wound pain and the combination of epidural anesthesia and posture conversion to promote patients leaving their beds early. We thought such measures would prevent atelectasis and aspiration pneumonia and thereby help patients smoothly recover.

When conducting major surgery on elderly people, we need to evaluate such patients sufficiently beforehand, and when it is necessary they should receive medical treatment and undergo functional recovery training so that postoperative complications can be prevented.

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