

Original

Acute Obstruction: An Independent Prognostic Factor of Right Colon Carcinoma?

Chih-Yuan Mou¹
Jen-Kou Lin¹
Tzu-Chen Lin¹
Wei-Shone Chen¹
Jeng-Kae Jiang¹
Huann-Sheng Wang¹
Shung-Haur Yang¹
Fen-Yau Li²

¹Division of Colon and Rectal Surgery,
Department of Surgery, and

²Department of Pathology, Taipei Veterans
General Hospital;
National Yang-Ming University, Taipei, Tai-
wan, R.O.C.

Key Words

Obstruction;
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Purpose. The prognosis of colon cancer can be influenced by many factors. The aim of this retrospective study is to evaluate whether acute obstruction is an independent prognostic factor by analyzing patients with cancer of the right colon.

Methods. Between 1981 and 1988, 256 patients with adenocarcinoma of the right colon were treated with curative resection. Thirty-five patients underwent emergent resection due to acute obstruction (Group I). Two hundred and twenty-one patients were treated with elective resection (Group II). All of the patients underwent right hemicolectomy or extended right hemicolectomy with ileocolostomy. The data including age, sex, tumor location, stage, and long-time survival rate were analyzed.

Results: There was no difference in the distribution of age, sex, tumor location, and stage ($p > 0.05$) between the two groups. The acute obstruction group, however, had a much poorer actual 5-year and 10-year survival rate (46.1% and 36.9%) than the non-obstruction group (83.0% and 77.8%, $p = 0.00001$).

Conclusions. Poorer survival was noted in the acute obstruction of the right colon cancer group. Acute obstruction is an independent prognostic factor for patients with right colon cancer.

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Despite advances in medical care and the application of diagnostic techniques such as barium enema, colonoscopy, and new image study instruments, a large number of patients with colorectal cancer are still detected at an advanced stage with large bowel obstruction present. The occurrence of large bowel obstruction due to colon carcinoma has been reported in 7-29% of total colorectal cancer patients.¹⁻⁶

Some reports reveal that the survival of patients with obstructive colorectal cancers is significantly poorer than patients without colonic obstruction.^{1-4, 7-9} In addition, there is an increased risk of surgical mor-

tal mortality, higher incidence of lymph node metastasis, and a decreased curative resection rate in patients with colonic obstruction.¹⁻³ The prognosis of colon cancer is suggested to be influenced by many factors, including the obstruction itself. The aim of this retrospective study is to evaluate whether acute obstruction is an independent prognostic factor.

Materials and Methods

The contents of medical records of patients with colon and rectal cancer were extracted and saved in

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Correspondence to: Jen-Kou Lin, MD, Division of Colon and Rectal Surgery, Department of Surgery, Taipei Veterans General Hospital, 201, Shih-Pai Road, Sec. 2, Taipei 11217, Taiwan. Tel: +886-2-2875-7544 ext. 110

computerized files. The data base included (1) the name, gender, age, family history, and major medical problems of the patients; (2) the location, size, gross appearance, stage, differentiation, and important pathological features of the tumor; (3) the type of operation, complications, recurrence, and the follow-up condition. These patients were under follow-up every 3 months in the first two years, every six months between the third and fifth year, and once per year thereafter.

Between 1981 and 1988, 366 patients with right colon cancer were treated. Those suffering from cancer with perforation were excluded from this series. Among these 366 patients, 256 patients underwent curative resection and 110 patients underwent palliative surgery due to locally advanced invasion or distant metastasis. All of the 256 curative resection cases received right hemicolectomy or extended right hemicolectomy with clear end and lateral margin. The histology type of all the tumors was adenocarcinoma.

Of these 256 patients, 35 had tumors presenting with acute large bowel obstruction. All these patients had symptoms of obstipation, vomiting, abdominal pain and distension, with evidence of colonic obstruction on plain abdominal radiographs. The diagnosis of an obstructing tumor was verified either by barium enema or colonoscopy, or at the time of laparotomy. According to the presence or absence of acute obstruction or not, these 256 patients were divided into two groups for analysis. Thirty-five cases underwent emergent resection due to acute obstruction (Group I), and 221 cases without colonic obstruction underwent elective operation (Group II). The data including age, gender, tumor location, stage, long-time survival, and recurrence rate was analyzed. The distribution of age was compared using the two-sample *t*-test. The Pearson chi-square test was used for comparison of gender. Fisher's exact test was applied to compare the difference in tumor location. The survival rates, including crude and cancer-specific survival, were expressed using Kaplan Meier's method. The difference in survival

rate between the two groups was compared with the log rank test. To identify the independent prognostic factors for survival, the Cox regression hazard model was used for multivariate analysis.

Results

As shown in Table 1, in the rate of curative resection between the two groups was statistically significant ($p=0.042$). Curative resection was performed in 35 (59.3%) patients with acute obstruction. This incidence was lower than that in patients without obstruction (72.0%). There was no significant difference in terms of age and gender distribution (Table 2). As shown in Tables 3 and 4, there was also no difference in the distribution of the location of tumors and the pathological stages between the two groups (Tables 3 and 4, $p=0.912$ and 0.251 , respectively). Seventeen (48.6%) patients with acute obstruction developed recurrence (local or distant) after curative resection, compared with 48 (21.8%) patients in the non-obstruction group. The rate of overall recurrence and distant metastasis was more frequent in group I than group II. The obstruction group had a higher local re-

Table 1. Surgical Management of 366 Patients with Right Colonic Carcinoma

	Obstruction	Non-obstruction
Total	59	307
Curative resection	35 (59.3%)	221 (72.0%)*
Palliative surgery	24	86
Distant metastasis	23	67
Local advanced	1	19

* $p=0.042$, Pearson chi-square test.

Table 2. Characteristics of 256 Patients who Underwent Curative Resection

	Group I	Group II	<i>p</i> value
Case number	35 (13.7%)	221 (86.3%)	
Age	59.03 ± 14.20	61.18 ± 13.05	0.379*
Gender (M/F)	27/8	151/70	0.292**

* Two-sample *t*-test; ** Pearson chi-square test.

cur rence rate, but the dif fer ence was not sta tis ti cally sig nifi cant (Table 5).

As shown in Ta bles 6 and 7, the crude sur vival and can cer-specific sur vival rates in group I were much lower than those in group II. This dif fer ence was ob served not only in over all groups com par i son but also in each can cer stage sub group (Ta bles 6 and 7). The sig nifi cant sur vival dif fer ence be tween the two groups per sisted in the long term fol low-up (10 years and 15 years) (Figs. 1, 2, 3, 4, 5).

Cox’s re gres sion haz ard model was used to ad just the po tential in flu ence of acute ob struc tion on the over all re sults. As shown in Ta ble 8, the acute ob struc tion was an in de pen dent prog nos tic fac tor for sur vival. It plays the same im por tant role as tu mor stag ing.

Table 3. Distribution of Tumor Location of 256 Patients who Underwent Curative Resection

	Group I	Group II
Cecum	9 (25.7%)	67 (30.3%)
Ascending colon	12 (34.3%)	76 (34.4%)
Hepatic flexure	7 (20.0%)	37 (16.7%)
Transverse colon	5 (14.3%)	34 (15.4%)
Synchronous	2 (5.7%)	7 (3.2%)

p = 0.912, Fisher’s exact test.

Table 4. Tumor TNM Staging for 256 Patients who Underwent Curative Resection

	Group I	Group II
I	2/35 (5.7%)	35/221 (15.8%)
II	18/35 (51.4%)	110/221 (49.8%)
III	15/35 (42.9%)	76/221 (34.4%)

p = 0.251. Pearson chi-square test.

Table 5. Overall, Local and Distant Recurrence after Curative Resection

	Overall	Local	Distant
Group I	48.6%(17/35)	14.3%(5/35)	40.0%(14/35)
Group II	21.8%(48/221)	5.4%(12/221)	17.6%(39/221)
<i>p</i> value	0.001*	0.065**	0.002*

* Pearson chi-square test. ** Fisher’s exact test.

Table 6. Five-year Cancer-specific Survival Rates after Curative Resection in 256 Cases

TNM stage	I	II	III	Overall
Group I	50%	59.0%	29.9%	46.1%
Group II	97.1%	90.5%	64.2%	83.0%
* <i>p</i> value	0.00001	0.0058	0.0036	0.0001

* Log rank test.

Table 7. Five-year Crude Survival Rates after Curative Resection in 256 Patients

TNM stage	I	II	III	Overall
Group I	50%	41.5%	27.0%	35.6%
Group II	94.3%	85.2%	55.2%	76.6%
* <i>p</i> value	0.001	0.0005	0.0147	0.00001

* Log rank test.

Table 8. Univariate and Multivariate Analysis for Prognostic Factors

	Age	Sex	Location	Staging	Obstruction
<i>p</i> value					
Univariate*	0.1495	0.8191	0.0677	0.00001	0.00001
Multivariate**	0.750	0.387	0.750	0.0001	0.0001

*Log rank test. ** Cox regression.

Discussion

Ob struc tive co lon can cer tends to be more lo cally ad vanced, and liver me tas ta sis is more com mon.^{4,5,9-12} This is re flected in the lower cu ra tive re sec tion rate and poorer sur vival. Serpell *et al.* re ported the lower cu ra tive re sec tion rate for com pletely ob struc tive tu mors (50.7%) com pared with those with out ob struc tion (70.6%)¹¹ In our se ries, the cu ra tive re sec tion rate for group I was 59.3%, sig nifi cantly lower than that for group II (72.0%) (*p*=0.042). After cu ra tive re sec tion, how ever, the can cer-specific sur vival was still sig nifi cantly poorer in group I pa tients, al though there was no sig nifi cant dif fer ence in the dis tri bu tion of age, gen der, tu mor lo ca tion, and TNM stag ing. The same re sult was noted in the com par i son of crude sur vival. Sim i lar re sults were found in some stud ies.^{11,12} Kaufman *et al.* re ported that ad vanced dis ease could not com pletely ex plain the poor prog no sis of ob struc tive co lon can cer.¹³ They found that when ad justed for

stage, there was still a significant difference in survival time between obstructive and non-obstructive colon cancer patients. Similar findings were observed

in a prognostic study by Phillips *et al.*⁵

Our results suggest that obstructive colon cancer is more aggressive than those without obstruc-

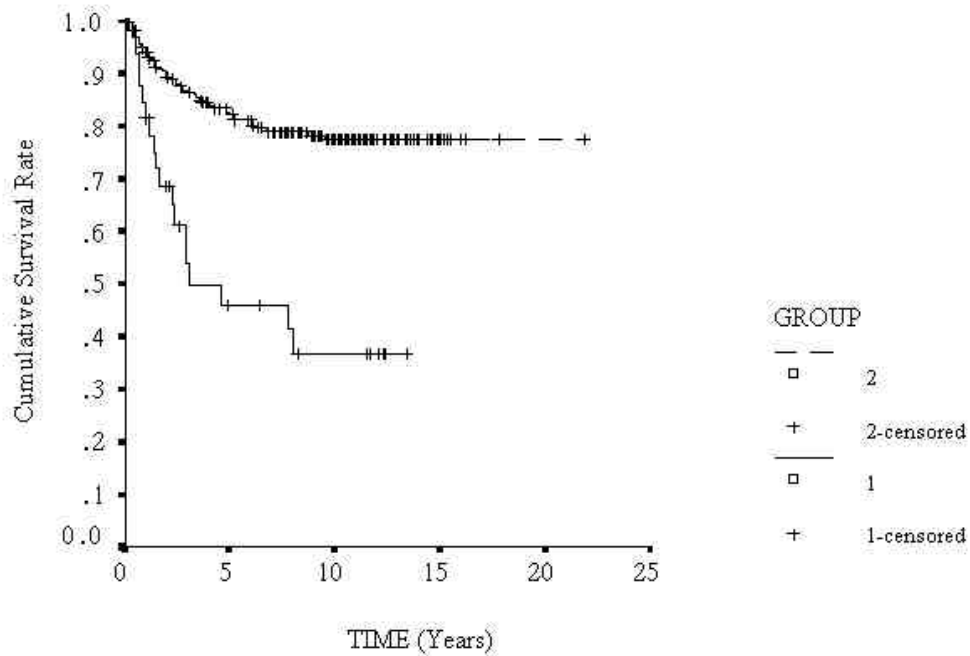


Fig. 1. Overall comparison of cancer-specific survival of patients who underwent curative resection ($p = 0.00001$).

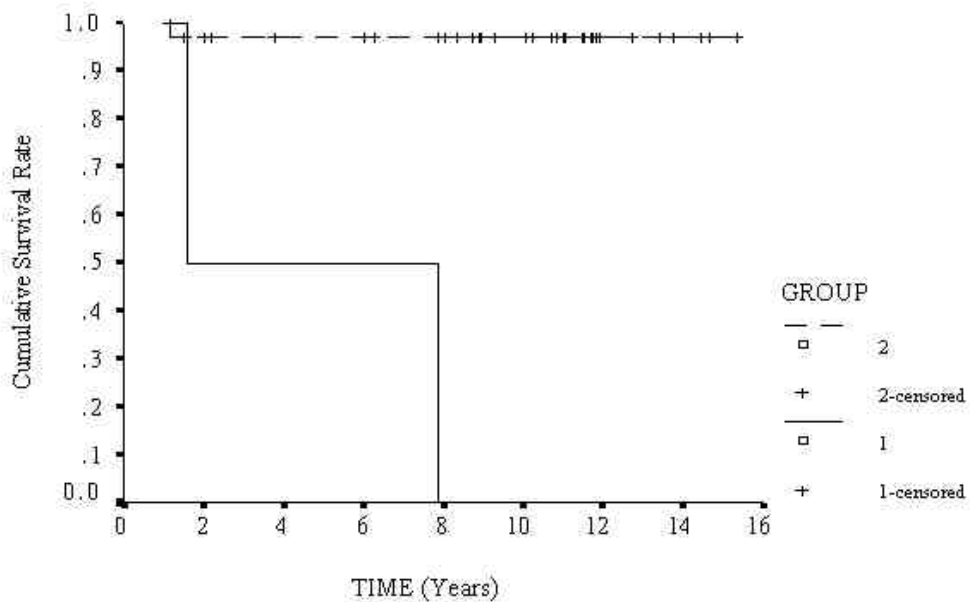


Fig. 2. Stage I comparison of cancer-specific survival of patients who underwent curative resection ($p = 0.00001$).

tion. The ob struc tion it self is an im por tant fac tor, as ob served through mul ti vari ate anal y sis. The de gree of im por tance on sur vival is sim i lar to that of stag ing.

Nickell *et al.* gave a pos si ble ex pla na tion for this phe nom e non. While ob struc tion oc curred, the per me abil ity of the bowel wall may in crease the pos si bil ity and fa cil i tate the lym phatic me tas ta sis of ma

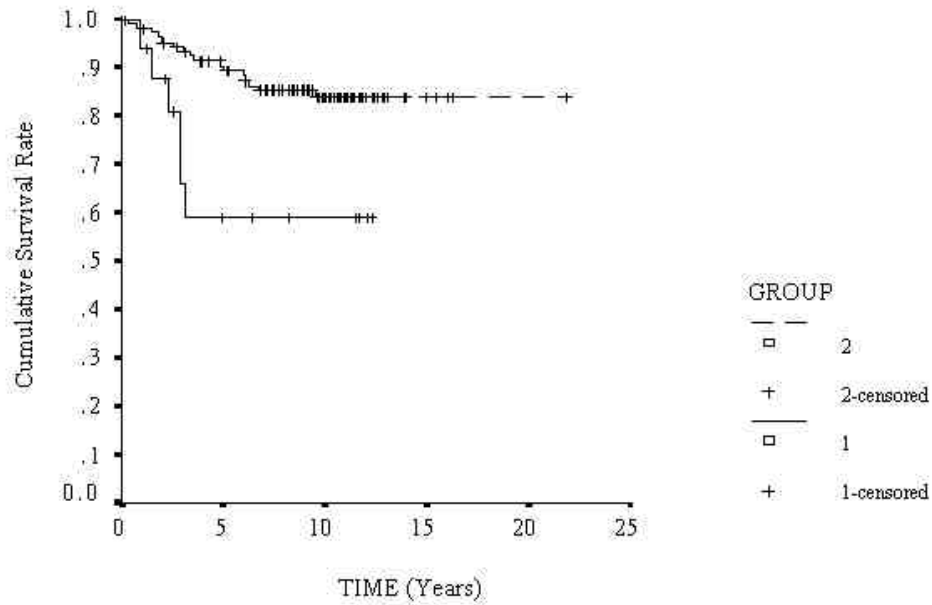


Fig. 3. Stage II com par i son of can cer-specific sur vival of pa tients who un der went cu ra tive re sec tion ($p = 0.0058$).

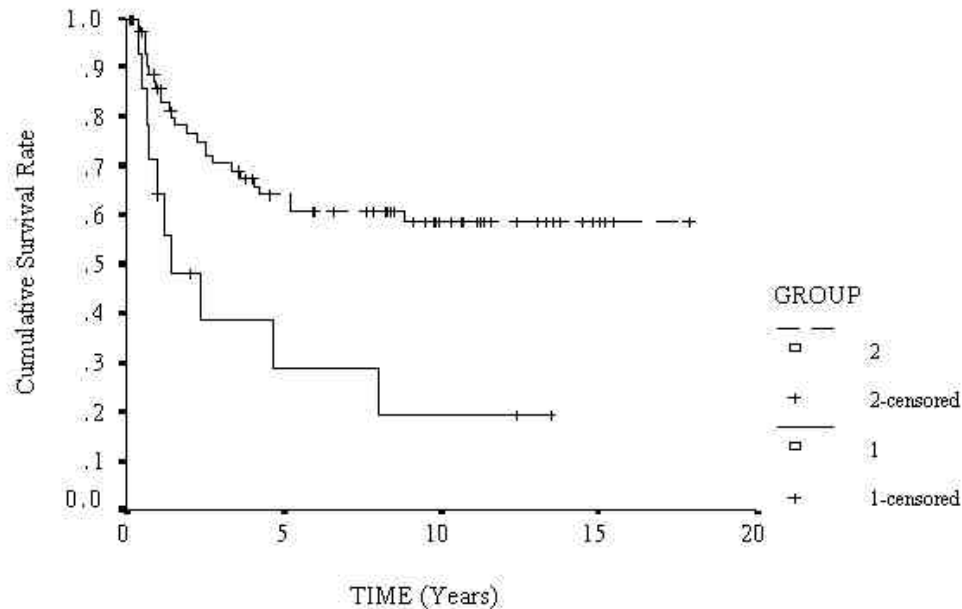


Fig. 4. Stage III com par i son of can cer-specific sur vival of pa tients who un der went cu ra tive re sec tion ($p = 0.0036$).

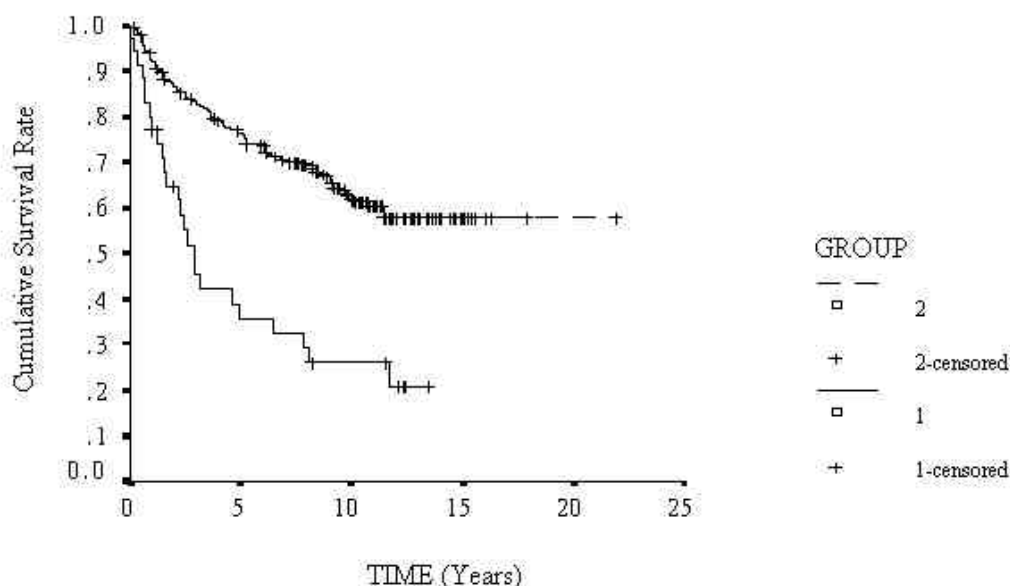


Fig. 5. Over all com pari son of crude sur vival of pa tients who un der went cu ra tive re sec tion ($p = 0.00001$).

lig nant cells.¹⁴ Korenaga et al. be lieved that the poor prog no sis of pa tients with large bowel ob struc tion may re sult from the fact that ob struc ting tu mors al ready have a propen sity to me tastasis via the lymphatics or spread to the vis ceral peri to neum at the time of di ag no sis.¹⁵ Serpell et al. sug gested that there might have some as yet un mea sured fac tors op er ating in the patho phys iol ogy of ob struc tion, which in flu ence the re la tion ship be tween the tu mor and host re sis tance, and sub se quently re sult in poor prog no sis.¹¹ How ever, we could not find ev i dence of the pres ence of these fac tors. In con clu sion, ob struc tive co lon can cer is more ag gres sive and poorer in prog no sis. Acute ob struc tion is an in de pend ent prog nos tic fac tor for right co lon can cer. In ten sive post op er a tive treat ment pro to col may be pre scribed for ob struc tive can cer.

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