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Total Gastrectomy for Carcinoma of the Stomach

Thomas A. Fox, Jr., M.D.*

The results of total gastrectomy in 47 patients with carcinoma of the stomach are reported. Extended total gastrectomy is recommended only if the growth cannot be removed by any other means. It should not be performed if the growth is not totally resectable. The operative mortality and postoperative results of total gastrectomy have improved to the extent that this operation for carcinoma of the stomach should be undertaken where indicated.

Although the incidence of cancer of the stomach is decreasing in the United States, there are approximately 20,000 new cases developing each year.¹ The proportion of incurable cases seen in recent years has remained fairly constant, indicating that early diagnosis has not advanced materially. The question then arises of whether a more radical resection such as extended total gastrectomy would lead to a more favorable outcome. In this context, extended total gastrectomy has been given consideration.

Indications

The limits of carcinoma of the stomach can be judged only very uncertainly by palpation and visual inspection. The invisible intramural spread of the carcinoma is likely to overlap the gross tumor boundary by four to five centimeters.

Histological study of patients dying after apparent curative resection has shown that 50% have recurrences in the gastric stump and 22% have malig-

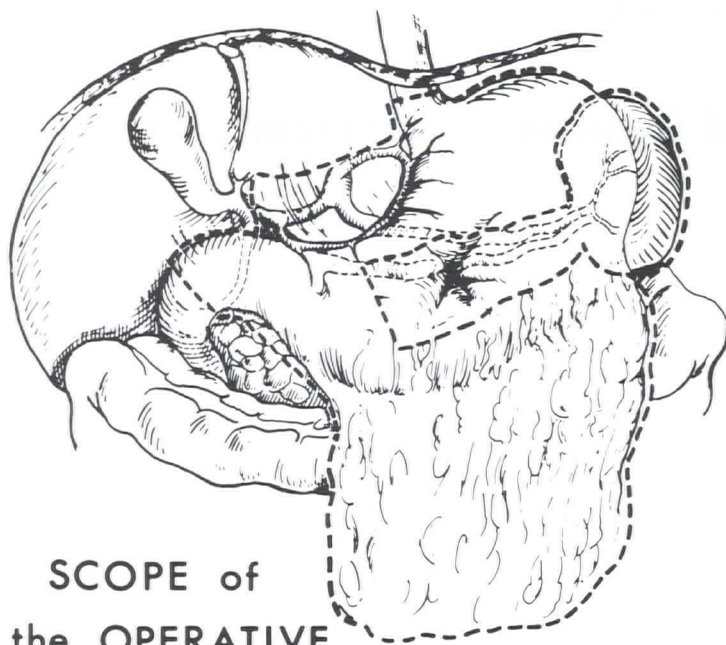
nant involvement of the perigastric lymph nodes.² In 40% of cases of extensive carcinoma and carcinoma involving the proximal part of the stomach, and in 30% of cases of carcinoma involving the distal part, this spread occurs to the lymph nodes along the tail of the pancreas and in the region of the spleen.³

In these situations, extended total gastrectomy offers definite advantages over the conventional subtotal gastrectomy. The scope of the operative field is as shown in Figure 1. The entire stomach and first portion of the duodenum, the gastrohepatic and gastrocolic omenta, the spleen, and the body and tail of the pancreas are included.

There are serious disadvantages in that the operative mortality after total gastrectomy is appreciably higher, and disturbances of digestion more severe.

Total gastrectomy should never become a routine procedure for every case of carcinoma of the stomach. Rather, it is indicated in all cases of diffuse infiltrating growth involving a large part of the stomach, in all tumors of the cardia and fundus, and in all those tumors of the body which, be-

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**SCOPE of
the OPERATIVE
FIELD in EXTENDED TOTAL
GASTRECTOMY.**

Figure 1

The scope of the operative field in extended total gastrectomy. The entire stomach and first portion of the duodenum, the gastrohepatic and gastrocolic omenta, the spleen and the body and tail of the pancreas are included.

cause of their extent and site, can be expected to be invading the region of the left gastric artery, the tail of the pancreas and the spleen. With involvement of the antrum, a distal four-fifths resection is usually favored.

Contraindications

Total gastrectomy is contraindicated when (1) the surgeon is able to establish that the operation will not rid his patient of cancer tissue; (2) in carcinomatous peritonitis or extensive lymph node metastases which cannot be resected (e.g. in the vicinity of the superior mesenteric artery or the head

of the pancreas), and (3) in the presence of distant metastases.

It should be discouraged as a palliative measure, since it would only burden an already weakened and cachectic patient with a deficient digestion and make him less likely to survive early post-operative complications.

Total gastrectomy always demands a careful decision as to whether the patient is equal to the operation. Advanced age and severe preoperative weight loss are hazardous, according to Hegemann and Gall,³ who reported an operative mortality of 62.1% for patients over 65 years of age.

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Material and Method

This report consists of 47 patients (30 males and 17 females) who underwent total gastrectomy for carcinoma of the stomach during the period 1953-1967. Age distribution is shown in Figure 2.

Of these, 24 operations were performed through an abdominal approach, 21 through a thoraco-abdominal approach, and two through a thoracic approach. In addition to the stomach, the spleen was resected in 42 patients, the distal pancreas in 18, and portions of the transverse colon in six. In all cases, most of the greater omentum was removed.

Reconstruction of the gastrointestinal tract was carried out by a variety of procedures (Table I).

Results

Total gastrectomy for carcinoma of the stomach carries a significant mortality.^{3,4} In our group of 47 patients, nine died, giving an operative mortality

Table I

TOTAL GASTRECTOMY FOR CARCINOMA OF STOMACH	
Type of Reconstruction	
1. Jejunal interposition	22
2. Jejunal interposition with Figure of 9	5
3. Esophago-duodenostomy	12
4. Loop esophago-jejunostomy with enter-enterostomy	6
5. Loop esophago-jejunostomy without enter-enterostomy	1
6. Ileo-cecal interposition	1
Total	47

of 19%. Many of these resections were obviously palliative.

The principal cause of death (Table

Table II

TOTAL GASTRECTOMY FOR CARCINOMA OF STOMACH	
Operative Mortality	
Cause of Death	Number of Cases
Anastomotic leak	5
Post-operative hemorrhage	2
Multiple intra-abdominal abscesses	1
Suspected pulmonary embolus (no autopsy)	1
Total	9

Per cent operative mortality = $9/47 \times 100 = 19\%$

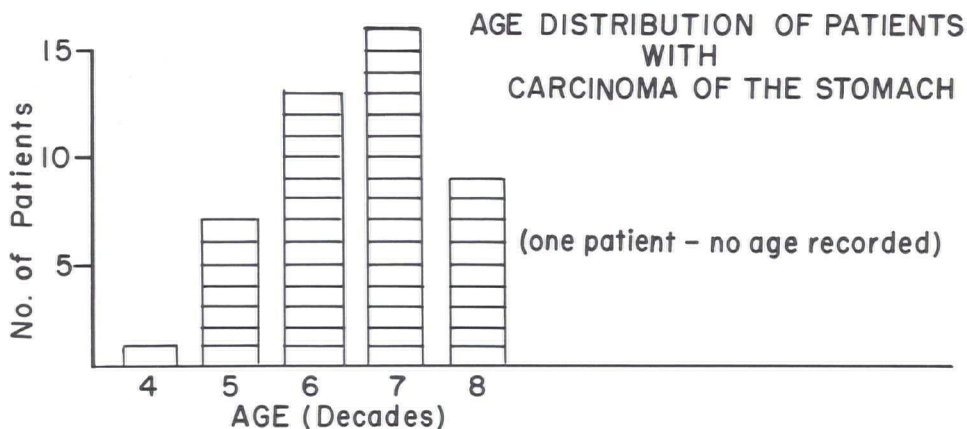


Figure 2

II) was leaking or rupture of the anastomotic suture lines. The operative morbidity is rather high in these patients, as shown by length of hospitalization (Fig 3). Length of survival is

shown in Figure 4. All deaths were considered to be due to the carcinoma.

Of the 47 patients, 33 had lymph node metastases, 5 had no lymph node metastases, and in 9 patients there was

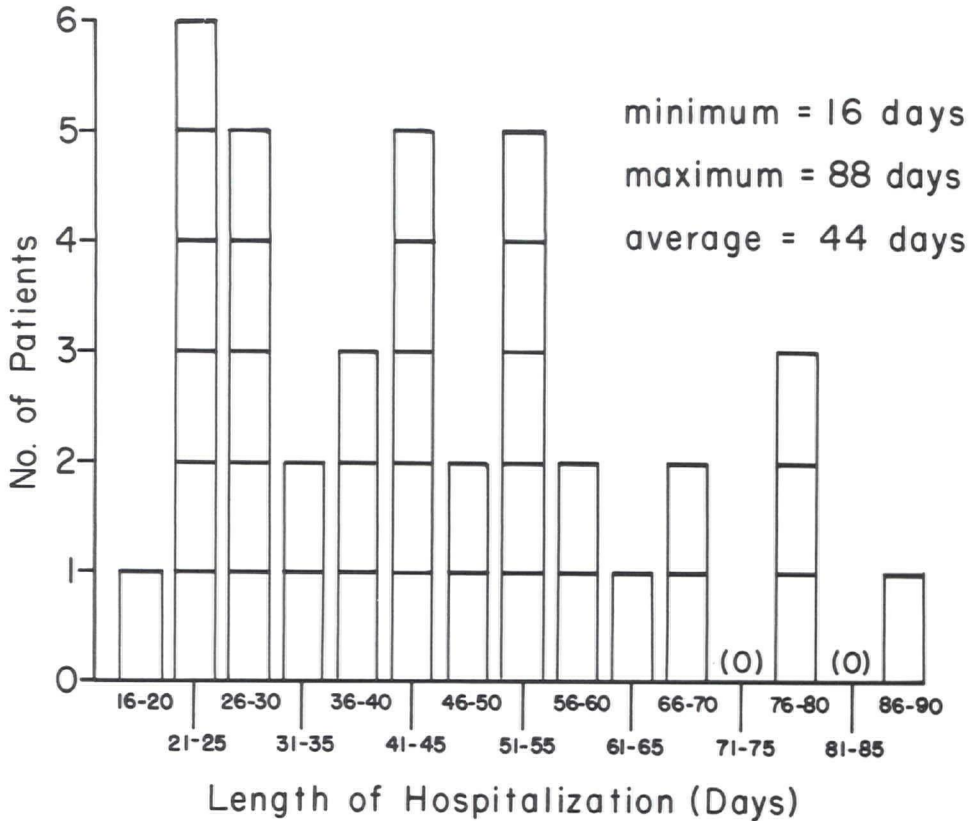


Figure 3
 Length of stay in hospital following total gastrectomy.

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no record as to the involvement of the lymph nodes. Both the five-year survivor and the patient who has survived for 41 months had lymph node involvement.

Discussion

The ideal operation for carcinoma of the stomach should remove the primary tumor widely through the healthy tissue with block dissection of the regional lymph glands. This result is more nearly accomplished by the extended total gastrectomy which involves resection of the stomach, omentum, spleen, and distal pancreas. Application may be limited because of close proximity to vital structures like the hepatic and superior mesenteric arteries and the biliary passages.

The mortality from this operation has gradually fallen to a reasonable

level. Among the best results are those of ReMine et al who report a mortality of 15% and a five-year survival of 10%.³ Our five-year survival rate is 3%. Still, these figures indicate that some patients can be cured by aggressive surgery.

The type of gastrointestinal reconstruction has been a matter of some debate. Some of the more common types are shown in Figure 5.

ReMine³ feels that the most satisfactory method is an end-to-side esophagojejunostomy with a diverting side to side entero-enterostomy well below the esophagojejunostomy. This is the type of reconstruction presently being employed by most surgeons at this hospital. Regardless of the type of reconstruction, most patients experience reflux esophagitis. There is no known anastomotic technique to prevent it.

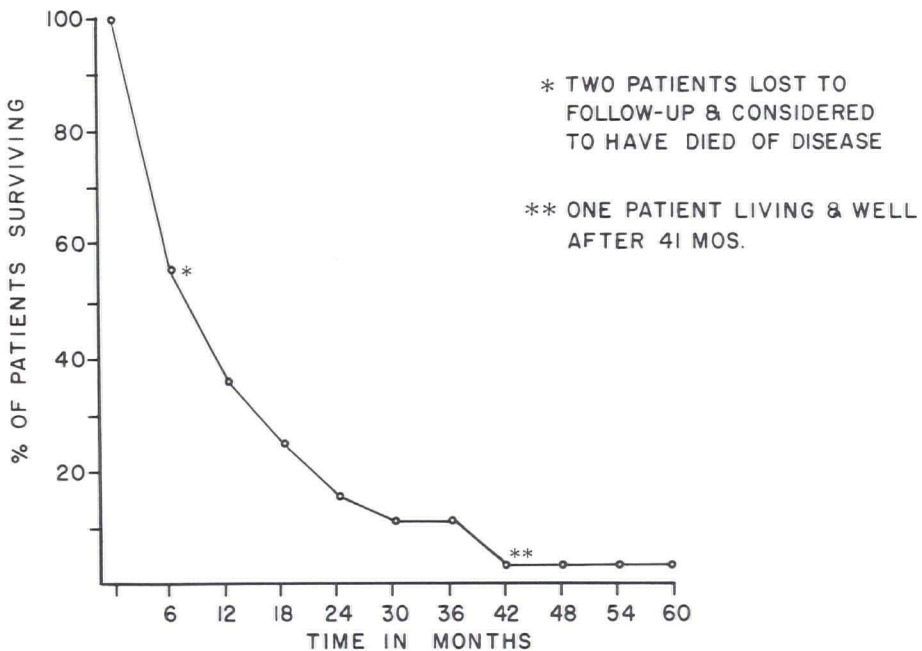
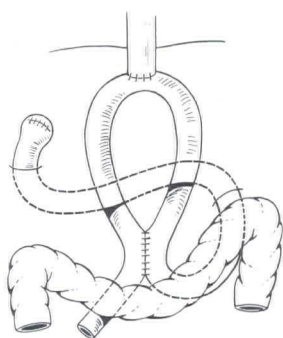
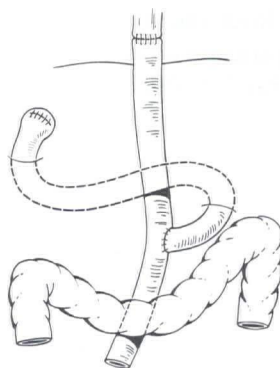


Figure 4

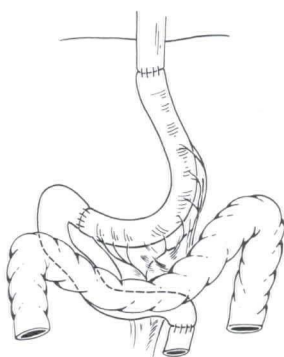
Five-year survival of patients undergoing total gastrectomy for carcinoma of the stomach.



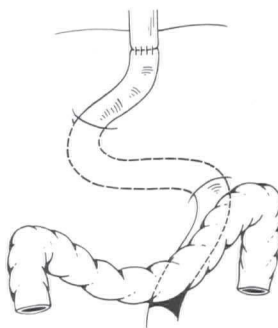
LOOP ESOPHAGO -
JEJUNOSTOMY WITH
ENTERO-ENTEROSTOMY
(6 Patients)



ROUX-Y ESOPHAGO -
JEJUNOSTOMY
(0 Patients)



JEJUNAL INTER -
POSITION
(22 Patients)



ESOPHAGO - DUODENOSTOMY
(12 Patients)

Figure 5

Most common types of gastrointestinal reconstruction following total gastrectomy.

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