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# Giant Gastric Ulcers

## *A Review of 49 Cases*

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Traditional therapy for giant gastric ulcers (>3 cm) has been gastric resection because of a presumed high risk of hemorrhage and recurrence. To determine the validity of this approach and decide whether the need for resection has been altered by the introduction of H<sub>2</sub>-blockers, the records of 10,054 gastroduodenal endoscopies performed between 1971 and 1984 were reviewed. Forty-nine patients with giant gastric ulcers were identified. Five patients had malignant ulcers. Ten patients underwent gastric resection as initial therapy. Thirty-four patients were initially treated without surgery and were divided into Group I (no H<sub>2</sub>-blockers; 9 patients) and Group II (H<sub>2</sub>-blockers; 25 patients). Medical therapy was successful in three of nine patients (33%) in Group I and in 20 of 25 patients (80%) in Group II. Of 11 patients who failed medical therapy (7 intractability, 3 recurrence, and 1 fatal hemorrhage), 10 underwent subsequent gastric resection. Of the 20 patients treated surgically (10 initial and 10 medical failures), none were readmitted for recurrent ulcer disease. These data suggest that medical therapy of benign giant gastric ulcers is often effective and not associated with an excessive incidence of complications, as believed. Successful healing of these ulcers is greatly enhanced when H<sub>2</sub>-blockers are employed. Thus, the presence of an uncomplicated benign giant gastric ulcer is not an absolute indication for gastric resection.

**G**IANT GASTRIC ULCERS (GGU) are gastric ulcers with maximum dimensions exceeding 3 cm. Classically, therapy for GGU has consisted of early surgical resection.<sup>1,2</sup> This approach has been based on an anticipated, though unsubstantiated, high incidence of complications (hemorrhage, perforation, and intractability) without surgery, a likelihood that ulcers will recur after they have healed, and the frequent occurrence of carcinoma (10–30%) in GGU.<sup>2–4</sup> The purposes of this study were to compare the relative merits of surgical and medical therapy of GGU and to determine whether the

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advent of modern medical therapies (H<sub>2</sub> blockers) has decreased the complication rates in GGU patients treated conservatively.

### Materials and Methods

A retrospective review of 10,054 gastroduodenal endoscopies performed at the Minneapolis Veterans Administration Hospital between 1971 to 1984 revealed 49 patients with GGU. Patients were excluded if more than three gastric ulcers were present or if prepyloric, pyloric channel, or concomitant bulbar ulcers were present. The mean age of patients with GGU was 61 years, and all were male but one. Five patients (10%) had malignant GGU. Presenting symptoms included ulcer pain in 30 patients (61%), hemorrhage in nine (18%), anemia in six (12%), and gastric outlet obstruction in four (8%). The majority (64%) of GGUs were located on the lesser curve, while 36% were on the greater curve. Acid secretory studies were performed in nine patients. Basal free acid ranged from 0.1 to 10 mEq/h (mean: 1.5 mEq/h). Maximal acid output after histamine stimulation ranged from 4 to 34 mEq/h (mean: 15.3 mEq/h).

Those patients receiving primary medical therapy were divided into two subgroups: Group I (N = 9), who were treated with antacids alone, and Group II (N = 25), who were treated with antacids and H<sub>2</sub>-blockers. There was no significant difference in age, presenting symptoms, associated illness, or ulcer size between Group I and Group II patients, nor between those receiving initial surgical *versus* medical management. Statistical analysis was performed using Fisher's exact test.<sup>5</sup>

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TABLE 1. *Surgical Therapy of GGU*

	Initial Surgical Therapy	Failed Medical Therapy		Totals
		Group I	Group II	
Indications for surgery				
Hemorrhage	2	0	1	1
Obstruction	1	0	0	0
Size alone	7	0	0	0
Recurrence	0	1	1	2
Intractability	0	5	3	8
Totals	10	6	5	11
Procedure performed				
Gastrectomy alone	5	1	3	4
Gastrectomy and vagotomy	5	5	1	6

## Results

### Surgical Therapy

Table 1 describes indications and surgical therapies for all patients who were operated on for GGU. Ten patients underwent initial surgical therapy. The decision for operation as the initial choice of therapy was made in seven of 10 patients based simply on large size of the ulcer (*i.e.*, prophylaxis against potential complications). Eleven patients failed medical therapy. One of the 11 patients died while being treated medically, and 10 patients later underwent surgical resection. Eight of the 11 patients had demonstrated failure of the original ulcer to heal, and two had recurrence after initial healing of their GGU.

Of the 19 patients surviving gastrectomy, complications were present in 25% and included one patient each with postoperative cardiac arrest, nonfatal myocardial infarction, *Clostridium difficile* colitis, necrotizing fasciitis, and wound seroma. No surgical patient required readmission

TABLE 2. *Results of Medical Therapy of GGU (34 Patients)*

	Group I	Group II	Totals
Number of benign giant gastric ulcers	9	25	34
Number of benign GGUs that healed at any time	4	22	26
Number of benign GGUs that healed at 6 weeks	3	18	21
Number of benign GGUs that recurred after initial healing	1	2	3
Number of patients with successful medical therapy	3	20	23
Number of patients who failed medical therapy	6	5	11
Mortality	0	1	1

for treatment of ulcer recurrence or complications of gastric resection. The single surgical death occurred in a patient operated on for medical failure who developed a leaking anastomosis after 75% gastric resection. There was no statistically significant difference in complications between the group undergoing initial surgical therapy and the group undergoing surgery as a result of medical failure.

### Medical Therapy

Results of the 34 patients treated medically are given in Table 2. Four of nine patients in Group I demonstrated healing of their GGU (confirmed at endoscopy), while the other five failed medical management and required eventual surgical resection. One of the four patients successfully treated developed a recurrent ulcer necessitating surgical intervention. Thus, only three of nine (33%) Group I patients had successful medical therapy of their GGU, with 67% eventually requiring surgery.

Twenty-two of the 25 patients in Group II (antacids and cimetidine) healed their GGU, as proven by endoscopy. Two of the 22, however, developed recurrence of ulcers and underwent subsequent operations. The remaining three patients who failed initial medical therapy also underwent operation for a total of five of 25 patients eventually requiring surgical intervention. Twenty of 25 patients in Group II (80%) had successful medical therapy of their GGU. The majority of benign GGU healed within 6 weeks (see Table 2). Significantly more ulcers healed in Group II than in Group I ( $p = 0.04$ ). A total of 5 more GGU (Groups I and II) healed during the entire follow-up period. Of the 26 ulcers that healed, there were three recurrences.

Table 3 lists the clinical data of patients who failed medical therapy. While there was no mortality in Group I, there was one Group II death, which occurred in an 84-year-old patient, who, while being treated for a 4 × 3 cm lesser curve ulcer, underwent operative fixation of an intertrochanteric fracture. The patient sustained fatal hemothorax 2 weeks after operation.

Long-term follow-up of the three medical successes in Group I revealed that two patients were taking no medications and had no ulcer symptoms at 5 and 6 years. The third patient was mildly symptomatic on antacid therapy at 9.5 years. Of the 20 patients treated successfully with antacids and cimetidine in Group II, one was lost to follow-up. Seven of the remaining 19 patients were asymptomatic and on no antiulcer medications at 8 months to 4 years follow-up. Eight of the 19 patients reported occasional antacid use at 8 months to 8 years follow-up (mean: 18 months). Only four patients were under therapy for active ulcer disease at the time of follow-up, two with antacids alone (15 and 24 months) and two with H<sub>2</sub>-blockers alone (15 months and 6 years).

TABLE 3. *Details of Medical Failures*

Patient	Presentation	Age	Size on Endoscopy	Initial Medical Therapy	Results of Medical Therapy	Eventual Surgical Therapy†
<b>GROUP I</b>						
1	Pain	59	3.5 cm	Frequent AAs*	Incompletely healed after 3 months	V&A, BI
2	Pain	67	3-4 cm	Frequent AAs	Increased size after 6 weeks	V&A, BI
3	Hemorrhage	61	4 × 2 cm	Frequent AAs	No healing after 6 weeks	V&A, BI
4	Pain	49	3-4 cm	Frequent AAs	Recurred 3½ years after initial ulcer healing	Subtotal gastrectomy
5	Pain	55	4 cm	Frequent AAs	Increased ulcer size after 6 weeks	50% gastrectomy, V, and BI
6	Pain	50	3 × 1.5 cm	Frequent AAs	Incompletely healed after 6 months	V&A, BI
<b>Group II</b>						
7	Pain	50	3 cm	Cimetidine and AAs	Healed after 8 months Recurred 2 years later and failed additional 2 years therapy	Subtotal gastrectomy, BI
8	Weight loss	65	4-5 cm	Cimetidine and AAs	Healed after 2 months Giant gastric ulcer recurred after 7 months of prn antacids	60% gastrectomy, BI
9	Pain	84	3 × 4 cm	Cimetidine and AAs	Therapy stopped after 1 month, exsanguinating hematemesis 3 weeks later	None
10	Pain	60	3-4 cm	Cimetidine and AAs	Incompletely healed after 9 months	V&A, BII
11	Hemorrhage	63	7 × 5 cm	Cimetidine and AAs	Re-bled after 1 week medical therapy Died post-op	60% gastrectomy, BII

\* Antacids.

† V&amp;A = vagotomy and antrectomy; BI = Billroth I; V = vagotomy; BII = Billroth II.

*Correlation of Endoscopic Findings with Operative and Pathologic Findings*

Twelve patients who were treated surgically had endoscopy within 10 days of operation. Table 4 compares

ulcer size at endoscopy with that found on pathologic examination of the resected stomach. There was good correlation in size (within 2 cm) in eight of 12 patients. A decrease in ulcer size from the time of endoscopy to surgery in two patients may have been related to intensive

TABLE 4. *Correlation Between Endoscopic and Pathological Measurement of Giant Gastric Ulcer Size*

Patient	Size of Ulcer Reported at Endoscopy	Size of Ulcer Reported by Pathologist	Interval Between Endoscopic and Pathologic Examinations	Therapy During Interval
1	7 × 5 cm	6 cm	7 days	Cimetidine and AAs*
2	4 cm	5 × 4 × 2 cm	7 days	AAs
3	4 × 3 cm	4 × 3 cm	9 days	Cimetidine and AAs
4	3-4 cm	3 cm	4 days	Cimetidine and AAs
5	4 × 2 cm	4 × 1.3 cm	9 days	AAs
6	6 cm	4 cm	1 day	Cimetidine and AAs
7	4-5 cm	2.5 cm	6 days	AAs
8	4 cm	2 cm	2 days	AAs
9	6-8 cm	3 cm	8 days	Cimetidine and AAs
10	3.5 × 3 cm	1 × 0.5 cm	0 days	None
11	6 × 3 cm	2 < 3 × 1.5 × 1 cm 3 × 2 cm	0 days	None
12	7 cm	10 cm	0 days	None

\* Antacids.

TABLE 5. Details of Patients with Ulcers &gt;5 cm in Diameter

Patient	Age	Size	Biopsy	Therapy*	Outcome
1	62	10 × 20 cm	Benign	V&A, BI	Alive and well 2 years post-op
2	64	10 cm	Malignant	Exploratory laparotomy, unresectable pancreatic carcinoma	Died 9 weeks post-op
3	58	6 × 10 cm	Malignant	Subtotal gastrectomy, BII	Died 6 weeks post-op
4	64	6–8 cm	Benign	50% gastrectomy	Alive and well 2 years post-op
5	63	5 × 7 cm	Benign	75% gastrectomy, BII	Died 2 weeks post-op, anastomotic dehiscence
6	57	7 cm	Benign	70% gastrectomy, BI	Alive and well 4 years post-op
7	62	6 cm	Benign	AAs and cimetidine	Healed at 6 weeks endoscopy, asymptomatic 1 year F/U
8	81	5–6 cm	Malignant	80% gastrectomy, BII	Died 6 weeks post-op
9	58	5–6 cm	Benign	AAs and cimetidine	Healed at 6 weeks endoscopy, occasional indigestion at 8 months follow-up
10	61	5 × 4 cm	Benign	V&A, BII	Alive and well 3 years post-op

\* V&A = vagotomy and antrectomy; BI = Billroth I; BII = Billroth II; AAs = antacids.

medical therapy instituted in the intervening time period in one patient (8 days interval), while the second was due to overestimation of size at endoscopy (0 days interval). A single large ulcer described on endoscopy in one patient proved to be two separate ulcers on pathologic examination. Only one patient proved to have an ulcer much larger than incorrectly measured at endoscopy (0 days interval).

#### Results in Patients with GGU >5 cm (see Table 5)

Three of 10 patients with GGU >5 cm had malignant ulcers. Only two patients with benign GGU >5 cm had a trial of medical therapy and completely healed their ulcers. The remaining five patients with benign GGU >5 cm underwent operations based on large size alone (*i.e.*, prophylaxis against potential complications) without a preceding trial of medical therapy.

### Discussion

Giant gastric ulcers have been considered to have a high incidence of intractability, hemorrhage, and recurrence. However, our review fails to document a higher rate of complications. The combination of cimetidine and antacids healed a larger proportion of GGUs than did antacids alone. Gastric resection was found to be an effective form of surgical therapy for these ulcers. Ulcers larger than 5 cm were more likely to be malignant; however, some of the benign ulcers larger than 5 cm did heal medically.

Seventy-two per cent of ulcers in this series treated with both cimetidine and antacids were healed by 6 weeks. This compares favorably to results of Englert et al.<sup>6</sup> where 60% of gastric ulcers with mean size of 1.2 cm healed by 6 weeks when treated with both antacids and cimetidine. Thus, no predilection for intractability was observed in this series of giant gastric ulcers.

Of a total of 26 patients in both groups who healed their giant gastric ulcers, only three (12%) recurred with mean follow-up of 20 months. Thus, despite small numbers, this study does not show a predisposition for medically treated giant gastric ulcers to have a high incidence of recurrence.

Excessive risk of hemorrhage in medically treated patients was not observed. Of the 11 medical failures, only one patient required surgery because of hemorrhage that was non-life-threatening. All other medical failures undergoing surgery did so because of failure to heal or persistence of pain after at least 3 months of medical therapy.

Two previous studies have suggested enhanced healing of gastric ulcers in patients treated with both cimetidine and antacids compared with antacids alone, as was found in the present study. Loludice et al.<sup>7</sup> prospectively randomized 70 patients with drug-induced gastric ulcers to receive cimetidine and antacids or antacids alone. Healing at 6 weeks was 66% in those treated with both cimetidine and antacids compared with only 25% treated with antacids alone. Utilizing a design similar to the present study, Haddad et al.<sup>8</sup> retrospectively compared 55 patients treated with antacids alone before cimetidine was available with 45 patients treated with both cimetidine and antacids. Ulcer healing within 4 to 12 weeks was significantly better (91% vs. 73%) in the group treated with both cimetidine and antacids.

Ten patients in this series had gastric ulcers greater than 5 cm. Five of these patients were brought to surgery immediately without a trial of medical therapy because such a trial was considered to be too hazardous in view of their enormous size. While three of these ulcers greater than 5 cm were malignant, two that were treated medically did heal. Although recommendations for treatment are difficult with small patient numbers, it would appear that if malignancy could be ruled out in ulcers larger than 5 cm, a trial of medical therapy does not pose undue risk for the patient and deserves serious consideration.

The reported incidence of malignancy in giant gastric ulcers varies widely. Earlier authors suggested that 80% of ulcers measuring more than 3.7 cm are malignant<sup>3</sup> or that all greater than 3 cm are malignant.<sup>9</sup> The 10% incidence of malignancy in this series more closely agrees with studies reporting an incidence of 6–30%.<sup>1,2,4,9–15</sup>

### Conclusion

Medical therapy of GGU compares favorably with surgical therapy. H<sub>2</sub>-blockers and antacids healed 80% of GGU compared to only 33% when only antacids were used. This study was unable to substantiate the commonly held belief that giant gastric ulcers have a greater incidence of intractability, hemorrhage, and recurrence than the common (smaller) gastric ulcer. Therefore, an attempt at healing an uncomplicated GGU with antacids and H<sub>2</sub>-blocker may safely precede surgical therapy. Also, the mere existence of an uncomplicated giant gastric ulcer should not be an indication for gastrectomy.

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