VAGUS SECTION IN THE TREATMENT OF GASTROJEJUNAL ULCER*

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DRAGSTEDT AND OWENS[1] first reported the treatment of peptic ulcer by vagus section in 1943. Since that time hundreds of patients have been treated by this operation, but its value still remains unsettled. The fact that most peptic ulcers will heal following complete division of the vagus nerve fibers to the stomach appears to be well established.[2-7] Nevertheless, two major objections have been raised concerning the usefulness of the operation;[8-11] first, the complications or side effects may be as disabling as the ulcer and, second, the late development of recurrent ulceration.

In most cases the unpleasant side effects have been due to failure of the stomach to empty normally, a fault which is in part relieved by gastro-enterostomy. Other objectionable features, such as epigastric fullness, bowel cramps and diarrhea, have been reported by a number of observers. In some instances ulceration of the stomach has occurred after vagus section for duodenal ulcer.[12] The condition for which vagus section has been most widely accepted is the ulceration that occurs in the vicinity of the stoma following gastrojejunostomy, the so-called marginal ulcer. Dragstedt,[7] Walters,[11] Grimson,[2] Colp[4] and others have reported healing of a high percentage of such ulcers following vagotomy. Since our experience in the treatment of gastrojejunal ulcers by secondary resection had been unsatisfactory, we decided to try vagus section which apparently had given satisfactory results in other hands.

This report is based on a study of ten patients treated between January, 1947, and September, 1948 (Table I). All were men. In six cases the marginal ulcer followed a partial gastric resection, and in four of the six, secondary resections had failed to prevent the development of a new ulcer. In the remaining four cases the ulcer developed after gastro-enterostomy.

Seven patients were found to have free acid values, after histamine, varying between 18 and 80 units. Three patients had no demonstrable free acid. In considering the significance of these tests it should be remembered that all these patients had anastomoses which allowed easy mixture of the gastric and jejunal fluids.

In eight cases the vagotomy was accomplished through a thoracic incision and in two through an abdominal incision. Before discharge from the hospital the patients were subjected to the Hollander Insulin Test as a measure of the completeness of the vagus section. It was negative in all ten cases. Relief of ulcer pain was prompt in every patient. Nine had a satisfactory postoperative course. One of the ten patients (Case 8) complained bitterly of pain in the thoracotomy wound and six months later was found to have a recurrent or possibly a persistent marginal ulcer.

Barium studies were made on seven patients within three weeks after operation, and in all the ulcers had healed or had markedly decreased in size. Two patients did not have roentgen examinations until approximately six weeks after operation, at which time their ulcers appeared to have healed. One patient already mentioned, (Case 8), was not examined until six months after operation, at which time he

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was found to have an ulcer; there had been temporary relief of pain following vagus section, but we do not know whether the ulcer ever healed.

Three patients have been followed for three years, two for two and a half years, three for two years, and two for one and a half years.

Eight patients have remained free of symptoms. All have good appetites, have gained weight, and returned to work. One patient who had been free of symptoms for two years after operation died from a cerebral hemorrhage. Insulin tests were repeated on nine patients from 13 to 24 months after operation and were still negative. The one patient (Case 8) who had had an unsatisfactory course was found to have a positive insulin test at six months. It is now two years since operation and he continues to have ulcer symptoms but refuses further surgical treatment.

Three patients are reported in some detail because they illustrate the difficulties of treating gastrojejunal ulcers by repeated gastric resections and the satisfactory results which may follow vagus section.

Case 1.—(A76168) J. T. Ulcer symptoms began in 1922 when the patient was 22 years old. In 1927, after 5 years of unsuccessful medical management, he was treated by gastro-enterostomy. Following this operation he remained well until 1944, 17 years, before developing a recurrence of the duodenal ulcer and a gastrojejunal ulcer. He was then subjected to a gastric resection, which gave temporary relief from pain. Within a year, however, two ulcers developed at the site of anastomosis. These ulcers were excised and another two inches of the stomach removed. Again an ulcer recurred and during the year 1946 there were two hospital admissions because of acute episodes of epigastric pain with hematemesis and melena.

The last hospital admission was in January, 1947, at which time the vagus nerves were divided. Operation resulted in immediate relief from the ulcer pain and roentgen studies on the twenty-first postoperative day showed that the ulcer had healed. This patient has remained well for more than 3 years, and has gained 25 pounds in weight.

Case 2.—(A15335) L. N. Ulcer symptoms began in 1920 when the patient was 20 years of age, and he was treated by a gastro-enterostomy which gave relief from pain for 14 years. A gastrojejunal ulcer then developed and after 4 years was treated by excision and revision of the gastro-enterostomy. The ulcer recurred within 6 months and was treated by gastric resection. Operation was promptly followed by the development

TABLE I.

Case No.	Preoperative Gastric Analysis		Postoperative Insulin Test	Follow-up Insulin Test	Length of Follow-up	Result
1.	Free acid	None	Negative	Negative	3 years	Good
	Total acid	24 units		22 months		
2.	Free acid	96 units	Negative	Negative	3 years	Good
	Total acid	80 units		21 months		
3.	Free acid	18 units	Negative	Negative	3 years	Good
	Total acid	18 units		18 months		
4.	Free acid	83 units	Negative	Negative	2½ years	Good
	Total acid	30 units		17 months		
5.	Free acid	None	Negative	Negative	2½ years	Good
	Total acid	35 units		13 months		
6.	Free acid	20 units	Negative	Negative	2 years	Good*
	Total acid	62 units		19 months		
7.	Free acid	33 units	Negative	Negative	2 years	Good
	Total acid	135 units		24 months		
8.	Free acid	38 units	Negative	Positive	2 years	Poor
	Total acid	60 units		6 months postoperative		
9.	Free acid	16 units	Negative	Negative	1½ years	Good
	Total acid	25 units		18 months		
10.	Free acid	None	Negative	Negative	1½ years	Good
	Total acid	48 units		18 months		

* Died two years after operation, cerebral hemorrhage.

of another ulcer which perforated the colon forming a gastro-jejuno-colic fistula. This was treated by proximal colostomy, resection of the fistula with end-to-end anastomoses of the colon and jejunum, plus excision of more stomach. Following operation and closure of the colostomy the patient was well for three years before roentgen studies revealed another gastrojejunal ulcer.

The last admission to the hospital was in February, 1947, at which time the vagus nerves were divided. Relief from pain was prompt and barium studies on the fourteenth postoperative day failed to show the ulcer. This patient has remained free of all symptoms for over three years and is employed regularly as a steel worker.

Case 3.—(A71442) B. M. A perforated duodenal ulcer was sutured in 1937 when the patient was 22 years of age. A second perforation occurred 5 years later and again was treated by suture. Because of the persistence of pain over a period of 6 months following the second perforation a gastric resection was done. A gastrojejunal ulcer, which bled, developed in 4 months, and more of the stomach was removed by a second resection. Again the ulcer recurred.

The last admission to the hospital was in January, 1947. At this time the patient was living on a diet of milk and crackers and had been unable to work for over a year. He had lost 30 pounds in weight. Roentgen studies showed a large ulcer at the site of anastomosis. Following section of the vagus nerves there was complete relief from pain and the patient was able to eat a normal diet. Barium studies on the thirteenth postoperative day revealed that the ulcer had healed. In the 3 years since operation there has been a weight gain of more than 30 pounds and the patient has been able to return to full time work as an elevator operator.

SUMMARY AND CONCLUSIONS

1. Ten patients with gastrojejunal ulcers treated by vagus section and followed for one and one-half to three years have been reported.

2. Eight of the nine patients in whom the nerve section was complete, as indicated by the Hollander Insulin Test, remain well to date. One patient who had been free of symptoms for two years died from a cerebral hemorrhage.

3. One patient, with a positive insulin test, has a recurrent or persistent ulcer.

4. In our limited experience vagus section has been more effective in treating gastrojejunal ulcer than repeated gastric resection.

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