TRANSABDOMINAL VAGOTOMY VERSUS GASTRIC RESECTION IN THE TREATMENT OF DUODENAL ULCER

A Comparison of Results

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The subject of the treatment of intractable duodenal ulcer is controversial. Some still believe that radical gastric resection is the treatment of choice, whereas others prefer the more conservative procedure of vagotomy combined with pyloroplasty or gastroenterostomy. Our reasons for preferring transabdominal vagotomy, coupled with a conservative operation to afford drainage of the denervated stomach, are based on an experience of only twenty-two months, but since the initial results following vagotomy have been superior to those obtained by any other method of treatment we believe that we are justified in resorting to this operation when medical treatment proves ineffective.

At least 85 per cent of the patients we see with duodenal ulcer make satisfactory progress on medical management. The patients who are being subjected to vagotomy are those with intractable complications of duodenal ulcer which require surgical intervention. Since transabdominal vagotomy has proved safer and more effective than gastric resection and since removal of three-fourths or more of the stomach is an irreversible procedure which cannot be altered even if it produces incapacitating symptoms, it would appear that vagotomy is the conservative method of treatment and that gastric resection is unnecessarily radical.

Duodenal ulcer is a disease which causes much distress but rarely threatens life. Since it is not a disease which carries with it a high mortality rate, operations which entail a significant risk and a high morbidity are not justified in its treatment.

A mortality rate of 2.1 per cent for subtotal gastrectomy for duodenal ulcer has been quoted[1] as evidence that gastric resection has a low mortality. This is an excellent record, but the question cannot fail to arise as to whether or not even 2.1 per cent of the patients would have died if operations more conservative than subtotal gastric resection had been employed.

In spite of the fact that in the past ten years at Cleveland Clinic the mortality rate of gastric resection for duodenal ulcer has been only 2.8

per cent, we have felt that any mortality incurred in the treatment of a disease which does not directly threaten the life of the patient is an irreparable tragedy. We therefore welcomed transabdominal vagotomy as a procedure which entails a minimal risk and which, over a period of nearly two years in our hands and of over four years in the experience of Dr. Dragstedt, has afforded the best protection against recurrence of ulcer.

Transabdominal vagotomy has now been performed by Dr. Thomas E. Jones and myself 120 times without a fatality. Dragstedt has done approximately 300 transabdominal vagotomies with "no deaths attributable to the procedure".[2] Most of the reported complications and deaths have followed transthoracic vagotomy, an operation which we have now abandoned because the stomach can nearly always be denervated as well by the transabdominal approach.

It is true that our period of observation has been too short to permit final evaluation of the method. Nevertheless, it is already apparent to us that in the first year and a half after operation, vagotomy accompanied by gastroenterostomy or pyloroplasty is (1) safer than gastric resection, (2) more effective than gastric resection in controlling recurrent ulceration, and (3) preferable to gastric resection because its morbidity is lower and it is more effective in restoring the patient to health and normal activity.

The gratifying initial results obtained in our first 50 vagotomies for peptic ulcer (gastric, jejunal, and duodenal) have been reported by Collins and Stevenson.[3] It is not within the scope of this article to discuss gastric and jejunal ulceration, and the following analysis of results refers only to patients with duodenal ulcer.

The course of 50 consecutive patients during the first year following gastric resection for duodenal ulcer has been analyzed and compared with that of 50 consecutive patients subjected to vagotomy alone or combined with gastroenterostomy or pyloroplasty. Complications which occurred over a year after resection were disregarded so that the time interval of the studies would be comparable. All patients were followed for at least four months. The results were graded as follows:

Excellent = no significant gastrointestinal symptoms; patient well and working.

Improved = persistent gastrointestinal symptoms requiring intermittent or constant dietary and medical treatment.

Failure = uncontrollable symptoms as severe as before operation.

Gastric Resection 50 cases	Vagotomy 50 cases*
Mortality = 4 per cent (In the larger group of 140 cases mortality = 2.8 per cent	Mortality = 0 (In the larger group of 120 cases mortality = 0)
Not followed=6 per cent	0 per cent
Excellent =58 per cent of followed survivors	88 per cent
Improved=29 per cent of followed survivors	10 per cent
Failure =13 per cent of followed survivors	2 per cent

* *13 had vagotomies only, 30 had gastroenterostomies, 7 had pyloroplasties.*

Three of the 6 patients classified as failures following gastric resection developed demonstrable jejunal ulcers in the first year. The other 3 developed symptoms typical of jejunal ulcer, but the ulcer could not be demonstrated.

The patient who is classified as a failure following vagotomy was subjected to vagotomy alone without any complementary operation to facilitate emptying of the denervated stomach. Three months later, because of persistent symptoms referable to gastric retention, a gastroenterostomy was performed with complete relief of all gastrointestinal distress. At the present time this case can properly be classified as having a good result.

The complaints of the 13 patients who continued to have symptoms after gastric resection but who were classified (sometimes generously) as improved were as follows:

Two had pain similar to preoperative pain.

Two had pain, vomited, and were losing weight.

Two vomited after meals.

Two had persistent nausea.

One had vague gastrointestinal symptoms and subsequently died of appendicitis.

One had a hemorrhage from the stomach and suffered from bloating.

One had pain and a hemorrhage.

One had bad taste in mouth and poor appetite.

One was weak and did not gain weight.

The complaints of the 5 patients who continued to have symptoms after vagotomy but who were classified as improved were as follows:

Two have diarrhea and bloating after meals but are improving steadily four months after operation.

One has gas, belching, and mild diarrhea but considers his condition much better than before operation.

One has nausea, weakness, and intermittent diarrhea.

One experiences persistent ulcer-like symptoms, although no ulcer can be demonstrated by roentgenogram. This patient had a very small posterior vagus trunk, and it is probable that the denervation was incomplete. The symptoms are controlled by medical management.

Three of the six patients who failed to obtain excellent results were subjected to vagotomy alone, without pyloroplasty or gastroenterostomy. These patients developed symptoms referable to gastric retention, but they are improving with the passing of time, and it is probable that within three months they will be completely well. In none of these except the one who required a secondary gastroenterostomy has the retention incapacitated the patient or proved to be more than an inconvenience and embarrassment. Nevertheless, my personal preference is for the almost routine employment of pyloroplasty or gastroenterostomy, the choice of operation depending on the amount of fixation and scarring of the duodenum.

None of the patients in this series has taken antacids or followed a diet other than the bland diet prescribed for the first six weeks after operation. Smoking and alcohol have not been interdicted. This is in sharp contrast to the patients subjected to gastric resection, most of whom were advised to maintain a full medical regimen of antacids and diet and in whom tobacco and alcohol were prohibited.

In addition to the 5 patients who have symptoms of sufficient significance to warrant treatment, there are 11 others (22 per cent) who have symptoms so mild that they do not require treatment, do not interfere with normal activities, and are elicited only in response to the promptings of a questionnaire. On the basis of the patient's own evaluation and of the patient's ability to return to normal activity without medical management, the results in these cases have been classified as excellent.

Four have occasional gas pains.

Two are constipated (one has a feeling of fullness when bowels do not move, the other a slight gas pain).

One has occasional diarrhea.
One has stools which are watery but not frequent (only one or two a day).
One has occasional belching of foul gas.
One has occasional pain on right side.
One has diarrhea and gas pain when he eats fresh fruit.

Since the majority of patients who develop marginal ulcers have symptoms or demonstrable ulcers in the first year after operation,[4] these figures, although admittedly covering only a brief period, probably are significant. In any case, they indicate that the mortality and morbidity in the first year after vagotomy, alone in selected cases or more often in conjunction with pyloroplasty or gastroenterostomy, is much lower than that following gastric resection.

The results following gastroenterostomy alone have been as unsatisfactory as are those following resection. The incidence of marginal ulcer and of persistent symptoms requiring medical treatment in a series of 50 consecutive cases was higher in the first year than was observed in patients subjected to gastric resection. It is clear, therefore, that the gastroenterostomies and pyloroplasties that were commonly performed in conjunction with a vagotomy cannot be given too much credit for the results obtained in this series of cases.

Even those who most strongly oppose the use of vagotomy in the treatment of ulcer do so because they fear that vagotomy will not afford permanent protection against recurrent ulceration rather than because they fear the end-results of sectioning the vagus nerve.[1] They combine vagotomy with gastric resection in the treatment of duodenal ulcer and in so doing accept the additional hazard of resection. This is in spite of the experience of Dragstedt, who has performed vagotomy alone or with gastroenterostomy and has followed his patients for four years without observing recurrences in patients whose stomachs have been completely denervated.

If, as has been suggested, there were to be a "five-year moratorium" on vagotomy to evaluate its end-results before more vagotomies were done, there would be many deaths and much morbidity following gastric resection which could have been avoided had less radical operations, coupled with vagotomy, been employed. Should the patients subjected to vagotomy develop recurrence of ulcers ten or twenty years from now, the situation will still be correctible by gastric resection. The mortality rate of gastric resection for marginal ulcer is said to be lower than that of the primary resection for duodenal ulcer (1.9 per cent to 2.1 per cent[1]). Recurrent duodenal ulceration or jejunal ulceration is still cor-

rectible. But the lives that are lost, even if they be only 2 per cent of the patients operated upon, are not retrievable; nor is it often possible to alter the morbidity that all too frequently follows radical resection of the stomach.

In comparing the results of the two surgical procedures it is necessary to weigh the possibility of a recurrent ulcer in a living patient against the possibility of a cured ulcer in a patient who has lost his life as the result of unnecessarily radical surgery employed in the treatment of a benign disease. The burden of proof rests upon him who accepts the responsibility of employing an operation which entails a greater risk and whose immediate results are not so satisfactory as are those which follow the safer procedure. And always, regardless of the apparent safety of transabdominal vagotomy, it should be emphasized that any operation entails risk, that ulcer is rarely a fatal disease, and that the risk of even so safe a procedure as vagotomy should not be undertaken until a fair trial has been given to more conservative methods.

Summary

1. Transabdominal vagotomy accompanied by pyloroplasty or gastroenterostomy is safer than gastric resection. One hundred and twenty patients have been subjected to vagotomy at Cleveland Clinic without a death.

2. Vagotomy should be supplemented by pyloroplasty or gastroenterostomy to facilitate emptying of the denervated stomachs.

3. The immediate postoperative course is smoother after vagotomy than after gastric resection.

4. The symptoms of ulcer and the tendency to recurrent ulceration are better controlled in the first year following vagotomy than following gastric resection.

5. The morbidity due to symptoms resulting from the operation is less in the first year following vagotomy than following gastric resection.

6. Gastric resection may result in incapacitating symptoms that cannot be treated surgically and may be difficult to control medically.

7. If a fatality or uncontrollable morbidity follows gastric resection the situation is irreversible and nothing can be done.

8. If vagotomy fails to effect permanent control of the tendency to peptic ulceration and if ten or twenty years later the ulcer recurs, the patient can still be treated by conventional surgical methods.

9. Since duodenal ulcer is a benign disease that rarely threatens life operations should be performed only upon those patients whose symptoms are intractable to medical management.

Conclusion

Since vagotomy with pyloroplasty or gastroenterostomy is safer and more effective than gastric resection, this conservative method of treatment should be employed before radical resection of the stomach is advised.

Addendum

Since the preparation of this paper thirty additional vagotomies have been performed with two deaths. The mortality rate for vagotomy is thus 1.3 per cent, one half that of gastric resection. Only one of the deaths could be attributed to the operative procedure.

References

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