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DISCUSSION

DR. PAUL H. JORDAN, JR. (Houston, Texas): Highly selective vagotomy, or parietal cell vagotomy, was first used in combination with a pyloroplasty for the treatment of duodenal ulcer by Fritz Holle about 12 years ago. This type of vagotomy, used without drainage, was introduced independently by Johnston and Amdrup approximately 7 years ago. The results of the latter procedure with respect to reducing the adverse effects of dumping, diarrhea, bilious vomiting, sometimes associated with conventional types of gastric surgery, have been excellent, as the present study by Sawyers and Herrington indicates.

The long-term results with respect to the incidence of recurrent ulcer is still awaiting a final answer. At the present time it appears that the recurrence rate is in the vicinity of 5% when the procedure is properly performed.

With respect to the utilization of this operation for duodenal ulcers, with the complications of bleeding, perforation, and obstruction, or for gastric ulcers, our information is more rudimentary and fragmentary. The results of parietal cell vagotomy in patients with perforated duodenal ulcer that Dr. Sawyers has reported is a cautious extension of the use of parietal cell vagotomy into an area less well explored than has the use of the operation for the elective treatment of duodenal ulcer.

This report, as well as several others, some of which he mentioned, that have appeared on this subject, suggests that the results with parietal cell vagotomy, when combined with a patch closure of the perforation, provides an excellent way to handle many patients with perforated ulcer.

Although many patients with perforation not treated with a definitive procedure will continue to have symptoms and require further surgery, there is a substantial number that will have no further trouble. The difficulty is our inability to precisely identify those patients who will and those who will not continue to have ulcer symptoms if untreated.

Being unable to do this, it seems unreasonable, then, to perform definitive surgery of the conventional variety on all patients who have a perforation, and thus incur a significant incidence of undesirable side effects in patients who might not have required definitive surgery.

Dr. Sawyers' results, therefore, suggest that parietal cell vagotomy without drainage may be a satisfactory compromise between the use of simple closure that does not protect patients against recurrent ulcer, and the use of vagotomy and hemigastrectomy, or vagotomy and drainage, which impose increased morbidity on those patients who might not have had further ulcer disease.

We therefore concur with Drs. Sawyers and Herrington in their thesis, and our results in 23 patients similarly treated completely support their conclusions.

I would like to ask Dr. Sawyers and Dr. Herrington what precautions do they take at the time of the operation to avoid performing parietal cell vagotomy in a patient who may have a pyloric lumen of inadequate size, leading to obstruction?

The other question is: How do they feel about the application of this procedure in patients with a prepyloric ulcer which has the same clinical characteristics as a duodenal ulcer, or with the garden variety of gastric ulcer at the angularis incisura that is unaccompanied by a duodenal ulcer?

DR. EDWARD R. WOODWARD (Gainesville, Florida): I want to ask the authors in how many cases they were not able to perform this for their patients in whom the inflammatory reaction was advanced to the point where this wasn't feasible. I would suspect that probably the lesser curvature is quite well protected by the liver, and that this particular area may be much more accessible than we would commonly think.

We haven't used definitive surgery extensively in patients with perforation, largely because in our locale we tend to get patients rather late; but I certainly think that the concept is sound.

Are there patients, however, where a nonrecurring stress relating to the perforation, which was present in two of their cases, would indicate that recurrence of perforation or development of persistent duodenal ulcer symptoms would be most unlikely? Wouldn't it be prudent to omit parietal cell vagotomy in such patients?

Also, in their manuscript I noticed that they plicate the serosa-covered posterior and anterior walls of the stomach over the area where the branches of the vagi have been transected, and I wonder if they feel this is essential. We don't do it, and have found no cause to regret it. What do they think the advantages are of this maneuver?

DR. PATRICIA C. MOYNIHAN (Jackson, Mississippi): I deal primarily in pediatric surgery, but I thought it might be appropriate to share with you some of the cases that we have seen in the neonate in recent years. As a matter of fact, in the last two years we have had 8 cases of newborn infants who had duodenal ulcer problems, and these were divided into 6 infants who had anterior perforation and two infants who had posterior bleeding also. The male-to-female ratio was 1:1.

Simply, we could categorize these patients into two categories. One is the stress infant, who is the premature infant with

hyaline membrane disease, or sepsis, or a difficult delivery. 60% of our patients were in that category. 40% were in the category of the full-term, uncomplicated pregnancy and delivery, except in one infant (and I might mention that it was a male infant) who was age 24 hours, was circumcized, and 18 hours later had a bleeding duodenal ulcer.

The average onset of symptomatology in all of these patients, whether it be perforation or bleeding, was three days. And what we have been doing, simply, Dr. Sawyers, in the perforated cases was to oversew and use an omental patch; and in the case of the posterior bleeding ulcers, to use the oversewing of the bleeding ulcer.

I would like your opinion, or your comments, on your experience with patients in this category. And do you think vagal stimulation is an important etiological factor?

DR. KENNETH ENG (New York, New York): Dr. Sawyer and Dr. Herrington are to be commended for showing that the perforated duodenal ulcer can be treated by suture plication and proximal gastric vagotomy safely and with excellent long-term results.

Certainly, if any definitive operation is to be performed, it should be one that produces a minimum of postoperative sequelae, since inevitably some patients would otherwise have had no further ulcer symptoms. And I think this is really analogous to the question that Dr. Dunphy raised about prophylactic antibiotics.

In the past four years we have treated 7 patients with perforated duodenal ulcer by plication and proximal gastric vagotomy at New York University with good results. Our series would have been larger, except that we have had some difficulty in obtaining consent. These patients are invariably very sick, and are anxious to get on with their operation. However, when the words "experimental operation" or "new operation" are mentioned, their ears perk up, and often the answer is no.

The question that I would like to pose is whether the excellent results presented here today, and with the excellent long-term results reported from England and Denmark for proximal gastric vagotomy, are we now justified in considering this operation, at least for this indication, as an accepted procedure in our armamentarium?

Proximal gastric vagotomy adds little to the morbidity of the operation or the long-term course, and offers great potential benefits.

DR. J. LYNWOOD HERRINGTON, JR. (Closing discussion): Dr. Jordan, we certainly appreciate your splendid historical review. I think it is indeed unfortunate that we do not have a more precise method at the present time to define the high-risk patient, who after an acute ulcer perforation is most likely to develop further ulcer problems.

Dr. Sawyers and I have had no experience with gastric outlet obstruction treated by proximal gastric vagotomy. However, as some of you know, David Johnston in Bristol, England has done 20-odd consecutive cases, many of them with a marked degree of stenosis in which he treated with proximal gastric vagotomy alone. These represented consecutive cases. He had a 10% incidence of persistent obstruction, where he had to go back in and do a drainage operation, or had to remove the gastric antrum.

We have had patients, though, who have had a mild to moderate degree of obstruction and at the time of operation, I passed a

fairly large Maloney dilator down through the obstruction without any difficulty. I did not treat these patients with parietal cell vagotomy, but treated them with a truncal vagotomy and a distal gastric resection. I am, however, convinced that some mild to moderate cases of obstruction can be adequately treated by intraoperative dilation and proximal gastric vagotomy.

Dr. Jordan, if we had a patient who presented with both a duodenal ulcer and a prepyloric ulcer, these people, as you well know, are hypersecretors, they have true duodenal ulcer disease, and we would treat them with a proximal gastric vagotomy if they had no evidence of obstruction and they were good risk.

Now, with a pure gastric ulcer, a Johnson type I ulcer, in which there is no associated duodenal ulcer or duodenal scarring, we would not treat the patient with a proximal gastric vagotomy, but would treat him with a distal antral resection and an end-to-end gastroduodenostomy.

Again, David Johnston has done 70 cases of proximal gastric vagotomy for pure gastric ulcer, type I. However, in 15% of his patients with gastric ulcer there was so much induration and edema about the lesser gastric curve that he could not do a proximal gastric vagotomy, and had to do another standard operation.

Dr. Woodward, our perforated ulcer series represented practically consecutive cases. Many of them had a fair to moderate degree of spillage, and we do not pay very much attention to the time interval of 12 to 24 hours since perforation. We just use our judgment. If we get the abdomen clean, and everything looks good and the patient is in good shape, we then go ahead and do the proximal gastric vagotomy. Obesity has been no contraindication to the operation. I believe the largest patient who received a proximal gastric vagotomy weighed 230 pounds.

Dr. Sawyers probably prefers to plicate the ulcer. I use the Graham patch technique, which I think is much better, Dr. Woodward.

Dr. Moynihan, I think with Dr. Jim O'Neill, if he is in the audience that he might perhaps feel different, but with a perforated ulcer in the newborn, I would simply close the ulcer, and not do anything else. However, in a child 6 to 12 years old, I would not hesitate on an elective basis to do a parietal cell vagotomy or a truncal vagotomy/antrectomy.

Dr. Eng, I think proximal gastric vagotomy is being used more and more throughout the world today. Of course, as you know, for about 6 to 8 years now it has been used extensively throughout the European countries and in Great Britain. It has been used on a lesser scale in America, and its use has been confined largely to University Centers. I think that before one undertakes a proximal gastric vagotomy, one should be taught how to do the operation correctly, because certainly the operation is doomed to fail unless it is done correctly. I think that the time has arrived when we should begin to use this operation on a wider basis.

I feel at the present time, and I want to qualify this by saying "currently", proximal gastric vagotomy is proving more effective in preventing recurrent ulceration than is truncal vagotomy with pyloroplasty. I think it is probably just as effective, or perhaps more effective, than gastric selective vagotomy plus pyloroplasty, but not as effective in preventing recurrence as is truncal vagotomy and antrectomy. The advantages of the operation are its low morbidity, low mortality, and diminished long-term side effects where compared to the standard operations for ulcer. We are very encouraged with our preliminary results thus far.