Discussion

DR. J. LYNWOOD HERRINGTON, JR. (Nashville, Tennessee): We are certainly indebted to Professor Boey, and also Professor Ong, in their selection criteria and in their guidelines in selecting a definitive operation for patients with an acute perforated ulcer.

A report from the Vanderbilt University Hospital back in 1955 showed that, following closure of a perforated duodenal ulcer, only one in four patients remained free of ulcer symptoms.

A few years ago, in an additional report, Dr. Sawyers, Dr. Joe Mulherin, and myself reviewed a series of perforated duodenal ulcers from our institution treated during the 1960s and midway through the 1970s. (slide) This retrospective study comprised 360 patients. Two hundred and fifty-four patients were treated by simple closure, with morbidity of 21% and a mortality of 6.7%. Definitive operation was done in 106 patients, usually vagotomy and antrectomy in most cases, a vagotomy and pyloroplasty in a few cases. The morbidity was 15%, and the mortality was 2.8%.

Definitive operation was largely restricted to the good-risk patients who had prior ulcer symptoms. We were reluctant to do a definitive operation in the absence of prior ulcer symptoms for fear of causing long-term side effects in some patients who would otherwise have remained asymptomatic. The simple closure cases were used on the high-risk patients.

In those, however, who had prior ulcer symptoms at the time of the closure, 77% continued to have ulcer problems, and almost 50% of this group later came to a definitive operation.

I think that currently there is no method to predict whether a single individual will have further trouble with his ulcer following simple closure, but in very recent years Dr. Sawyers and I have used simple closure combined with a proximal gastric vagotomy in a series of 37 good-risk patients. We have not hesitated to use this combination in patients in the absence of prior ulcer symptoms. No mortality has occurred thus far, and the hospital morbidity has been indeed low. Long-term side effects are in the range of 2 to 3%, with none being severe, and up to a four-year period, we have had no recurrent ulcer among the 37 patients.

As you know, the long-term side effects with vagotomy and antrectomy and vagotomy and drainage are approximately 20%, and an occasional death does follow the operation.

The concern with proximal gastric vagotomy is the increasing rate of recurrent ulceration being reported, in some centers, as high as 15%. However, I believe it is important to emphasize that 80 to 85% of patients after a proximal gastric vagotomy are currently relatively free of gastrointestinal complaints, and this is not true, as you know, with vagotomy and drainage, or even with vagotomy and pyloroplasty.

For the 15% of patients who may develop a recurrent ulcer, many of these ulcers are very small, and they can be managed quite satisfactorily with Tagamet and other means. The appealing argument for a proximal gastric vagotomy to me is should reoperation become necessary for control of recurrence, the technical problems are less, and the morbidity and the mortality are reduced, when compared with a reoperation for recurrence after vagotomy and antrectomy, or vagotomy and drainage.

One question for Dr. Boey: What is your overall recurrence rate with proximal gastric vagotomy so far, and how many cases have you done?

DR. PAUL JORDAN, JR. (Houston, Texas): I rise mainly to concur with the authors' findings. We have performed proximal gastric vagotomy, with patch of the ulcer, in 65 patients, and these results will be published shortly. We have encountered no mortality and virtually no immediate or long-term morbidity, just as Dr. Boey has. Sixty of these patients have been followed yearly one to eight years, and 49 have been followed longer than two years. We have had one recurrence, or a 2% recurrence rate, if one considers only the patients that we have followed longer than two years.

Years ago, the difficulty I had accepting definitive surgery for perforated duodenal ulcer was the imprecise method available then, and which persists today, for distinguishing those patients who will from those who will not have further ulcer problems if only a simple closure is performed at the time of perforation. As Dr. Boey has pointed out in his paper, 30% of his patients with an acute perforated ulcer treated by simple closure developed symptomatic relapse within two years. But what guides do we have to sort out these patients and tell us on an individual basis who does and who does not need definitive surgery?

In the absence of such guides, our criteria for the ideal operation for definitive surgery for perforated duodenal ulcer include an operation with virtually no mortality, an operation that will provide protection for recurrent ulcer in those patients who would have further trouble without definitive surgery, and an operation that will produce no untoward effects if it happens to be performed in a patient who might not have had further ulcer problems if definitive surgery had not been performed.

Proximal gastric vagotomy seems to fulfill these requirements admirably, and we are able to perform the procedure in about 75% of patients. This is somewhat lower than the 85% in whom Dr. Boey estimates that the risk factors are suitable for application of the operation.

In our own experience, those patients who are relegated to simple closure because the risk factors do not permit definitive surgery had an exceptionally high mortality. This leads me to wonder if we should be giving greater consideration to nonoperative treatment in some of these patients. I am led to believe that in many parts of the world, including China, this method is still used. I would like to ask Dr. Boey if he has an opinion regarding nonoperative therapy, as outlined originally by Taylor, Byrne, and Rosoff, and more recently by Art Donovan.

DR. DAVID B. HINSHAW (Loma Linda, California): I would like to support the authors' conclusion that definitive surgery can be safely performed for perforated duodenal ulcer.

Our experience with proximal gastric vagotomy and closure has been very limited. However, we have performed truncal vagotomy with Heineke-Mikulicz pyloroplasty in 315 patients over the past 26 years. There have been four postoperative deaths in this group of patients.

Although our selection criteria were relatively strict early in this series, these criteria have been gradually relaxed to now include most patients with perforated duodenal ulcer. At present, simple closure is reserved primarily, in our hands, for those patients with severe associated medical illnesses. The early fears that truncal vagotomy and pyloroplasty would be associated with mediastinitis or pyloroplasty leak have proved to be unfounded. We have not seen these particular complications. The deaths in our series have all been cardiac or pulmonary related.

It has been our experience that truncal vagotomy with Heineke-Mikulicz pyloroplasty can be performed in the vast majority of patients with perforated duodenal ulcer, with a mortality rate approaching 1%.

DR. GEORGE L. JORDAN, JR. (Houston, Texas): We too have been interested in the problem of perforated ulcer for many years, and members of our department have conducted studies relative to this problem for over thirty years. Our program for treatment of these patients has evolved over some period of time, and currently bears a number of similarities to that which you have heard presented. We use similar risk factors for our choice of patients.

We have found a high recurrence rate, 73%, after simple closure, and we have found that the use of definitive surgical procedure does not increase the mortality rate in treating patients who are good risks. In fact, we have had at times more than 100 consecutive patients treated by gastrectomy, with no mortality, and in the last 20 years, in patients under 50 years of age who had no complicating diseases, the mortality rate for all types of procedures we have used has been less than 1%.

We have some differences, however. We have continued to use vagotomy and resection as our definitive procedure of choice and have had no reason to change it. The mortality rate has remained low in good-risk patients, and we have not identified patients that we would consider nutritional cripples.

Secondly, many of our procedures have been performed by residents, and we have found that our senior residents can handle this problem quite well in our institution.

Our series have not been randomized, as was done here, and certainly the randomized series gives a good comparative data. Nevertheless, with our mortality rate of less than 1%, we did not feel that great statistical evaluation was necessary.

Many people today have indicated that definitive surgery can be performed safely, but in this country very few who are writing in the literature indicate that they are using definitive surgery very commonly. A couple of years ago, I reviewed a number of large series published in the current American literature, and collected 1746 patients reported in a variety of series. Only 25% of these patients had undergone any type of definitive surgery at the time of their acute perforation.

Using the criteria that we have developed, we perform definitive surgery in 75% of patients, and I still believe that an increasing use of definitive surgery in properly selected patients will reduce the morbidity of this disease without increasing its mortality rate.

DR. JOHN BOEY (Closing discussion): To begin with Dr. Herrington, you, as well as Dr. Paul Jordan have commented on the difficulty in predicting who are the patients who will actually benefit from a definitive procedure. We have also addressed this problem concurrently in this particular trial. In this trial, we elected to study definitive surgery only in patients whom we believe have perforations in chronic duodenal ulcers. (slide). However, this is data from patients who had acute perforations in acute duodenal ulcers, the latter being defined as perforations in patients who had an ulcer history of less than three months. We compared these patients following closure with those who had patched chronic duodenal ulcers. What you can see is the cumulative per cent recurrence-free rate indicated here, and that there is a difference between the patients who had perforations in acute *vs.* those who had perforations in chronic duodenal ulcers. At two years' follow-up, the cumulative remission-free rates are roughly 70% and 55%. These differences, which are statistically significant, I think, importantly bear out one point, and that is that just as not all patients who had perforations in chronic ulcers relapsed, neither are those who had acute perforations in acute ulcers completely immune to recurrences. And so there is the problem of how do we within this population select patients who might require definitive surgery?

I think Dr. Herrington, Dr. Sawyers, and Dr. Paul Jordan have felt that given these problems in identifying the individual patients who might recur, proximal gastric vagotomy should be performed in all of them, and we feel there is a great deal to be said in favor of this position.

In answer to Dr. Herrington's question of the number of recurrences that we have encountered so far, at follow-up of up to 40 months now, we have only had one recurrence among the 34 patients after proximal gastric vagotomy. This was merely an endoscopically diagnosed recurrence in an otherwise asymptomatic patient.

In regard to the treatment and the form of definitive operation to be preferred, Dr. Hinshaw has been a pioneer and strong advocate of vagotomy and pyloroplasty. We would agree with him that in the community, vagotomy and pyloroplasty is a more widely accepted operation, and is probably an easier procedure to perform for the majority of surgeons in practice. However, we feel that in centers with special expertise, proximal gastric vagotomy has a great deal of advantages. I think many surgeons have some reservations about performing gastrectomy, and not all surgeons, perhaps, can equal the splendid results that Dr. G. L. Jordan's group had in Houston.

All together, in the literature so far, there have been nearly 400 cases of proximal gastric vagotomy performed for perforated ulcers. There have been only two reported deaths, and so, again, all of these procedures in carefully selected patients are certainly acceptable.

Dr. Jordan had two questions regarding nonoperative treatment, and also the per cent of patients in whom definitive surgery might be feasible. We also subscribe to the use of nonoperative, conservative treatment for patients who have intractable shock. In some of these patients we have inserted peritoneal drains under local anesthesia, and, following recovery from their septic episode, we have gone in subsequently and drained their intraabdominal abscesses. We certainly would agree with Dr. Rosoff's and your own feeling, and also Dr. Donovan's that this is certainly still acceptable treatment for perforations in critically ill patients.

In our review of the 216 patients, roughly 15% of them had one or more of the risk factors which I believe should preclude consideration of an immediate definitive operation. There may be differences in patient populations, but, by and large, I think definitive operation is feasible in the vast majority of patients. However, whether you should choose to perform immediate definitive surgery in patients with perforations of acute duodenal ulcer, I think, is still an unsettled issue.