Proximal Gastric Vagotomy for Complicated Duodenal Ulcer and Benign Gastric Ulcer Disease

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Abstract
Forty one patients underwent proximal gastric vagotomy (PGV) for upper gastrointestinal bleeding (18), gastric outlet obstruction due to chronic duodenal ulcer (16) and benign gastric ulcer (7), and were followed up for 6 months to 10 years. Of the patients who presented with bleeding, 14 had duodenal ulcer, three erosive gastritis and one benign gastric ulcer.

PGV with direct suture with or without excision of the ulcer was performed in the bleeding group. PGV was combined with dilatation by Hegar’s dilator up to No 14 size in obstructed ulcer patients. PGV with excision of ulcer was performed in patients having gastric ulceration.

There was no operative mortality and none of the patients developed recurrent ulcer on follow up. In the bleeding ulcer group, there has been no rebleeding and Visick grades I and II results were achieved in 100%. In the obstructed group, 81% of patients achieved Visick grades I and II. Three patients in this group required re-surgery for gastric atonia, restingenosis and gastric volvulus. In gastric ulcer patients, Visick grades I and II results were achieved in all.

Key words: Proximal gastric vagotomy, bleeding duodenal ulcer, erosive gastritis, gastric outlet obstruction, benign gastric ulcer.

Introduction
Postoperative sequelae are significantly less after proximal gastric vagotomy as compared to other procedures done for treating peptic ulcer diathesis.7,8 Johnston et al7 have therefore recommended this procedure for the treatment of ulcer complications as well. The present communication reviews our experience with proximal gastric vagotomy in the treatment of upper gastrointestinal (GI) bleeding, outlet obstruction and benign gastric ulcer. To date, no such experience has been reported from any other centre in the country.

Material and Methods
Between 1975 and 1986, forty one patients underwent proximal gastric vagotomy for complicated duodenal ulcer and benign gastric ulcer disease. These included 18 patients presenting with upper GI haemorrhage, 16 patients with gastric outlet obstruction and seven with uncomplicated benign gastric ulcer. During the same period, proximal gastric vagotomy was performed by the senior author (SPK) in 120 other patients with uncomplicated duodenal ulcer, truncal vagotomy and drainage in 228 and gastrectomy in 55 patients presenting with ulcer diathesis.

In the bleeding group the diagnosis was established by barium meal (4 cases) and/or endoscopy (all cases) and the indication for surgery recorded. At laparotomy, the diagnosis was confirmed after anterior gastrotomy, which was done through a longitudinal incision of approximately 4-5 cm, placed about 2-5 cm away from and parallel to the greater curvature, centred at the junction of the body of the stomach and antrum. If any active bleeding was present, this was managed by direct suture of the bleeding point or excision of the bleeding ulcer. The gastrotomy incision was then closed in two layers using chromic catgut (two zero) along the longitudinal axis of the stomach. Following control of bleeding, proximal gastric vagotomy was performed in all cases.

In the group of patients presenting with obstructive features, the diagnosis was again confirmed by barium meal (14 cases) and/or endoscopy (12 cases). Saline load test was also performed in seven patients. The degree of stenosis was assessed intraoperatively by insinuating the index finger into the pylorus, by invaginating the anterior wall of the stomach as well as by passing a Hegar’s dilator after anterior gastrotomy. The procedure of gastrotomy was the same as described above. Graded dilatation was performed using Hegar’s dilator up to a maximum of No 14 size. Proximal gastric vagotomy was performed in all cases after closing the gastrotomy wound in two layers longitudinally.

The diagnosis of gastric ulcer was confirmed by barium meal examination. At laparotomy, after anterior gastrotomy the benign nature of the ulcer was evaluated grossly, and after excision of the ulcer, the same was submitted for histopathology. A proximal gastric vagotomy was performed in all patients after closure of the gastric defect.

The mortality and morbidity if any were recorded in each case. Saline load test was repeated at the time of discharge in eight patients who had presented with outlet obstruction. All patients were followed up for 6 months to 10 years. At follow up patients were evaluated for recurrence of original complication and development of ulcer. The results of surgery were evaluated by the modified Visick grading.

Results
The cause of bleeding was duodenal ulcer in 14 (78%) patients, benign gastric ulcer in one (5%), and
C erosive gastritis in three (17%) patients. There were 17 males and one female, aged 12 to 35 years (mean 37.7). Five patients had profuse hematemesis and required emergency surgical intervention. Twelve patients had recurrent hematemesis: one patient presented with severe melena alone. The duration of bleeding was 4 days in severe cases and varied from 1 year to 11 years in cases with recurrent bleeding.

Active bleeding was noticed at the time of endoscopy in live (29%) patients. One patient with actively bleeding duodenal ulcer was managed by direct suturing of the bleeding vessel at the base of the ulcer, and another patient with actively bleeding gastric ulcer was managed by excision of ulcer. In three patients with erosive gastritis, erosions were the cause in two and acute ulceration of the stomach in the third patient. These patients were managed by endoscopic coagulation of the ulcer respectively.

The bleeding got controlled in all patients immediately after surgery. Two patients developed delayed gastric emptying and vomiting in the period postoperatively: this improved with conservative treatment alone within two weeks. The delay in gastric emptying was suspected on the basis of inability to retain oral feeding and persistent high gastric aspirate through Ryle's tube.

No patient had recurrence of bleeding or any evidence of recurrent ulcer at follow up, which varied from 1 year to 10 years (mean 37.2 months). Using modified Visick grading, all patients were adjudged to have achieved grades I and II.

Amongst the patients presenting with gastric outlet obstruction, there were 15 males and one female, aged 19 to 65 years (mean 39.9). At surgery, calibration with Hagar's dilator showed mild stenosis (No 12 Hagar's dilator) in two, moderate stenosis (No 11) in 13, and moderately severe stenosis (No 8) in one patient. In all cases, however, pyloroplasty and dilatation upto No 14 Hagar's dilator was possible.

Postoperatively one patient developed prolonged gastric atony for which he was reoperated and posterior gastrojejunoanostomy with gastrostomy and feeding jejunostomy was performed. Delayed gastric emptying was also seen in the immediate postoperative period in three other patients. Two patients recovered completely with conservative treatment but one patient continued to have mild epigastric discomfort followed by meals.

At follow up, which varied from 6 months to 6 years (mean 29 months), 13 patients (81%) have remained well and asymptomatic. Apart from the patient who required posterior gastrojejunoanostomy for gastric atonia in the immediate postoperative period, the other patients required surgery after 6 months and 2 years respectively, for restenosis in one and gastric volvulus in the other. Pyloroplasty was performed for restenosis and gastrectomy for gastric volvulus. In the patient in whom gastric volvulus was discovered, calibration done at the time of surgery allowed only No 8 Hagar's dilator; postoperatively the patient had mild abdominal discomfort following meals with equivocal saline load test at the time of discharge. The patient who developed gastric volvulus was asymptomatic at the time of discharge, but he had equivocal saline load test.

None of the patients have developed recurrent ulcer at follow up. Using the modified criteria of Visick grading, 13 patients were adjudged to grades I and II. All three patients to grade IV, because they required another surgery. All three of them, however, have also remained asymptomatic and well after the second surgery.

All gastric ulcer patients were males, aged 30 to 58 years (mean 40.4). During follow up, which varied from 3 to 12 years, no patient has developed any recurrent ulcer and all seven patients have achieved Visick grades I and II results.

There was no operative mortality in any of the groups.

Discussion

Proximal gastric vagotomy in the treatment of ulcer diathesis was first introduced in 1970. The procedure had no operative mortality and the incidence of side effects postoperative sequela (0% to 4%) was found to be better compared with other operative procedures on the stomach. In 1973, Johnston et al performed proximal gastric vagotomy even for complicated peptic ulcer, and achieved equally good results.

In this series of 18 patients with upper GI bleeding, proximal gastric vagotomy with suture ligation of the bleeding vessel or excision of the ulcer wherever required achieved excellent results. There was no operative mortality or rebleed. At follow up, which ranged from 1 to 10 years, all our patients have remained well and achieved Visick grades I and II results.

Gastric outlet obstruction forms yet another major indication for surgery, occurring in approximately 10% to 15% of patients with duodenal ulcer. Proximal gastric vagotomy with pyloroduodenal dilatation has been associated with no mortality. It has been possible to achieve Visick grades I and II results in 79% to 96% of cases.

Delaney et al. found no clinical or radiological evidence of restenosis after 3 years in any of 11 patients of outlet obstruction treated with proximal gastric vagotomy and dilatation. In our series of 16 patients with gastric outlet obstruction, 13 patients were found to be completely asymptomatic at follow up and were found to have achieved Visick grades I and II. One patient had developed prolonged gastric atonia in the immediate postoperative period and this could have been due to prolonged preoperative obstruction or an inadvertent injury to pyloric innervation. One patient who developed restenosis after 6 months was almost certainly due to faulty selection of moderately severe stenosis for dilatation. Similar disappointing results have been reported by Rossi et al in patients with moderately severe stenosis. The procedure, therefore, ought to be reserved for patients with mild to moderate stenosis only.

Gastric volvulus was found to be the cause of outlet obstruction in one patient after 2 years of surgery.
This is an extremely uncommon complication and occurred due to the development of adhesions between the anterior gastrotomy incision and the undersurface of the liver, allowing an already dilated stomach to rotate on itself. Careful closure of gastrotomy wound in two layers is therefore recommended to avoid such a complication.13

Excision of the gastric ulcer followed by proximal gastric vagotomy has given Visick grades I and II results in 80%–85% of cases. The recurrence rates have been reported to be around 4%. The ulcer has been found to be malignant in subsequent pathological examination in 4% of cases.14 This can be avoided by being more careful and selective, by preoperative multiple endoscopic biopsies and awaiting histopathological confirmation. In our series no ulcer was malignant and all seven patients achieved Visick grades I and II results with no recurrence of ulcer at follow up.

In our experience, proximal gastric vagotomy has given Visick grades I and II results in 100% of patients with upper gastrointestinal bleeding and uncomplicated benign gastric ulcers and in 81% of patients with gastric outlet obstruction. Proximal gastric vagotomy, along with direct suture of bleeding points in upper gastrointestinal hemorrhage, pyloric dilatation in mild to moderate gastric outlet obstruction and excision of benign gastric ulcer, has therefore been found to be a safe and effective procedure with very low morbidity and no mortality in our patients.

References

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INDIAN J GASTROENTEROL Vol 7 No 4 OCTOBER 1988

PROXIMAL GASTRIC VAGOTOMY—GUPTA ET AL. 225