Sequelae of peptic ulcer surgery

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There are a number of sequelae of peptic ulcer surgery , which include recurrent ulceration, small stomach syndrome, bilious Eugen (Jeno) Alexander Pólya , 1876–1944, surgeon, St Stephen’s Hospital, Budapest, Hungary . Walther Hermann Heineke , 1834–1901, surgeon, Erlangen, Germany . Johann von Mikulicz-Radecki , 1850–1905, Professor of Surgery , Breslau, Germany (now Wroc ł aw , Poland). transformation. These sequelae principally follow from the more destructive operations that are now seldom performed. Howe ver, a substantial number of patients have side e ff ects from operations undertaken in the past. Approximately 30% of patients can expect to su ff er a degree of dysfunction follow - ing peptic ulcer surgery (Table 67.2); in about 5% of such patients, the symptoms will be intractable. - -) is - -

TABLE 67.2 Operative mortality, side effects and incidence of recurrence following duodenal ulcer operations. Recurrent Operation Operative Signi /f_i cant ulceration mortality (%) side effects (%) (%) Gastrectomy 1–2 20–40 1–4 Gastroenterostomy <1 10–20 50 alone Truncal vagotomy <1 10–20 2–7 and drainage Selective vagotomy <1 10–20 5–10 and drainage Highly selective <0.2 <5 2–10 vagotomy Truncal vagotomy 1 10–20 1 and antrectomy Figure 67.16 Gastroenterostomy. The jejunum is anastomosed to the posterior, dependent, wall of the stomach.

Recurrent ulceration and gastrocolic fistula As with other peptic ulcers, recurrent ulcers may present with complications, particularly bleeding and perforation. In this respect, the complication of gastrojejunal–colic fistula requires particular mention. In this rare condition, an anastomotic ulcer in the gastrojejunostomy penetrates into the transverse colon. Patients su ff er from diarrhoea that is severe and follows every meal. They have foul breath and may vomit formed faeces. Severe weight loss and dehydration are rapid in onset; for this reason the condition may be mistaken for malignancy . The major factor producing the nutritional disturbance is the severe contamination of the jejunum with colonic bacteria. A number of imaging techniques can be used to detect the fistula, most commonly CT with oral contrast or indeed a barium enema. Endoscopy may not convincingly demonstrate the fistula and, in about one-half of such cases, the barium meal will not reveal the problem. The treatment of gastrocolic fistula consists of first correcting the dehydration and malnutrition and then performing revisional surgery . Small stomach syndrome Early satiety follows most ulcer operations to some degree, including highly selective vagotomy . In this latter circumstance, although there is no anatomical disturbance of the stomach there is loss of receptive relaxation. Fortunately , this problem does tend to get better with time and revisional surgery is not necessary . Bile vomiting Bile vomiting can occur after any form of vagotomy with drainage or gastrectomy . Commonly , the patient presents with vomiting a mixture of food and bile or sometimes some bile alone after a meal. Often eating will precipitate abdominal pain and reflux

symptoms are common. Bile-chelating agents can be tried but are usually ine ff ective. In intractable cases, revisional surgery may be indicated. The nature of that revi - sional surgery depends very much on the original operation. Following gastrectomy , Roux-en-Y diversion is probably the best treatment. In patients with a gastroenterostom y , this can

Figure 67.17 Truncal vagotomy: (a) division of the anterior vagus; (a) (a) (i) (ii) (ii) (i) Figure 67.18 Heineke–Mikulicz pyloroplasty in which (a) a full-thickness longitudinal incision traversing the pylorus is retracted by stay sutures (i) and closed transversely with full-thickness sutures (ii). (b) Completed transverse closure. (b) mobilisation of the oesophagus; (c) division of the posterior vagus. (b) (b)

be taken down and, in most circumstances, a small pyloroplasty can be performed. In patients with a pyloroplasty , reconstruc tion of the pylorus has been attempted but, in general terms, the results of this operation have been rather poor. Antrectomy and Roux-en-Y reconstruction may be the better option. Early and late dumping Although considered together because the symptoms are similar, early and late dumping have di ff erent aetiologies A common feature, however, is early rapid gastric emptying. Many patients have both early and late dumping. Early dumping Early dumping consists of abdominal and vasomotor symptoms that are found in about 10% of patients following gastrectomy or vagotomy and drainage. It also a ff ects a small percentage of patients following highly selective vagotomy owing to the loss of receptive relaxation of the stomach. The small bowel is filled with foodstu ff s from the stomach, which have a high osmotic load that leads to the sequestration of fluid from the circulation into the gastrointestinal tract. This can be observed by the rise in the packed cell volume while the symptoms are present. All of the symptoms shown in Table 67.3 can be related to this e ff ect on the gut and the circulation. The principal treatment is dietary manipulation. Small, regular meals based on fat and protein are best. Avoiding fluids with a high carbohydrate content also helps. Fortunately , the César Roux , 1857–1934, Professor of Surgery and Gynecology , Lausanne, Switzerland. syndrome tends to improve with time; however, a group of patients have intractable dumping. The somatostatin analogue octreotide given before meals is useful in some individuals and the long-acting preparation may also be useful; however, it does not help diarrhoea, which many patients with dumping also su ff er. Revisional surgery may be occasionally required. In patients with a gastroenterostomy , the drainage may be taken down or, in the case of a pyloroplasty , repaired. Alterna tively , antrectomy with Roux-en-Y reconstruction is often e ff ective, although the procedure is of greater magnitude; following gastrectomy , it is the revisional procedure of choice (Figure 67.20). -

6–8 cm 7 cm Figure 67.19 Highly selective vagotomy. The anterior and posterior vagus nerves are preserved but all branches to the fundus and body of the stomach are divided. Early Late Incidence 5–10% 5% Relation to Almost immediate Second hour meals after meal Durations of 30–40 minutes 30–40 minutes attack Relief Lying down Food Aggravated More food Exercise by Precipitating Food, especially carbohydrate As early factor rich and wet dumping Tremor, Major Epigastric fullness, sweating, faintness, symptoms light-headedness, tachycardia, prostration colic, sometimes diarrhoea Stomach Gastrojejunal anastomosis Duodenum 50-cm limb of proximal jejunum Jejunojejunal anastomosis Figure 67.20 Roux-en-Y reconstruction following Billroth I gastrectomy. Note the length of the proximal jejunal limb required to minimise bilious re /f_l ux.

This is due to reactive hypoglycaemia. The carbohydrate load in the small bowel causes a rise in the plasma glucose, which, in turn, causes insulin levels to rise, causing a secondary hypoglycaemia. This can be easily demonstrated by serial measurements of blood glucose in a patient following a test meal. The treatment is essentially the same as for early dump ing. Octreotide is very e ff ective in dealing with this problem. Postvagotomy diarrhoea This can be the most devastating symptom to a ffl ict patients having peptic ulcer surgery . Most patients will have some loose ness of bowel action (with the exception of highly selective vagotomy), but it may be intractable in approximately 5%. The cause is uncertain but is related to rapid gastric emptying, denervation of the upper g astrointestinal tract and an exag gerated gastrointestinal peptide response. Many patients with severe diarrhoea do not have other symptoms of dumping and likewise some patients with dumping do not experience significant diar rhoea. In general, patients should be managed as for early dumping and antidiarrhoeal preparations may be of value. Octreotide is not e ff ective and the results of revisional surgery are unpredictable. Malignant transformation Partial gastrectomy or vagotomy and drainage are indepen dent risk factors for development of gastric cancer as bile reflux gastritis, intestinal metaplasia and gastric cancer are linked. The lag phase between operation and the development of malignancy is at least 10 years. Highly selective vagotom does not seem to be associated with an increased long-term incidence of gastric cancer. Nutritional consequences Nutritional disorders are more common after gastrectomy than after vagotomy and drainage. Weight loss is common after gastrectomy and patients may never return to their original weight. Taking more frequent small meals is often useful. Henry Hamilton Bailey , 1894–1961, surgeon, The Royal Northern Hospital, London, UK. vagotomy and drainage. Reduced iron absorption is proba - deficiency occurs bly the most important factor. Vitamin B 12 after total gastrectomy; however, it may be years before meg - aloblastic anaemia is clinically apparent. Vitamin B supple - 12 mentation after total gastrectomy is essential. Rarely , vitamin B deficiency may occur after lesser forms of gastrectomy . In 12 - such patients the cause is probably a combination of reduced intrinsic factor production and bacterial colonisation, which results in vitamin B being metabolised in the gut, preventing 12 absorption. Bone disease is seen principally after gastrectomy and - mainly in women. The condition is essentially indistinguish - able from the osteoporosis commonly seen in postmenopausal women. It is only the frequency and magnitude of the disorder that distinguish it. Treatment is with dietary supplementation, - calcium and vitamin D, and e xercise. Gallstones Following truncal vagotomy , the biliary tree is denervated, leading to cholestasis and gallstone formation. Symptomatic patients require cholecystectomy; however, this may induce or worsen other postpeptic ulcer surgery syndromes such as bilious vomiting and postvagotomy diarrhoea. -

Figure 67.21 A sketch of Mr Hamilton Bailey watching for abdominal movement on respiration. In the case of a classically presenting perfo rated ulcer, the abdominal movement is restricted or absent.

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