

# Zollinger–Ellison syndrome

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This syndrome is mentioned here because the gastrin - producing endocrine tumour is often found in the duodenal loop, although it also occurs in the pancreas, especially the head. It is a cause of persistent peptic ulceration. Before the development of potent gastric antisecretory agents, the condition was recognised by sometimes fulminant peptic ulceration - that did not respond to gastric surgery short of total gastrectomy. The advent of PPIs such as omeprazole has rendered this extreme endocrine condition fully controllable, but also - less easily recognised. Gastrinomas may be either sporadic or associated with the autosomal dominantly inherited multiple endocrine neoplasia (MEN) type I (in which a parathyroid adenoma is almost invariable). The tumours are most commonly found in the 'gastrinoma triangle', which is defined by the junction of the cystic duct and common bile duct superiorly, the junction of the second and third parts of the duodenum inferiorly and the junction of the neck and body of the pancreas medially (essentially the superior mesenteric artery). Many are found in the duodenal loop, presumably arising in the G cells found in Brunner's glands. It is extremely important that the duodenal wall is carefully inspected endoscopically and at operation. Even malignant sporadic gastrinomas may have a very indolent course. The palliative resection of liver metastases may be beneficial and, as for other gut endocrine tumours, liver transplantation is practised in some centres with reasonable long-term results. However, a minority of tumours found to the left of the superior mesenteric artery (outside the 'triangle') seem to have a worse prognosis, with more having liver metastases at presentation. In MEN type I, the tumours may be multiple and the condition is incurable. Even in this situation, surgical treatment should be employed to remove any obvious tumours and associated lymphatic metastases, as good palliation may be achieved (see Chapter 57).

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