

## CASE REPORT

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# Brunner's Gland Hamartoma: 'Over-Treatment' of a Voluminous Mass Simulating a Malignancy of the Pancreatic-Duodenal Area

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### ABSTRACT

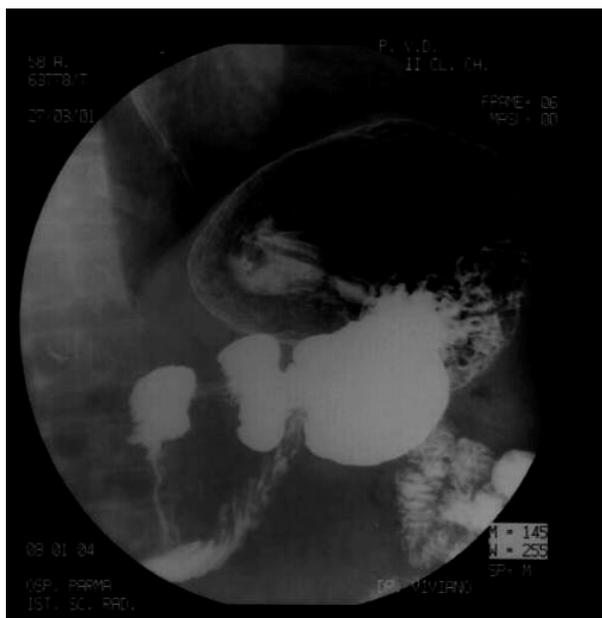
**Context** Brunner's gland hyperplasia is rarely associated with clinical symptoms. Most of the lesions are less than 1 cm in diameter and accounts for about 6.8% of all endoscopically removed duodenal polyps. When symptoms occur, this hyperplasia can be effectively treated with endoscopy. However, when the lesion is too large to pass through the endoscopic snare, endoscopic treatment is not possible and surgical treatment is necessary. This treatment may vary from local excision to more complex operations. When Brunner's gland hyperplasia does not have common dimensions, it may also mimic a malignancy of the duodenal-pancreatic area. In this case, a biopsy is indicated even though its result may be not informative.

**Case report** We report the case of a 60-year-old man with a large Brunner's gland hyperplasia mimicking a malignancy and in which the impossibility of a correct diagnosis by pre-operative and intra-operative biopsy led to 'over-treatment' involving a duodeno-cephalopancreatectomy.

**Conclusions** This 'over-treatment' may be justified since nowadays the consequences of leaving an undiagnosed pancreatic cancer are much worse than the risk of undergoing a major pancreatic operation.

### INTRODUCTION

Brunner's gland hyperplasia is a rare lesion which, since it was first described by Salvioli in 1872 [1], has been reported in only 200 cases in the literature [2]. It develops from the alkaline-secreting submucosal glands which protect the mucosa from the pylorus to the second portion of the duodenum. Brunner's glands develop from the anterior primitive intestine. Most reports of this lesion are those of incidental findings seen on barium radiographs or during endoscopic examination, although Brunner's gland hyperplasia represents 6.8% of duodenal polyps removed endoscopically [3, 4]. More than half (57%) originate at the bulb of the duodenum; the incidence decreases with increasing distance from the pyloric ring [5]. Feyter [6] classified Brunner's gland hyperplasia into three main categories: circumscribed nodular hyperplasia (the most frequent), diffuse nodular hyperplasia, and adenomatous hyperplasia (the rarest). Robertson explained these classifications as being a pathologic progression [7]. More recently, they have been classified as being the same clinical entity. However, the pathophysiology and etiology of Brunner's gland hyperplasia remain obscure. The prevailing opinion as to the etiology of these lesions is that they are hamartomas [8, 9]. Even though these tumors are benign, the literature reports a proven case of cancer



**Figure 1.** Radiological examination of the upper gastrointestinal tract showing stenosis of the second part of the duodenum.

developing from Brunner's hyperplasia [10] and a case associated with two *foci* of microcarcinoids [11]. Brunner's gland hyperplasia is often associated with chronic renal failure [12], chronic pancreatitis [13] and peptic ulcer disease [14], and has been known to regress, in some cases, after effective treatment of gastric hyperacidity [15]. It is noteworthy that hamartomas are commonly associated with a generalized polyposis syndrome, mandating examination of the entire gastrointestinal tract [16].

Most patients with Brunner's gland hyperplasia are completely asymptomatic, but when symptoms are present they consist of abdominal pain and upper gastrointestinal bleeding [17]. The abdominal pain is usually late postprandial or nocturnal and is often due to obstructive episodes; the bleeding is mostly occult, is often associated with sideropenic anemia and, on rare occasions, can cause hematemesis or melena.

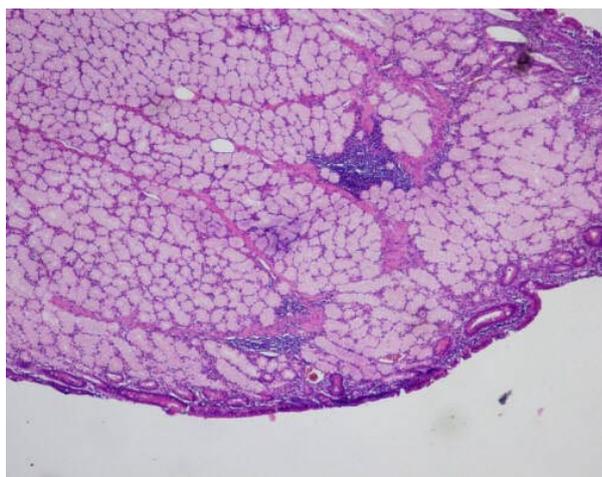
Rare complications include intestinal obstructions, intussusception and, in the paravaterian localization, pancreatitis and obstructive jaundice [18].

Most of the lesions described have been less than 2 cm in dimensions, and only 25 cases in the literature have reported larger dimensions

[11]. These large lesions make a differential diagnosis between Brunner's gland hyperplasia and carcinomas of the duodenal-pancreatic district difficult. We report a case of a Brunner's gland hyperplasia, 6 cm in size mimicking a carcinoma of the duodenal-pancreatic area, 'over-treated' with a duodenocephalopancreatectomy (DCP).

## CASE REPORT

A 60-year-old man was referred to our hospital in March 2003 because of belt-like upper abdominal pain. The anamnestic data showed alcohol-induced chronic pancreatitis which gave the patient post-prandial epigastric belt-like pain. The patient had been treated with substitutive therapy since 1998, and had had a laparoscopic cholecystectomy in January 2001. Serum chemistry revealed only an increase in the amylase level (717 U/L; reference range: 0-130 U/L). Ultrasound examination showed a slight dilatation of the choledochus (1.3 cm in diameter), an ectasia of the Wirsung duct with images referable to microcalculi (0.3 cm in diameter) and a voluminous anecogenic formation 5.5 cm in diameter situated below the head of the pancreas. An attempt at ERCP failed, since cannulation of the papilla of Vater was impossible owing to the presence of a 5.5 cm bulky mass which occupied part of the bulb and the second portion of the duodenum. An endoscopic pinch biopsy was performed; the pathologic finding showed aspecific phlogosis. A radiological examination of the upper gastrointestinal tract showed stenosis of the second part of the duodenum (Figure 1). A CT examination confirmed the ectasia of the Wirsung duct, and showed a volumetric reduction in the body of the pancreas, together with a thickening of the upper duodenal angle and the second part of the duodenal wall. Surgery was indicated for a duodenopancreatic mass of unknown nature. Laparotomy showed a mass which appeared hard upon palpation, vegetating in the duodenal lumen, occupying the duodenum from the bulb to the second portion with intense periduodenitis. The surgeon



**Figure 2.** Histological examination showing diffuse nodular Brunner's gland hyperplasia.

performed an intra-operative biopsy of the periduodenal tissue which he believed to be neoplastic. A frozen section of the biopsy showed only aspecific chronic phlogosis. In the belief that this histological finding was due only to an error in sampling a malign tumor, a duodenocephalopancreatectomy was performed.

The histological examination showed diffuse nodular Brunner's gland hyperplasia (Figure 2) with extension to the antro-pyloric region, dilatation of the pancreatic ducts with chronic suppurative phlogosis, an abscess in correspondence to the papilla and in the adjacent areas, fibrosis of the pancreatic gland, wide gastric metaplasia of the duodenum, and thickening of the antrum and the fundus mucosa which did not show any sign of phlogosis or tumor.

The post-operative period was uneventful and the patient was discharged on day 13 without any complications. At a 12-month follow-up the patient was seen to be in good health and subsequent instrumental examination excluded the presence of polyps in the gastrointestinal tract.

## DISCUSSION

This case report points out the problem of the diagnosis, and consequently of the treatment, of those cases in which Brunner's gland hyperplasia manifests itself by mimicking a malign neof ormation.

In most cases, endoscopy combined with biopsy and duodenography leads to a diagnosis. However, both examinations have some limitations: duodenography has a reliability of 61% [19] with 20% of false negatives and 10% of uncertain interpretations [20]; esophagogastroduodenoscopy has a sensitivity ranging from 72 to 89%, and in some cases, such as the one we present here, the endoscopic biopsy is nondiagnostic. This is because these lesions are submucosal and may be missed by a pinch biopsy, which will only show signs of aspecific reactive phlogosis [21].

These considerations may explain why, in some cases, it is not possible to achieve an accurate pre-operative diagnosis.

The medical treatment for these lesions consists of the control of gastric hyperacidity, and only rarely causes the regression of gland hyperplasia; therefore, excision would appear to be the treatment of choice. Since most of the lesions are less than 1 cm in diameter, an endoscopic polypectomy is feasible with instruments such as U-shaped snares [22]. However, surgical intervention is still needed in complicated cases and those with excessively large or sessile type tumors, [23, 24, 25] and may consist of a surgical polypectomy, wedge duodenal resection or a partial gastrectomy extended to the duodenal bulb.

In exceptional cases, such as the one we present here and the one already reported by Skellenger *et al.* [26], a voluminous Brunner's gland hyperplasia can mimic a carcinoma of the duodenal-pancreatic region and can lead to major destruction such as a DCP.

Skellenger *et al.* suggested solving the diagnostic problem with a biopsy at surgery [26]. The latter, although having a sensitivity of 83-92% [27, 28, 29] and yielding a diagnostic accuracy of 91% and 97% in two studies, respectively [30, 31], presents some problems peculiar to this technique. It is well-known that a biopsy of the pancreatic-duodenal region performed with a wedge biopsy or trucut needle gives rise to a high occurrence of complications, such as

hemorrhage, fistulas, pancreatitis or abscess formation. The reported rate of complications judged to be related to the biopsy varies from 0 to 10% and the mortality rates from 0 to 4% [27, 31, 32, 33, 34]. The wedge biopsy is regarded as safe, since it can be kept as superficial as possible, avoiding lesions of the Wirsung duct. However, the fear of complications may lead the surgeon to obtain biopsy specimens which are too superficial and that will thus often result in a false negative, as cancers in this area are often surrounded by a large rim of phlogistic tissue [32]. This situation may even be found more readily in cases of, voluminous Brunner's gland hyperplasia, since this condition involves the inner layers of the duodenum.

Even though intra-operative biopsy did not solve the diagnostic problem in our case, our still valid suspicion of malignancy warranted a DCP. In fact, the literature now holds that it is appropriate to perform a DCP in the case of a suspected but unproven malignancy [35, 36]. This aggressive approach has been justified by the better outcome of patients after DCP in the last few years since the mortality rate related to surgery dropped from 20% in 1970 to 5% in 1990, and post-operative morbidity from 50 to 25% in high volume centers [37]. In our institution, the surgery-related mortality rate has dropped in the past few years to 3.5% and postoperative morbidity to 20% (most cases due to a pancreatic fistula from the pancreatic stump).

Thompson *et al.* reported a 45% incidence of cancer in patients who underwent DCP for suspected but unproven cancer in which a pre-operative or an intra-operative biopsy was not performed or was not informative. The same author states that an intra-operative biopsy for confirmation of malignancy should be reserved only for those patients in whom it is not possible to perform a resection [35].

Finally, this experience points out a relatively rare situation in which the impossibility of having a correct pre-operative and intra-operative histologic diagnosis of a rare, but absolutely benign, lesion has led to 'over-treatment'; the correct treatment for this

lesion, in fact, would have been a local excision.

However, we deem that this aggressive behavior can be justified, since nowadays the consequences of leaving a misdiagnosed cancer of the pancreatic-duodenal area are much worse than the risk of post-operative morbidity and mortality in patients undergoing DCP.

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Received December 21<sup>st</sup>, 2004 - Accepted May 13<sup>th</sup>, 2005

**Keywords** Brunner Glands; Endoscopy; Pancreaticoduodenectomy; Polyps

**Abbreviations** DCP: duodenocephalo-pancreatectomy

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