Endoscopic Mucosal Resection of a Large Brunner's Gland Adenoma: A Case Report

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Abstract

Brunner's gland adenoma is a rare, benign small-bowel tumor. Although asymptomatic, it has been reported to cause complications like gastrointestinal bleeding. We present the case of a 28 year-old Filipino male who presented with recurrent melena from a duodenal polypoid mass, successfully removed by endoscopic mucosal resection. Histopathologic examination of the mass revealed findings consistent with Brunner's gland adenoma. The patient recovered uneventfully. No recurrence of gastrointestinal bleeding was noted thereafter.

Introduction

Small intestine tumors account for about 5% of all alimentary tract tumors, with the highest proportion occurring in the duodenum. Benign duodenal tumors, including Brunner's gland adenoma account for less than 1% of small intestine tumors (1). Brunner's gland adenoma is a rare, benign proliferative lesion of the Brunner's gland found in the duodenum. Brunner's glands are submucosal mucin-secreting glands located in the mucosa and submucosa of the duodenum, which serve to protect the duodenal epithelium from acid.

Brunner's gland adenoma is predominantly seen in the fifth to sixth decade of life with no gender predilection. It is most often asymptomatic and may be incidentally found on endoscopic and radiologic studies (2). Among symptomatic patients, gastrointestinal bleeding is the most common manifestation. We report the case of a young adult Filipino male who presented with melena from Brunner's gland adenoma, which was successfully removed by endoscopic mucosal resection. Informed consent for writing up this case for publication was obtained from the patient during outpatient follow-up.

The Case

A 28 year-old Filipino male presented with sudden-onset melena, occurring one to two times per day on an almost daily basis associated with pallor and progressive weakness. He denied abdominal pain, vomiting, hematemesis and hematochezia. He has no co-morbid illnesses and has no family history of gastrointestinal malignancies. He was previously seen at another institution. Initial hemoglobin was 9.9 g/dL and he underwent transfusion of 3 units packed red blood cells. Gastroscopy was done showing a 3x2 cm polyp at the first portion of the duodenum with no signs of bleeding. He then transferred to our institution where he was received with normal blood pressure and heart rate, but appeared to be pale. Abdominal examination was unremarkable. Rectal examination revealed no signs of bleeding. Hemoglobin on admission in our institution was at 9 g/dL. Upper abdomen CT scan revealed soft tissue fullness and wall thickening involving the first and second portions of the duodenum (Figure 1A).

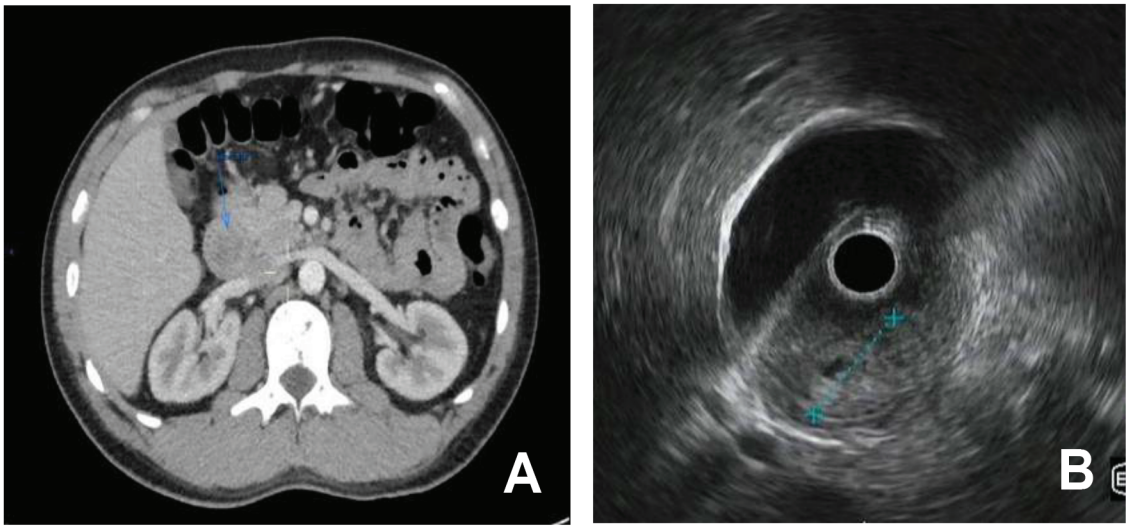

Figure 1. Upper abdomen CT scan revealed a soft tissue fullness and wall thickening (blue arrow) on the first to the second portion of the duodenum (A). Endoscopic ultrasonography revealed a hypoechoic lesion (blue line), corresponding to the duodenal polyp seen on gastroscopy, measuring around 20 mm and only confined to the mucosal surface (B).

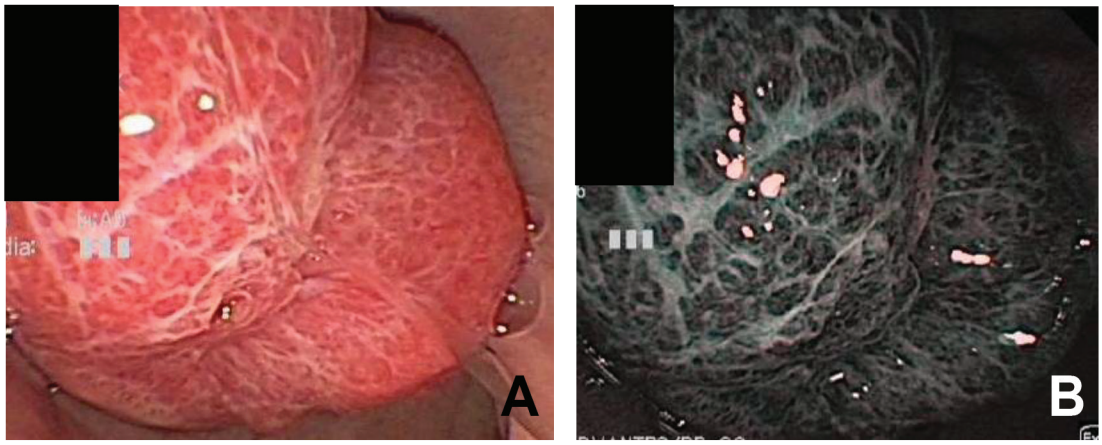

Figure 2. Esophagogastroduodenoscopy revealed a 20-mm polypoid mass with short and wide peduncle, almost completely obstructing the lumen of the first portion of the duodenum (A), with no active bleeding and uniform capillary pattern on narrow band imaging (B).

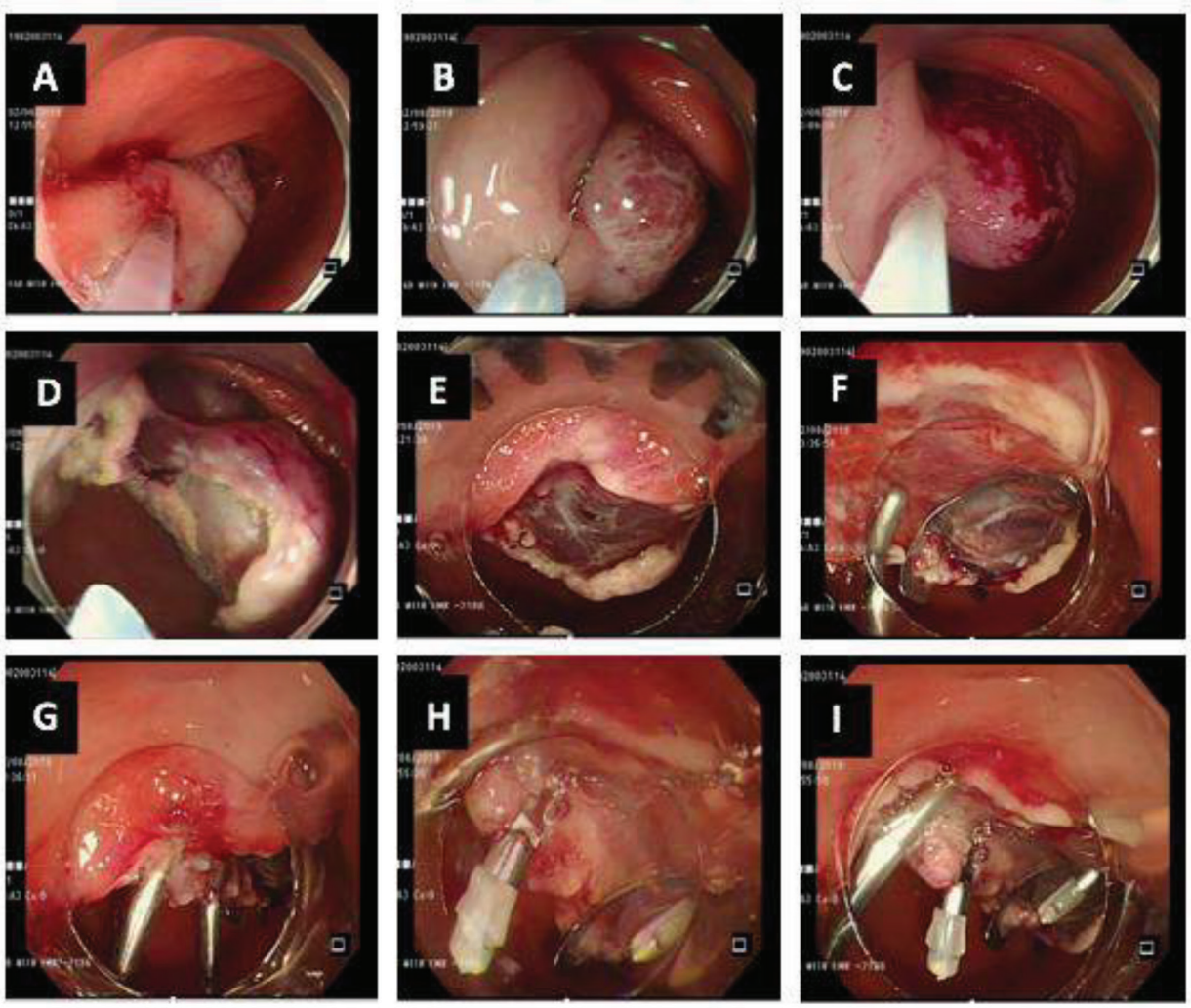

Figure 3. Endoscopic mucosal resection of the duodenal polypoid mass was done. A mixture of epinephrine, hyaluronic acid and saline solution was injected onto the base of the lesion to achieve a desired lift (A). A snare was then looped around the lesion (B), followed by cauterization (C) and cutting of the lesion from the base (D). The resulting defect (E) was then closed using an over-the-scope clip (F), resolution clips (G) and hemostatic clips (H). The repaired defect (I) revealed no signs of active bleeding after the completion of the procedure.

Endoscopic mucosal resection was done by first injecting a mixture of epinephrine, hyaluronic acid and saline solution onto the base of the polypoid mass until a desired lift and pallor was achieved (Figure 3A). The polypoid mass was then looped around a 25-cm snare at the lowest possible level between the peduncle and the head of the polyp (Figure 3B). Coagulation was done (Figure 3C) and the lesion was eventually cut off from its base (Figure 3D). The polypectomy site appeared to be an artificial ulcer measuring around 55 x 45 mm (Figure 3E). Around two-thirds of the defect was closed using an over-the-scope clip system set (Ovesco Endoscopy AG) (Figure 3F). The rest of the defect was closed using resolution clips (Figure 3G) and hemostatic clips (Figure 3H-3I).

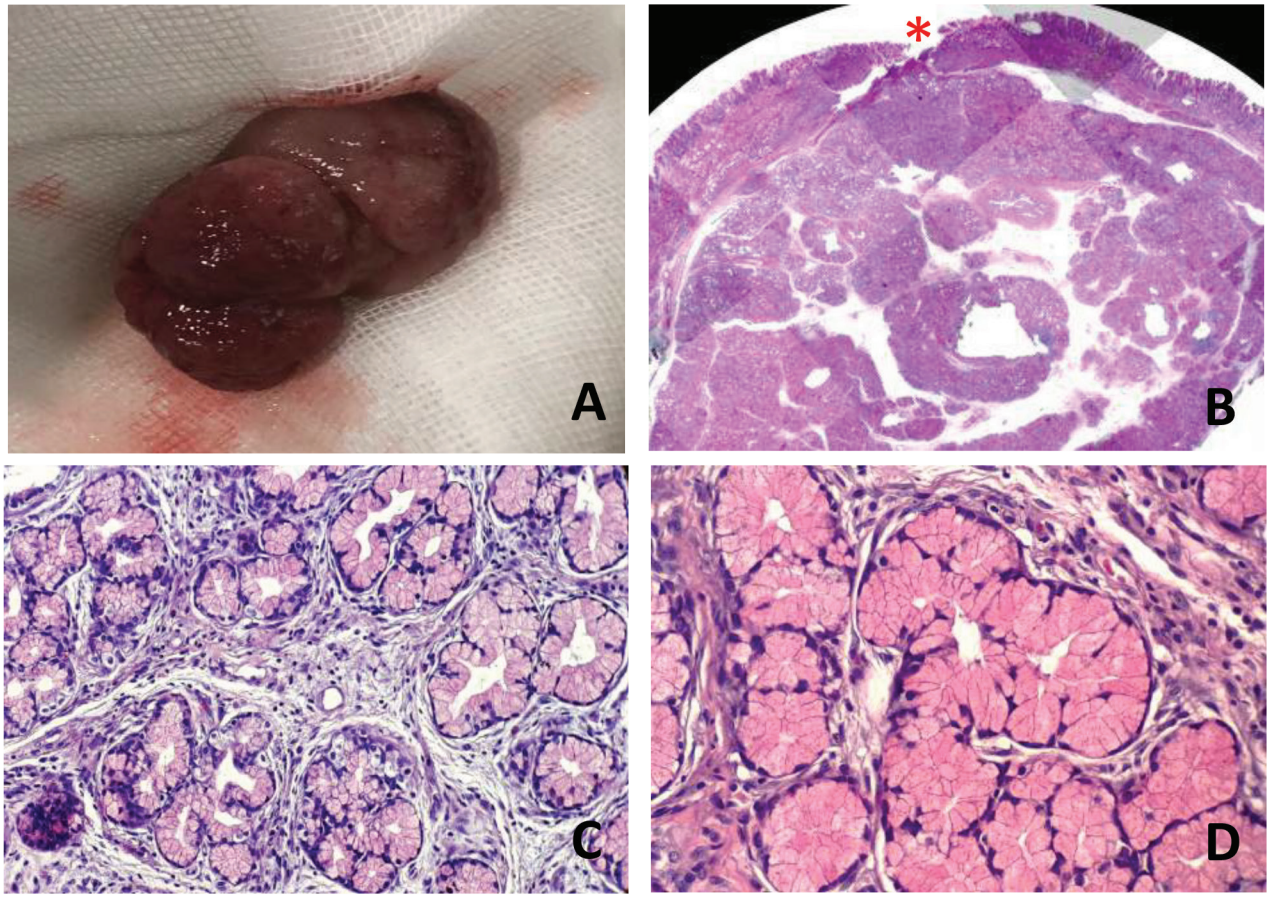

Figure 4. The resected duodenal polypoid mass appeared pink-tan in color, firm in consistency with areas of ulceration (A). Hematoxylin and eosin staining was done on cut segments of the tumor. Scanning photomicrograph (B) revealed areas of ulceration (red asterisk). Histopathology in 20x magnification (C) revealed lobular submucosal proliferation of compact simple glands with fibrous septa. The glands are lined by a single layer of short columnar epithelium with round-to-oval nuclei (D, 40x magnification). These findings are consistent with Brunner gland adenoma.

The resected duodenal polypoid mass grossly measured 38 x 27 x 22 mm, pink-tan in color, soft in consistency. The lesion was cut into thin sections and stained with hematoxylin and eosin. Scanning microscopy confirmed areas of ulceration (Figure 4B). Further magnification revealed submucosal proliferation of compact simple glands with fibrous septa, lined by a single layer of short columnar epithelium (Figures 4C and 4D). These findings are consistent with Brunner's gland adenoma.

After the procedure, the patient was temporarily put on nothing per orem. A nasogastric tube was inserted to facilitate decompression and later used for feeding. Intravenous proton pump inhibitor was started. Diet was slowly progressed and was tolerated well. No recurrence of melena and no signs of gastrointestinal bleeding were noted. No episodes of nausea, vomiting and abdominal pain were reported. Repeat determinations of blood counts were stable. No blood transfusion was done during the course of admission. He was discharged stable and well after nine days of hospital stay.

Discussion

Brunner's glands are branched acinotubular submucosal and mucosal glands located mainly in the duodenal bulb and proximal duodenum. They secrete an alkaline fluid, composed of viscous mucin, which protects the duodenal epithelium from the acidic secretions of the stomach. On light microscopy, the cells of these glands are eosinophilic with clear cytoplasm and with basally-oriented nuclei (3).

The nomenclature of Brunner's gland lesions is not well established in literature. The terms "Brunner's gland hyperplasia," "Brunner's gland hamartoma," and "Brunner's gland adenoma" are used interchangeably.

Brunner's gland adenoma is a rare benign tumor of the small intestines, presenting in the fifth to sixth decade in life with no sex or race predilection. The most common location is the posterior wall of the duodenum near the junction of the first and second portion (2). It often presents as a single pedunculated polyp reaching an average size of 1-2 cm but lesions up to 10 cm have been reported (5,6). In our case, the lesion measured around 4 cm on widest diameter.

The etiology and pathogenesis of Brunner's gland adenoma remains unclear. Acid secretions have been thought to stimulate these structures to undergo hyperplasia. An association between hyperchlorydia in patients with chronic erosions and duodenal ulcers has also been studied (8). They may also be inflammatory in origin due to the presence of dense cell infiltration on histopathology (9). Helicobacter pylori infection has also been found to be associated with it (10).

The clinical presentation is variable. Most patients with Brunner's gland adenoma are asymptomatic and may be incidentally detected during endoscopy or abdominal imaging studies (2,3,4). In our case, bleeding was the presenting symptom, which is common (6, 11-18). Other symptoms include abdominal pain (7,11,12,14) and obstruction (13). Brunner's gland adenoma has also been reported to cause duodenal intussusception (14), pancreatitis from obstruction of the ampulla of Vater (19) and mimicking pancreatic or duodenal malignancy (19-23). There have also been reports of malignant transformation and lesions with high-grade dysplasia. (24).

Brunner's gland adenoma is often difficult to differentiate from other submucosal lesions. CT scan usually reveals a non-specific soft tissue fullness in the first and second portions of the duodenum. Barium examination appears as single or multiple nodules with cobblestone pattern. Endoscopically, they appear as submucosal nodules in the first or second portion of the duodenum with a heterogeneous hypoechoic mass in the submucosal layer on endoscopic ultrasound. (3,4). Grossly, they have a pink-tan smooth surface with well-circumscribed solitary sessile or pedunculated polyps and with a lobular appearance on cut sections due to fibrous septa.

The standard treatment for Brunner's gland adenoma has not been established. Treatment options vary according to the size, symptoms and suspicion of malignancy. Small tumors are treated conservatively. However, others recommend outright endoscopic resection to prevent complications like bleeding and obstruction (25-27). In this case, considering the significant gastrointestinal bleeding, we opted to do endoscopic resection. The mucosal defect created by the polypectomy site was closed with endoscopic clips for hemostasis. No recurrence of bleeding was noted thereafter even until follow-up after six months. A repeat esophagogastroduodenoscopy was recommended to evaluate the lesion particularly recurrence, but the patient did not give consent to have this done.

Conclusion

Brunner's gland adenoma is a rare benign duodenal lesion. We presented a case of rare Brunner's gland adenoma presenting as gastrointestinal bleeding. We successfully removed the lesion by endoscopic mucosal resection. Endoscopic mucosal resection is a safe and low-risk treatment for large and symptomatic Brunner's gland adenoma.

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