

# An endoscopic videocapsule finding of heterotopia of the gastric mucosa of the small intestine

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## Abstract

**Introduction:** Heterotopia of the gastric mucosa refers to an ectopic location of gastric mucosa in any part of the gastrointestinal tract. It is a rare cause of gastrointestinal ulcers and occult digestive bleeding. Endoscopic videocapsules have become fundamental tools for study of the small intestine. **Methods:** This is a descriptive case study based on information from the medical history, pathology report and endoscopic studies extracted from the databases of the Fundación Valle del Lili in Cali, Colombia. **Results:** An endoscopic videocapsule was used to examine a 71-year-old male patient who suffered from occult digestive bleeding. Segments of stenosis and ulcers were found in the jejunum and histopathology revealed heterotopic gastric mucosa. **Conclusion:** Heterotopy of the gastric mucosa should be thought of as a possible cause of bleeding in the small intestine.

## Keywords

Gastric heterotopy, occult digestive bleeding, endoscopic videocapsule.

## INTRODUCTION

Ulcers rarely occur in the small intestine, but endoscopic techniques such as videocapsules and enteroscopy have allowed this type of lesions to be identified more frequently. Intestinal ulcers can manifest clinically with anemia, episodes of abdominal pain, bleeding, obstruction or perforation. (1) Heterotopic gastric mucosa (HGM), the presence of gastric mucosa in an abnormal location, can cause intestinal ulcers although it is rarely found below the Ligament of Treitz. It is difficult to differentiate heterotopia from gastric metaplasia which is associated with Crohn's disease. (2)

We present the case of the endoscopic videocapsule study of a male patient who had been suffering from digestive bleeding. Multiple ulcers plus stenosis in were found in several of his small intestine. Histological study revealed the presence of pyloric glands with gastric foveolar epithelium.

## CLINICAL CASE

The patient was a 71-year-old man who had a history of hypertension and diverticular disease. He had been referred to the endoscopy unit of the Fundación Valle del Lili as an outpatient for endoscopic videocapsule diagnosis following two years of abdominal pain, colic and the sensation of a mass in the right iliac fossa that were associated with abdominal distension and episodic constipation alternating with occasional aqueous diarrhea. Paraclinical studies had found fecal occult blood and iron deficiency anemia refractory to administration of ferrous sulfate. He said that he did not use non-steroidal anti-inflammatory drugs (NSAIDs) and said that he was allergic to them. Reports of upper gastrointestinal endoscopy and total colonoscopy conducted elsewhere were normal. He was considered to have digestive bleeding, probably originating in the small intestine.

The patient provided and informed consent and was properly prepared prior to placement of the videocapsule. Erosions and small isolated ulcers were observed in the proximal jejunum. Erosions and deep ulcers with fibrin, retraction of folds, and mucosal edema which appeared to be chronic were found in the middle jejunum together with segments with partial stenoses. The capsule was retained by an ulcerated stenotic lesion in the distal jejunum (Figure 1).

One week after the study, the patient returned with symptoms of an intestinal obstruction. Fluoroscopy documented the capsule in the lower left quadrant of the small intestine. Exploratory laparoscopy found a flange of the omentum causing partial obstruction in the distal ileum of the small intestine. The loop was dilated with thickened and congestive serosa distal to the obstruction. The capsule was trapped in the stenotic segment which required a 6.5 cm resection of the intestine (Figure 2).

The surgical piece contained two ulcerated lesions (1.5 cm x 1 cm and 1 cm x 1 cm) which were reported macroscopically. A microscopic examination showed that the small intestine had areas of mucosal ulceration with granulated tissue and fibrin deposits. Foci were found in which foveolar gastric epithelium was observed as well as pyloric glands without cytological atypia in the mucosal and submucosal regions. Inflammatory lymphoplasmocytic infiltrate with formation of hyperplastic lymphoid nodules was observed. Surgical margins had adequate viability. Immunohistochemical PAS (periodic acid-Schiff) staining was used to check for the MUC-5AC mucin marker. The interpretation of the results indicated that neutral mucin was present in the gastric mucosa represented by the foveolar epithelium and the pyloric glands (Figure 3).

Omeprazole was prescribed for the patient during a postoperative follow-up appointment. Subsequent appointments documented improvement of gastrointestinal symptoms and resolution of anemia. Complementary studies of antineutrophil cytoplasmic antibodies (ANCA), anti-Saccha-

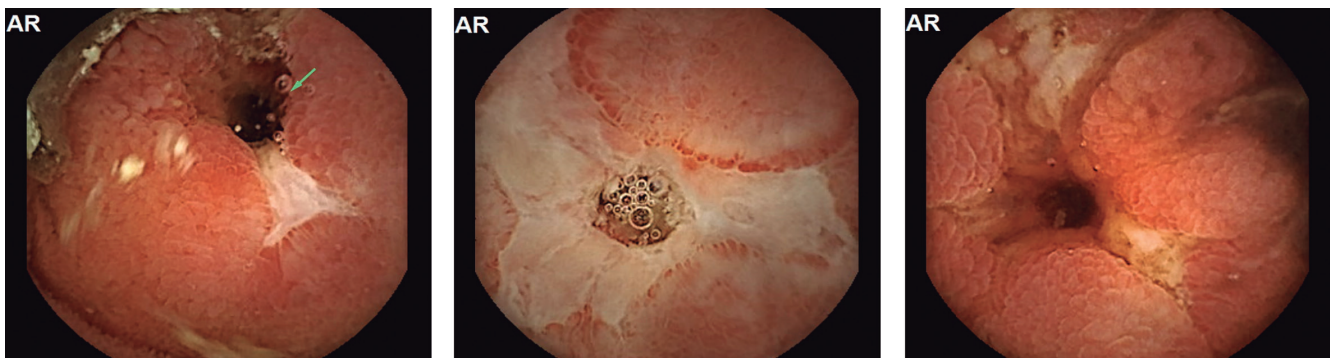
romyces cerevisiae antibodies (ASCA), rheumatoid factor, the erythrocyte sedimentation rate (ESR) and qualitative C-reactive protein (PCR) tests were done. The rheumatoid factor test was negative while the C-reactive protein (PCR) test was positive. It was decided to continue clinical follow-up with quarterly laboratory tests.

## DISCUSSION

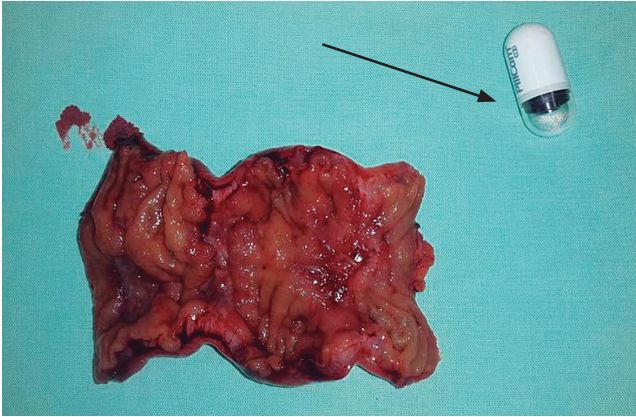
The development and use of the endoscopic videocapsule has enabled diagnosis of various lesions in the small intestine that were previously difficult to identify. (3) This study has become a primary tool for evaluating hemorrhagic lesions, ulcers and tumors in this organ. (4) It is currently considered a first-line study for what was previously called occult digestive bleeding, a term that has changed to possible bleeding of the small intestine. This accounts for 5% to 10% of patients who consult for gastrointestinal bleeding. (5-7)

A study by Pandey et al. of patients who were diagnosed by endoscopic videocapsule has shown that the most frequent causes of bleeding in the small intestine were angiodysplasia in up to 23.5% of these patients, Crohn's disease in 14.7%, and NSAID enteropathy in 11.76%. Ulcers do not commonly cause bleeding in the small intestine although they have been reported in up to 5.8% of the cases. (8) In general, these ulcers are secondary to Crohn's disease or NSAID enteropathy and are less frequently associated with entities such as Celiac's disease, Behcet's disease, unspecified jejunoileitis, vasculitis, gastrointestinal stromal tumors, intestinal adenocarcinoma, lymphoma, multiple myeloma, Meckel's diverticulum, infections and HGM. (9)

HGM is gastric mucosa in an ectopic location in any part of the gastrointestinal tract. HGM is identified most frequently in the esophagus, followed by the duodenum. (10-12) With the exception of Meckel's diverticulum, locations below the Ligament of Treitz are extremely rare. There are only a few cases of HGM in the jejunum, ileum, colon and rectum

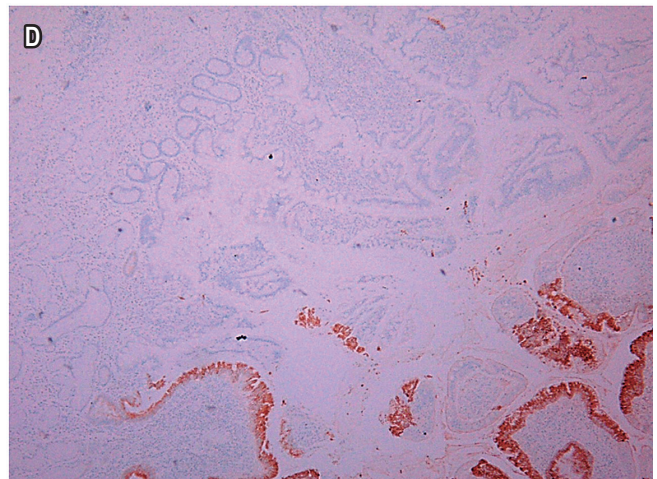
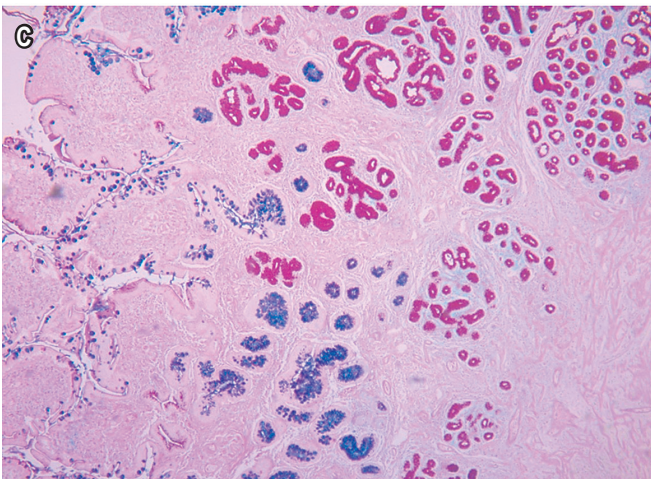
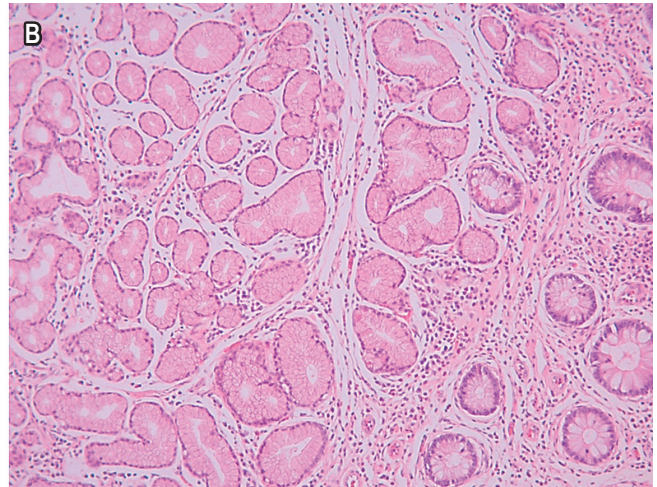
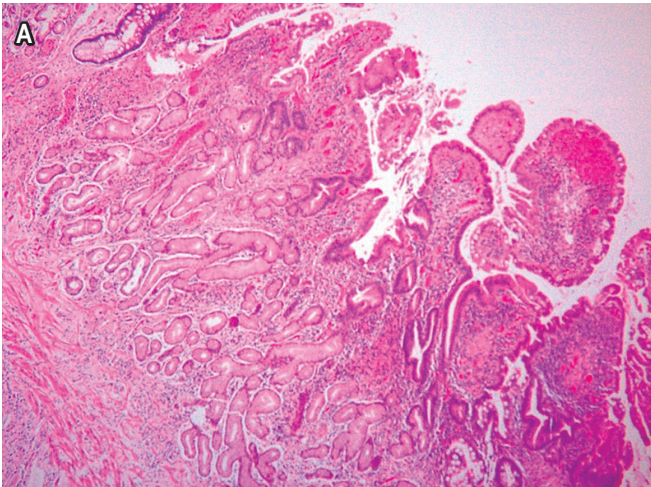


**Figure 1.** Endoscopic videocapsule. Concentric ulcerated stenosis, surrounded by mucosal edema.



**Figure 2.** Surgical piece. Stenotic segment of 6.5 cm of small intestine (ileum). Endoscopic videocapsule (arrow).

in the medical literature. (13, 14) Most reports involving the small intestine present asymptomatic patients whose HGMs were identified by histopathological studies of samples obtained surgically. Nevertheless, associated symptoms of gastrointestinal bleeding, (15, 16) intussusception, (17) ulceration, perforation and intestinal obstruction have been described. In addition, there are cases in which HGMs have become malignant. (14, 18-20) In our patient, the symptoms were abdominal pain and anemia with a bowel obstruction after the endoscopic videocapsule was retained. Findings of multifocal compromises of the small intestine due to several ulcers resulting in various segments of stenosis are very rare situations. There are only two similar cases reported in the literature. One was a 42-year-old patient who had episodes of recurrent abdominal pain, and the other was a 24-year-old



**Figure 3.** Histopathological study. **A.** Areas covered by the foveolar gastric epithelium (H-E x 10). **B.** Pyloric glands in the mucosa and submucosa (H-E x 40). **C and D.** PAS staining with immunohistochemical study with MUC-5AC showing the presence of neutral mucin of the gastric mucosa represented by the foveolar epithelium and the pyloric glands.

patient who had abdominal pain and intestinal perforation. (2, 21) Lesions were identified by endoscopic videocapsule in only one case. (14)

Two types of HGM have been characterized in relation to histological findings. The first has both gastric glands and gastric foveolar epithelium as in our patient. The second has only gastric foveolar epithelium. It is believed that the former has its origin in a congenital abnormality of the gastrointestinal tract, while the latter could be acquired through a metaplastic process the mechanism of which remains unknown. (11, 15, 22) There is a possibility that these types of histological lesions are related to Crohn's disease since outbreaks of pyloric metaplasia have been identified in patients with ileum ulcers and this disease. (23) Koukoulis et al. evaluated 45 biopsies of the terminal ileum of different patients and identified pyloric gland metaplasia in 10 (22.2%) specimens. These findings were observed in patients with terminal ileitis and were located below regeneration crypts and close to granulation and ulceration tissue. No granulomas were observed in any of the pieces. The meaning of this type of lesions is not entirely clear and has been considered a non-specific finding. (24) Agarwal et al. conducted a retrospective study which found that pyloric metaplasia in patients with inflammatory bowel disease who had ileoanal anastomoses with ileal pouches were more likely to have Crohn's disease than ulcerative colitis. In addition, pyloric metaplasia was associated with postoperative complications such as chronic pouchitis. (25) Although there was not enough evidence to suggest Crohn's disease in our patient, this possibility cannot be completely ruled out, which makes clinical, paraclinical and imaging follow-up necessary.

## CONCLUSION

Endoscopic videocapsules have made it possible to obtain images of the small intestine that were previously not possible. Heterotopic gastric mucosa is a condition that had traditionally been considered to be congenital, one that very rarely compromised the gastrointestinal tract below the Ligament of Treitz. It is very rare to have a multifocal condition in the small intestine, as in the case of this patient. Distinguishing HGM from pyloric metaplasia is difficult and still remains a point of discussion. This situation requires that patients diagnosed with this condition be strictly monitored clinically, paraclinically and with imaging.

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