

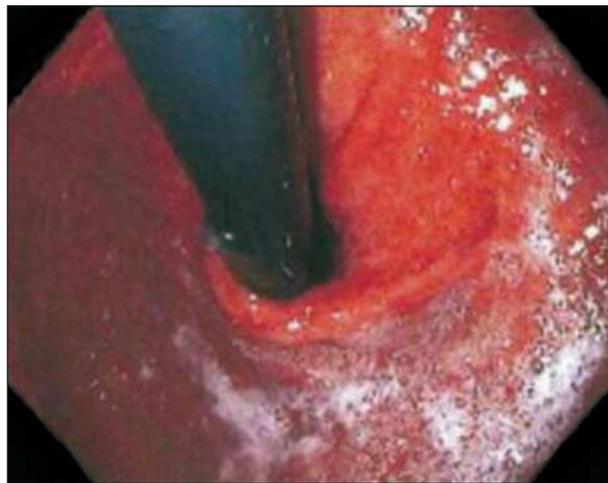
# Answer

## Fundic Gland Polyps

In this patient, more than 100 polyps were seen during esophagogastroduodenoscopy and at least 30 were removed for biopsy. Polyp biopsies showed no evidence of *Helicobacter pylori* microorganisms or dysplasia, and all were found to be inflammatory polyps of the gastric fundic type. The patient's proton pump inhibitor (PPI) was discontinued. The patient was seen for follow-up 8 months later and reported improvement of symptoms. Repeated esophagogastroduodenoscopy (**Figure 3**) showed remarkable resolution of the gastric polyps. Results of a colonoscopy performed to evaluate for colonic polyps were negative. Incidentally, multiple gallbladder polyps were found on ultrasonography of the right upper quadrant; the largest gallbladder polyp was 7 mm. The patient was scheduled to have a laparoscopic cholecystectomy to eliminate any possibility of malignancy.

Fundic gland polyps (FGPs) are usually smaller than 1 cm and are smooth, glassy, and often transparent in appearance. They are typically found in the fundus and upper body of the stomach. Histologically, they have fundic mucosa with dilated cystic glands, parietal cell protrusions, and parietal cell hyperplasia. Treatment of FGPs is based on the size of the polyps. For those larger than 1 cm, biopsies are performed and PPI use is discontinued. For those between 0.5 and 1.0 cm, biopsies are done. For those smaller than 0.5 cm, surveillance is performed in 3 to 6 months.

The FGPs are usually detected incidentally during endoscopic evaluation for abdominal pain, dyspepsia, or chronic reflux as in our patient. They are the most common gastric polyps in Western countries, found incidentally in 2% of all endoscopic studies.<sup>1-4</sup> They may be sporadic, may occur in association with PPI use, or may be present in patients with familial adenomatous polyposis.<sup>1,5-8</sup> Sporadic and PPI-associated FGPs are believed to have a low malignant potential in contrast to the familial adenomatous polyposis-associated FGPs. The in-



**Figure 3.** Follow-up esophagogastroduodenoscopy showed the fundus with a few small, scattered, hyperplastic polyps. The remainder of the stomach appeared normal.

cidence of FGPs has increased owing to the overuse of PPIs in the treatment of acid-related disorders such as gastroesophageal reflux disease, peptic ulcer disease, and *H pylori* infection; they are associated with PPI use in up to 1.9% of the general population. Increased risk of FGPs was noted with PPI use longer than 1 year (odds ratio=2.2; 95% CI, 1.3-3.8) as compared with short-term use (odds ratio=1.0; 95% CI, 0.5-1.8).<sup>5</sup> Also, an increased risk of dysplasia in FGPs was suggested in a case-control study involving patients with familial adenomatous polyposis receiving a PPI.<sup>5,9</sup>

The formation of FGPs is postulated to be a result of hypergastrinemia leading to parietal cell hyperplasia and protrusion into the lumen of the gland. Long-term PPI use is associated with a 4-fold increased risk of FGPs. Several studies have documented that discontinuation of the PPI results in the disappearance of the polyps.<sup>7,8</sup> The true clinical significance of these FGPs remains elusive. Further long-term prospective studies are required to elucidate the long-term risks of prolonged PPI use.

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Correspondence: Izi Obokhare, MD, Department of Surgery, University Hospitals Case Medical Center, 11100 Euclid Ave, Cleveland, OH 44106 (iobokhare@hotmail.com).

Author Contributions: Study concept and design: Obokhare, Santoso, and Ponsky. Acquisition of data: Obokhare and Santoso. Analysis and interpretation of data: Santoso and Coughlan. Drafting of the manuscript: Obokhare, Santoso, and Coughlan. Critical revision of the manuscript for important intellectual content: Obokhare, Santoso, and Ponsky. Administrative, technical, and material support: Obokhare, Santoso, and Coughlan. Study supervision: Ponsky.

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