

# Large, Multifocal, and Symptomatic Gastric Xanthoma in a 41-Year-Old Woman

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<b>Background</b>	A 41-year-old woman presented with acid reflux and early satiety. Endoscopy revealed large, concerning multifocal gastric masses. Biopsy initially suggested malignancy, but pathology confirmed gastric xanthoma (GX).
<b>Summary</b>	Our patient, a 41-year-old female, initially presented with complaints of acid reflux and early satiety. She had no other concerning symptoms or relevant history. She was worked up for these complaints with an endoscopy, which was significant for large multifocal gastric masses. Initially presumed to be cancer, the mass was biopsied. Pathology resulted as gastric xanthoma. Given the size of the lesion and the association between gastric xanthoma and premalignant and malignant lesions, concern for malignancy persisted. The patient was taken to surgery for excision of the masses. The masses were completely excised, and final pathology remained consistent with the diagnosis of GX with no invasive component.
<b>Conclusion</b>	Gastric xanthomas are generally small, asymptomatic lesions that are benign in nature, but an association exists between gastric xanthoma and gastric malignancy. This patient's masses were significantly larger than any gastric xanthoma we have found in the literature, and while she was not found to have a malignant or premalignant lesion, given the association, increased surveillance is needed. There are currently no guidelines for surveillance in patients with gastric xanthoma.
<b>Key Words</b>	gastric xanthoma; xanthelasma; malignancy; atrophic gastritis

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## Case Description

Gastric xanthomas are exceedingly rare, benign, superficial lesions that are usually small, asymptomatic, and encountered incidentally on upper endoscopy. There is an association between *H. pylori* infection and gastric xanthoma; more recently, a correlation between gastric xanthomas and early gastric cancer was discovered. The lesions are usually discreet, although manifestations with numerous diffuse lesions have been observed. This report describes a case of a grossly unique gastric xanthoma that appeared as a large symptomatic villous mass.

Our patient was an obese, 41-year-old woman who presented with a three-year history of reflux and early satiety without significant weight loss. She tolerated her diet without nausea or vomiting and reported normal bowel function. She received an upper endoscopy that revealed a small hiatal hernia and large, noncircumferential, frond-like, villous masses with extensive intragastric extension. A CT scan of the abdomen demonstrated the extent of the masses as well (Figure 1). The biopsies of the masses were evaluated by two different pathologists; they both determined that the lesions were gastric xanthoma. She then underwent an endoscopic ultrasound, where deeper biopsies of the lesions were taken and were concordant with the diagnosis of xanthoma without pathologic evidence of carcinoma. She was then referred to surgical oncology for definitive care.

**Figure 1.** Preoperative CT Scan Demonstrates Gastric Xanthoma (arrows). Published with Permission

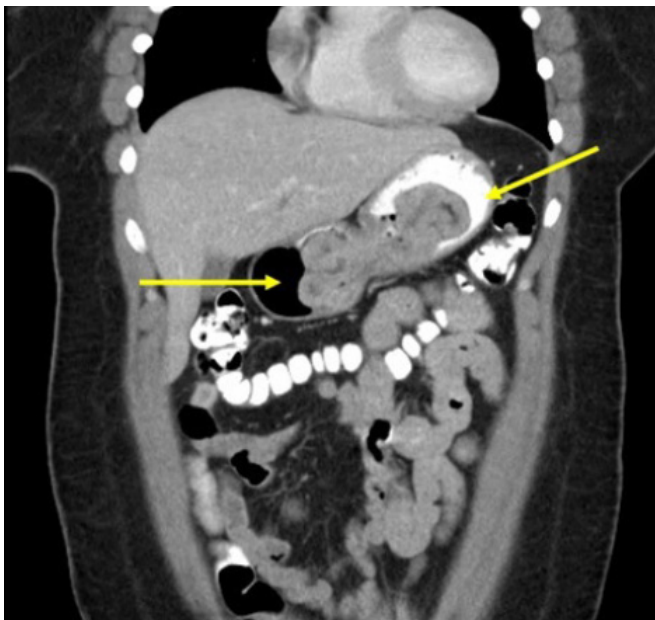
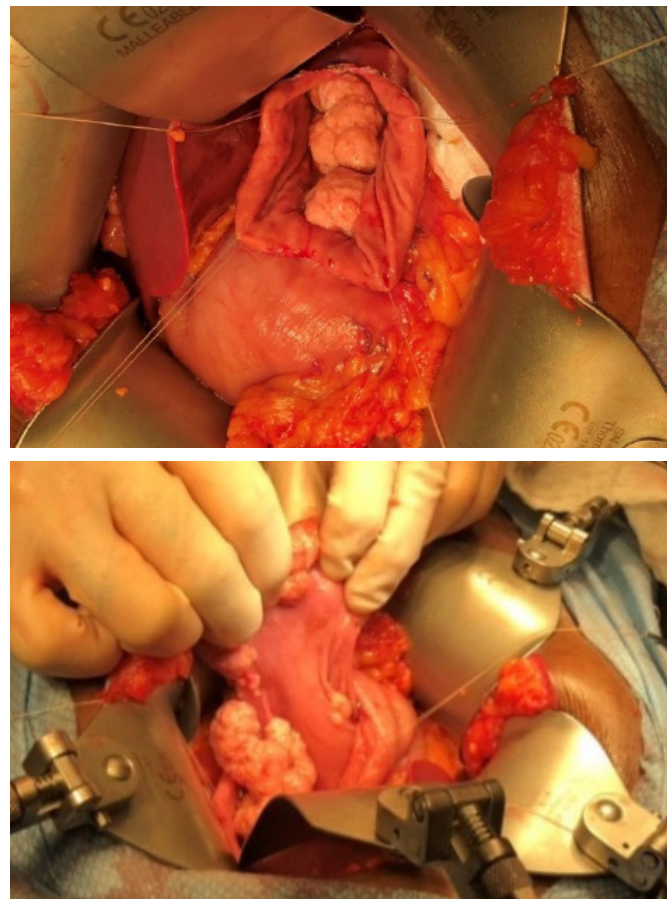


Image confirmed a large, well-defined mass within the gastric body

Given the known association between gastric xanthoma and gastric cancer as well as the symptomatic nature of the condition, the decision was made to pursue extirpation of the mass via partial gastrectomy. After performing upper endoscopy in the operating room, multifocal masses were visualized. The abdomen was entered via an anterior open approach with an upper midline incision and the mass was palpated. There was no extraluminal extension. A large anterior gastrotomy was made, and the multifocal xanthoma (three in total) were removed separately by externalizing them anteriorly through the gastrotomy and transecting the base with a gastrointestinal loaded stapler (Figures 2A and 2B). The anterior gastrotomy was then closed with a handsewn technique. Gross pathology measured the three specimens as  $9 \times 3.7$  cm;  $14 \times 3$  cm; and  $0.5 \times 0.3$  cm. Final surgical pathology confirmed that all three specimens were consistent with xanthoma. There was no dysplasia or malignancy identified in the specimens, and the margins were free of xanthoma. The patient recovered well postoperatively. To our knowledge, this case represents the largest gastric xanthoma reported in the medical literature.

**Figure 2.** Multifocal Gastric Xanthoma Visualized Through Anterior Gastrotomy. Published with Permission



Multiple, yellowish lesions consistent with gastric xanthoma are evident on the gastric mucosa

## Discussion

Gastric xanthelasma, or gastric xanthoma, is an uncommon lesion of the lamina propria that is created by large, foamy histiocytes and appears grossly as a yellow-white plaque on the mucosal surface. Generally, gastric xanthomas manifest as discrete, small lesions less than 10 mm in diameter. They are most commonly even smaller—less than 5 mm in size. The largest lesion we have found in the literature was 1.5 cm. Rarely, patients can have numerous diffuse lesions or can present with gastric xanthomatosis, which is characterized by numerous small mucosal patches affecting a large surface area of the gastric mucosa.

Most gastrointestinal xanthomas are found within the stomach (76%); however, they can also be found in the esophagus (12%) and the duodenum (12%). Gastric xanthelasma is generally an incidental finding on upper endoscopy and rarely causes symptoms in isolation. Gastric xanthoma was previously thought to be associated with hyperlipidemia<sup>6</sup>; however, more recent studies show no association between hyperlipidemia and gastric xanthoma. While some studies have found a relationship between *H. pylori* infection and gastric xanthoma, many other publications have found no significant association with *H. pylori*. One of the most frequent associations with gastric xanthoma that we noted was atrophic gastritis (Table 1). Given the association between atrophic gastritis and gastric xanthoma as well as the association between atrophic gastritis and gastric cancer, the natural question is: is there a significant relationship between gastric xanthoma and malignancy that needs to be elucidated?

**Table 1.** Summary of Reported Cases of Retained Surgicel Mimicking Thyroid Cancer Recurrence

Authors	# of Cases Reported	Xanthoma Size(s) (cm)	Multifocal?	Gastric Malignancy Present?	Other Associated Pathology?
Muraoka 1998 <sup>11</sup>	1	GX cells found within a 0.6 × 0.7 cm IIa gastric cancer	No	Yes	
Isomoto 1999 <sup>2</sup>	67/134	NR	NR	No	<i>H. pylori</i> Atrophic gastritis
Gencosmanoglu 2004 <sup>3</sup>	17/7320	<5 mm in diameter (14 patients) 5-10 mm in diameter (3 patients)	Yes (4/17 pts)	No	Atrophic gastritis
Jeong 2004 <sup>12</sup>	1	NR	Yes	No	
Kubosawa 2007 <sup>13</sup>	1	NR	Yes	No	
Yi 2007 <sup>6</sup>	54/771	Mean size 0.7 cm, no lesions >1.0 cm	Yes, in 35%	No	<i>H. pylori</i> Atrophic gastritis
Jansen 2009 <sup>8</sup>	2	0.3-0.4 cm	Yes	No	
Kinoshita 2011 <sup>14</sup>	1	NR	No	Yes	
Sekikawa 2014 <sup>1</sup>	249/3238	NR	NR	Yes, xanthoma in 50/105 patients with gastric cancer	Atrophic gastritis
Köksal 2016 <sup>15</sup>	69	NR	Yes, in 20/69	Yes, in 1/69	Atrophic gastritis Intestinal metaplasia
Sekikawa 2016 <sup>16</sup>	107	NR	NR	Yes, in 15/107	Atrophic gastritis
Kitamura 2017 <sup>17</sup>	66	NR	NR	Yes, xanthoma in 66/91 patients with gastric cancer	<i>H. pylori</i> Atrophic gastritis

prudent.

Shibukawa 2017 <sup>18</sup>	80	NR	NR	Yes, xanthoma in 80/192 patients with gastric cancer	Atrophic gastritis Intestinal metaplasia
Alzahrani 2018 <sup>19</sup>	1	0.7 cm	No	No	Hyperplastic polyp
Liu 2018 <sup>4</sup>	1	1.5 cm	No	No	High-grade dysplasia
Shibukawa 2019 <sup>20</sup>	62	NR	NR	Yes, in 45/62	<i>H. pylori</i> Intestinal metaplasia
Yamashita 2019 <sup>21</sup>	174	NR		Yes, in 46/174; xanthoma in 46/114 patients with gastric cancer	<i>H. pylori</i>
Hashimoto 2020 <sup>5</sup>	1	NR	Yes	No	<i>H. pylori</i>
Xiao 2020 <sup>22</sup>	306	NR	NR	No	Atrophic gastritis Intestinal metaplasia
Sayar 2020 <sup>7</sup>	108	NR	NR	Yes in 3/108	Atrophic gastritis Intestinal metaplasia
Abu-Alreesh 2021 <sup>23</sup>	1	NR	No	No	
Miura 2021 <sup>24</sup>	114	NR	NR	Yes, all 114 patients had GC	(54/114 were rapidly growing GC)
Shibukawa 2021 <sup>25</sup>	247	NR	NR	Yes, in 99/247	<i>H. pylori</i> Atrophic gastritis

As indicated previously, studies have demonstrated a correlation between gastric xanthomas and gastric precancerous lesions as well as between gastric xanthomas and gastric cancer. Miura et. al<sup>24</sup> recently found an association between rapidly growing gastric cancers and gastric xanthelasma. While the incidence of gastric xanthomas in patients with diagnosed gastric cancer is significantly higher than in the general population,<sup>1</sup> a causative relationship cannot be inferred. In our review, atrophic gastritis was the single most commonly encountered condition associated with gastric xanthoma, but it is possible that the association between xanthoma and gastric cancer is simply a representation of the known associations between atrophic gastritis and both xanthoma and gastric cancer.

## Conclusion

Gastric cancer is the fourth most common cause of cancer-related mortality globally. With such high mortality rates, guidelines for gastric cancer screening are warranted. There are currently no recommendations for postoperative surveillance for gastric xanthoma patients; however, given its association with gastric cancer, surveillance would be

## Lessons Learned

There is an observed association between gastric xanthoma and gastric cancer. Gastric xanthoma can have atypical presentations. Our patient had a remarkably large, unusual-appearing xanthoma. Given the size and the clinical symptoms she was experiencing due to mass effect, we had high suspicion for malignancy; however pathology did not demonstrate gastric malignancy. Our suspicions were unfounded, as there is no literature to our knowledge that suggests that the gross morphology of the lesion influences the likelihood of cancer. Additionally, our patient was not found to have any of the other conditions associated with gastric xanthoma in the literature, as she was *H. pylori*-negative, and tissue samples were similarly negative for atrophic gastritis, gastric dysplasia, and intestinal metaplasia. Regardless of our patient's presentation, given all that we do know about gastric xanthoma and its associated conditions, surveillance guidelines are currently lacking and should be established for patients with gastric xanthoma. We plan to surveil this patient with endoscopy every six months for two years, and then yearly.

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