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A Case of Multiple Gastric Adenocarcinoma of Fundic Gland type

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Case Report

Keywords: Gastric Adenocarcinoma of Fundic Gland type, Multiple synchronous gastric cancers, Endoscopic submucosal dissection, Narrow-band imaging, Case report

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Additional Declarations: No competing interests reported.

Abstract

Background

Gastric Adenocarcinoma of Fundic Gland type (GA-FG) is a rare and distinct variant of gastric adenocarcinoma, often characterized by its indolent behavior and association with non-atrophic gastric mucosa. While typically solitary, the occurrence of multiple synchronous gastric adenocarcinoma of fundic gland type is exceedingly uncommon. This case report documents a patient presenting with numerous synchronous GA-FG.

Case Report:

A 66-year-old man presented with a 6-month history of epigastric fullness. Gastroscopic revealed multiple faded/discolored lesions scattered throughout the gastric body and fundus. White-light endoscopy showed surface dilated branching vessels with ill-defined borders. Narrow-band imaging with magnifying endoscopy (NBI-ME) revealed dilated glands with relatively regular arrangement and focal microvascular disruption. The patient had no significant past medical history, including no prior *H. pylori* eradication or proton pump inhibitor use. Lesions were resected via endoscopic submucosal dissection (ESD) in multiple sessions. Histopathological examination of all resected specimens confirmed well-differentiated adenocarcinoma of the fundic gland type, invading the muscularis mucosae or submucosa. Immunohistochemistry was positive for MUC6, Pepsinogen I, Pepsinogen II, and H^+/K^+-ATPase, supporting a fundic gland cell lineage. Three months postoperatively, surveillance biopsies of some lesions showed persistent GA-FG. The patient remains under active surveillance without further intervention.

Conclusions

This case highlights that GA-FG can present as multiple synchronous lesions. A high index of suspicion and meticulous examination with image-enhanced endoscopy are crucial for detection. Long-term endoscopic surveillance is essential given the potential for persistence or metachronous occurrence, even after extensive ESD.

Main Text

A 66-year-old male patient presented with a 6-month history of epigastric fullness and discomfort. Gastroscopic revealed multiple faded/discolored areas at the following locations: □ anterior wall of the upper gastric body, □-□ greater curvature of the upper gastric body, □ anterior wall of the lower gastric body, □ anterior wall of the lower gastric body, □ posterior wall of the mid-gastric body, □ anterior wall of the gastric fundus, □ fornix of the gastric fundus, □ anterior wall of the lower gastric body, □ greater curvature of the lower gastric body, 11posterior wall of the lower gastric body, 12below the

cardia, 13greater curvature of the upper gastric body, and 14lesser curvature of the mid-gastric body (Fig 1). Under white light endoscopy, the lesions exhibited dilated branching vessels on the surface, mostly with ill-defined borders (Fig 2). NBI-ME showed dilated glandular structures with relatively regular arrangement, and partial microvascular disruption was observed (Fig 3). Endoscopic diagnosis: Multiple faded/discolored gastric lesions. The patient was subsequently admitted to our hospital for further management.

Past medical history was unremarkable, with no history of *Helicobacter pylori* eradication or proton pump inhibitor (PPI) use. There was no family history of cancer. Blood test results were within normal limits. Lesions □ to □ were treated with ESD in multiple sessions. Postoperative pathological examination confirmed gastric adenocarcinoma of fundic gland type in all lesions, with tumor invasion into the muscularis mucosae or submucosa. Localized deep cystic gastritis was also observed. Immunohistochemical staining results were as follows (Fig 4): MUC2 (-), MUC5AC (focal+), MUC6 (+), CD10 (-), β-catenin (membranous+), P53 (focal+, wild-type), Ki-67 (approximately 5%+), Pepsinogen I (+), Pepsinogen II (+), ATPase (+). All lesions were classified as Ly0, V0, UL0, PHM0, and PVM0. Three months postoperatively, biopsies of lesions 1, 2, and 3 indicated gastric adenocarcinoma of the fundic gland type, with involvement of the muscularis mucosae. No further treatment was administered, and the patient remains under active surveillance. Three months postoperatively, follow-up biopsies of the remaining lesions (exact numbers not specified in the original text) indicated persistent gastric adenocarcinoma of fundic gland type involving the muscularis mucosae. The patient did not receive further treatment and remains under active surveillance.

Figure 1: Morphology and distribution of all lesions within the stomach.

Figure 2: Endoscopic appearance of lesions □-14 **under white light imaging.**

Figure 3: Magnified endoscopic view of lesions □-□ and □-14**.**

Figure 4: Lesion □. A: HE staining, ×10; B: HE staining, ×100; C: MUC6 (+); D: MUC5AC (focal +); E: β-catenin (+); F: Ki67 (+); G: H+/K+-ATPase (+); H: CgA (-).

This case presents a rare and clinically significant instance of multiple synchronous GA-FG occurring throughout the gastric body and fundus in a patient without identifiable risk factors. GA-FG is characterized by its indolent biology and excellent prognosis, often discovered incidentally[1]. However, its potential for multiplicity, as demonstrated here, is an underappreciated face. The presence of over ten synchronous lesions in our patient is extraordinary and challenges the conventional approach of single-lesion management. The pathogenesis of GA-FG remains incompletely elucidated, but it is notably independent of *H. pylori* infection and atrophic gastritis[2], which was consistent with our patient's history. The immunohistochemical profile—positive for MUC6, Pepsinogen I/II, and H^+/K^+-ATPase—is diagnostic, confirming differentiation towards chief cells and parietal cells of the fundic glands.

The endoscopic detection of these lesions can be challenging. As seen in this case, they often appear as subtle, faded areas with ill-defined borders and characteristic dilated branching vessels. The critical role of NBI with magnification allows for the detailed assessment of the irregular microsurface and microvascular patterns that suggest neoplasia, guiding targeted biopsies and resection.

The management of such multifocal disease presents a dilemma. While ESD is the standard curative treatment, achieving complete removal of all lesions in multiple sessions, as performed here, is technically demanding and carries cumulative risks. This necessitates a long-term, rigorous surveillance protocol.

In conclusion, this case emphasizes that GA-FG can manifest with extensive multifocality. It calls for heightened endoscopic vigilance in examining the entire stomach and underscores the necessity of lifelong follow-up for affected patients, even after extensive resections.

Abbreviations

ESD
endoscopic submucosal dissection
GA-FG
gastric adenocarcinoma of fundic gland type
NBI-ME
Narrow-band imaging with magnifying endoscopy
PPI
proton pump inhibitor

Declarations

Ethics approval and consent to participate:

Written informed consent was obtained from participant included in the study.

Consent for publication:

Written informed consent for publication of images/data was obtained from the individual depicted.

Availability of data and materials:

The data supporting the findings are available from the corresponding author upon reasonable request.

Competing Interests

All authors declare no conflict of interest.

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Authors' contributions:

WY, ZQ contributed equally to this work, they performed the manuscript writing and editing, and data collection; WYH made a pathological diagnosis; GLM coordinated the research; LTS carried out the operation and revised manuscript. All authors have read and approved the manuscript.

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Not applicable.

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Figures

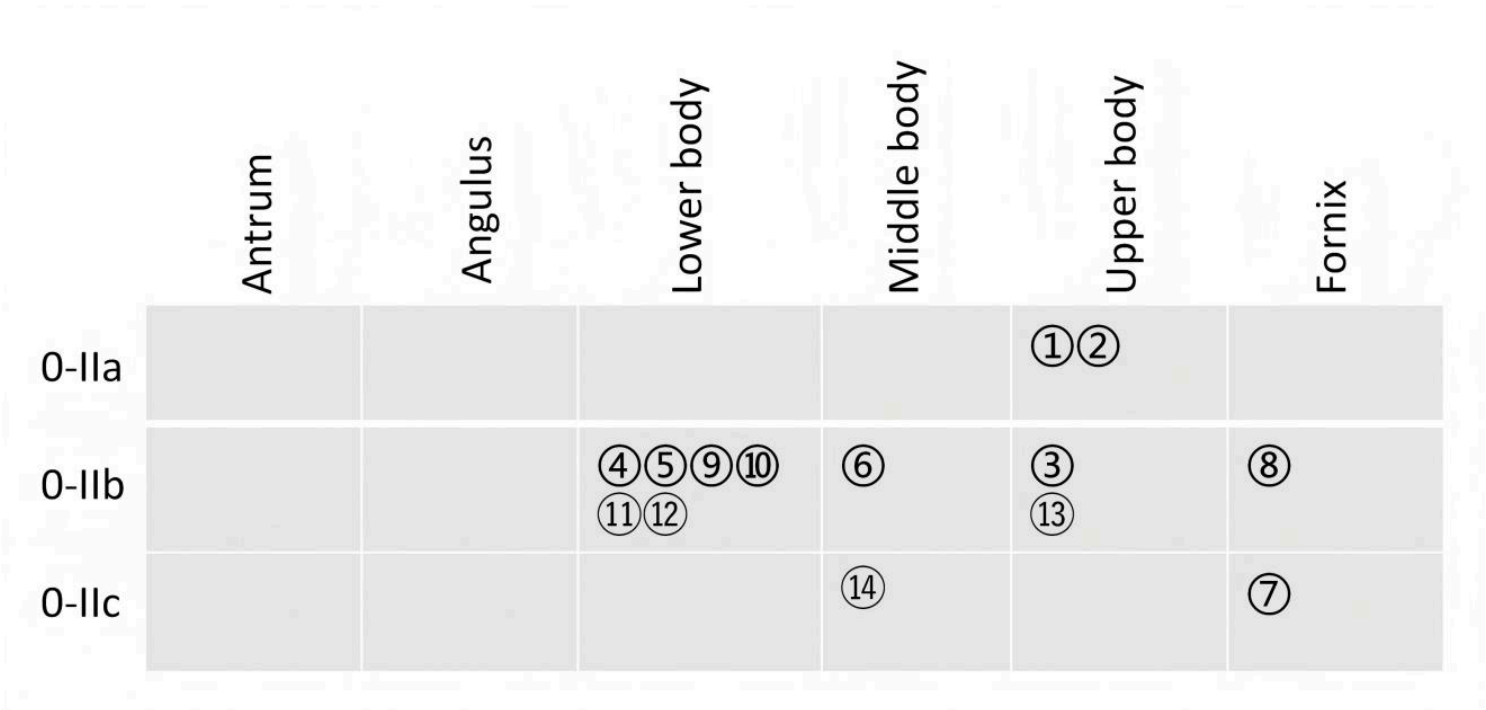


Figure 1

Morphology and distribution of all lesions within the stomach.

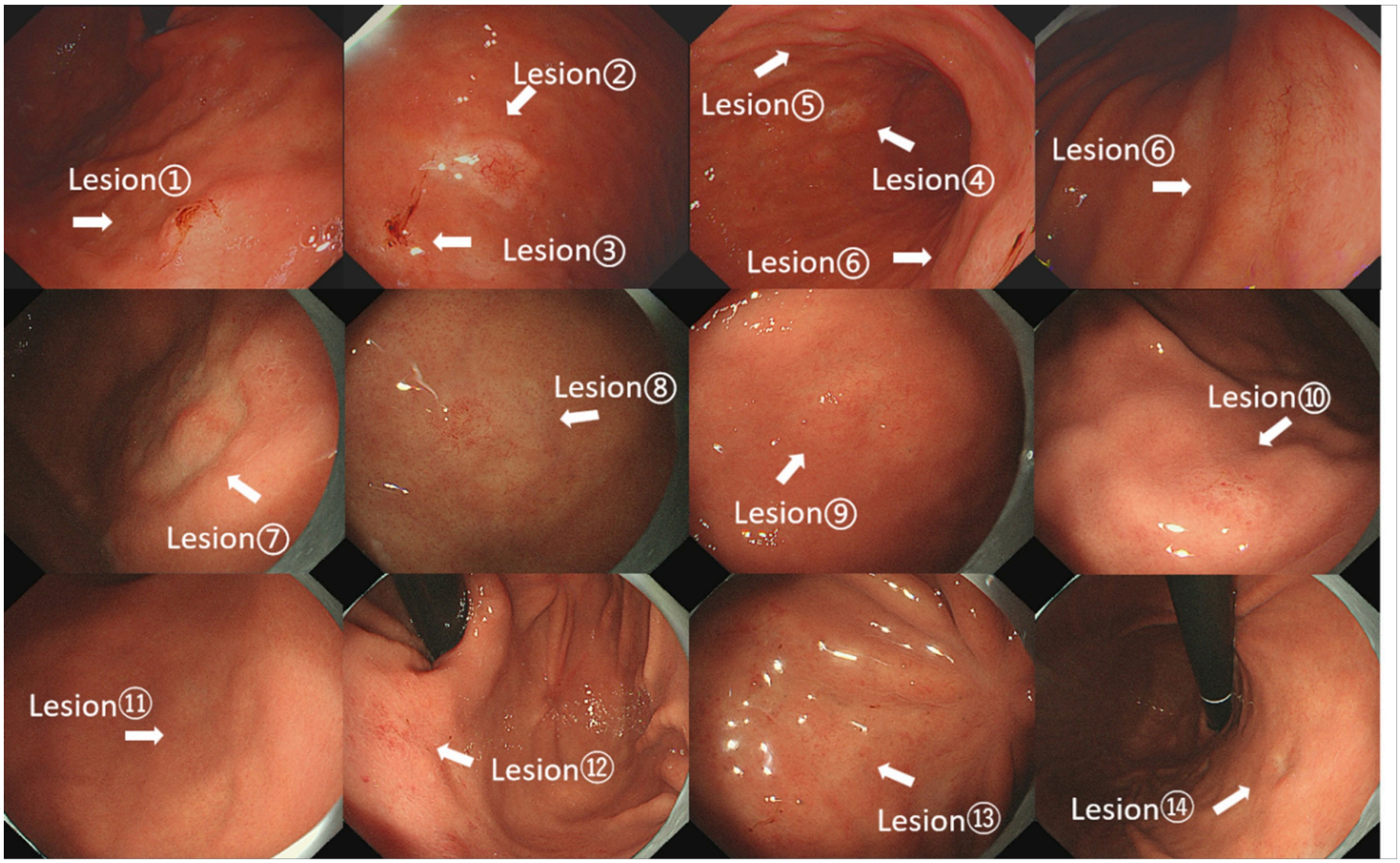


Figure 2

Endoscopic appearance of lesions ①-14 under white light imaging.

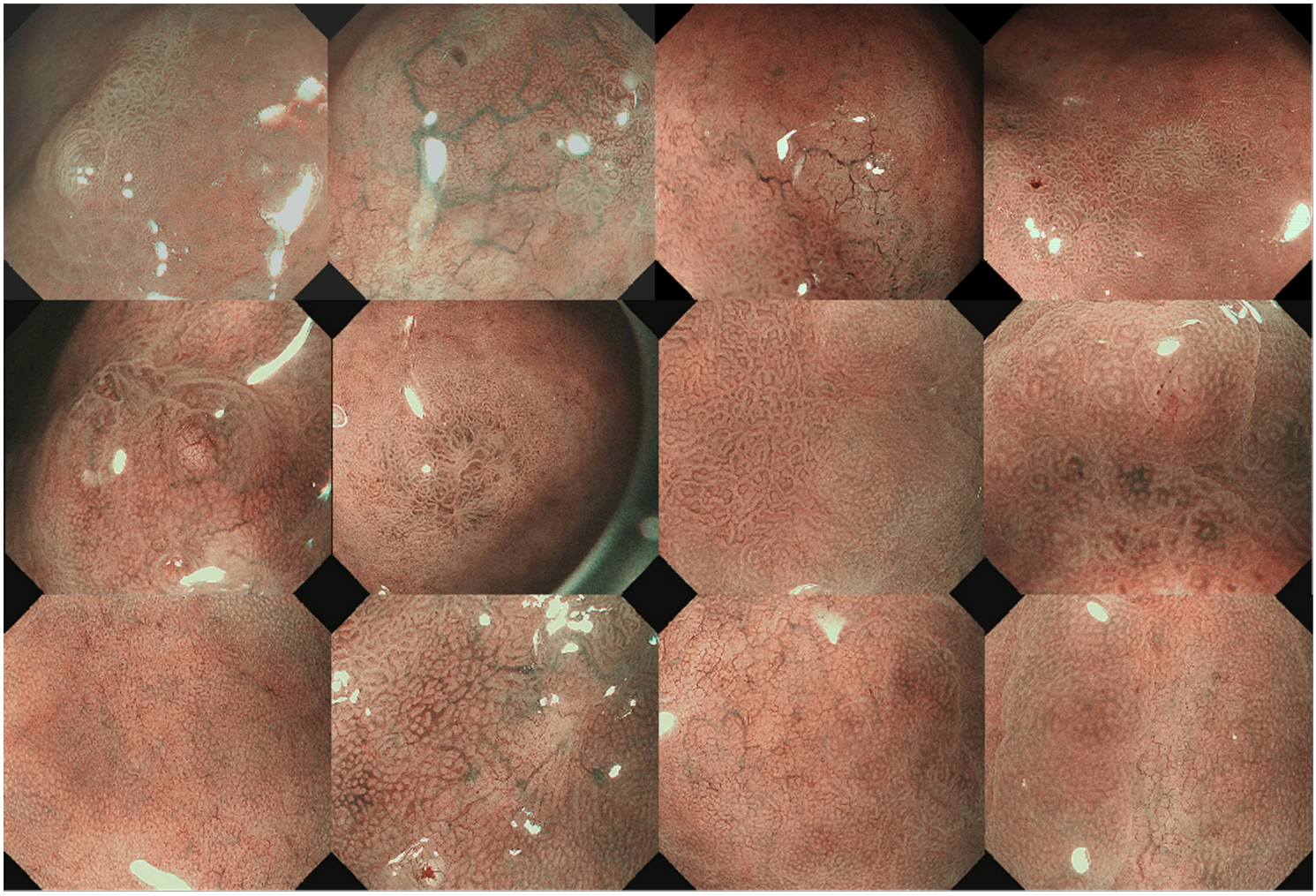


Figure 3

Magnified endoscopic view of lesions □-□ and □-14.

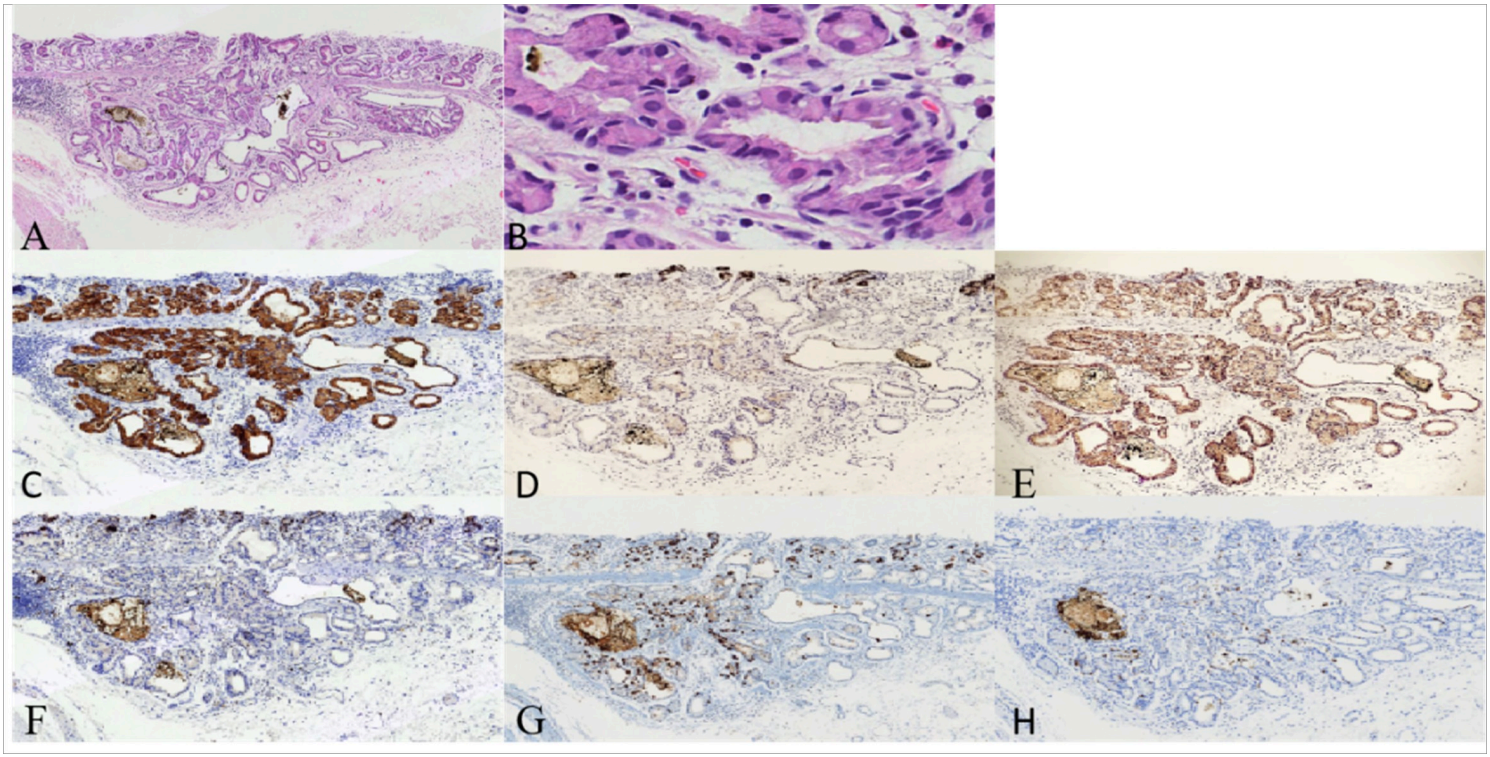


Figure 4

Lesion Ⅱ. A: HE staining, ×10; B: HE staining, ×100; C: MUC6 (+); D: MUC5AC (focal +); E: β-catenin (+); F: Ki67 (+); G: H+/K+-ATPase (+); H: CgA (-).

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