

Can Transabdominal Ultrasound Avoid an Endoscopic Ultrasonography to Diagnose Gastric Varices? A Case Report

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ABSTRACT

Background: Variceal bleeding is a gastrointestinal emergency that is one of the major causes of death in patients with cirrhosis. Although the incidence of bleeding from gastric varices is relatively low (10%-36%), the bleeding is massive, increasing the patient's mortality. Thus, diagnosis and classification of gastric varices are essential.

Case presentation: in this report, we describe the case of a man with cirrhosis who underwent gastroscopy for complete eradication of esophageal varices. A rounded bulging lesion covered with normal mucosa of the gastric fundus described as a submucosal neof ormation was identified. Before endoscopic ultrasonography, transabdominal ultrasound was performed showing an anechoic lesion in the same gastric area. To verify whether it was the same lesion found on gastroscopy, endoscopic ultrasound was performed and confirmed that it was just a gastric varices. Conclusion: although sometimes gastric varices may be confused with large gastric folds or submucosal tumors, gastroscopy remains the gold standard for the diagnosis, and endoscopic ultrasound helps to differentiate between them. Both methods are accompanied by potential risks. In our case, transabdominal ultrasound was able to identify a suspected submucosal lesion on gastroscopy as a gastric varice.

Keywords: Transabdominal ultrasound; Endoscopic ultrasound; Color doppler examination; Gastric varices; Case report

Abbreviations: EUS: endoscopic ultrasound; US: ultrasound; CT: computed tomography

INTRODUCTION

Gastric varices have been increasingly recognised as an important cause of gastrointestinal bleeding in patients with portal hypertension [1]. Compared with oesophageal variceal bleeding, haemorrhage caused by gastric varices is frequently more severe, and haemostatic control is reported to be more difficult [2]. The diagnosis of gastric varices is challenging. We report the case of a patient who underwent gastroscopy to continue the ligation of esophageal varices with evidence of gastric lesion initially interpreted as submucosal lesion.

CASE PRESENTATION

A 46-year-old man with alcohol liver disease was admitted to our Gastroenterology Department for an episode of melaena and hematemesis related to bleeding from esophageal varices. The patient underwent endoscopic band ligation, which successfully stopped bleeding. No gastric varices or portal hypertensive gastropathy have been identified during the exam. After one month, the patient was re-hospitalized to have esophageal varices completely eradicated. During the second gastroscopy, scars of the previous ligation with residual small straight varices (F1) were observed. Therefore, the planned procedure was not performed; in addition to the previous exam, a bulging rounded lesion covered with apparently normal mucosa, about 20 mm in size, located on the anterior wall of the gastric fundus (Figure 1), was found. This lesion was described as suspected submucosal neoformation, thus endoscopic ultrasound (EUS) was planned to identify the nature of the lesion.

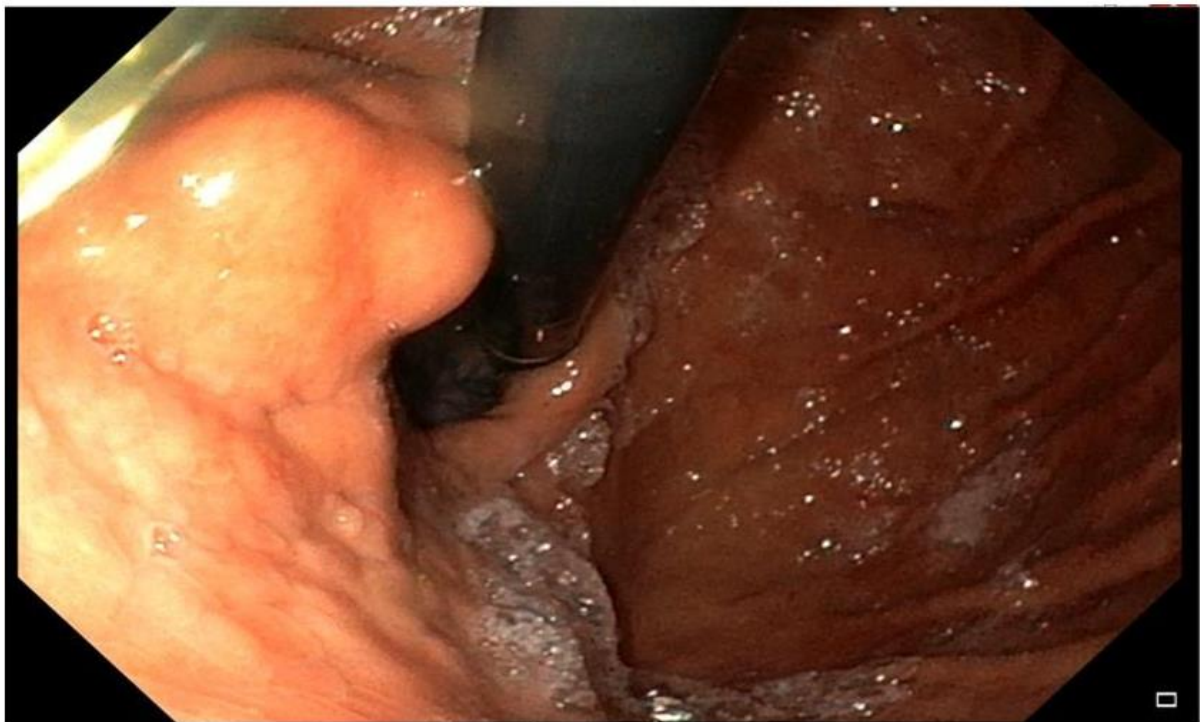


Figure 1: Endoscopy image of the rounded lesion with a regular surface suspected for submucosal neoformation.

Before performing EUS, the patient came to our observation to perform an upper transabdominal ultrasound (US) for the re-evaluation of the liver disease, including screening of hepatocarcinoma, and to exclude a thrombosis of the spleno-portal axis and the presence of ascites. On the transabdominal US we found: liver with hypertrophy of the left and caudate lobe, inhomogeneous echostructure and irregular margins, with multiple subcentimetric lesions related to regeneration nodules; splenoportal axis with increased caliber (15 mm), minimal amount of ascites in the pelvic cavity; splenomegaly; multiple collateral circles round the retroperitoneal, short gastric and gallbladder; evidence in the gastric fundus wall in the sub-cardial area of a lesion of about 20 mm in diameter, oval and with an anechoic appearance (Figure 2) that takes color on color Doppler examination: it was described as a venous varice to refer to the submucosal lesion highlighted on gastroscopy.

The following day the patient underwent EUS, which documented, in the gastric fundus, multiple anechoic, rounded areas communicating with each other (Figures 3 and 4), showing an intense signal on Doppler

examination (Figure 5), compatible with collateral circulation, confirming the diagnosis made by an US Doppler examination.

In conclusion, transabdominal US, performed by expert hands, represents a useful technique to study the alteration of the gastric wall avoiding invasive diagnostic procedures.

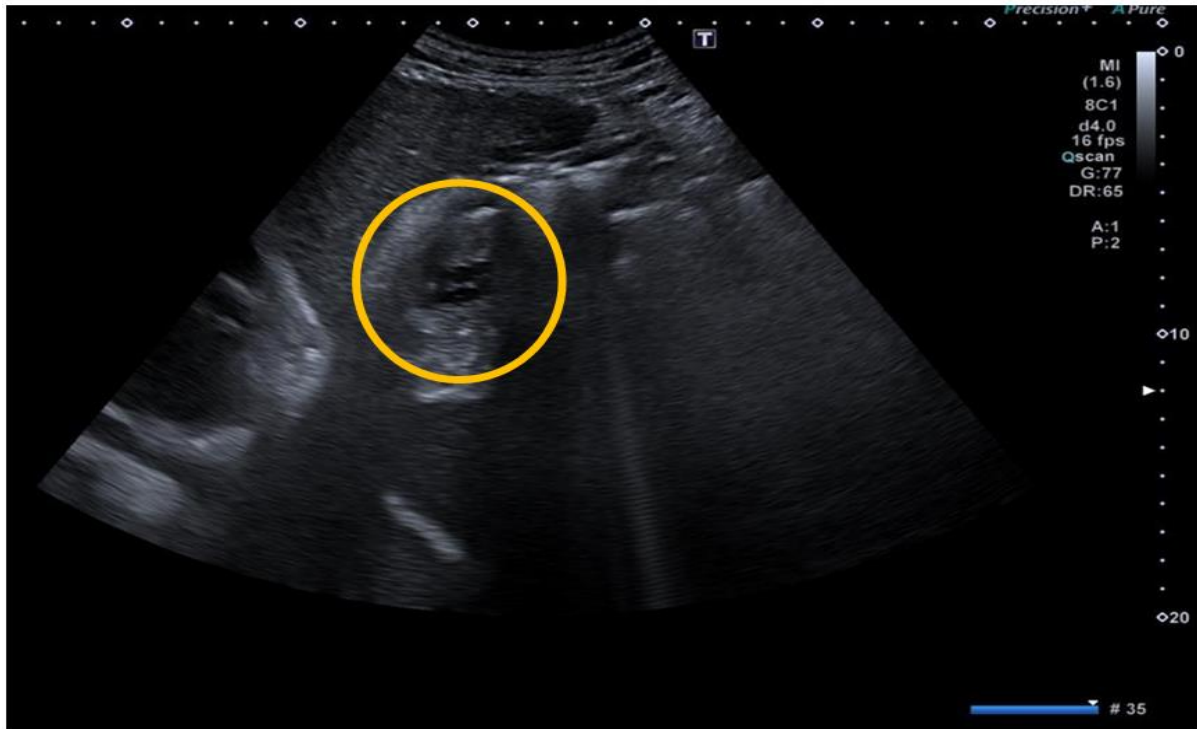


Figure 2: B-mode US image of the anechoic lesion of the gastric fundus.

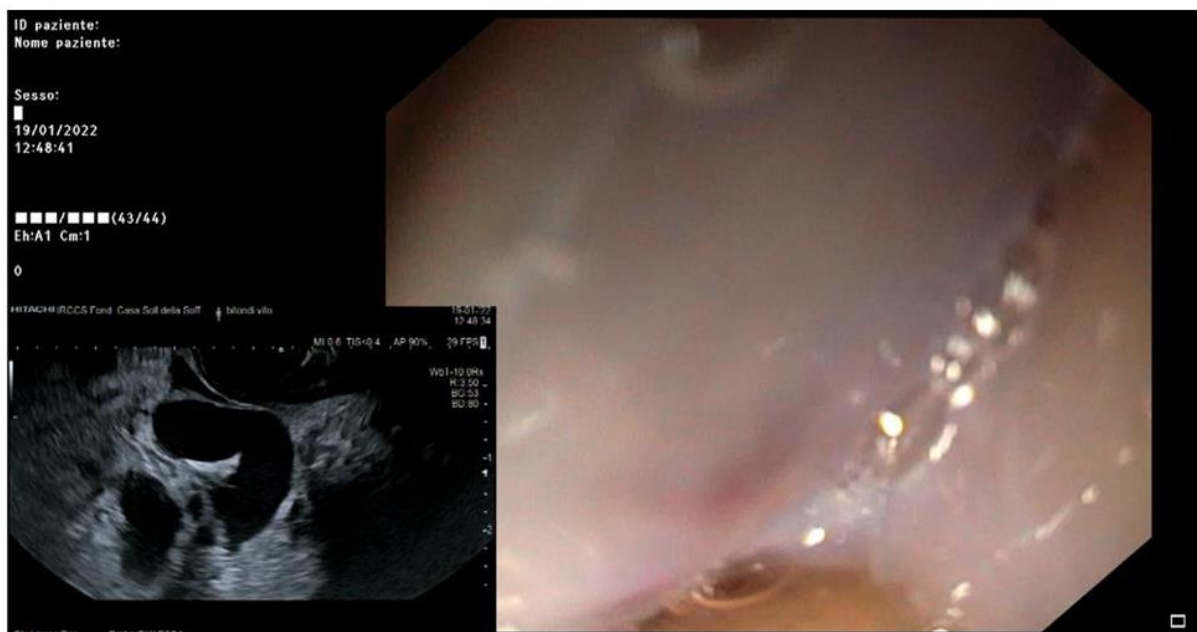


Figure 3: Echo-endoscopy image of the collateral circulation of the gastric fundus.

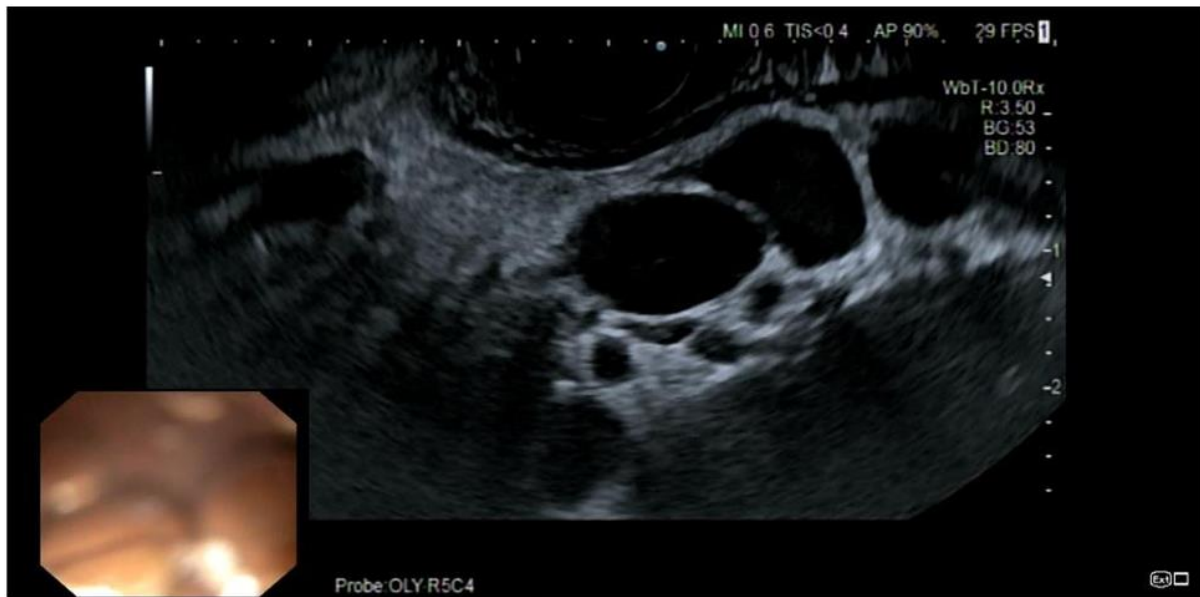


Figure 4: Echo-endoscopy image of the collateral circulation of the gastric fundus.

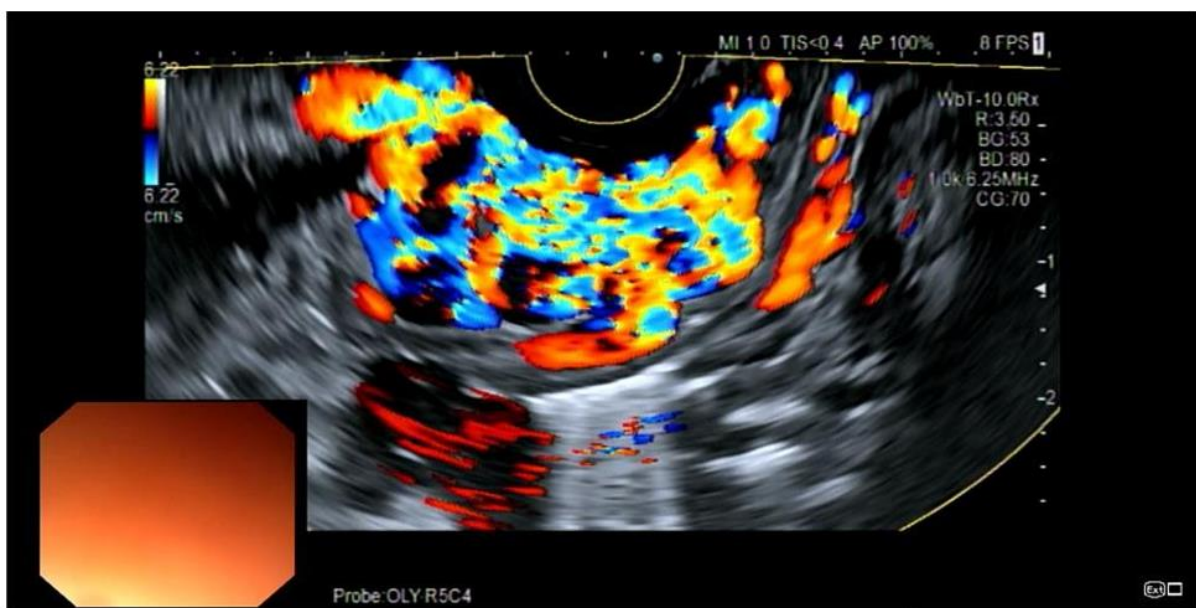


Figure 5: Echo-endoscopy image of the gastric collateral circulation which take an intense signal on the color Doppler examination.

DISCUSSION

Sometimes, gastric varices are mistaken for large gastric folds or submucosal tumors, and EUS helps differentiating between them [3].

EUS, with its ability to provide both endoscopic and ultrasonographic visualization, has expanded the diagnostic and therapeutic armamentarium in patients with portal hypertension. EUS has been used to study gastroesophageal varices and to identify high risks of bleeding by determining the size of the varix on cross-sectional imaging. EUS has a higher sensitivity for detection of varices than gastroduodenoscopy. Endoscopic Doppler US can assist in

differentiating gastric varices from other gastric submucosal lesions and enlarged gastric folds and preclude biopsy in these cases [4]. In a study on eight patients with uncertain gastric submucosal lesions seen on gastroscopy, EUS-guided Doppler US probe revealed six cases of gastric varices, one case of gastrointestinal stromal tumor and one case of Menetrier's disease [5].

Another study performed EUS in 25 patients with giant gastric folds that had been detected with upper gastrointestinal X-ray or endoscopy. The final diagnoses of these 25 patients were gastric varices in eight, gastric lymphangiectasis in one, gastritis in four, gastric carcinoma (scirrhous type) in six, and gastric lymphomas in other six. All patients with gastric varices had anechoic tortuous varicose veins in the submucosal layer [6].

Few studies have investigated the role of transabdominal US in the diagnosis of gastric varices. Takahiro S. *et al.* [7] investigated the ability of US to detect gastric varices compared to computed tomography (CT). Gastric varices were detected with color doppler US in 41 of 41 patients (100%), and outflow vessels were detected in 34 (82.9%). With CT, gastric varices were detected in 41 of 41 patients (100%), and outflow vessels were detected in 38 (92.7%). Color Doppler ultrasonographic and CT findings were in complete agreement in 35 of 41 patients (85.4%). A total of 11 patients with a high risk of variceal rupture underwent balloon-occluded retrograde transvenous obliteration, and color doppler US and CT findings after treatments were consistent.

Zhijun L. *et al.* [8] investigated the use of transabdominal color Doppler US after oral administration of an oral cellulose-based contrast agent in depicting varices at the cardia and fundus. The authors studied the patients in three different modalities: group 1 on an empty stomach, group 2 with a stomach filled with water and group 3 with a cellulose-based contrast agent. All patients underwent confirmatory gastroscopy. Varices were directly observed in 10.5% of the group 1 members, compared with 59.2% of the group 2 and 89.6% of the group 3.

These studies show that some efforts have been made to find alternative diagnostic techniques to gastroscopy, which remains the gold standard in this setting, even though it may be painful or injurious, provoking major hemorrhage. There is also a chance of disseminating hepatitis virus through cross-infection, and the venous circulation beyond the gastric wall cannot be pursued. However, gastroscopy does not allow a clear visualization of varices. Because the gastric fundus and cardia are structurally endowed with heavier walls, venous varices may not protrude appreciably and may be difficult to distinguish from gastric mucosal folds. Likewise, partially extruded veins and submucosal tumors may not be readily separable.

There have been some instances of major hemorrhage stemming from clinical misdiagnosis and ill-advised mucosal biopsy. As we made in the management of our clinical case, hazards of this sort may be avoided with EUS, which reportedly surpasses conventional gastroscopy in diagnostic sensitivity for fundic varices [9]. Unfortunately, this option has other drawbacks, specifically a large, hard-bodied scope that heightens the iatrogenic bleeding risk imposed by severe varices [8].

CONCLUSION

In our case, transabdominal US was able to identify a suspected submucosal lesion at gastroscopy as a gastric varices. Future large-scale studies are needed to examine the impact of transabdominal US in the assessing of the alteration gastric wall, in particular for the evaluation of lesion in the easily accessible areas to the US study and to avoid invasive diagnostic procedures in patient with high risk of iatrogenic bleeding from severe varices.

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