Perioperative endoscopic findings of Hill grade II in the bariatric patient: When to explore during surgery?

Juan Francisco Zavalza, MD; Felipe Giron Arango, MD; Pedro J Prats, MD; Patricia Ruiz-Cota, MD; Santiago Niño, MD; Carlos Rey, MD; Iván Cantos, MD; Manuel Molinares, MD; Natan Zundel, MD, FACS, FASMBS
IFSO Latin American Chapter

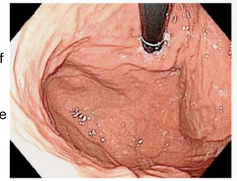
INTRODUCTION

- Hiatal hernias (HH) are common in patients undergoing bariatric surgery, with an incidence of 20–50%.[1]
- EGD is commonly used to assess hiatal abnormalities, with the Hill grade classification being a standard evaluation method.
- Small HHs are frequently overdiagnosed with EGD, and many do not require surgical repair. In contrast, moderate and large HHs are more reliably detected with EGD and often warrant intervention.[2] Despite these insights, evidence guiding intraoperative hiatal exploration remains limited.

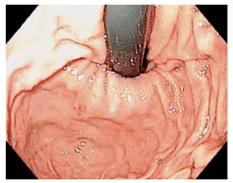
OBJECTIVE

This study aims to analyze the association between clinical and surgical variables in patients classified as Hill grade II and intraoperative hiatal hernia detection.

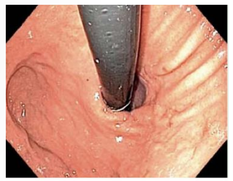
Hill Grade I
Well-defined fold of tissue that remains closely approximated to the endoscope shaft.



Hill Grade II
The fold is less prominent, and intermittent opening and rapid closure around the endoscope with respiration.



Hill Grade III
The valve lacks a distinct fold at the GE junction, resulting in a looser grip around the endoscope and reduced structural support.



Hill Grade IV
No fold, the lumen remains open, often exposing the squamous epithelium. A hiatal hernia is always present.

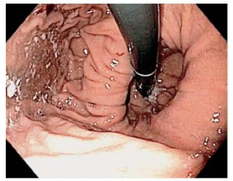


Fig 1. Hill Classification. Modified from Hansdotte, et al. 2016.

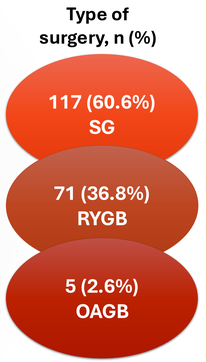
METHODS

A retrospective observational study was conducted using a prospective database from January to December 2022. Patients who underwent bariatric surgery with either preoperative or intraoperative EGD confirming Hill grade II were included. Endoscopic findings were compared with intraoperative diagnoses of hiatal hernia. Descriptive statistics, Chi-square analysis, and predictive values were calculated.

RESULTS

Table 1. Patients Demographics and Medical History

Demographics	Patients with Hill II (N= 193/1083)
Age (years), mean (SD)	41.41 (9.6)
Female, n (%)	176 (91.2)
BMI (kg/m^2), mean (SD)	41.9 (10.2)
Smoking, n (%)	36 (18.7)
Medical History and Comorbidities	
History of surgery, n (%)	5 (2.6)
Reflux/Heartburn, n (%)	31 (16.1)
Hypothyroidism, n (%)	26 (13.5)
Asthma, n (%)	15 (7.8)
Rheumatoid Arthritis, n (%)	5 (2.6)
Type 2 Diabetes, n (%)	19 (9.9)
Hypertension, n (%)	47 (24.4)
GERD, n (%)	25 (13.0)
Dyslipidemia, n (%)	22 (11.4)
Sleep apnea, n (%)	27 (14.0)



- Hiatal hernia was confirmed intraoperatively in **85 patients (44.04%),** all of whom underwent laparoscopic repair.
- A significant correlation was found between a history of GERD and the intraoperative diagnosis of hiatal hernia (OR 3.125, 95% CI 1.277–7.648).
- Two patients developed postoperative bleeding unrelated to hiatal hernia repair; neither required reintervention.

DISCUSSION

- Our findings align with previous studies indicating that endoscopic assessment alone is insufficient for accurately detecting HHs in bariatric patients. Discrepancies between endoscopic and intraoperative findings have been reported, with small HHs frequently overdiagnosed on EGD.[2]
- Additionally, our study reinforces the strong association between GERD and HH, suggesting that hiatal exploration should be considered in symptomatic patients to prevent persistent reflux postoperatively.[3]

Table 2. Operative Data

Variable	Value
Operative time (min), Mean SD	70.05 (28.2)
Hiatal hernia size (cm), Mean (IQR)	3 (1)
Type of surgery	n (%)
- SG	117 (60.6)
- RYGB	71 (36.8)
- OAGB	5 (2.6)
Hiatal hernia confirmed intraoperative	85 (44)
Hiatal hernia repaired	193 (100)
Intraoperative complications	0 (0)
Postoperative complications	2 (1)

CONCLUSION

Patients with perioperative endoscopic findings of Hill grade II and a history of GERD may benefit from routine intraoperative hiatal exploration, given the significant association with hiatal hernia. However, prospective studies are needed to validate these findings and refine surgical decision-making protocols in bariatric patients.

REFERENCES

1. Valukas CS, et al. Surgeon variability in repair of hiatal hernia at the time of bariatric surgery. *Surg Endosc*. 2024;38(9):5017-5022.
2. Mohammed R, et al. Efficiency of preoperative esophagogastroduodenoscopy in identifying operable hiatal hernia for bariatric surgery patients. *Surg Obes Relat Dis*. 2017;13(2):287-290.
3. Hutopila I, et al. Hiatal Hernia is More Frequent than Expected in Bariatric Patients. Intraoperative Findings during Laparoscopic Sleeve Gastrectomy. *chr*. 2019;114(6):779.

HH, *hiatal hernia;* ***EGD****, esophagogastroduodenoscopy;* ***GERD****, gastroesophageal reflux disease;* ***GE****, gastroesophageal;* ***BMI****, body mass index;* ***SG,*** *Sleeve Gastrectomy;* ***RYGB****, Roux-en-Y Gastric Bypass;* ***OAGB,*** *One-Anastomosis Gastric Bypass*