



doi:10.7659/j.issn.1005-6947.2022.06.017
http://dx.doi.org/10.7659/j.issn.1005-6947.2022.06.017
Chinese Journal of General Surgery, 2022, 31(6):829-835.

· 临床研究 ·

术前常规胃镜检查对拟行减重手术患者临床应用价值

胡瑞翔, 杨华, 王华曦, 宋二飞, 董志勇, 王存川, 姜舒文

(暨南大学附属第一医院/暨南大学第一临床医学院 胃肠外科, 广东 广州 510632)

摘要

背景与目的: 随着减重手术在中国逐渐普及化, 术前常规检查的标准化显得至关重要。目前, 腹腔镜袖状胃切除术 (LSG) 或腹腔镜胃旁路术 (LRYGB) 术前是否常规行胃镜检查仍有争议。本研究旨在分析拟行减重手术的患者术前消化系统症状和胃镜结果的关系, 及术前消化系统症状是否可能成为改变手术方式的依据, 并比较术前胃镜结果与术后病理结果间的差异, 由此探讨术前常规胃镜检查的必要性。

方法: 回顾性分析 2019 年 11 月—2021 年 11 月期间暨南大学附属第一医院胃肠外科/减重中心行减重手术且行术前胃镜检查的患者病历资料。分析患者术前消化系统症状、术前胃镜结果与改变手术方式的关系; 判断胃镜结果与术后病理结果的一致性。

结果: 共纳入 458 例患者, 平均年龄 (31.3 ± 9.3) 岁; 平均 BMI (38.9 ± 7.5) kg/m^2 。103 例 (22.5%) 存在术前消化系统症状, 371 例行 LSG, 87 例行 LRYGB; 其中 82 例 (17.9%) 术中改变手术方式, 在原计划 LSG 或者 LRYGB 的基础上加行食管裂孔疝修补术、胃间质瘤切除术、胃底切除术和胃底折叠术。胃镜结果异常的有 456 例 (99.6%), 且均有胃部病变 (100.0%), 包括胃炎、胃溃疡、胃息肉等; 十二指肠相关病变 53 例 (11.6%), 主要为炎症和溃疡; 食管相关病变 117 例 (25.7%), 以食管炎居首位 (94.0%)。患者术前胃镜结果是否异常与有无消化系统症状无明显关系 ($P > 0.05$); 消化系统症状与手术方式的改变明显有关 ($P = 0.008$), 其中主要是因行 LSG 患者的手术方式的改变与消化系统症状有关 ($P = 0.008$), 而行 LRYGB 患者手术方式的改变与消化系统症状无明显关系 ($P = 1$)。将 371 例行 LSG 患者的术前胃镜结果与术后病理结果行一致性分析, 结果显示两者诊断不一致 ($\kappa = 0.072$, $P = 0.000$)。

结论: 在无消化道症状患者中开展术前胃镜检查可有助于早期发现消化系统疾病, 术前消化系统症状可一定程度作为改变手术方式的依据。

关键词

减肥手术; 胃镜检查; 袖状胃切除术; 胃旁路术

中图分类号: R656.6

Clinical application value of preoperative routine gastroscopy in patients waiting for bariatric surgery

HU Ruixiang, YANG Hua, WANG Huaxi, SONG Erfei, DONG Zhiyong, WANG Cunchuan, JIANG Shuwen

(Department of Gastrointestinal Surgery, the First Affiliated Hospital of Jinan University/the First School of Medicine, Jinan University, Guangzhou 510632, China)

基金项目: 广州市科技计划基金资助项目 (202201020063)。

收稿日期: 2022-04-20; **修订日期:** 2022-06-06。

作者简介: 胡瑞翔, 暨南大学附属第一医院/暨南大学第一临床医学院住院医师, 主要从事肥胖与代谢疾病方面的研究。

通信作者: 姜舒文, Email: jiangsw@jnu.edu.cn

Abstract

Background and Aims: With the growing popularity of bariatric surgery in China, the standardization of routine preoperative examinations has become increasingly important. At present, there is some debate as to whether gastroscopic examination should be routinely performed before laparoscopic sleeve gastrectomy (LSG) or laparoscopic gastric bypass (LRYGB). This study was conducted to analyze the relationship between preoperative digestive system symptoms and gastroscopic results in patients scheduled to undergo bariatric surgery, and whether preoperative digestive system symptoms can become the basis for altering the surgical procedure, and also to compare the results between preoperative gastroscopic evaluation and postoperative pathological diagnosis, so as to determine the necessity of routine preoperative gastroscopic examination.

Methods: The medical records of patients who underwent preoperative gastroscopic examination prior to bariatric surgery in the Gastrointestinal Surgery/Bariatric Center of the First Affiliated Hospital of Jinan University from November 2019 to November 2021 were analyzed retrospectively. The associations of preoperative digestive system symptoms and preoperative gastroscopic findings with the alteration of surgical procedure were analyzed, and the consistency between the gastroscopic results and postoperative pathological results were determined.

Results: A total of 458 patients were included, with a mean age of (31.3±9.3) years and mean BMI of (38.9±7.5) kg/m². There were 103 patients (22.5%) with preoperative gastrointestinal symptoms. Among the patients, 371 cases underwent LSG and 87 cases underwent LRYGB, of whom, 82 cases (17.9%) had intraoperative changes of surgical procedures, which included hiatal hernia repair, gastric stromal tumor resection, gastric fundectomy and fundoplication in addition to the originally planned LSG or LRYGB. Four-hundred and fifty-six patients (99.6%) had abnormal preoperative gastroscopy findings, all of them (100.0%) had gastric problems such as gastritis, gastric ulcer, and gastric polyps; 53 cases (11.6%) of them had duodenal abnormalities that mainly were inflammation and ulcers; 117 cases of them (25.7%) had esophageal pathologies, which was dominated by esophagitis (94.0%). The statistical results showed that preoperative gastroscopic view was not significantly related to the presence or absence of digestive system symptoms ($P>0.05$); the existence of digestive system symptoms was significantly associated with the change of surgical procedure ($P=0.008$), which was mainly due to the significant association between the existence of digestive system symptoms and change of surgical procedure in patients undergoing LSG ($P=0.008$), but not due to that in patients undergoing LRYGB ($P=1$). Consistency analysis was performed between the preoperative gastroscopy findings and postoperative pathological diagnosis in the 370 patients undergoing LSG, and the result showed that there was no consistency between two examinations ($\kappa=0.072$, $P=0.000$).

Conclusion: Preoperative gastroscopy in patients without digestive system symptoms can help early detection of digestive diseases, and preoperative digestive system symptoms may be the basis for changing surgical procedure.

Key words

Bariatric Surgery; Gastroscopy; Sleeve Gastrectomy; Gastric Bypass

CLC number: R656.6

数据^[1]显示中国已成为世界肥胖人口大国,肥胖症患者人数众多,部分患者需通过减重手术来减轻体重和缓解2型糖尿病等代谢疾病。中国地区人群因饮食等相关因素致胃癌发病率高^[2],而胃镜

对早期胃癌诊断有重要价值^[3-4],因此对我国肥胖症患者,术前胃镜检查具有独特意义;另有报道指出应选择性地对有消化系统症状的减重手术患者行术前胃镜检查,但对于无症状的患者中行常

术前胃镜检查应谨慎考虑^[5-6],是否应将胃镜作为术前常规检查仍存在争议^[7]。有研究^[8]表明,腹腔镜胃旁路术(laparoscopic gastric bypass, LRYGB)因术后远端胃无法探及,因此,应术前常规行胃镜检查,但腹腔镜袖状胃切除术(laparoscopic sleeve gastrectomy, LSG)前是否常规行胃镜检查意见不统一。目前国外研究仍在探讨是否应术前常规行胃镜检查^[9],而我国对术前是否胃镜检查相关的研究较少。本研究目的为分析术前消化系统症状与胃镜结果间的联系,并分析术前消化系统症状是否可能成为改变手术方式的依据,对比分析术前胃镜与术后病理结果间的差异及联系,重点评估术前胃镜检查在减重手术中术前评估的应用价值。

1 资料与方法

1.1 一般资料

回顾性分析2019年11月—2021年11月期间在暨南大学附属第一医院胃肠外科/减重中心行减重手术且术前胃镜检查458例患者的病历资料,观察指标包括:患者一般信息[年龄、性别、身高、体质指数(body mass index, BMI)]、术前消化系统症状(恶心、呕吐、腹痛、反酸、腹胀和腹泻等)、术前胃镜结果、手术方式、石蜡病理结果等。

1.2 纳入标准及排除标准

纳入标准:(1)年龄18~65岁;(2)保守治疗未能有效减重的主动寻求减重手术者。排除标准:(1)严重的精神心理疾病,或难以配合者;(2)酒精或药物依赖者;(3)暴食症或厌食症;(4)合并其他手术或者肿瘤的患者;(5)合并肝病毒感染或药物诱导的肝病患者;(6)1型糖尿病患者;(7)自身免疫性疾病患者等。

1.3 统计学处理

采用SPSS 13.0统计软件进行数据分析,对患者术前有无消化系统症状与术前胃镜结果是否异常、患者术前有无消化系统症状与是否改变原手术方式的比较,采用 χ^2 检验;判断胃镜结果与术后病理结果是否一致,采用一致性检验。 $P<0.05$ 为差异有统计学意义

2 结果

2.1 患者基本信息

共纳入458例患者,103例(22.5%)有消化系统症状,355例(77.5%)为无症状的患者。371例(81.0%)行LSG、87例(19.0%)行LRYGB。82例患者术中改变手术方式,在原计划LSG或LRYGB的基础上加行食管裂孔疝修补术、胃间质瘤切除术、胃底切除术和胃底折叠术(表1)。

表1 458例患者基本信息

Table 1 Basic information of the 458 patients

基本信息	数值
年龄(岁, $\bar{x} \pm s$)	31.3±9.3
男性[n(%)]	149(32.3)
体质量(kg, $\bar{x} \pm s$)	107.8±26.8
身高(cm, $\bar{x} \pm s$)	165.7±8.8
BMI(kg/m ² , $\bar{x} \pm s$)	38.9±7.5
消化系统症状[n(%)]	
无	355(77.5)
有	103(22.5)
恶心、呕吐	69(62.1)
腹痛	4(3.9)
反酸	95(92.2)
腹胀	8(7.8)
腹泻	1(1.0)
手术方式[n(%)]	
LSG	371(81.0)
LRYGB	87(19.0)
改变手术方式[n(%)]	82(17.9)
LSG+食管裂孔疝修补术	72(87.8)
LRYGB+食管裂孔疝修补术	6(7.3)
RYGB+胃间质瘤切除术	1(1.2)
RYGB+胃部分切除术	1(1.2)
LSG+胃底折叠术	1(1.2)
LSG+食管裂孔疝修补术+胃底折叠术	1(1.2)

2.2 胃镜结果

458例患者中胃镜检查发现异常的有456例(99.6%),胃镜检查可同时发现多种异常结果。117例(25.7%)发生食管相关病变,其中食管炎居首位(94.0%);456例均发生胃相关病变,胃炎发生最多,其次在胃镜检查中可有效观察到胃溃疡、息肉等病变;十二指肠相关病变发生较少,包含炎症、溃疡等(表2)。

表2 458例患者术前胃镜结果[n(%)]

Table 2 Preoperative gastroscopic results of the 458 patients [n(%)]

胃镜结果	数值
正常	2(0.4)
异常	456(99.6)
食管相关	117(25.7)
食管炎	110(94.0)
LA-A级	90(81.8)
LA-B级	17(15.5)
LA-C级	2(1.8)
LA-D级	1(0.9)
食管肿物	5(4.3)
食管静脉曲张	1(0.9)
食管裂孔疝	9(7.7)
Barrett食管	1(0.9)
胃相关	456(100.0)
慢性浅表性胃炎	343(75.2)
慢性浅表性胃炎并糜烂	110(24.1)
慢性萎缩性胃炎	3(0.7)
胃溃疡	5(1.1)
胃息肉	32(7.0)
胃窦隆起型病变	2(0.4)
胃黏膜肠化	4(0.9)
十二指肠相关	53(11.6)
十二指肠球部炎症	41(77.4)
十二指肠球部溃疡	3(5.7)
十二指肠球部息肉	3(5.7)
十二指肠球部局部隆起	6(11.3)

2.3 消化系统相关症状与胃镜结果及手术方式改变的分析

行减重手术患者中,患者有无消化系统症状与胃镜结果之间差异无统计学意义($P>0.05$),是否改变手术方式与消化系统症状之间差异有统计学意义($P=0.008$)。独立分析LSG与LRYGB的结果显示,行LSG的患者术前消化系统症状与改变手术方式间有统计学差异($P=0.008$);而在行LRYGB的患者中,消化系统症状与改变手术方式间差异无统计学意义($P=1$)(表3)。

2.4 胃镜结果与术后病理结果的一致性分析

371例行LSG患者的术前胃镜结果及术后胃石蜡切片病理结果行一致性检验,两者对胃部疾病诊断不一致($\kappa=0.072$, $P=0.000$)(表4)。

表3 术前胃镜结果、手术方式的改变与术前消化系统症状的相关性分析[n(%)]

Table 3 Analysis of the correlation between the changes of surgical methods and the preoperative symptoms of digestive system [n(%)]

因素	有消化系统症状(n=103)	无消化系统症状(n=355)	κ	P
胃镜结果				
正常	2(1.9)	0(0.0)	3.178	>0.05
异常	101(98.1)	355(100.0)		
减重手术				
改变手术方式	28(27.2)	54(15.2)	6.993	0.008
未变手术方式	75(72.8)	301(84.8)		
LSG				
改变手术方式	26(31.0)	48(16.7)	8.238	0.008
未变手术方式	58(69.0)	239(83.3)		
RYGB				
改变手术方式	2(10.5)	6(8.8)	0.000	1
未变手术方式	17(89.5)	62(91.2)		

表4 行LSG患者术前胃镜和术后病理结果的一致性分析[n(%)]

Table 4 Consistency analysis of preoperative gastroscopy and postoperative pathological results in patients undergoing LSG [n(%)]

胃镜结果	术后病理异常	术后病理正常
异常	346(100.0)	24(96.0)
正常	0(0.0)	1(4.0)
κ		0.072
P		0.000

3 讨论

我国减重外科飞速发展,手术技术已逐渐推广至诸多医院^[10],现需进一步细化、规范如围手术期管理等各类相关诊疗方案,术前检查项目的规范更为重中之重,其对患者病情的深入了解,治疗方案的制定,手术方式的选择有重要意义。我国治疗指南中已提到术前应常规行消化系统检查,但对使用何种检查方式并未明确^[11],另外在国外研究中,术前是否常规行胃镜检查也存在分歧^[7, 12-16]。

多数国际专家认为,LSG与LRYGB术前应常规行胃镜检查,胃镜检查可发现患者有无活动性胃炎、胃溃疡、幽门螺旋杆菌感染等疾病,在术前进行治疗,其次对患者术后恢复,及出现并发

症的原因有一定的预测和指导作用^[12-16]。Madhok等^[16]和 Wolter等^[17]均提出,胃部疾病如胃炎、息肉、间质瘤等,多无消化系统症状表现,消化系统症状可能与胃镜结果是否异常不相关,与本研究结果相似。美国减重外科组织发出立场声明,表明症状不能作为明确诊断的依据,术前胃镜可作为有效的诊断方法,但具体临床实际需外科医生结合实际情况^[9,18]。另有部分学者认为,仅在胃镜结果提示有占位病变时才需术前处理,其他诊断对治疗流程整体影响较小,因此术前无需常规胃镜检查^[7],且胃镜检查常被认为是微创检查,是否需行术前胃镜检查应结合患者症状、危险因素决定^[19]。

结合本中心治疗经验,更支持术前常规胃镜检查的观点。首先,多数患者虽无明显消化系统症状,但术前胃镜检查下存在上消化道疾病表现,胃镜检查结果对患者术后药物治疗有指导作用,如术前发现胃炎、幽门螺旋杆菌感染(*helicobacter pylori infection*, HPI)等术后需使用特定药物治疗等。其次,胃镜检查对上消化道内膜及相关功能结构在无特殊疾病时为微创检查,在麻醉下患者整体感觉良好,耐受程度强,因此,胃镜检查更应常规推广使用。

有学者^[17]提出,LSG术前胃镜检查因其能早期诊断反流性食管炎、食管裂孔疝等,可一定程度上预防术后胃食管反流症状的加重,可能影响手术方案的选择。本研究也发现术前消化系统症状与手术方式变更有关,其中LSG患者中更为明显。

结合本中心临床经验,如患者术前出现进食吞咽感异常、反酸、烧心等胃食管反流症状,术中均需探查食管裂孔处有无明显疝或结构疏松表现,行单纯性食管裂孔疝修补,极少数情况下使用补片加固或行胃底折叠术^[20-21]。本研究中,54例患者术前无消化系统症状,通过术前胃镜检查发现食管炎,术中除行LSG或LRYGB外,探查见食管裂孔处结构疏松或间质瘤,均行食管裂孔疝修补或间质瘤切除,可见术前胃镜检查对无症状患者同样重要,对手术方式的制定有重要意义。如今内镜技术快速发展,除普通上消化道病变外,已达到可在内镜下发现如早期癌变、神经内分泌瘤、胃间质瘤等病变^[4,22],可有效帮助外科医师制定手术方式,减少术中意外情况,保障手术安全^[23-24]。另有研究表明术前常规胃镜检查能发现

胃炎、溃疡或HPI等增加术后吻合口溃疡、痿发生率的疾病^[25-26],若术前及时发现并予以药物治疗,可有效减少此类并发症的发生^[12-13,27]。结合我国已有数据库的相关报道,我国现LSG例数远超LRYGB例数^[26,28],对于无消化系统症状的肥胖症患者,术前胃镜检查也是必要的,结合胃镜和术后石蜡切片病理进行分析,有利于提高诊断的精准性。

本研究中,LSG术前胃镜和术后石蜡切片病理对胃部疾病诊断的结果并不完全一致,术后石蜡切片病理中诊断胃组织正常者,96.0%在术前胃镜检查中均提示有胃部病变,其原因可能为:(1)LSG标本取出时可能出现挤压、撕脱的情况,石蜡切片取材位置主观性较强,不同位置结果不同^[29];(2)胃镜检查中,操作医生对胃黏膜改变观察更具直观性和整体性,可更加细致、全面地观察黏膜病变,致使胃镜对胃部病变的诊断更具优势^[25-26],更加完善。

部分学者持反对意见,认为术前不应常规行胃镜检查。主要原因在于部分国家认定胃镜为微创检查,费用昂贵^[30],且检查结果多无需外科干预^[14],对肥胖症合并代谢疾病患者的整体治疗方案影响较小^[7],因此在无症状患者中术前无需常规胃镜检查。

综上所述,在无消化道症状患者中开展术前胃镜检查可有助于早期发现消化系统疾病,术前消化系统症状可能成为改变手术方式的依据,对于无消化系统症状的肥胖症患者,术前胃镜检查也是必要的,结合胃镜和术后石蜡切片病理进行分析,有利于提高诊断的精准性。

利益冲突:所有作者均声明不存在利益冲突。

参考文献

- [1] GBD 2015 Obesity Collaborators, Afshin A, Forouzanfar MH, et al. Health Effects of Overweight and Obesity in 195 Countries over 25 Years[J]. *N Engl J Med*, 2017, 377(1): 13-27. doi: 10.1056/NEJMoal614362.
- [2] Chen WQ, Zheng RS, Baade PD, et al. Cancer statistics in China, 2015[J]. *CA Cancer J Clin*, 2016, 66(2): 115-132. doi: 10.3322/caac.21338.
- [3] 陈武.窄带成像技术结合放大胃镜在发现胃癌前病变和早期胃癌中的临床价值[J]. *福建医药杂志*, 2021, 43(2): 31-33. doi:

- 10.3969/j.issn.1002-2600.2021.02.010.
- Chen W. The clinical value of narrowband imaging combined with magnifying gastroscopy in detecting precancerous lesions and early gastric cancer [J]. *Fujian Medical Journal*, 2021, 43(2):31-33. doi: 10.3969/j.issn.1002-2600.2021.02.010.
- [4] 唐榛, 杨亚玲, 文黎明. 内镜窄带成像技术联合放大内镜诊断胃癌准确性的Meta分析[J]. *中国内镜杂志*, 2020, 26(12):8-17. doi: 10.12235/E20200103.
- Tang Z, Yang YL, Wen LM. Diagnostic accuracy of magnifying endoscopy with narrow-band imaging in gastric cancer: a Meta-analysis[J]. *China Journal of Endoscopy*, 2020, 26(12): 8-17. doi: 10.12235/E20200103.
- [5] Loewen M, Giovanni J, Barba C. Screening endoscopy before bariatric surgery: a series of 448 patients[J]. *Surg Obes Relat Dis*, 2008, 4(6):709-712. doi: 10.1016/j.soard.2008.02.009.
- [6] Peromaa-Haavisto P, Victorzon M. Is routine preoperative upper GI endoscopy needed prior to gastric bypass? [J]. *Obes Surg*, 2013, 23(6):736-739. doi: 10.1007/s11695-013-0956-5.
- [7] Chang VC, Pan P, Shah SK, et al. Routine preoperative endoscopy in patients undergoing bariatric surgery[J]. *Surg Obes Relat Dis*, 2020, 16(6):745-750. doi: 10.1016/j.soard.2020.02.002.
- [8] Wong HM, Yang W, Yang JG, et al. The value of routine gastroscopy before laparoscopic Roux-en-Y gastric bypass surgery in Chinese patients[J]. *Surg Obes Relat Dis*, 2015, 11(2):303-307. doi: 10.1016/j.soard.2014.06.020.
- [9] Campos GM, Mazzini GS, Altieri MS, et al. ASMBBS position statement on the rationale for performance of upper gastrointestinal endoscopy before and after metabolic and bariatric surgery[J]. *Surg Obes Relat Dis*, 2021, 17(5): 837-847. doi: 10.1016/j.soard.2021.03.007.
- [10] 陈孝平, 汪建平, 赵继宗. 外科学[M]. 第9版. 北京: 人民卫生出版社, 2018.
- Chen XP, Wang JP, Zhao JZ. *Surgery*[M]. 9th Edition. Beijing: People's Medical Publishing House, 2018.
- [11] 中华医学会外科学分会甲状腺及代谢外科学组, 中国医师协会外科医师分会肥胖和糖尿病外科医师委员会. 中国肥胖及2型糖尿病外科治疗指南(2019版)[J]. *中国实用外科杂志*, 2019, 39(4): 301-306. doi:10.19538/j.cjps.issn1005-2208.2019.04.01.
- Group of Thyroid and Metabolism Surgery, Society of Surgery, Chinese Medical Association, Chinese Society for Metabolic & Bariatric Surgery, Society of Surgery, Chinese Medical Association. Guidelines for Surgical Treatment of Obesity and Type 2 Diabetes in China (2019 Edition) [J]. *Chinese Journal of Practical Surgery*, 2019, 39(4): 301-306. doi: 10.19538/j. cjps. issn1005-2208.2019.04.01.
- [12] Praveenraj P, Gomes RM, Kumar S, et al. Diagnostic yield and clinical implications of preoperative upper gastrointestinal endoscopy in morbidly obese patients undergoing bariatric surgery[J]. *J Laparoendosc Adv Surg Tech A*, 2015, 25(6): 465-469. doi: 10.1089/lap.2015.0041.
- [13] Carabotti M, Avallone M, Cereatti F, et al. Usefulness of upper gastrointestinal symptoms as a driver to prescribe gastroscopy in obese patients candidate to bariatric surgery. A prospective study[J]. *Obes Surg*, 2016, 26(5): 1075-1080. doi: 10.1007/s11695-015-1861-x.
- [14] Assef MS, Melo TT, Araki O, et al. Evaluation of upper gastrointestinal endoscopy in patients undergoing bariatric surgery[J]. *Braz Arch Dig Surg*, 2015, 28(Suppl 1): 39-42. doi: 10.1590/S0102-6720201500S100012.
- [15] Moulla Y, Lyros O, Mehdorn M, et al. Preoperative upper-GI endoscopy prior to bariatric surgery: essential or optional?[J]. *Obes Surg*, 2020, 30(6):2076-2084. doi: 10.1007/s11695-020-04485-5.
- [16] Madhok BM, Carr WR, McCormack C, et al. Preoperative endoscopy may reduce the need for revisional surgery for gastro-oesophageal reflux disease following laparoscopic sleeve gastrectomy[J]. *Clin Obes*, 2016, 6(4): 268-272. doi: 10.1111/cob.12153.
- [17] Wolter S, Duprée A, Miro J, et al. Upper gastrointestinal endoscopy prior to bariatric surgery-mandatory or expendable? an analysis of 801 cases[J]. *Obes Surg*, 2017, 27(8): 1938-1943. doi: 10.1007/s11695-017-2622-9.
- [18] Wang SQ, Wang Q, Xu L, et al. Beware pathological findings of the stomach in patients undergoing bariatric surgery: a systematic review and meta-analysis[J]. *Obes Surg*, 2021, 31(1):337-342. doi: 10.1007/s11695-020-05029-7.
- [19] Parikh M, Liu J, Vieira D, et al. Preoperative endoscopy prior to bariatric surgery: a systematic review and meta-analysis of the literature[J]. *Obes Surg*, 2016, 26(12): 2961-2966. doi: 10.1007/s11695-016-2232-y.
- [20] Chen WH, Feng J, Wang CC, et al. Effect of concomitant laparoscopic sleeve gastrectomy and hiatal hernia repair on gastroesophageal reflux disease in patients with obesity: a systematic review and meta-analysis[J]. *Obes Surg*, 2021, 31(9): 3905-3918. doi: 10.1007/s11695-021-05545-0.
- [21] Yano F, Tsuboi K, Omura N, et al. Treatment strategy for laparoscopic hiatal hernia repair[J]. *Asian J Endosc Surg*, 2021, 14(4):684-691. doi: 10.1111/ases.12918.
- [22] 李鹏. 窄带成像联合放大胃镜技术在早期胃癌及癌前病变筛查中的诊断价值分析[J]. *中国现代药物应用*, 2021, 15(6):76-78. doi: 10.14164/j.cnki.cn11-5581/r.2021.06.030.
- Li P. Diagnostic value of narrowband imaging combined with magnifying gastroscopy in screening early gastric cancer and

- precancerous lesions[J]. Chinese Journal of Modern Drug Application, 2021, 15(6): 76-78. doi: 10.14164/j.cnki.cn11-5581/r.2021.06.030.
- [23] Şen O, Türkçapar AG. Finding carcinoid tumor before bariatric surgery. is preoperative endoscopy necessary? case report[J]. Int J Surg Case Rep, 2019, 62: 132-134. doi: 10.1016/j.ijscr.2019.08.011.
- [24] Al-Kadi A. Gastroscope-assisted laparoscopic sleeve gastrectomy: a case report with an unexpected old deflated intragastric balloon[J]. Int J Surg Case Rep, 2022, 95:107250. doi: 10.1016/j.ijscr.2022.107250.
- [25] Gómez García de Las Heras S, Galindo Fernández C, Ruiz Tovar J, et al. Preoperative management of obese patients undergoing bariatric surgery: role of endoscopy and Helicobacter eradication[J]. Obes Res Clin Pract, 2021, 15(3): 289-290. doi: 10.1016/j.orcp.2021.05.002.
- [26] Cheng YL, Elli EF. Management of gastric intestinal metaplasia in patients undergoing routine endoscopy before bariatric surgery[J]. Updates Surg, 2021. doi: 10.1007/s13304-021-01181-6. [Online ahead of print]
- [27] de Moura Almeida A, Cotrim HP, Santos AS, et al. Preoperative upper gastrointestinal endoscopy in obese patients undergoing bariatric surgery: is it necessary?[J]. Surg Obes Relat Dis, 2008, 4(2):144-149. doi: 10.1016/j.soard.2007.12.006.
- [28] Erkinuresin T, Demirci H, Cayci HM, et al. The relationship between histopathologic findings and weight loss in laparoscopic sleeve gastrectomy[J]. Obes Surg, 2020, 30(2): 478-482. doi: 10.1007/s11695-019-04185-9.
- [29] 杨华, 陈缘, 王存川, 等. 中国肥胖代谢外科数据库:2019年度报告[J]. 中华肥胖与代谢病电子杂志, 2020, 6(3):143-149. doi: 10.3877/cma.j.issn.2095-9605.2020.03.001.
- Yang H, Chen Y, Wang CC, et al. Chinese Bariatric metabolic surgery Database: Annual Report 2019 [J]. Chinese Journal of Obesity and Metabolic Diseases: Electronic Edition, 2020, 6(3): 143-149. doi:10.3877/cma.j.issn.2095-9605.2020.03.001.
- [30] 杨华, 陈缘, 董志勇, 等. 中国肥胖代谢外科数据库:2020年度报告[J]. 中华肥胖与代谢病电子杂志, 2021, 7(1):1-7. doi:10.3877/cma.j.issn.2095-9605.2021.01.001.
- Yang H, Chen Y, Dong ZY, et al. Chinese Bariatric metabolic surgery Database: Annual Report 2020 [J]. Chinese Journal of Obesity and Metabolic Diseases: Electronic Edition, 2021, 7(1):1-7. doi:10.3877/cma.j.issn.2095-9605.2021.01.001.
- [31] Bennett S, Gostimir M, Shorr R, et al. The role of routine preoperative upper endoscopy in bariatric surgery: a systematic review and meta-analysis[J]. Surg Obes Relat Dis, 2016, 12(5): 1116-1125. doi: 10.1016/j.soard.2016.04.012.

(本文编辑 熊杨)

本文引用格式:胡瑞翔, 杨华, 王华曦, 等. 术前常规胃镜检查对拟行减重手术患者临床应用价值[J]. 中国普通外科杂志, 2022, 31(6): 829-835. doi:10.7659/j.issn.1005-6947.2022.06.017

Cite this article as: Hu RX, Yang H, Wang HX, et al. Clinical application value of preoperative routine gastroscopy in patients waiting for bariatric surgery[J]. Chin J Gen Surg, 2022, 31(6): 829-835. doi: 10.7659/j.issn.1005-6947.2022.06.017