Review Article

Metabolic Bariatric Surgery, Gastric Cancer, and *Helicobacter pylori*: A Portuguese Reality?

Cirurgia Bariátrica, Cancro Gástrico e *Helicobacter pylori*: Uma Realidade Portuguesa?

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https://doi.org/10.34635/rpc.1136

ABSTRACT

Obesity is a major healthcare problem, increasingly affecting millions of people and immensely burdening government health budgets worldwide and being responsible for worse life expectancies and unhealthy aging. Metabolic bariatric surgery is a major treatment option for severe obesity, even though very few possible surgical candidates get an operation yearly. It is of paramount importance to raise awareness and promote early referral to multidisciplinary surgical teams.

Gastric cancer is one of the most common and high-mortality cancers and is one of 13 obesity-related malignancies. Its association with *Helicobacter pylori* infection is increasingly recognised through several pathways related to bacterial virulence factors and host-pathogen cross-talk.

Received/Recebido: 29/10/2025 **Accepted/Aceite:** 20/11/2025 **Published online/Publicado online:** 13/01/2026 **Published/Publicado:** 16/01/2026

This review aims to provide data of Portugal's national reality regarding *Helicobacter* infection and gastric cancer in the metabolic bariatric surgery setting and its possible influence on eradication policy and surgical options.

Keywords: Bariatric Surgery; Helicobacter Infections; Helicobacter pylori; Stomach Neoplasms

RESUMO

A obesidade é um grande problema de saúde, afetando cada vez mais milhões de pessoas e sobrecarregando os orçamentos governamentais de saúde em todo o mundo, sendo responsável por piores expectativas de vida e envelhecimento pouco saudável. A cirurgia bariátrica metabólica é uma importante opção de tratamento para a obesidade grave, embora muito poucos candidatos possíveis à cirurgia sejam operados anualmente. É de suma importância promover o encaminhamento precoce a equipas cirúrgicas multidisciplinares.

O cancro gástrico é um dos cancros mais comuns e com elevada mortalidade e é uma das 13 neoplasias malignas relacionadas com a obesidade. A sua associação com a infeção por *Helicobacter pylori* é cada vez mais reconhecida através de várias vias relacionadas com fatores de virulência bacteriana e interação hospedeiro-patógeno.

O objetivo desta revisão é fornecer dados da realidade nacional de Portugal em relação à infecção por Helicobacter e ao cancro gástrico no contexto da cirurgia bariátrica metabólica e sua possível influência na política de erradicação e nas opções cirúrgicas.

Palavras-chave: Cirurgia Bariátrica; Infecções por Helicobacter; Helicobacter pylori; Neoplasias do Estomago

INTRODUCTION

Obesity is a chronic, multifactorial disease with a very complex pathophysiology. The pressure on every healthcare system is increasing with the exponential growth in its prevalence worldwide and with very disappointing estimates for the next decades. Portugal is in line with this trend, with a projected number of people with a body mass index (BMI) over 25 kg/m² of nearly 2.3 million people by the year 2030.[1]

Metabolic bariatric surgery is one of the most efficient treatments for severe obesity and current guidelines of major scientific societies have helped increase earlier referral of these patients for surgery.[2] Even with this major effort in raising awareness about the benefits of surgery, only about 1% of surgical candidates actually get an operation.[3] In 2024, the International Federation for the Surgery of Obesity (IFSO) Global Registry Report revealed nearly 600 000 surgeries performed worldwide during the year of 2023, with no reported data from Portugal.[4]

Obesity has been reported to be a risk factor for 13 malignancies, including gastric cancer.[5] Weight loss treatment strategies, including metabolic bariatric surgery, have proven to reduce cancer risk for these malignancies.[6]

In the latest published reports of cancer incidence in Portugal, gastric cancer is currently the 5th most common cancer in incidence and ranks 3rd in mortality.[7] One main contributor for the incidence of gastric malignancies is *Helicobacter pylori* infection which can promote mucosa-associated lymphoid tissue lymphoma (MALT) and gastric adenocarcinoma. This Gram-negative bacterium has several bacterial virulence factors that promote carcinogenesis such as cytotoxin-associated gene A (CagA) and vacuolating cytotoxin A (VacA), with other possible pathways of carcinogenesis being the regulation of host-pathogen interactions through several immune modulators responsible for innate and adaptive immune responses, such as galectins.[8] *Helicobacter* infection contributes to carcinogenesis through promoting inflammation, DNA damage and targeting host immune response and signaling pathways.[9]

1. *HELICOBACTER PYLORI* INFECTION IN PORTUGAL

There are very few epidemiological studies regarding *H. pylori* infection prevalence in Portugal. A global meta-analysis showed that the estimated prevalence in Southern Europe is around 55%.[10] This same meta-analysis reports a prevalence of 86,4% in Portugal, in a single study including 2067 individuals in which *H.pylori* was identified through serology.[10,11] Several studies reporting different prevalences in Portugal are shown in Table 1.

Table 1 – Prevalence of *Helicobacter pylori* infection in Portugal

	Patients (n)	Age	Diagnosis	Prevalence
Nunes, F, 2025[12]	54	Adults	Histology/Culture	42.6%
Antunes, R, 2023[13]	461	Pediatrics	Histology/Culture	37.3%
Lunet, N, 2014[14]	1047	Pediatrics	Serology	30.6%
Bastos, J, 2013[11]	2067	Adults	Serology	86.4%
Oleastro, M, 2011[15]	844	Pediatrics	Stool antigen	31.6%

2. *HELICOBACTER PYLORI* INFECTION IN METABOLIC BARIATRIC SURGERY

In almost all surgical protocols, patients with obesity usually undergo pre-operative upper GI endoscopy as screening for esophageal or gastric pathology, including esophagitis, Barrett's esophagus, hiatal hernia, gastric polyps, ulcers or malignancies and biopsy for *Helicobacter* status evaluation. In a position statement in 2024, IFSO strongly recommended performing upper GI endoscopy before surgery.[16]

Several reports have provided data regarding *H. pylori* infection in pre-operative workup in metabolic bariatric surgery, ranging from 3.9% to 69.7%, as seen in Table 2. Only one paper reported data from Portugal with a pre-operative infection rate of 69.7% found in screening endoscopy.[17]

Table 2 – *H. pylori infection* in pre-operative upper GI endoscopy

	Patients (n)	*H.pylori* infection (%)
Sawathanon, S, 2023[18]	461	18.7
Heras, S, 2022[19]	1040	36.1
Valadares, E, 2022[20]	232	59.1
Alimadadi, M, 2022[21]	637	61.5
Heras, S, 2021[22]	259	28
Sen, O, 2021[23]	819	26.6
Di Palma, A, 2020[24]	222	18
Ozeki, K, 2020[25]	260	4.6
Arieira, C, 2019[17]	360	69.7
Coumes, S, 2018[26]	201	22
Wolter, S, 2017[27]	801	3.7

3. ERADICATION THERAPY BEFORE SURGERY

H. pylori eradication therapy effectiveness is around 90% with bismuth quadruple therapies, in a large European cohort of 49 690 patients.[28]

Even though there are no specific guidelines addressing pre-operative eradication in metabolic bariatric surgery, most surgeons choose to eradicate due to the fear of *Helicobacter*-related post-operative complications such as marginal ulcer, stricture, leakage and carcinogenic potential, especially regarding Roux-en-Y gastric bypass and gastric remnant.[29,30] If the patient is undergoing sleeve gastrectomy, this fear might be mitigated by the future accessibility of the stomach to endoscopic evaluation.

After adequate eradication, usually confirmed by urea breath test, there are still reports of *H. pylori* infection relapse seen in sleeve gastrectomy specimen histopathology (Table 3). Unpublished data from our center show a rate of 0.3% of specimens with *H. pylori* infection after pre-operative successful eradication.

Table 3 – *H. pylori* infection in sleeve gastrectomy specimen histopathology after pre-operative eradication.

	Patients (n)	*H. pylori* in specimen (%)
Briggs, H, 2025[31]	404	5.44
Baillargeon, D, 2023[32]	6388	6.3
Abeid, A, 2022[33]	111	35
Nowak, K, 2021[34]	572	1.8
Heras, S, 2021[22]	259	9.7
Canil, A 2018[35]	925	2.48
Lázaro, A (unpublished results)	599	0.3

Identification of *H. pylori* in sleeve specimen histopathology is positively correlated with more severe gastric mucosal inflammation, intestinal metaplasia and thicker mucosa.[36]

Eradication rates have been reported to be lower in patients with more severe obesity, with rates being as low as 67% for BMI between 40 and 49 kg/m2 and even lower, 51%, for patients with BMI >50 kg/m2.[37] This may elicit a tailored approach of eradication in these patients.

4. GASTRIC CANCER AND METABOLIC BARIATRIC SURGERY

Compared to the yearly number of bariatric surgeries worldwide, there are very few case reports in the literature of gastric cancer diagnosed after a patient has had metabolic bariatric surgery. A systematic review of 324 esophageal, gastric and GE junction cancer cases reported in literature after metabolic bariatric surgery revealed 122 gastric cancers arising mainly after Roux-en-Y gastric bypass (63 cases) and sleeve gastrectomy (22 cases), other surgeries (37cases). Diagnosis of cancer was within a mean 5 years after surgery and nearly a quarter of patients had metastasis at the time of diagnosis.[38]

To our knowledge, there was no report from Portugal in this review and no reports can be found in the literature referring to national centers.

Our own center has had a single case of a patient presenting with vomiting and bowel obstruction, circa 8 years after Roux-en-Y gastric bypass, performed at another institution. Prior *Helicobacter* infection status was unknown, upper endoscopy and computed tomography (CT) imaging were non-diagnostic and the patient underwent an exploratory laparoscopy that revealed diffuse peritoneal metastasis with histological confirmation of adenocarcinoma. A feeding jejunostomy was performed and the patient started palliative chemotherapy with an unfavourable progression of disease.

Gastric remnant resection at the time of Roux-en-Y gastric bypass may be an option in high-risk patients for malignancy of the excluded stomach, including eradication-refractory *H. pylori* infection, gastric intestinal metaplasia and other pre-neoplastic conditions, family history of gastric cancer or high gastric cancer-incidence areas.[39,40] The presence of gastric intestinal metaplasia in pre-operative endoscopic biopsies is, along with altered hiatal anatomy, one of the major reasons for altering surgical decision making.[41]

CONCLUSION

Helicobacter pylori infection is very common and plays a pivotal role in promoting gastric carcinogenesis. Gastric cancer is one of the most common cancers in incidence and even more importantly is associated with high mortality rates.

Metabolic bariatric surgery reduces the overall risk of 13 obesity-related cancers, including gastric cancer. Pre-operative endoscopic screening is important for the diagnosis of pre-existing gastric pathology and for adequate diagnosis of *H. pylori* infection. Eradication before surgery is advisable, and is especially important in surgeries that leave behind an excluded stomach, possibly leading to alternative surgical decision-making.

Similar to other pathologies, national epidemiological studies are scarce and usually with small cohorts of patients, requiring government-level changes in healthcare policies to provide for more robust data.

ETHICAL DISCLOSURES

Conflicts of Interest: The authors have no conflicts of interest to declare.
Financial Support: This work has not received any contribution grant or scholarship.
Provenance and Peer Review: Not commissioned; externally peer-reviewed.

RESPONSABILIDADES ÉTICAS

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse.
Apoio Financeiro: Este trabalho não recebeu qualquer subsídio, bolsa ou financiamento.
Proveniência e Revisão por Pares: Não solicitado; revisão externa por pares.

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