Indications for Surgical Resection of the Gastric Diverticulum

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ABSTRACT

Introduction: Gastric diverticulum is a rare condition that has been surgically managed in the past for a wide range of symptoms. These symptoms include nonspecific reflux, pain, abdominal bloating, dyspepsia, vomiting, and oral fetor, alongside more serious complications such as hemorrhage or malignancy. Although complications, such as hemorrhage or perforation, clearly indicate surgical intervention, the question of when to pursue diverticulectomy in the case of other milder and persistent symptoms is still unclear. In the case of oral fetor, three previous case reports indicated complete resolution after diverticulectomy.

Case: A 65-year-old man with longstanding halitosis underwent an extensive workup including endoscopy, computed tomography (CT) of the abdomen and pelvis, and barium swallow. He was found to have a large gastric diverticulum and elected to undergo resection. There was no significant intraoperative blood loss, and postoperative recovery was uneventful. However, the patient continued to experience persistent oral fetor 5 months after the diverticulectomy and returned to previously used conservative measures, such as peppermint and chlorophyll.

Discussion: Given the subjective nature of what a patient considers to be resolution of halitosis, our report presents an argument for conservative management of gastric diverticulum, even after alternative causes of halitosis have been investigated.

Key Words: Diverticulum, Halitosis, Laparoscopy, Stomach.

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INTRODUCTION

A gastric diverticulum is a rare outpouching of the gastric wall usually found incidentally on abdominal imaging.[1] Reported symptoms include nonspecific pain, reflux, bloating, a sensation of fullness, and nausea.[2] However, because of the multitude of gastrointestinal pathologies that can cause the aforementioned symptoms, it is often difficult to conclude a causal association between a diverticulum and relatively nonspecific symptoms. Thus, the decision to manage a gastric diverticulum surgically is typically made after alternative causes and treatment options have been ruled out.

Although symptoms such as reflux, pain, bloating, and nausea are often medically managed with proton pump inhibitors and histamine receptor blockers, surgical management is often required in cases of gastric diverticulum complicated by gastrointestinal bleeding[3] or hemorrhagic shock.[4] Troublesome belching with oral fetor has also been linked to this condition and presents a more unique question of whether medical or surgical management is most appropriate.[5] Three previous case reports have documented successful resolution of persistent oral fetor after diverticulectomy,[5–7] with food retention and bacterial overgrowth within the diverticula having been suggested as explanations for belching and oral fetor.[8] With so few reported cases of surgical management, we present our experience with laparoscopic diverticulectomy performed for persistent halitosis and seek to add our unique input on the proper management of this condition in the nonurgent setting.

CASE REPORT

A 65-year-old man with gastroesophageal reflux disease, esophageal dysmotility, and chronic ulcerative colitis was referred for evaluation of severe halitosis of several years' duration that had severely impacted his social life. Various conservative treatments including proper oral hygiene, antacids, metoclopramide, ciprofloxacin, omeprazole, and ranitidine were attempted without satisfactory response.

The patient underwent an extensive workup, including 2 upper gastrointestinal endoscopies, a computed tomographic scan of abdomen and pelvis, and a barium swallow, which demonstrated a large gastric diverticulum of the posterior fundus measuring up to 8.6 cm, with the neck measuring 4.1 cm. Notably the barium swallow indicated incomplete emptying of the diverticulum. Thus, an association between the patient's diverticulum and halitosis was suspected, and a laparoscopic diverticulectomy was offered.

Our laparoscopic approach was consistent with previously published methods. The dissection began on the greater curve of the stomach with division of the short gastric vessels proximally to the angle of His. The gastroesophageal junction was also dissected circumferentially. The stomach was rotated to expose the posterior wall where a moderate amount of adhesions were found attaching the gastric diverticulum to the surrounding tissues. A gastroscope was introduced to confirm the location of the diverticulum. The diverticulum was grasped and elevated toward the anterior abdominal wall, providing a clear view of its base with demarcation of the normal gastric wall. A laparoscopic stapler was introduced, positioned, and fired across the base of the diverticulum, ensuring a grossly normal-appearing stomach at the margin of the transection. The gastroscope was reintroduced to examine the remaining stomach and ensure that there was no narrowing or distortion of the gastroesophageal junction or stomach. Final pathology of the resected specimen confirmed normal gastric tissue with no evidence of malignancy, consistent with the clinical impression of gastric diverticulum.

The patient had an uneventful postoperative course and was discharged on hospital day 4. At his 1-month follow-up appointment, the patient had healed well, but denied acceptable resolution of his symptoms and inquired about further operative management. When counseled about long-term management and alternative potential causes including chronic bacterial infection of the respiratory tract, the patient inquired after radical procedures including pneumonectomy. By his 5-month follow-up visit, the patient was experiencing mildly improved but still significant halitosis and continued to use peppermint and chlorophyll regularly. He did not undergo any postoperative imaging.

DISCUSSION

All previously reported cases of persistent halitosis in the setting of gastric diverticulum have resolved after diverticulectomy.[5–7] However, even after removal of his large gastric diverticulum, our patient did not experience an acceptable improvement in symptoms by 5-month follow-up, making this case a counterpoint to those currently in the literature. Although postoperative imaging was not pursued, intraoperative visualization of adequate resection with the gastroscope makes persistence of a portion of the diverticulum unlikely.

We recognize the goals of surgical management as safety, efficacy, and improvement. Multiple case reports of laparoscopic diverticulectomy have demonstrated this procedure's safety in addressing gastric diverticula.[7] However, the efficacy of such an approach is questionable, as its ability to provide improvement of baseline fetor is based on a largely qualitative assessment by the patient. Furthermore, patients rely on their physicians to indicate when further interventions for nonspecific symptoms could incur more cost than benefit. This can keep patients from adopting a "whatever it takes" philosophy. For example, pneumonectomy for potential chronic bacterial infection of the airways, as suggested by our patient, is clearly an overaggressive step in management for halitosis.

On the other hand, we acknowledge that laparoscopic diverticulectomy is a safe and largely complication-free minor procedure.[1] For patients who are good surgical candidates, it seems reasonable to choose surgical management, even for halitosis, but as a last resort. The cost-effectiveness of such an intervention, however, is unclear without more data on success rates of laparoscopic diverticulectomy in resolving this condition.

CONCLUSION

A review of the literature suggests that laparoscopic resection should be pursued if a diverticulum causes treatment-resistant reflux, especially if complicated by bleeding or perforation. However, in cases regarding halitosis as the chief concern, we advise caution in recommending

diverticulectomy, given the subjectiveness of the endpoint of improvement.

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