

# Spontaneous Perforation of Primary Gastric Lymphoma: A Case Report of Successful Treatment with a Modified Graham Patch Repair followed by Chemotherapy and a Rituximab Regimen

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## Abstract

Spontaneous perforation of a primary gastric lymphoma is unusual. When perforation does happen, it is usually as a result of oncologist treatment of a known lymphoma. Herein we report a patient presenting with a spontaneous perforation of an extensive gastric lymphoma which was successfully managed by modified Graham patch closure followed by routine oncologist treatment of his lymphoma.

## INTRODUCTION

While accounting for only 1-3% of gastric cancers, the incidence of gastric lymphoma has been increasing over the last 20 to 30 years. Furthermore, it represents up to 40% of all extranodal non-Hodgkin's lymphoma (1, 2). Primary gastric lymphomas are more likely in males and in patients over the age of 50 (3). Almost 90% of such lymphomas are of B-cell lineage with very few T-cell lymphomas or Hodgkin's lymphomas (4, 5).

Risk factors associated with gastric lymphoma include infections with *Helicobacter pylori*, HIV, hepatitis B, Epstein-Barr virus, and human T-cell lymphotropic virus 1. Celiac disease, immunosuppression, and inflammatory bowel disease have also been associated with the development of gastric lymphoma (6).

Gastric lymphomas are slow-growing indolent neoplasms that respond well to treatment, especially if caught early in the course of the disease (7). Once a diagnosis of gastric lymphoma is established, staging is necessary for planning, treatment, and prognosis. A modified Lugano staging has been accepted as the standard for patients with primary gastric lymphomas (9). Surgical resections have been used in the past for perforations, obstructions, and bleeding due to gastric lymphomas; however, oncologic management is

otherwise the standard of care. Medical management entails a combination of radiation, chemotherapy, and/or immunotherapy with rituximab, cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), and prednisone (rCHOP). On rCHOP, patients with stage II gastric lymphoma have an estimated 5-year survival of 49%. Patients with the germinal center B-cell type have a superior 5-year survival rate with rCHOP.

## CASE PRESENTATION

A 54-year-old male presented to the emergency department complaining of acute onset upper abdominal pain associated with nausea and diaphoresis that began several hours prior to presentation. On further probing, he also endorsed a roughly 60-pound weight loss due to a decreased appetite over the past year. His previous medical history was significant for type 2 diabetes mellitus for which he was taking metformin. He denied non-steroidal anti-inflammatory drug use. There was no pertinent family or social history.

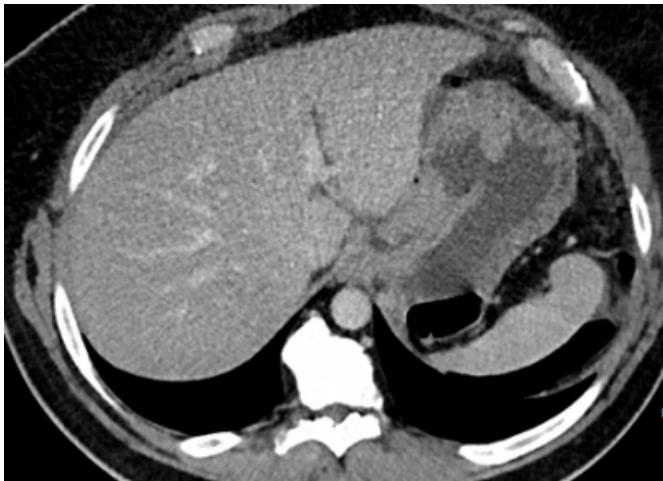
On initial evaluation, the patient was mildly tachycardic in the low 100s, but vitals were otherwise unremarkable. On exam, his abdomen was soft but quite tender with associated guarding, especially in the epigastrium. His labs on presentation demonstrated no leukocytosis with a white

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blood cell count of 5, hemoglobin 10, and glucose in the 400s. A CT of the abdomen and pelvis was performed, which demonstrated a 9.7 x 4.5 x 4.4 cm mass in the lesser curvature of the stomach with a 1.6 cm ulceration that was perforated with extensive pneumoperitoneum. In the emergency room, he received ceftriaxone and Flagyl, and he received 10 units of lispro pre-operatively.

### Figure 1

Large gastric neoplasm with deep ulceration and free air



### Figure 2

CT showing retro-gastric and celiac nodal extension



The patient was taken to the operating room, where we performed an exploratory laparotomy, biopsy of his retrogastric tissue, a modified oversewing and Graham patch for the perforated anterior wall gastric neoplasm, and drain placement. We placed two silk sutures on both sides and inferiorly to the ulcer widely back from the necrotic area where the ulcer had perforated, and the omentum was laid

across the opening and the sutures were tied down over the omentum to secure it in place. We did not close the perforation within the necrotic tumor. We had initially hoped to perform a resection, however, the patient had what appeared to be a linitis plastica neoplasm of the stomach with extension distally to the angle of the stomach and proximally to almost the gastro-esophageal junction with invasion of the retrogastric pancreas tissue, celiac axis, and involvement of many adjacent lymph nodes. Because of the extent of the tumor, we decided that this was unresectable for cure. Frozen section pathologic analysis was not available at the time of his operation.

The patient's post-operative course was complicated by a 6.5 cm pelvic abscess requiring drainage by interventional radiology (IR). He tolerated this procedure well in addition to a course of antibiotics and was discharged home on post-operative day 13 without issue.

He was seen in clinic for follow up, where he was found to be doing well and the IR drain was removed. Pathology revealed gastric diffuse large B cell lymphoma, with germinal center subtype.

After surgical recovery, he was treated with a modified CHOP regimen followed by outpatient Rituximab. Recent imaging studies suggest no increased metabolic activity in chest, abdomen or pelvis. One year later, a follow-up endoscopic gastric biopsy revealed no residual lymphoma and his indwelling port was removed.

## DISCUSSION

Our initial impression was that the mass was a carcinoma or even a gastrointestinal stromal tumor, rather than a lymphoma, but the biopsy showed otherwise. A perforated gastric lymphoma is quite unusual, and there is very limited literature discussing its management. In 2015, Ohkura et al reviewed the literature and found that perforation in these cases typically occurs when patients are undergoing chemotherapy. This occurs in 0.9-1.1% of cases (8). It is most unusual that our patient's gastric lymphoma was perforated at initial presentation. In the case report by Ohkura et al, only 15 cases had been recorded between 1985 and 2013. They found that patients with spontaneous perforations had larger tumors. There are some documented gastric resections for these perforated gastric lymphomas (10,11). However, there is no documented, modified Graham patch technique described in the literature for perforations of gastric lymphoma. One patient was treated with closure of

the perforation (12). Our experience shows treating a perforated gastric lymphoma with a modified Graham patch, even with sutures through likely neoplastic tissue, can be successful if the patient also receives appropriate oncology care.

## CONCLUSION

A Graham patch closure can be a lifesaving procedure in a patient with a spontaneous perforation of primary gastric lymphoma.

## References

1. Filip PV, Cuciureanu D, Diaconu LS, Vladareanu AM, Pop CS. MALT lymphoma: epidemiology, clinical diagnosis and treatment. *J Med Life*. 2018 Jul-Sep;11(3):187-193.
2. Ghimire P, Wu GY, Zhu L. Primary gastrointestinal lymphoma. *World J Gastroenterol*. 2011;17(6):697-707.
3. Cogliatti S, Schmid U, Schumacher U, et al. Primary B-cell gastric lymphoma: a clinicopathological study of 145 patients. *Gastroenterology*. 1991 Nov;101(5):1159-70.
4. Herrmann R, Panahon AM, Barcos MP, et al. Gastrointestinal involvement in non-Hodgkin's lymphoma. *Cancer*. 1980;46(1):215-222.
5. Juárez-Salcedo, L. M., Sokol, L., Chavez, J. C., & Dalia, S. (2018). Primary Gastric Lymphoma, Epidemiology, Clinical Diagnosis, and Treatment. *Cancer control : journal of the Moffitt Cancer Center*, 25(1), 1073274818778256.
6. Engels EA. Infectious agents as causes of non-Hodgkin lymphoma. *Cancer Epidemiol Biomarkers Prev*. 2007;16(3):401-404.
7. Herlevic V, Morris JD. Gastric Lymphoma. [Updated 2021 Dec 28]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK567799/>
8. Ohkura Y, Lee S, Kaji D, Ota Y, Haruta S, Takeji Y, Shinohara H, Ueno M, Udagawa H. Spontaneous perforation of primary gastric malignant lymphoma: a case report and review of the literature. *World J Surg Oncol*. 2015; 13:35.
9. Rohatiner A, d'Amore F, Coiffier B, et al. Report on a workshop convened to discuss the pathological and staging classifications of gastrointestinal tract lymphoma. *Ann Oncol*. 1994;5(5):397-400.
10. Kim JS, Rou WS, Ahn BM, Moon HS, Kang SH, Sung JK, Jeong HY, Song K. Gastric perforation caused by primary gastric diffuse large B cell lymphoma. *Korean Journal Gastroenterology* 2015; 65:43-47
11. Shimada S, Gen T, Okamoto H. Malignant gastric lymphoma with spontaneous perforation. *BMJ Case Rep* 2013; 17:1-2
12. Chen G, Zhang M, Zhu J, Mao J, Li Y. Damage Control Surgery Saves Patient with Gastric Lymphoma from Radical Gastrectomy. *J Coll Physicians Surg Pak* 2021 Aug;31(8):978-981

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