Perforated gastric carcinoma is a rare condition that is hard to diagnose preoperatively. It is associated with advanced cancer stages and has a high mortality, particularly in cases presenting preoperative shock. Few studies have investigated the presentation and adequate management of these carcinomas. In addition, there are no reports in the literature on perforations extending to the spleen, as described in this case, making the management of these lesions challenging. Our article reports a case of gastric tumor perforation extending to the spleen, which presented as a perforated acute abdomen. The patient was treated with total gastrectomy and D2 lymph node resection with splenectomy and progressed well with current survival of one year at disease stage IV.

Keywords: acute abdomen, hemoperitoneum, stomach neoplasms.
Gastric cancer with lesion extending to spleen and perforation into free peritoneum

FIGURE 1. Surgical specimen of stomach and spleen, anterior view.

FIGURE 2. Surgical specimen of stomach and spleen, sagittal section.

FIGURE 3. Surgical specimen of stomach and spleen, sagittal section showing gastric perforation contiguous to splenic perforation.
The surgeon must be able to refrain the deleterious effects of cancer with perforated lesion. Similarly to most studies in the literature, the reported case presented an advanced tumor with severe invasion and lymph node metastasis. However, there are no previous reports of a gastric perforation by adenocarcinoma progressing with splenic perforation. A literature search of the PubMed and Lilacs databases spanning 20 years with search words, gastric cancer, splenic perforation and perforated gastric cancer, found no case reports similar to that outlined above.

The spleen has a close relation with the stomach. The stomach floor, and the part proximal to its body, interfaces laterally with the spleen, increasing the likelihood of an extended lesion. However, the site of this patient’s lesion, which was the gastric floor, is atypical according to the literature that reports that 50 to 80% of gastric perforations by cancer invade the distal third of the stomach.

The optimal management of neoplastic lesions of the stomach complicated by perforation is not yet well-defined. The surgeon must be able to refrain the deleterious effects of the perforation, such as diffuse peritonitis and bleeding, and to provide curative correction or correction with a good prognosis for the patient. Given that the diagnosis of cancer is typically confirmed at the postoperative stage, full neoplastic resection is hampered. Moreover, most of the cases of perforation occur in advanced cancers with peritoneal dissemination. The most debated issue is whether the surgical treatment should comprise one or two operations, i.e. full resection in a single operation, or correction of the lesion in a first operation followed by oncological resection in a second. The current trend is to surgically manage these cases using two separate operations. In the present case, however, the patient underwent radical resection in a single surgical procedure, because neoplasia was suspected intraoperatively.

Another common debate regarding gastric cancers revolves around lymph node resection. Various Western and Japanese studies have sought to compare effectiveness in terms of mortality and morbidity among patients submitted to D1 (neoplastic tumor of up to 3 cm) or D2 (up to 6 cm) lymph node resection, the latter done without splenectomy or pancurectomy. The result of these studies favors D2 resection, with splenectomy and pancreatectomy elected only in certain cases. In our patient, in addition to total gastrectomy and D2 lymph node resection, splenectomy was also carried out due to the organ’s perforation. The patient presented N2 staging and the operation seems to have been curative.

The prognosis of patients with gastric tumor perforation depends on several factors but outcomes are poor in most cases. A study reviewing factors that contribute to poor prognosis showed that mortality is linked to advanced cancer stages. In very advanced cases, however, the only possible approach is that of simple suturing of the perforation, although patients undergoing this procedure have a higher mortality than those submitted to gastrectomy. There is no relation between perforation site and chances of survival. However, the study showed that preoperative shock and time until resolution of perforation were directly linked to mortality. Patients with advanced cancer are less able to deal with the complications of gastric perforation such as peritonitis and hemorrhage. Despite presenting advanced neoplasia in addition to the association with a splenic lesion, which may have led to bleeding and resultant shock, the patient progressed well, with current survival at one year. According to the literature, the 5-year survival rate is 40% for emergency cases treated with total resection, which was the procedure performed in our patient.

**Conclusion**

Exclusive perforated gastric carcinoma is a rare condition, and its association with splenic perforation has not yet been reported in the literature. The stage of the disease, presence of preoperative shock and time to surgical intervention are the main prognostic factors. Association with splenic lesion can aggravate bleeding, leading to shock and a poor outcome. Optimal management of this condition remains unclear and depends on surgeon skill and experience for a successful outcome.

**Conflict of interest**

The authors declare no conflict of interest.

**Resumo**

Neoplasia gástrica perfurada com extensão da lesão para o baço

A neoplasia gástrica perfurada é uma condição incomum e de difícil diagnóstico pré-operatório, estando relacionada a estágios avançados e com alta mortalidade, principalmente na presença de choque pré-operatório. Poucos estudos foram feitos quanto a sua forma de apresentação e ao tratamento adequado. Além disso, não há nenhum relato em literatura quanto à extensão da perfuração para
o baço, como é descrito neste caso, tornando mais difícil a conduta. Este artigo relata um caso de perfuração de neoplasia gástrica com extensão para o baço, que se apresentou como abdome agudo perfurativo. Submetido a gastrectomia total e ressecção linfonodal D2 com esplenectomia, apresentou boa evolução e sobrevida atual de 1 ano, em um estadiamento IV da doença.

**Palavras-chave:** abdome agudo, hemoperitônio, neoplasias gástricas.

**References**