

Perforated Gastric Adenocarcinoma Presenting with Bilateral Krukenberg Tumours in a Young Woman: A Case Report

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DOI: <https://doi.org/10.52403/ijrr.20260941>

ABSTRACT

Krukenberg tumours are ovarian metastases most commonly arising from gastric carcinoma and may mimic primary ovarian neoplasms, particularly in younger women. We report a 31-year-old woman with no known malignancy who presented with acute severe abdominal pain and persistent vomiting. Examination was consistent with generalized peritonitis. Contrast-enhanced computed tomography demonstrated pneumoperitoneum, ascites, a left pleural effusion and bilateral mixed solid-cystic adnexal masses. Emergency exploratory laparotomy identified a perforated gastric tumour with generalized peritoneal contamination and bilateral enlarged abnormal ovaries. Total gastrectomy, omentectomy, splenectomy and jejuno-oesophageal reconstruction were performed, and bilateral ovarian biopsies were obtained. Histopathological examination demonstrated poorly differentiated grade 3 gastric adenocarcinoma with lymphovascular invasion and bilateral ovarian metastases consistent with Krukenberg tumours, confirming stage IV disease. The patient was referred to oncology for chemotherapy.

Gastric perforation is a rare, life-threatening first presentation of metastatic gastric cancer.

Keywords: Krukenberg tumour, gastric adenocarcinoma, gastric perforation, ovarian metastasis, acute abdomen, case report

INTRODUCTION

Krukenberg tumours are metastatic ovarian neoplasms classically associated with a gastrointestinal primary, most commonly gastric adenocarcinoma. They frequently involve both ovaries and may resemble primary ovarian malignancy clinically and radiologically. Classical histological features include mucin-producing signet-ring cells within a cellular ovarian stroma. [1,2]

Perforation is an uncommon but life-threatening presentation of gastric cancer. Generalized peritonitis requires urgent source control and may prevent complete preoperative oncological assessment. [3]

This report describes a young woman in whom bilateral Krukenberg tumours were identified during emergency surgery for perforated gastric adenocarcinoma. The case highlights the importance of considering a gastrointestinal primary when bilateral ovarian masses accompany an acute abdominal presentation.

CASE REPORT

PATIENT INFORMATION AND CLINICAL FINDINGS

A 31-year-old woman with no known history of malignancy presented to the Emergency Department at Georgetown Public Hospital Corporation with acute severe abdominal pain and persistent vomiting. She described preceding progressive abdominal discomfort that had worsened substantially over a short period. There was no documented history of gastrointestinal malignancy or significant gynaecological disease.

The patient appeared acutely ill. Abdominal examination demonstrated generalized tenderness, guarding and rebound tenderness, consistent with generalized peritonitis. The initial clinical impression was an acute abdomen requiring urgent surgical evaluation, with gynaecological pathology included in the differential diagnosis.

DIAGNOSTIC ASSESSMENT

Laboratory investigations supported an acute inflammatory process. Urgent contrast-enhanced computed tomography of the abdomen and pelvis demonstrated extensive pneumoperitoneum consistent with a perforated hollow viscus, moderate ascites, a left pleural effusion and bilateral adnexal masses with mixed solid and cystic components. The combination of gastrointestinal perforation and bilateral ovarian masses raised concern for an underlying malignancy.

THERAPEUTIC INTERVENTION

Following resuscitation with intravenous fluids, broad-spectrum antibiotics and analgesia, the patient underwent emergency exploratory laparotomy. Generalized peritoneal contamination from a perforated gastric tumour was identified. Total gastrectomy, omentectomy and splenectomy were performed, followed by jejuno-oesophageal reconstruction. Both ovaries were markedly enlarged and appeared suspicious for metastatic disease; bilateral

ovarian biopsies were obtained for histopathological examination.

PATHOLOGICAL FINDINGS AND OUTCOME

Microscopic examination of the gastric specimen demonstrated poorly differentiated grade 3 gastric adenocarcinoma with lymphovascular invasion. Both ovarian specimens contained metastatic adenocarcinoma morphologically consistent with a gastric primary, confirming bilateral Krukenberg tumours and stage IV disease. The patient had an uncomplicated postoperative recovery and was discharged in stable condition. She was referred to the oncology clinic for chemotherapy and continued follow-up.



Figure 1: Intraoperative photograph showing ovarian tissue at the site of biopsy during exploratory laparotomy.

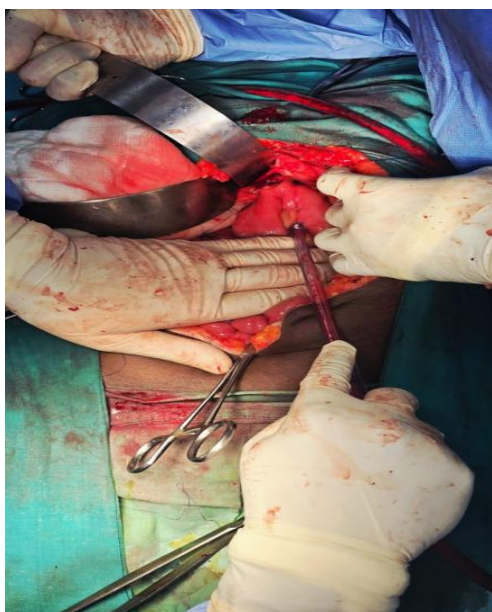


Figure 2: Intraoperative photograph showing the perforated gastric lesion identified during emergency exploratory laparotomy.



Figure 3: Axial contrast-enhanced computed tomography image demonstrating free intraperitoneal air beneath the anterior abdominal wall.



Figure 4: Axial contrast-enhanced computed tomography image demonstrating pneumoperitoneum consistent with perforation of a hollow viscus.

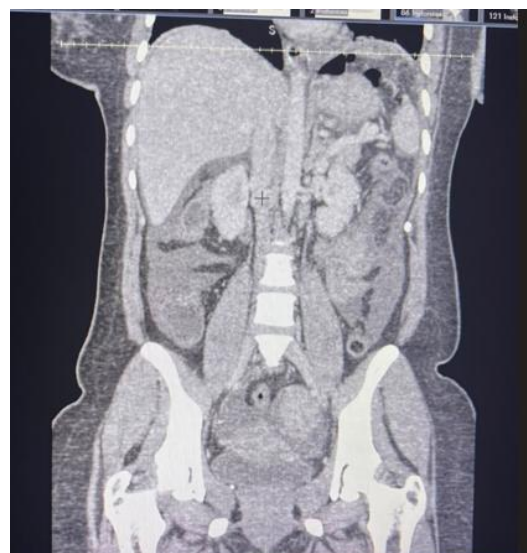


Figure 5: Coronal contrast-enhanced computed tomography image of the abdomen and pelvis demonstrating pneumoperitoneum beneath the anterior abdominal wall.

DISCUSSION

Krukenberg tumours are uncommon metastatic ovarian neoplasms, most frequently arising from the stomach, although colorectal, appendiceal, pancreaticobiliary and breast primaries have also been reported. Bilateral ovarian involvement is characteristic, but radiological appearances overlap with those of primary ovarian tumours. Histopathological evaluation is therefore central to diagnosis. [1,4]

This case was diagnostically challenging because the patient was young and presented with an acute surgical abdomen rather than recognized manifestations of advanced gastric cancer. Diffuse-type gastric carcinoma can occur in younger patients and may metastasize to the ovaries. Age should therefore not exclude metastatic gastrointestinal malignancy when bilateral ovarian masses are detected. [5,6]

Perforated gastric cancer is rare and life-threatening. Peritonitis commonly necessitates emergency surgery before full oncological staging can be completed, and malignancy may become apparent only intraoperatively or after histopathological examination. In the present case, computed tomography identified pneumoperitoneum and bilateral adnexal masses, while surgery

established the gastric source and permitted ovarian sampling. [3]

The differential diagnosis for bilateral solid-cystic ovarian masses includes primary epithelial ovarian carcinoma, sex-cord stromal tumours, lymphoma and metastases from gastrointestinal or breast malignancies. Bilaterality, associated gastrointestinal pathology and concordant gastric and ovarian morphology favoured metastatic disease. When the primary site is uncertain, an immunohistochemical panel may include CK7, CK20, CDX2, SATB2 and PAX8, interpreted with morphology and clinical findings. [2,4]

Management requires collaboration among emergency and upper gastrointestinal surgeons, gynaecologic oncologists, pathologists, medical oncologists, radiologists and nutrition specialists. Systemic therapy is generally central to the treatment of metastatic gastric cancer. Gastrectomy is not routinely recommended for metastatic disease unless required for palliation or control of complications; in this patient, emergency surgery was undertaken for perforation and generalized peritonitis. Retrospective reports suggesting benefit from aggressive resection in selected patients are vulnerable to selection bias and should not be interpreted as establishing a standard approach. [7,8]

CONCLUSION

Krukenberg tumours should be considered when bilateral ovarian masses coexist with gastrointestinal symptoms or an acute abdominal presentation, even in a young woman. Gastric perforation may be the first manifestation of advanced malignancy. Prompt source control, careful abdominal and pelvic assessment, representative tissue sampling and coordinated pathological and oncological evaluation are essential.

Authors' Contributions: All authors contributed to the preparation and revision of the manuscript and approved the final version for publication.

Declaration by Authors

Acknowledgement: The authors acknowledge the Georgetown Public Hospital Corporation Research Committee for granting permission to publish this case report.

Source of Funding: None

Conflict of Interest: No conflicts of interest declared.

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- How to cite this article: Latoya Young, Leatitia Samuel, Amanda Gray. Perforated gastric adenocarcinoma presenting with bilateral Krukenberg tumours in a young woman: a case report. *International Journal of Research and Review*. 2026; 13(9): 443-447. DOI: <https://doi.org/10.52403/ijrr.20260941>
