

# Total gastrectomy en bloc with total pancreatoduodenectomy, splenectomy, portal vein and celiac axis resection for isolated recurrence from epithelial ovarian cancer – A case report

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## ABSTRACT

Although the development of upper abdominal metastases in relapsed ovarian cancer has been considered as a sign of biological aggressive disease once the surgical techniques improved these extended resections have been successfully implemented in the armamentarium of cytoreductive surgery.

**Case:** a 54 year old patient diagnosed with an isolated metastasis at the level of upper abdomen invading the pancreatic head, the portal vein and the common hepatic artery was submitted to surgery. Venous reconstruction was performed by using a Goretex patch while arterial reconstruction was performed by using a saphenous graft which was placed between the celiac trunk and the proper hepatic artery.

**Conclusion:** extended local visceral and vascular resections might be needed in order to achieve complete cytoreduction for relapsed ovarian cancer.

**Keywords:** relapsed ovarian cancer, pancreatic resection, portal reconstruction, arterial recon-struction, case report

## INTRODUCTION

Ovarian cancer remains one of the most deathful gynaecological malignancies especially due to the fact that it is usually diagnosed in advanced stages of the disease and, even if in this cases complete cytoreduction is achieved, a significant number of cases will develop recurrent disease [1,2]. When it

comes to the type or recurrence, it can be classified according to the pattern of spread in peritoneal, hematogenous and lymphatic recurrence, most often multiple pathways being reported at the time of diagnostic [3]. Success reported in patients presenting locally advanced ovarian cancer submitted to cytoreductive surgery followed by adjuvant chemo-

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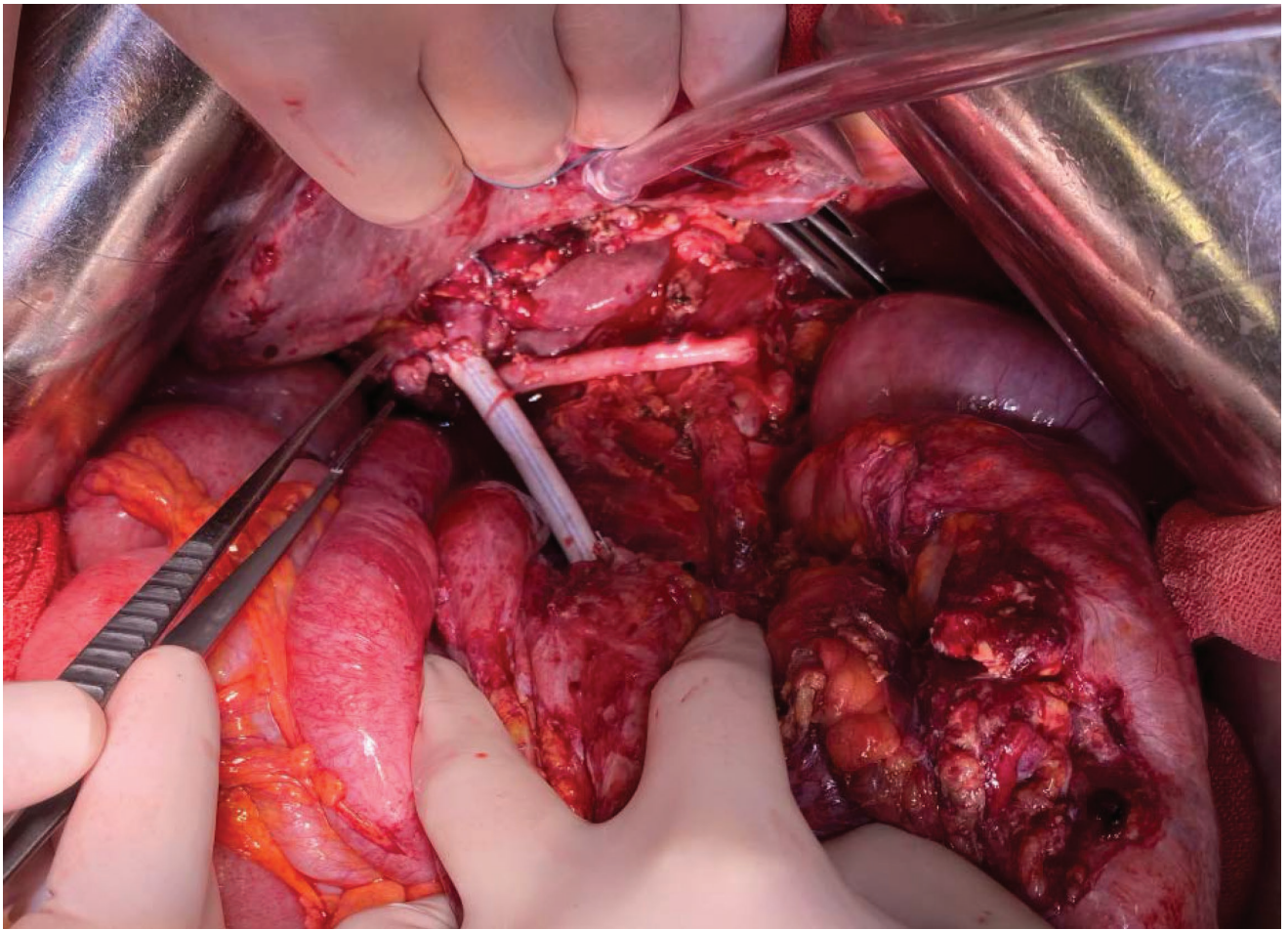
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**FIGURE 1.** Intraoperative aspect after resection: the venous continuity was re-established by placing a synthetic graft while the arterial reconstruction was established by placing an autologous graft originating from the saphenous vein

therapy led to the introduction of this therapeutic strategy also at the time of relapse [4-6]. When it comes to the location of the recurrence and the benefits of cytoreductive surgery, the development of upper abdominal involvement has been considered for a long period of time as a sign of a tumor with particular biological aggressiveness which transformed the patient into a candidate for palliative surgery. However improvement in the field of surgical techniques, of perioperative care as well as the apparition of new lines of oncological treatment led to the apparition of a challenge in the way of approaching these cases; therefore, nowadays patients presenting resectable recurrent disease are rather submitted to surgery than to palliative oncological treatment [4-7].

## CASE REPORT

A 54 year old patient with no significant medical history was diagnosed at the age of 44 years with stage IIIC ovarian cancer; at that moment a total hysterectomy with bilateral adnexectomy, pelvic and para-aortic lymph node dissection, omentectomy, pelvic and parietal peritonectomy was performed, a macroscopic R0 resection being achieved.

The final histopathological diagnostic was of a moderately differentiated serous ovarian adenocarcinoma and the patient was further submitted to six cycles of adjuvant platinum based chemotherapy. At nine year follow up she was diagnosed with an isolated metastasis at the level of the upper abdomen invading the pancreatic head, the portal vein and celiac trunk. Due to the local extent of the disease, the patient was initially submitted to neoadjuvant chemotherapy; after four cycles of platinum based chemotherapy stable disease was described at the imagistic studies. After discussing with the patient the risks and benefits of an extended surgical procedure and obtaining the informed consent, the patient was further submitted to surgery, a total gastrectomy en bloc with total pancreatoduodenectomy, splenectomy, portal vein and celiac axis resection being performed; the continuity of the portal vein was re-established by placing a Goretex prosthesis while the arterial continuity was re-established by placing an autologous venous graft originating from the saphenous vein, the graft being placed between the remnant celiac trunk and the proper hepatic artery. The length of the surgery was of 420 minutes while the estimated blood loss was of 560 ml. Postoperatively an anticoagulant treatment with

low molecular heparin was maintained for 30 days. The control Doppler ultrasound which was performed at 24, 48 and 72 hours postoperatively revealed the good functionality of the graft. The histopathological studies demonstrated the presence of a large adenopathy invading the pancreatic head and the surrounding vascular structures and confirmed the achievement of negative resection margins. The final intraoperative aspect is shown in Figure 1. At one month postoperatively the computed tomography demonstrated the patency of the vascular reconstructions.

## DISCUSSION

Pancreatic resections have been recently included as part of cytoreductive surgery for locally advanced or relapsed ovarian cancer due to the fact that are usually associated with increased risks of postoperative morbidity or mortality; however once the surgical techniques as well as the perioperative management of these patients improved, pancreatic surgery has been successfully implemented in the armamentarium of advanced stage or relapsed ovarian cancer [2,3].

As for the type of involvement at the level of the upper abdomen, peritoneal, hematogenous as well as lymphatic route seem to be incriminated; therefore, while the hematogenous route leads to the apparition of distant, parenchymatous metastases, the peritoneal route leads to the apparition of peritoneal nodules of carcinomatosis invading the adjacent organs while the lymphatic route leads to the apparition of adenopathic masses which might also invade the surrounding structures especially the blood vessels. When it comes to our case, the recurrence occurred via lymphatic route and led to the apparition of large adenopathic mass which developed in the retroduodenopancreatic area and invaded the surrounding structures including the portal vein, the celiac trunk and the pancreatic head. Although a significant tissular sacrifice was needed, the decision of removing this mass was taken as long as the patient presented an isolated recurrence as stable disease during neoadjuvant chemotherapy [2].

One of the most recent studies which aimed to investigate the benefits of pancreatic surgery as part of debulking surgery for ovarian cancer has been published in 2020 in the European Journal of Surgical Oncology; the paper was a review conducted by Di Donato et al. and included 11 studies and 101 patients submitted to pancreatic resections for ovarian cancer. As expected most cases were submitted to pancreatic resections at the time of primary cytoreduction; therefore, only five out of the 11 studies included patients submitted to pancreatic resections as part of secondary debulking surgery.

When it comes to the postoperative morbidity related to pancreatic surgery, as expected pancreatic fistula was the commonest encountered complication. However the most commonly performed pancreatic resections were represented by distal pancreatic resections [8].

When it comes to pancreatic head resections as part of debulking surgery for locally advanced or relapsed ovarian cancer, only isolated cases have been reported so far, especially due to the fact that pancreatoduodenectomy itself represents a demanding procedure, associated with significant rates of postoperative complications such as pancreatic leak or postoperative haemorrhage. The first case of a pancreatoduodenectomy for ovarian cancer pancreatic metastasis has been reported by Beissel et al. in 2014; the authors reported the case of a 58 year old patient diagnosed with advanced stage ovarian cancer and who was submitted to total hysterectomy, bilateral adnexectomy, omentectomy, appendectomy, peritonectomy, transverse colectomy with colo-colic anastomosis, bilateral pelvic and para-aortic lymph node dissection; however during para-aortic lymph node dissection a large bulky mass invading the pancreatic head and duodenum was diagnosed. Therefore pancreatoduodenectomy was also associated; however pancreatic leak developed and necessitated conservative treatment. As for the long-term outcomes, she was disease free survival 15 months after surgery, demonstrating the benefits of the long term outcomes after performing such extended procedures [9].

When it comes to the role of extended pancreatic resections en block with vascular resections, the method has been widely reported in the last years especially when local invasion of the portal vein is encountered [10-13]. Once the surgical technique improved, arterial resection has been also proposed in association with pancreatic head resections in order to achieve radical resection margins. In such cases certain authors proposed association of total pancreatectomy in order to minimize the risk of lethal complications such as pancreatic leaks; therefore, it has been demonstrated that once arterial resection and reconstruction is performed, the risk of developing a lethal haemorrhage due to the development of a possible pancreatic leak is significantly higher; therefore, most often if arterial resection is needed, total pancreatectomy is the option of choice in order to avoid the risk of developing a postoperative pancreatic leak. Meanwhile other authors consider that the presence of arterial invasion should be considered rather as a formal contraindication for resection due to the significant rates of postoperative morbidity in association with the low rates of long-term survival. However, in our case, the decision of performing such an extended surgi-



cal procedure was done by the fact that the tumor was an adenopathic metastasis from ovarian cancer and therefore, the only chance in order to improve the long-term outcomes of this case was to achieve radical resection with negative margins [15-17].

As for the rationale of association of celiac axis resection, this procedure was initially performed in locally advanced gastric cancer and is widely known as Appleby procedure; depending of the extent of invasion and the presence of collateral circulation, the procedure can further associate gastrectomy and splenectomy. In the case that we presented the absence of patent collateral circulation as well as

the local extent of the disease imposed association of total gastrectomy, total pancreatectomy and splenectomy [18,19].

## CONCLUSIONS

In conclusion, although local invasion might affect large vessels in the upper abdomen and extended visceral and vascular resections might be needed in order to achieve R0 resection, this tissular sacrifice seem to be perfectly justified whenever complete debulking surgery is achievable; in such cases a significant benefit in terms of survival is to be expected.

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