

# Quinary debulking for epithelial ovarian cancer

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## ABSTRACT

We report a case of optimal quinary debulking for recurrent papillary serous carcinoma of the ovary involving the liver parenchyma through the full thickness of the diaphragm into the lung parenchyma. Multiple debulking procedures for ovarian cancer are controversial, especially when there is extensive upper abdominal or thoracic disease. Selection criteria for such extensive surgery include: good functional status, long disease-free interval, and absence of other systemic disease. Our patient tolerated her procedure well without evidence of residual disease over 6 months postoperatively.

## INTRODUCTION

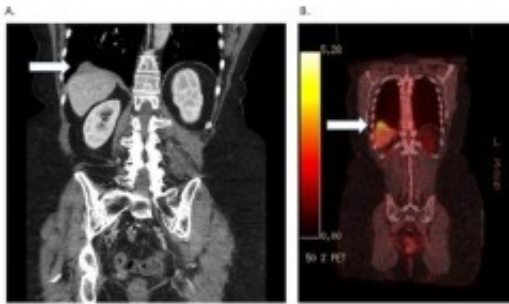
Despite the high rate of clinical remission seen with maximal cytoreduction and platinum based chemotherapy in the primary setting, the majority of women with ovarian cancer will have a recurrence of their disease. While controversial, the benefit of secondary cytoreductive procedures for recurrent epithelial ovarian cancer has been reported in retrospective series (1). Even more controversial is the role of surgery beyond secondary cytoreduction. Shih et al, demonstrated that multiple cytoreductive surgeries may be reasonable and offer a survival benefit in highly selected patients in whom have a single site of disease in which complete gross resection is possible (2).

Disease involving the liver, diaphragm, and lung present difficulties to optimal cytoreduction. In these cases, radical surgery by a combined specialties team can serve to successfully achieve optimal surgical goals. Dos Santos et al previously described resection of diaphragm with lung for recurrent ovarian cancer (3). We present a case of a quinary debulking consisting of an en bloc resection of an ovarian cancer implant extending from the hepatic dome to the pulmonary parenchyma through the full thickness of the diaphragm.

## CASE REPORT

A 72-year-old female with a history of recurrent stage III-C, Grade 3 papillary serous carcinoma of the ovary presented with right back pain and a CT scan demonstrating a new right hepatic dome subcapsular implant measuring 2.7cm by 2.1cm. She was treated with three cycles of liposomal Doxorubicin chemotherapy; however, she had disease progression by a rise in her CA-125. Repeat imaging demonstrated a stable mass measuring 2.7cm by 1.9 cm. A PET scan revealed the hypermetabolic subcapsular hepatic lesion. (Fig. 1) She was seen in consult by the Hepatobiliary Surgery service, who felt the lesion appeared subcapsular and

amenable to resection.



Her initial presentation was 9 years earlier and she underwent optimal cytoreduction and 6 cycles of carboplatin and paclitaxel. She had a disease-free interval of 3 years at which time she was diagnosed with recurrence and underwent 6 cycles of Docetaxel and Carboplatin and once again had complete response based on CA-125 and imaging. A year later she developed right groin pain and was noted to have a 4 cm mass on CT scan. She then underwent optimal secondary debulking with resection of multiple right inguinal lymph nodes followed by 6 cycles of carboplatin. A year later she was noted to have a pelvic mass and underwent optimal tertiary debulking followed by whole pelvic radiation. Two years later, she was diagnosed with a recurrence and underwent optimal quaternary debulking including splenectomy, and distal pancreatectomy with postoperative Carboplatin and Paclitaxel. She had an approximately one year disease-free interval prior to her most recent diagnosis. She strongly desired surgical management.

She underwent an exploratory laparotomy; adhesiolysis; and en bloc resection of the mass involving the liver, diaphragm, and lung. The intraoperative findings revealed a diaphragmatic mass with involvement of the liver. The liver was mobilized allowing for better assessment of the disease. The mass was adherent to the superior dome of the right liver in segment VII as well as densely adherent to the diaphragm. On palpation the mass was felt to extend through the diaphragm. The hepatic portion of the tumor was resected en bloc with the mass. The diaphragm was then incised circumferentially around the tumor. Visualization into the pleural cavity revealed a mass densely adherent to the right lower lobe of the lung. Thoracic surgery was consulted and performed the lung resection. (Fig. 2) An Endo GIA purple stapling device was used to perform a right lower lobe wedge resection of the tumor mass en bloc. The diaphragm was then closed in a single running layer using 0-Prolene. After her abdomen was closed, a right-sided thoracostomy tube was placed through a separate incision.



Postoperatively the patient did well. She was discharged on postoperative day eight. Pathology revealed metastatic poorly differentiated adenocarcinoma consistent with ovarian cancer involving the diaphragm, liver, and visceral pleura. She was offered adjuvant therapy as well as surveillance. She was treated with one cycle of Paclitaxel and Bevacizumab postoperatively. Due to toxicity she discontinued therapy. She has been without evidence of disease for 6 months.

## DISCUSSION

Diaphragm and lung involvement is not unique to epithelial ovarian cancer. In colorectal cancer, combined lung and liver metastectomy has been demonstrated to improve survival rates as compared to resection of liver metastasis alone (4). Lung metastectomy also improves outcomes in urinary transitional cell carcinoma, adrenocortical carcinoma, and testicular nonseminomatous germ cell cancer (5,6,7).

Traditionally, optimal cytoreduction of ovarian cancer has been limited to abdominal disease. While there is an increase in morbidity and mortality with upper abdominal surgery, the outcomes appear to justify the risks (8). While liver resection is becoming more common, diaphragmatic and lung disease pose unique challenges. However, this should not limit optimal cytoreduction. This case report demonstrates that in the presence of appropriate surgical consultation, diaphragm and lung metastasis are within the grasp of the gynecologic oncologist.

Patient selection for thoracic cytoreduction follows that of extensive upper abdominal surgery. Good functional status, long disease-free interval, and absence of other systemic disease are all good prognostic factors favoring radical cytoreduction (9). Our patient is a unique case. She had a good functional status preoperatively and was able to live independently. While her disease-free interval was relatively short she did have a history of long disease-free intervals after prior cytoreductive surgeries. She did not have any other medical conditions complicating her care. Finally, she had demonstrated the ability to withstand cytoreductive surgery and extensive upper abdominal surgery on three separate occasions. Therefore she was the ideal candidate for such extensive surgery.

In summary, multiple cytoreductive surgeries in highly selected patients may improve patient outcomes, especially for those whose cancers do not demonstrate a response to chemotherapy. In the case of presumed subdiaphragmatic disease, the possibility of

full-thickness diaphragmatic and lung parenchymal involvement should be considered. This should not be a contraindication or limitation to surgery per se as long as appropriate surgical consultation is available and disease-free margins can be obtained.

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