

Postoperative diaphragmatic herniation after cytoreductive surgery in advanced stage ovarian cancer

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ABSTRACT

Ovarian cancer is frequently associated with upper abdominal involvement necessitating extensive resections at this level. In such cases a significant increase of the postoperative complications is to be expected, the most commonly encountered one being represented by pleural effusion. Another complication which is described less frequently but which is associated with higher risks is represented by upper abdominal herniation at the level of the thorax. The aim of this paper is to discuss the risk factors and the therapeutic strategies in such cases.

Keywords: ovarian cancer, debulking surgery, diaphragmatic resection, chest herniation

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INTRODUCTION

Ovarian cancer still represents a serious health problem worldwide due to the absence of an adequate screening test; therefore a significant number of cases will be diagnosed in advanced stages of the disease when upper abdominal involvement is already present. It is estimated that over 80% of new diagnosed cases are included in this category, being classified as stage FIGO III or IV. While cases included in stage IIIC FIGO usually present extended lesions of peritoneal carcinomatosis, cases included in FIGO stage IV usually present hematogenous metastases from the initial moment of diagnostic, seriously impeding the chances to achieve a long term survival rate (1-3).

CHANGING THE PARADIGM. THE INFLUENCE OF SURVIVAL

For a long period of time it has been considered that the presence of extended abdominal lesions at the time of the initial diagnostic represents the sign of a more biologically aggressive tumor and therefore these patients have been rather submitted to treatment with palliative purposes. In time, improvement of the surgical techniques as well as of the perioperative management of these cases led to the successful introduction of more extended surgical procedures also including the upper abdomen in order to maximize the debulking effort. Therefore the paradigm changed and patients presenting upper abdominal involvement have been not longer considered as having an inoperable disease. Meanwhile the results in terms of survival significantly improved, and upper abdominal resections became rather the rule when it comes to the standard therapeutic strategy of such cases. However, attention should be paid to the type of upper abdominal involvement; therefore, cases presenting disseminated peritoneal lesions (and usually classified as FIGO stage IIIC lesions) usually exhibit a better long term outcomes when compared to cases presenting hematogenous lesions (and which are usually classified as stage IV FIGO lesions). The later ones also benefit from radical surgical procedures such as extended debulking resections but their long term outcome seems to be less favorable when compared to cases presenting peritoneal lesions solely. However, although their long term outcomes in terms of survival are poorer when compared to cases diagnosed in stage IIIC of disease, they exhibit a significantly improved survival when compared to cases submitted to palliative treatment exclusively (1-6).

DIAPHRAGMATIC RESECTIONS AS PART OF DEBULKING SURGERY FOR ADVANCED STAGE OVARIAN CANCER

The diaphragm represents one of the most commonly invaded structures especially when tumoral

cells are present into the free peritoneal fluid. In such cases peritoneal lesions of carcinomatosis might develop. According to the depth of development of these lesions, the needed surgical procedures might range between limited peritoneal resections to full thickness diaphragmatic resections alone or in association with visceral resections such as liver or pulmonary resections if these structures are invaded through contiguity process. Another surgical procedure which might be needed in such cases is represented by transdiaphragmatic resection of cardiophrenic lymph nodes (5,6).

In all these cases postoperative complications are to be expected, pleural effusion being the most commonly encountered. In such cases a conservative therapeutic approach or a pleural drain placement is enough in order to control the situation (5).

A more fearful complication but hopefully less frequently encountered one is represented by the transdiaphragmatic migration of different abdominal viscera. Therefore the most commonly described situations are represented by gastric herniation after left diaphragmatic procedures and liver herniation after right diaphragmatic resections (5-7).

When it comes to left diaphragmatic herniation, the most commonly procedures which seem to be associated with this risk are represented by splenectomy and left colectomy in association with diaphragmatic resection; meanwhile association with surgical procedures such as hyperthermic intraperitoneal chemotherapy also seem to increase the intraabdominal pressure which will further conduct to the apparition of this complication (8-11). Other factors which seem to influence the risk of developing such complications are related to patients' weight mass, obese patients being more frequently at risk, previous history of neoadjuvant chemotherapy or postoperative severe emetic syndrome (12).

In order to minimize the risks of developing this complication, whenever the resulting defect at the level of the diaphragm is a significant one, reconstruction using a biodegradable mesh should be taken in consideration in order to achieve a tension free procedure (10).

CONCLUSIONS

Diaphragmatic surgery has been associated as part of debulking for advanced stage ovarian cancer in order to maximize the debulking effort in association with other procedures such as splenectomy, colorectal resection, or cardiophrenic node resection. In such cases the most commonly complication is represented by pleural effusion which can be rapidly controlled. However, a more fearful com-

plication which fortunately has a significantly lower incidence is represented by diaphragmatic herniation of the stomach – whenever the left diaphragm is resected or of the liver – whenever the right diaphragm is resected. In cases in which extended dia-

phragmatic resections are performed, more complex reconstructions such as mesh placement might be an effective method in order to prevent diaphragmatic herniation.

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