

Port site metastases after laparoscopic treatment of ovarian cancer

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ABSTRACT

Once the techniques of minimally invasive surgery improved and the benefits in terms of early postoperative recovery have been widely demonstrated, minimally invasive surgical procedures have been widely implemented in the setting of surgical oncology. However, in cases in which peritoneal contamination already exists, attention was focused on identifying the risk factors of developing port site metastases and, in the meantime, on preventing this event. The aim of the current paper is to analyze these risk factors and to discuss about the possibilities to prevent this event.

Keywords: ovarian cancer, peritoneal carcinomatosis, port site metastases, contamination

INTRODUCTION

In the last decades laparoscopy has gained significant popularity in the field of surgical oncology, especially due to the advantages of the minimally invasive approach such as early recovery, early discharge, lower need of postoperative pain killers, early mobilization and lower risk of developing postoperative thromboses [1]. These advantages are particularly important in oncological patients who benefit most from this early recovery due to the fact that, most often they need to be submitted to adjuvant therapies few weeks after the surgical procedure [2-4]. In the meantime, attention was focused on the fact that in certain cases presenting peritoneal contamination with malignant cells, abdominal insufflation when creating pneumoperitoneum might increase the risk of tumoral cell contamination. Meanwhile, once the incisions for port placement are performed, it has been considered that these port sites represent the riskiest surfaces for tumoral contamination [5].

RISK FACTORS RELATED TO THE OVARIAN LESIONS FOR PORT SITE METASTASES

When it comes to the risk of peritoneal contamination and, furthermore, of port site metastases in ovarian cancer patients, it seems that it exists even in early stages of the disease. The most important factors which seem to increase the rates of port site metastases are represented by the dimensions of the lesion and by the histology of the ovarian tumors; therefore, the risk seems to be maximal in clear cell carcinoma and is followed by endometrioid, serous and mucinous ovarian carcinomas [6,7]. As expected, in cases initially diagnosed with stage I ovarian cancer, in which tumor rupture occurs during laparoscopy spillage will occur and will transform the case in a stage III tumor, significantly negative impact on survival being observed. However, certain authors underline the fact that not laparoscopy itself but tumoral effraction is responsible for this negative effect on survival, cases in which open sur-

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gery is performed and tumoral spillage occurs having similar long-term outcomes to those submitted to laparoscopic surgery and in which such an accident occurs [7].

In cases in which peritoneal metastases are already present at the time of the initial surgery, port site metastases are reported after a very short period of time in up to half of the patients, even if the laparoscopic procedure has only a diagnostic purpose [8-10]. However, other risk factors related to the ovarian tumors are represented by tumor stage, tumor histology, the presence of positive lymph nodes and the presence of ascites in a volume higher than 500 ml [9].

RISK FACTORS RELATED TO LAPAROSCOPIC SURGERY ITSELF

Other risk factors which have been widely discussed are related to laparoscopy itself and to different technical tips and tricks. Therefore, the most important factors which have been analyzed are represented by the maneuvers of trocar placement, by the chimney effect, by the speed of insufflation and desufflation and by the contamination of the port sites with ascites.

The technique of trocar placement has been widely studied and has come to demonstrate that trocars should be placed in areas with lower levels of blood supply such as the white line, the incisions should be reduced in size in order to minimize the gas leak at this level (also known as the chimney effect), and the number of trocars should be as low as it possible. Meanwhile, if resection is performed, the specimen should be retracted in an Endo bag and a wound protector should be placed in order to minimize the tumoral contamination. In cases in which ascites is present, all the liquid should be aspirated before desufflation in order to minimize the risk of port site contamination in the moment in which the trocars are removed [10-12].

THERAPEUTIC STRATEGIES FOR PORT SITE METASTASES PREVENTION

In order to minimize the risks of developing port site metastases, multiple therapeutic strategies have been proposed such as placing the trocars at the level of the white line and avoiding their placement through muscular layers in order to minimize the risk of port hemorrhage and a possible hematogenous contamination on this level, avoiding rapid desufflation or avoiding frequent port removal or reintroduction.

However, once the suspicion of port site contamination appears, the port sites should be irrigated with povidine-iodine solution or chemotherapeutic agents. Therefore, in the study conducted by Schneider et al. on an animal model the authors demonstrated that if port sites are washed with povidine-iodine solution the risk of port site metastases decreases from 64% to 14% [12]. Other therapeutic strategies include even complete port site removal; however, a recent study came to demonstrate that port site removal in such cases does not significantly influence the long-term outcomes and therefore it should be abandoned [10].

THE IMPACT ON SURVIVAL OF PORT SITE METASTASES

As expected, once tumoral contamination of the peritoneum and abdominal wall occurs the patient will suffer a negative impact on survival. The development of port site metastases is considered as a reason to upstage the patient in FIGO stage IV of disease; however, in such cases the overall survival is not so poor as in cases diagnosed with FIGO stage IV disease due to other distant metastases. Therefore, in the study conducted by Ataseven et al. the authors demonstrated that patients classified as FIGO stage IV due to the presence of port site metastases reported an overall survival of 58 months, significantly longer when compared to cases diagnosed with FIGO stage IV due to the presence of other distant metastases (who reported an overall survival rate of 25 months) or with those diagnosed with FIGO stage IIIC (with an overall survival rate of 37 months) [11].

CONCLUSIONS

Port site metastases after laparoscopic surgery for ovarian cancer have a higher incidence when compared to other malignancies, being significantly influenced by the tumoral stage, histology, but also by human related risk factors such as the number of cases submitted to surgery for this disease annually in each surgical center. Although their presence significantly modifies the stage of the disease, considering the patient as having a stage IV ovarian cancer, the overall survival in such cases is significantly improved when compared to FIGO stage IV cancer due to other distant metastases. In such cases different therapeutic strategies have been proposed such as port site removal, their effect being still under debate.

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