

Trocar Orifice Metastasis: About A Case

El Hachami FZ, Imami Y, Saligane A*, Elkaroumi M, Ennachi M and Benhessou M

Onco- Gynecology Department of the Center, Mohamed IV- Gynecology Department B, CHU Ibn Rochd Casablanca, Morocco

***Corresponding author:**

Saligane A,
Onco- Gynecology Department of the Center,
Mohamed IV- Gynecology Department B, CHU Ibn
Rochd Casablanca, Morocco

Received: 28 May 2023

Accepted: 17 July 2023

Published: 24 July 2023

J Short Name: AJSCCR

Copyright:

©2023 Janjua D, This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and build upon your work non-commercially.

Keywords:

Metastasis; Cancer; Laparoscopy; Laparotomy;
Occurred; Prevention

Citation:

Janjua D. Trocar Orifice Metastasis: About A Case. *Ame J Surg Clin Case Rep.* 2023; 6(14): 1-4

1. Abstract

Trocar orifice metastases are a rare but serious complication of laparoscopy. Several hypotheses have been put forward responsible for STDs and several preventive means have been applied. The aim of this work is to analyze the risk factors assumed and the means of prevention through a case study on metastasis on trocar orifice confirmed histologically and managed at the Mohammed VI center service of the University Hospital of Casablanca.

2. Identity

A 54-year-old patient, menopausal for 3 years, without any particular medical history. Her initial illness dates back to 2 and a half years ago with the onset of non-cyclic chronic pelvic pain without other associated signs, digestive or urinary, all evolving in a context of good general condition. During the clinical examination, a lateral uterine mass on the right was palpated during a vaginal examination with abdominal palpation, while the rest of the clinical examination was unremarkable. Pelvic ultrasound showed a small homogeneous echogenic uterus with the presence of two cystic lateral uterine masses separated by thin septa, measuring 11x4.9 cm on the right and 4.6x2 cm on the left.

The pelvic CT scan revealed a normal-sized uterus lateralized to the left by the presence of a cystic formation measuring 10 x 4.6 cm, with fine wall calcifications and peritoneal effusion in the Douglas pouch. The endometrium had a normal thickness and there was no pelvic adenopathy observed. Tumor markers were negative, including CA 125 with a value of 22.14 U/ml. The patient's cervical smear was junctional, atrophic, and without signs of malignancy. A diagnostic laparoscopy was performed after a supraumbilical skin incision. Gas insufflation was carried out using a Veress needle, followed by the introduction of the umbilical trocar and placement of the optics. During exploration, a small amount of effusion was present with an adnexal mass measuring 7 cm,

adhering to the digestive structures. Trocars were then inserted on the right and left flanks, and a cystectomy was performed. Haemostasis was ensured and the wound was closed layer by layer. The anatomopathological result revealed a calcified cyst without signs of malignancy.

Two years later, the patient returned for the appearance of abdominal distension accompanied by chronic pelvic pain of heaviness type, for the past 9 months, without associated urinary or digestive signs, all evolving in a context of good general health. The clinical examination showed a distended abdomen with signs of fluid wave, and a vaginal examination with speculum showed a normal-looking cervix, no bleeding, and clean vaginal walls. The abdominal-pelvic MRI showed a large amount of ascites, more marked in the pelvic area, with several peritoneal nodules forming a mass at this level measuring 52x45mm, which is responsible for scalloping on the lower edge of the right liver and on the body of the uterus. The tumor markers were positive, notably CA 125 at 90.42 U/ml and CA 19.9 at 61.32 UI/ml, while ACE marker was negative at 5.73 ng/ml. A diagnostic laparoscopy was performed after a suprapubic skin incision. Gas was insufflated using a Veress needle, followed by introduction of the umbilical trocar and placement of the optic. Upon exploration, there was presence of a gelatinous ascites of moderate abundance covering the peritoneum, stomach, omentum, and with the presence of a mass adherent to the uterus and right adnexa. When trocars were introduced at the left flank, a parietal mass was discovered at the site of initial introduction of the trocar from the first exploratory laparoscopy, measuring 5 mm. Aspiration of the gelatinous ascites was performed, along with biopsy of the parietal mass. (Figure 1 and Figure 2). The histopathological result revealed a grade 3 peritoneal pseudomyxoma. The patient was referred to the oncology department for additional adjuvant management.

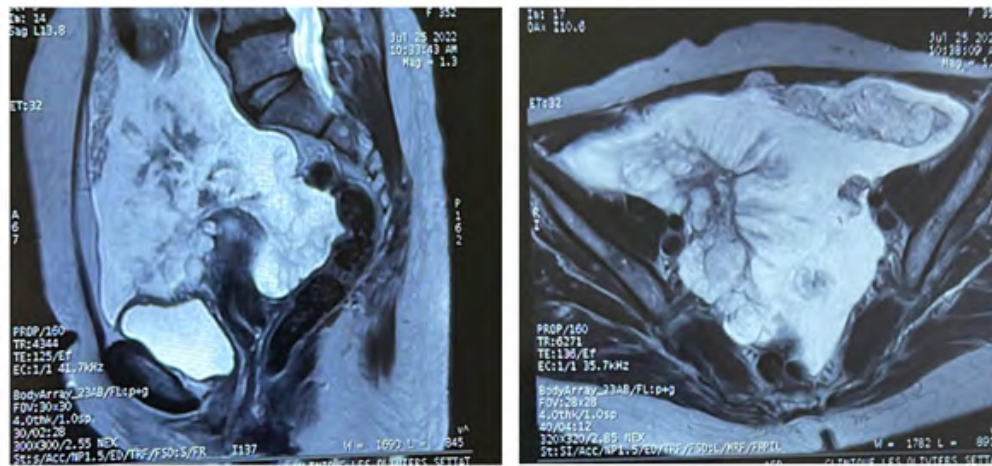


Figure 1: Right lateral uterine mass with abundant ascites and diffuse peritoneal carcinomatosis [(A) - sagittal section; (B) - axial section].

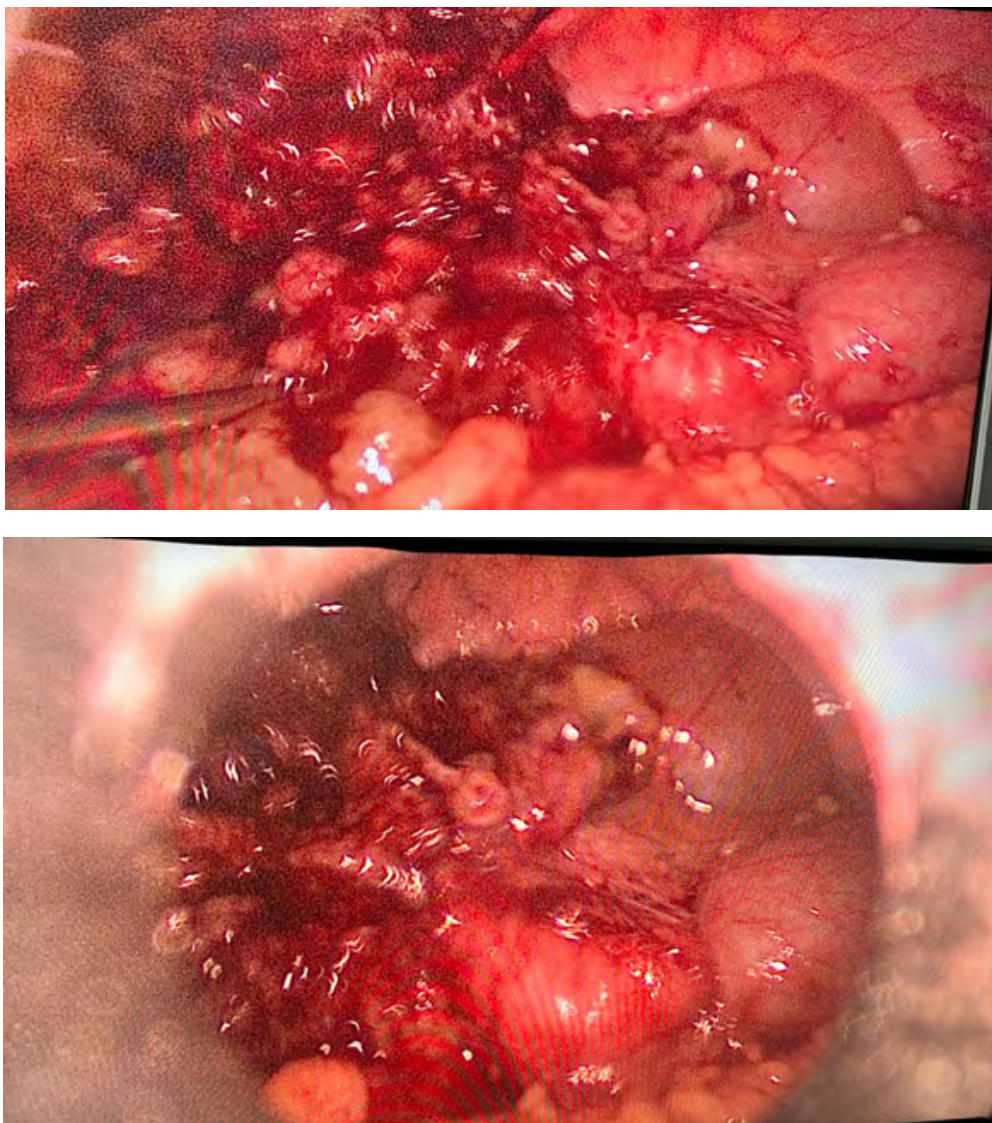


Figure 2: Mass adherent to the right uterus and annex, with a presumable digestive appearance, and presence of a parietal mass at the initial trocar insertion site.

3. Discussion

Surgical oncology has been revolutionized over the past two decades by minimally invasive surgical techniques with improved recovery, resulting in reduced morbidity and faster recovery times for patients undergoing oncologic treatment. Although laparoscopic treatment of cancer has become the standard of care in many circumstances, there are unique complications associated with minimally invasive techniques, especially trocar site metastasis. Although laparoscopic treatment of cancer has become the standard of care in many circumstances, there are unique complications associated with minimally invasive techniques, particularly trocar site metastasis [1]. Trocar site metastases were first described by Dobronte et al in 1978 in ovarian cancer, leading to several debated studies over the decades. [2-5]. The occurrence of these metastases is one of the major complications of laparoscopy for gynecological cancers.

The etiologies have not been clearly identified, and several hypotheses have been proposed, including the gas used and the pressure of the pneumoperitoneum, dissemination during exsufflation, manipulation of the specimen, trauma to the trocar sites, unprotected specimen extraction, and postoperative inflammation. [2-4]. However, several preventive measures have been used to reduce the risk of occurrence. Metastases at trocar sites are associated with a poor prognosis. Although this implantation has been reported in various malignancies, the precise incidence is difficult to verify due to the limited number of large studies with long-term follow-up. There are isolated port-site metastases (iPSM), which refer to tumor recurrence without evidence of concomitant metastases, as opposed to non-isolated port-site metastases (PSM), which are simultaneous metastases in other locations that are typically considered part of the recurrence [2,6,7]. Yes, that is correct. While it has not been demonstrated that all patients with trocar site metastases have a worse prognosis, some studies have suggested that these metastases, which are associated with multilobar recurrence, have a negative impact on survival. The management of PSM with multiple metastases follows the general principles of treating a systematic recurrence, but the treatment of iPSM is controversial due to the limited number of reported cases, which has limited the specific management of the isolated form [2]. In a meta-analysis by Curet et al, the authors reported an overall incidence of trocar site metastases of 0.71% [13].

In gynecological cancer, several studies have shown that cervical and endometrial cancer have a lower risk of developing metastasis at the trocar site compared to ovarian cancer. In a study by Martínez, laparoscopy was performed on 1216 patients with uterine cancer (921 patients with cervical cancer and 295 with endometrial cancer). The prevalence of non-isolated port-site metastases in patients with cervical cancer and those with endometrial cancer was 0.43% and 0.33%, respectively [2]. The prevalence of non-isolated port-site metastases after laparoscopy in ovarian cancer has been

reported to vary between 16% and 47%, and this high prevalence in ovarian cancer may be due to its invasive nature and late diagnosis of advanced disease [2]. Currently, the role of the immune response in non-isolated port-site metastases (PSM) has shown that systemic immunity appears to be better preserved after a laparoscopic procedure than after open surgery.

Several studies have hypothesized various mechanisms promoting the development of trocar site metastases. At the molecular level, it has been demonstrated that hypoxia of abdominal wounds and subsequent acidosis induce the expression of interleukin-8 (IL-8), which is involved in regulating angiogenesis via vascular endothelial growth factor. One of the most widely accepted hypotheses involved in PSM is the use of CO₂ gas and the “chimney effect” created by rapid desufflation through the port sites. The main concern with rapid desufflation is related to the theoretical increase in the number of tumor cells at the port site caused by gas leakage. This theory has been questioned by studies, which have shown no difference in metastases between gasless laparoscopy and conventional laparoscopy [8-10]. In 2014, a meta-analysis of 20 randomized controlled trials using animal models revealed that wound recurrence was not significantly higher in laparoscopic surgery than in gasless laparoscopy. In addition, the surgical technique and repeated reintroduction of trocars have also been proposed as potential mechanisms for trocar site metastases.

The latter can lead to trauma and exposure to malignant cells, making the surrounding tissue susceptible to tumor implantation. Other suggested mechanisms include hematogenous spread, direct implantation of wounds by malignant cells, and aerosolization of tumor cells. The theory of hematogenous spread is less favored since only 0.1% of malignant cells survive in circulation and could theoretically induce metastases. Direct implantation of malignant cells from contaminated instruments and trocars could explain the development of trocar site metastases.

This is supported by a previous study, which demonstrated the presence of tumor cells in trocars and instrument washings during 12 staging laparoscopies for pancreatic cancer. In spite of the controversial nature of many proposed risk factors and mechanisms associated with port-site metastases, it is essential to develop preventative strategies to minimize recurrence. Patient selection is likely one of the most important factors in minimizing this risk. Based on previous data suggesting higher rates of port-site metastasis in patients with higher grade and progression of disease, surgeons should always consider obtaining imaging studies and tumor markers before performing surgery. This can allow for better risk stratification and preoperative planning. Indeed, proper use of laparoscopic instruments, avoiding tissue trauma and repeated replacement of laparoscopic trocars, is crucial in prevention. Surgeons may consider securing the trocars to the anterior abdominal wall to minimize dislodgement. Other suggested techniques to reduce this risk include deflating the abdomen with trocars in place

to avoid the “chimney effect” and closing the fascia with peritoneum at the sites of 10-12 mm trocar entry. Rinsing the trocars, laparoscopic instruments, and incisions with a povidone-iodine solution has been associated with a decrease in the risk of PSM.

In addition, the use of a specimen retrieval bag is commonly employed by contemporary surgeons as a means of preventing port site contamination by malignant cells. This change in practice was at least in part due to several case reports of patients who developed trocar site metastases following unconfined retrieval of malignant tissue. Trocar site excision has been recommended for several years. This approach is feasible when a laparotomy is performed for incidentally discovered ovarian cancer during laparoscopy. The effectiveness of this preventive measure has been demonstrated in animal studies [11, 12]. Recent practices of oncologic surgeons have been examined by Baptiste et al in a survey conducted among 132 members of the Society of Gynecologic Oncology. The authors investigated the association between preventive measures and PSM, and compared surgeons with prior PSM cases to those with no previous cases regarding pneumonion sufflation pressure, sample administration mode, use of local anaesthesia at incision sites, and deflation method. Interestingly, no statistically significant differences were found in practice patterns, except for an increased rate of PSM cases among surgeons performing over 75% of oncologic surgeries using a minimally invasive technique.

4. Conclusion

Trocar orifice metastases are a rare but serious complication of laparoscopy. The etiologies are poorly identified and seem multiple.

References

1. Couteau C, Lazard A, Marcelli M, Estrade JP, Agostini A, Cravello L, et al. Port-site metastasis after retroperitoneal lymphadenectomy for endometrial adenocarcinoma. *Gynecol Obstet Fertil.* 2014; 42(2): 129-131.
2. Gao Q, Guo L. The Pathogenesis and Prevention of Port-Site Metastasis in Gynecologic Oncology. *Cancer Management and Research.* 2020; 12: 9655-9663.
3. Agostini A, Mattei S, Ronda I, Banet J, Lécuru F, Blanc B, et al. Prevention of port site metastasis after laparoscopy. *Gynecol Obstet Fertil.* 2002; 30: 878–81.
4. Ramirez PT, Wolf JK, Levenback C. Laparoscopic port-site metastasis: etiology and prevention. *Gynecol Oncol.* 2003; 91: 179-89.
5. Dobronte Z, Wittmann T, Karacsony G. Rapid development of malignant metastases in the abdominal wall after laparoscopy. *Endoscopy.* 1978; 10(2): 127–130.
6. Agarwala V, Ramaswamy A, Dsouza S. Resection of Isolated Port Site Metastasis in Gall Bladder Cancers-Careful Selection and Perioperative Systemic Therapy May Improve Outcomes. *Indian J Surg Oncol.* 2018; 9(3): 427–431.
7. Baptiste CD, Buckley de Meritens A, Jones NL. Port Site Metastases: A Survey of the Society of Gynecologic Oncology and Commentary

- on the Clinical Workup and Management of Port Site Metastases. *J Minim Invasive Gynecol.* 2017; 24(4): 592–598.
8. Manvelyan V, Khemarangsang V, Huang KG, Adlan AS, Lee CL. Port-site metastasis in laparoscopic gynecological oncology surgery: an overview. *Gynecol Minimally Invasive Therapy.* 2016; 5(1): 1-6.
9. Lecuru F. Impact of pneumoperitoneum on visceral metastasis rate and survival. Results in two ovarian cancer models in rats. *BJOG.* 2001.
10. M Canis M. Laparoscopy and gynecologic cancer: is it still necessary to debate or only convince the incredulous? *Gynecol Obstet Fertil.* 2001; 29(12): 913-8.
11. Castillo OA, Vitagliano G. Port Site Metastasis and Tumor Seeding in Oncologic Laparoscopic Urology. 2008; 71(3): 372-378.
12. Agostini A, Mattei S, Ronda I, Banet J, Lécuru F, Blanc B. Prevention of port-site metastases after laparoscopic surgery. 2022; 30(11): 878-881.
13. Kabbour J. Radical cystectomy for bladder cancer: comparison between laparoscopy and open surgery. Thesis number 32 – 2010.