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Case Report

Botulinum Toxin Preoperatory for Oncoplastic Abdominal Wall Resection of Ovarian Metastasis in Rectus Abdominis: Case Report

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Abstract

Cancers of internal organs is not commonly to metastasize to skin or subcuticular tissue and almost none has been to show metastasis to rectus muscle. We present our preoperative approach with botulinum toxin type A (BTA) and surgical oncoplastic technique to make an abdominal wall block resection in a 55-year-old woman with an ovarian metastasis lesion in rectus abdominis to achieve the closure of aponeurotic midline.

Keywords: ***Oncoplastic, Botulinum toxin, Ovarian, Ovarian cancer.***

Introduction

The first ones to use BTA were the pediatrics surgeons to reduce the abdominal pressure at primary repair in wall defects such as gastroschisis or omphalocele [1]. Since then, different groups have been working with preoperatory BTA in ventral hernia with loose of dominion [2].

Ovarian cancer is a common cancer of the female genital tract, the mortality rate varies greatly based on stage at initial diagnosis, 5-year overall survival in patients with stage I is 92% but 25% in stage III and IV [3]. It is interesting that cancers of internal organs are not commonly to metastasize to skin or subcuticular tissue and almost none has been to show metastasis to the rectus abdominis muscle [4]. Here we present a case of female with a history of ovarian serous adenocarcinoma and at the 12 years follow-up we found a hypermetabolic mass in right rectus abdominis, we decided to prepare the abdominal wall foreseeing a block-dissection with the aim to achieve the closure of aponeurotic midline.

Case presentation

A 55-year-old woman with a history of ovarian serous adenocarcinoma and at the 12 years follow-up a growing mass in abdominal wall was noted, the fine-needle aspiration biopsy (FNAB) found cells suggestive of sarcoma, without be able to discard metastasis, to complete the following protocol, in the PET-CT and CT an hypermetabolic mass in right rectus abdominis was found (**Figure 1**), so we decided to perform and abdominal wall block resection.

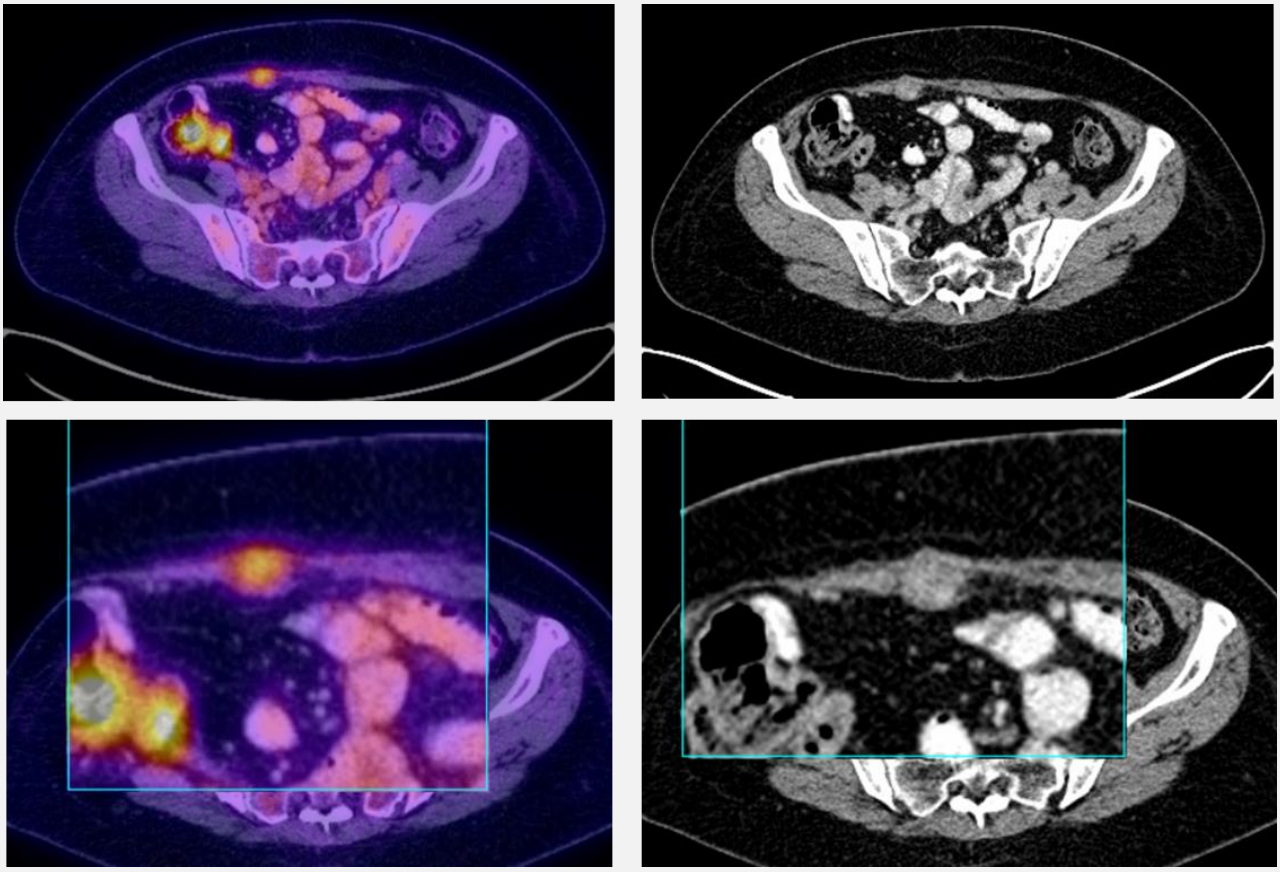

Figure 1: Comparative images of PET-CT and CT with an infraumbilical hypermetabolic mass in the right rectus abdominis.

Our oncoplastic surgical technique was made bearing in mind the patient was underwent FNAB and in the preoperative plan, the incision hast to resect skin, subcutaneous tissue, aponeurosis, muscle, and parietal peritoneum.

To achieve the midline, three weeks before the procedure we applied 500 UI of BTA image-guided; following the technique of Ibarra-Hurtado, et al. (5) and Zendejas, et al. (6) the used dilution was 500 UI (Dysport®) in 5 ml of lidocaine 1%, 80 UI [40 UI in the external oblique (EO), 40 UI in the internal oblique (IO)] , distributed in six sites of the abdominal wall right in the lateral line of insertion of external and internal oblique, three per side with a 2 cm distant each (**Figure 2-3**) fourteen days after the application, an adequate response to BTA was evaluated and one week after came to operating room. (**Figure 4**)

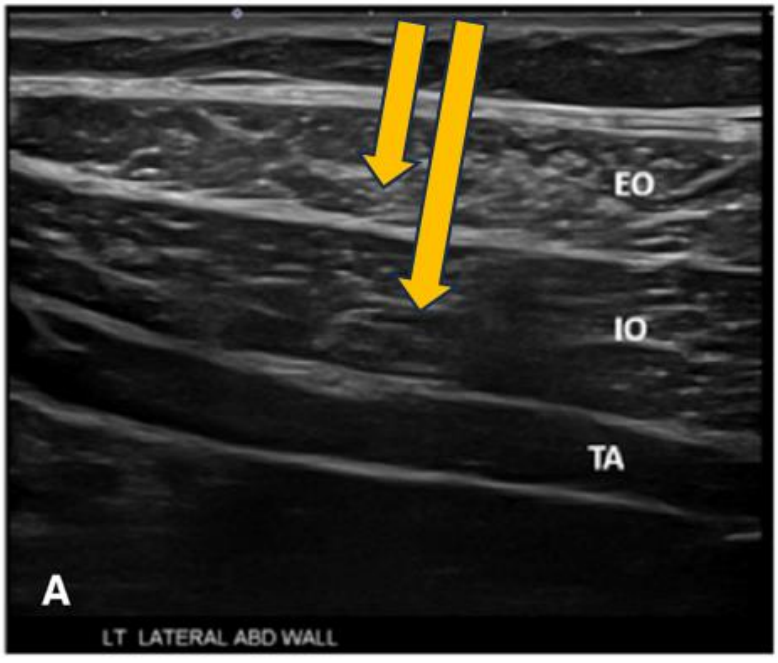

Figure 2: Sonographic image at the external axillary line, it is noted the external oblique (EO), internal oblique (IO), transversus abdominis (TA). Arrows points where the BTA is infiltrated.

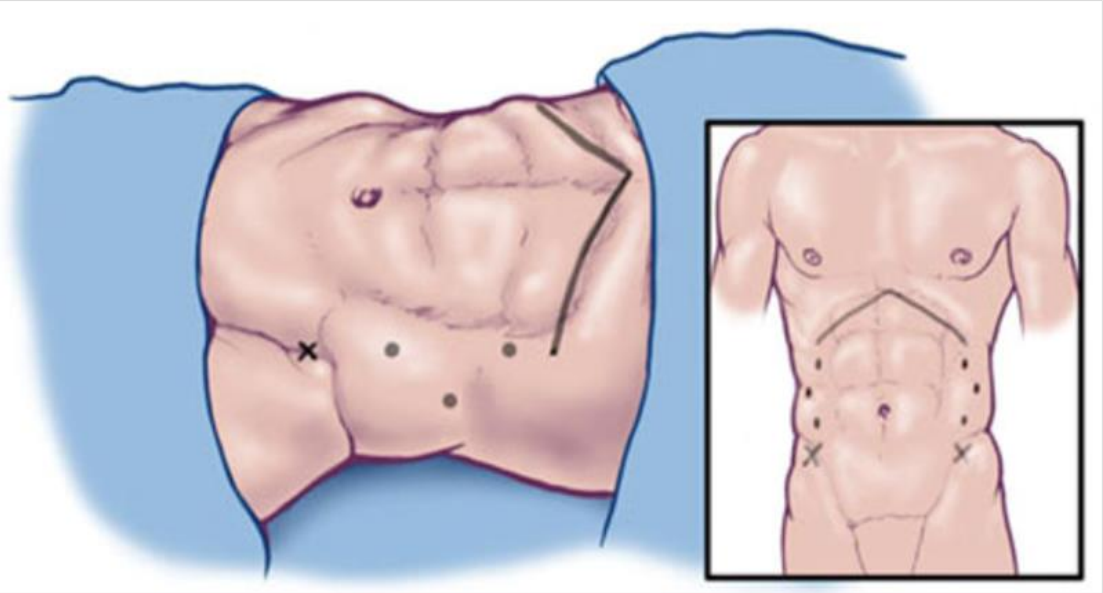

Figure 3: The six injection sites. Reproduction of figures from Zendejas et al. Outcomes of Chemical Component Paralysis Using Botulinum Toxin for Incisional Hernia Repairs. World Journal of Surgery. 2013 Dec;37(12):2830-7.

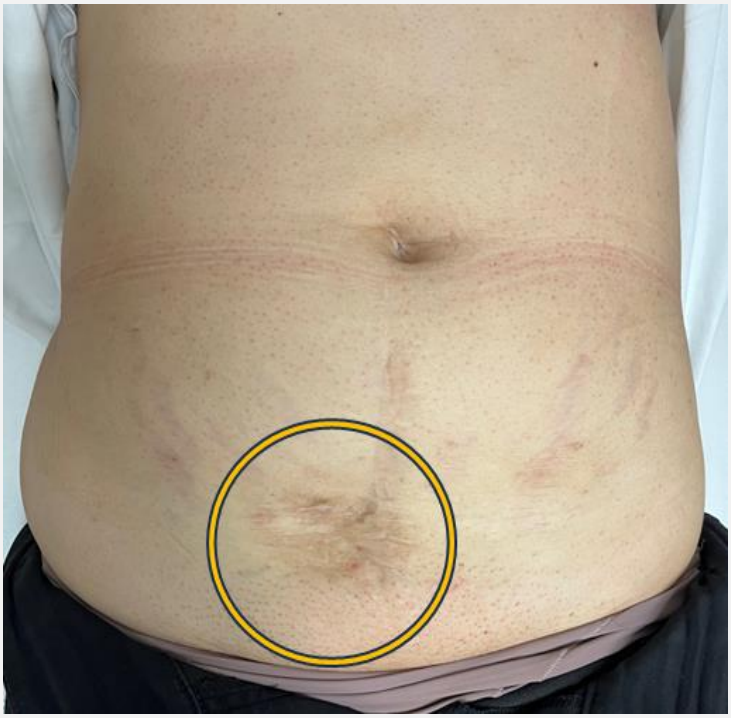

Figure 4: Image of one week before surgery, tone maneuvers in the abdominal muscle were abolished. Circle points hyperchromic changes in the skin where the fine-needle aspiration biopsy (FNBA) was made.

For the surgical technique we use the Pfannenstiel extended incision, the dissection was made until the aponeurosis and the cephalic flap until 5 cm down umbilicus as in an abdominoplasty; then we made an incision in the middle line to divide the aponeurosis and a 6x6 cm right paramedian block dissection was performed taking the aponeurosis, the right rectus abdominis and parietal peritoneum. The intraoperative report by Pathologist was ovarian metastasis, no more dissection was made. At time to close the midline the effect of BTA let us the approach without compartment separation, for the skin, panniculectomy was performed. (**Figure 5**). A closed drain was placed and removed two weeks later in the office. (**Figure 6**).

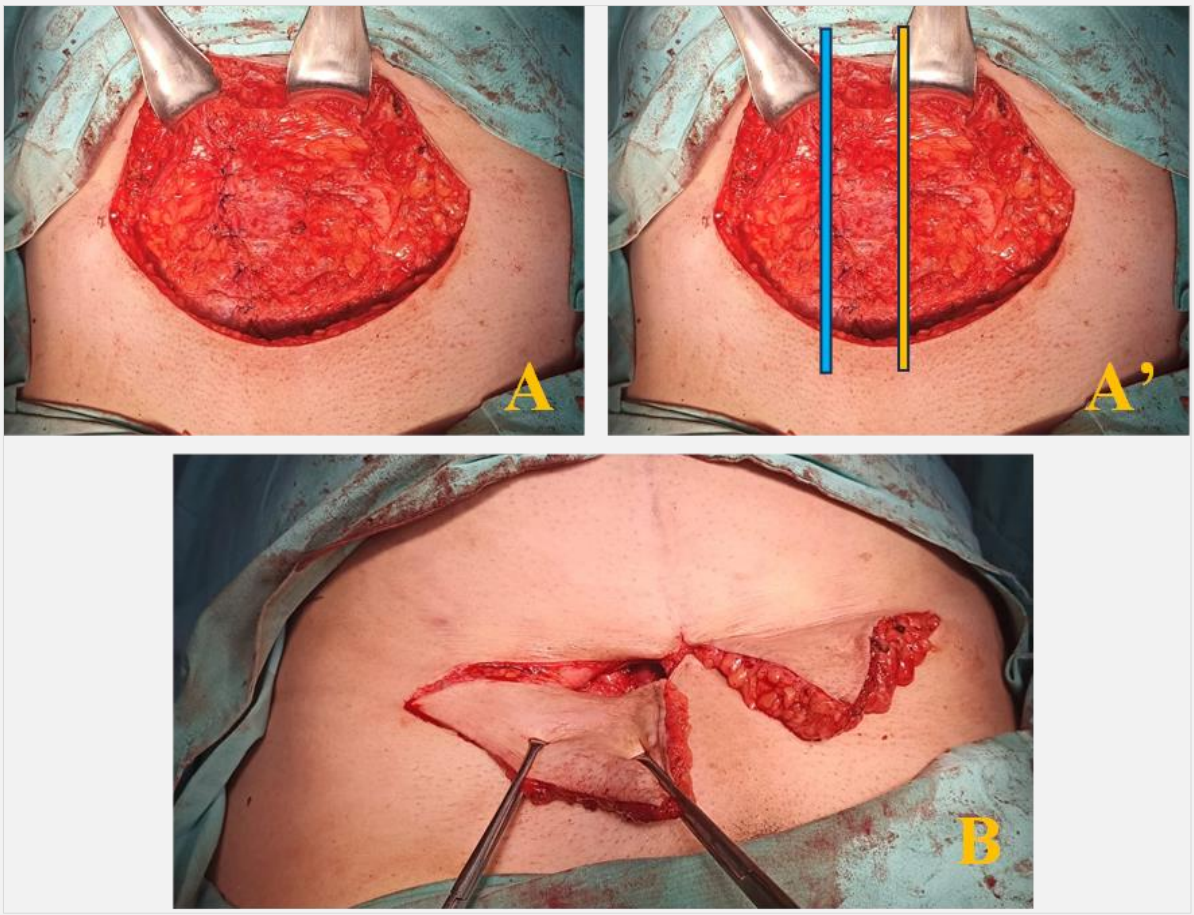

Figure 5: A and A': shows the deviation of the midline due to block resection (about 6.5 cm). The yellow line indicates the site of the initial midline, the blue is the new one, closed with simple continuous suture of Monocryl Ethicon® 1, and separate Smead-Jones suture of Prolene Ethicon® 0.

B: Panniculectomy

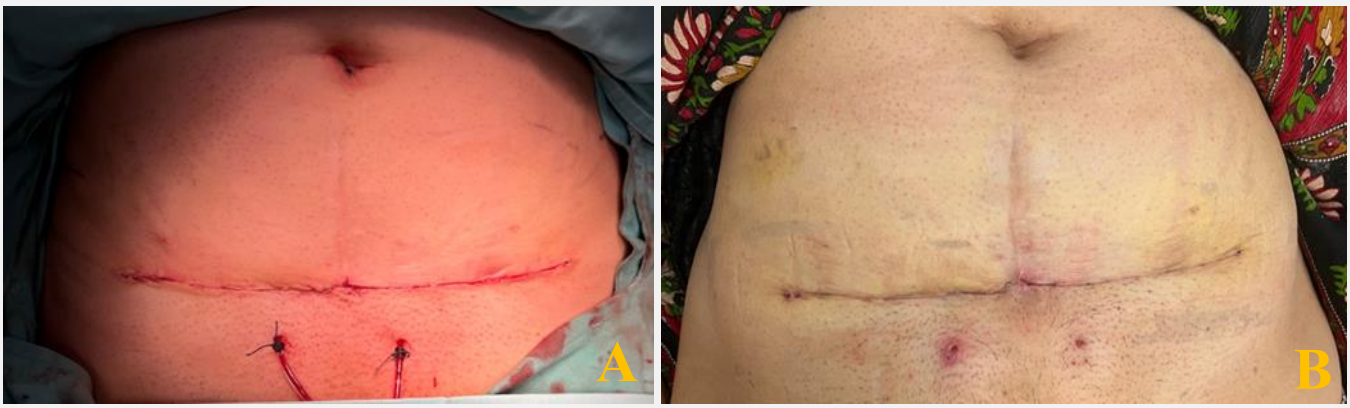

Figure 6: A: The immediate postoperative. B: Two weeks after surgery

Conclusions

Surgery is often curative in oncologic patients by eradicating the tumour, in the other hand many factors impede the ability of patients to heal: the disease process itself, host factors including nutritional status, and the therapies before surgery [8].

Chemotherapy and radiotherapy are known to affect the immunological mechanism of wound healing in addition to inducing deposit of immature collagen subtype, clinically this means decreased wound tensile strength [9]. The objective in intraabdominal surgery after settle the main problem is the aponeurotic closure given that the primary complication are ventral hernias reported as high as 69% in high-risk patients [10]. However, the European Hernia Society highlights that one of the most important determinants of the risk of developing an incisional hernia is the surgical technique used for, that is why we prepared our patient keeping in mind to get a less midline tension with the application of BTA in the muscles of abdominal wall, the effect begins in at least 7 days, but 14 days is the most described, and the changes in the elongation of the muscles increases 20-25% [11] those means laxity in the aponeurosis which facilitates medial advancement of the borders.

BTA is a neurotoxin that is isolated and purified from Clostridium botulinum type A bacteria which blocks the acetylcholine receptor at the neuromuscular junction and is an

effective adjunct which has been seen facilitates the repair in large ventral hernias, but a postulated concern is the role of abdominal core muscles in respiratory physiology and spinal stability that both functions may be critically compromised due to induced paralysis. [12] however, the theory includes the injection of transversus abdominis, and in this case report, last layer was respected.

Although nowadays no international guidelines about the use of BTA has been reported, the success in the abdominal wall is replicable. It is important to keep in mind the flaccid paralysis will undergo for 6-8 months and the patients' principal compliant will be bloat-like; the muscle tone progressively will be recovered and probably the greater impact is reducing the risk of ventral hernia.

Declarations

Ethics approval and consent to participate

The content of this manuscript are in accordance with the declaration of Helsinki for Ethics. No committee approval was required. Oral and written consent to participate was granted by the patient.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review.

Data Availability

Supporting data is available.

Conflicts of Interest

The author declares no competing financial interests and nothing to disclose.

Authors' contributions

Daniel Sánchez-Ávila is the headleader of the Oncologic Department, Surgeon of the patient and reviews this paper.

Cuauhtémoc Aguilar-Barragán is the first assistant in the surgery and writes this paper.

Sergio Sandoval-Tapia is the second assistant in the surgery and reviews paper; Samantha Colchado-Mariscal collects data´s; Arianna Ruiz-Berrones reviews paper; Jorge Flores-Filio collects data´s.

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