Multidisciplinary surgical approach in the treatment of giant mucinous ovarian cystadenocarcinoma

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SUMMARY

Introduction: *Giant ovarian tumors (>20 cm) are not common and often present late, with organ compression symptoms and increased abdominal girth. Early diagnosis is challenging due to nonspecific complaints until tumors reach massive dimensions.*

Case Presentation: *A 49 year old woman presented with progressive abdominal distension over, as she claimed, four months, culminating in a 180-cm abdominal circumference that impaired mobility and caused orthopnea. Contrast enhanced CT demonstrated a 54 × 26 × 25 cm cystic mass of ovarian origin, with focal wall thickening up to 5.6 cm, displacing abdominopelvic organs and elevating diaphragm. After multidisciplinary consultation, a midline laparotomy was performed. Controlled puncture and aspiration yielded approximately 53 L of mucinous fluid. A right adnexectomy was performed, and frozen section analysis indicated a borderline mucinous tumor. The operation continued with total hysterectomy, left adnexectomy, and partial omentectomy. Abdominal closure was achieved by abdominal and plastic surgeons: excess fascia and skin were excised, a synthetic mesh was placed, and abdominoplasty was performed. Definitive histopathology and immunohistochemistry confirmed right ovary mucinous cystadenocarcinoma without capsular surface involvement or lymphovascular invasion, staged as FIGO IC1. The patient received six cycles of adjuvant paclitaxel–carboplatin. At one year follow up, the patient exhibited no evidence of recurrence and satisfactory abdominal contour.*

Conclusion: *Management of giant ovarian tumors demands meticulous preoperative planning and a coordinated multidisciplinary team. Surgical challenges include safe tumor decompression, accurate intraoperative diagnosis, and specialized abdominal wall reconstruction including gynecologic, abdominal, and plastic surgical expertise.*

Keywords: *giant ovarian tumors; borderline ovarian tumor, mucinous cystadenocarcinoma*

INTRODUCTION

Ovarian tumors are the most common gynecological neoplasms, with a lifetime prevalence of 2.5–6.6% in women, and they are most often discovered during routine gynecological examinations, primarily due to the introduction of ultrasound imaging which has enabled the diagnosis of these lesions in the asymptomatic phase, i.e. while they are smaller (1,2). Large ovarian tumors, therefore, are detected much less frequently; the main symptoms are associated with pressure of the tumor on adjacent organs, mainly the urinary and respiratory systems, and they may also be suspected based on noting but an increased abdominal girth (3). There is no general consensus in the literature on which ovarian tumors should be called large, enormous, gigantic, or giant. Usually these are tumors whose largest diameter exceeds 10 or 20 cm (2,4,5), and they most commonly belong to the group of epithelial mucinous tumors, which can be benign in 80%, borderline in 10%, and malignant in 10% (1). The incidence of mucinous carcinoma of the ovary is 3–4% of all primary ovarian carcinomas (6). "Borderline ovarian tumors" is a term introduced in 2003 by the World Health Organization for tumors that show histological features of both benign and malignant tumors, i.e. cellular proliferation and nuclear atypia without destructive stromal invasion, implying a lower malignant potential and a better prognosis (1). This designation also allows gynecologists to include patients of reproductive age in an oncofertility program (7).

CASE PRESENTATION

A 49-year-old female patient was admitted to the Department of Gynecology and Obstetrics University Clinical Center of Vojvodina as an emergency case due to a significantly enlarged abdomen, which made movement difficult and caused dyspnea, especially when lying down. Initially, she had not paid attention to the growing abdomen, but symptoms worsened four months before admission, as she claimed. She denied any previous pregnancies, and her menstrual cycles were regular. On admission she was conscious, oriented, with a normal heart rate and normal respiration at rest; however, she was poorly mobile due to the enormous abdomen extending well above the level of the ribs because of a large tense cystic mass that completely filled the abdominal cavity (Figure 1).

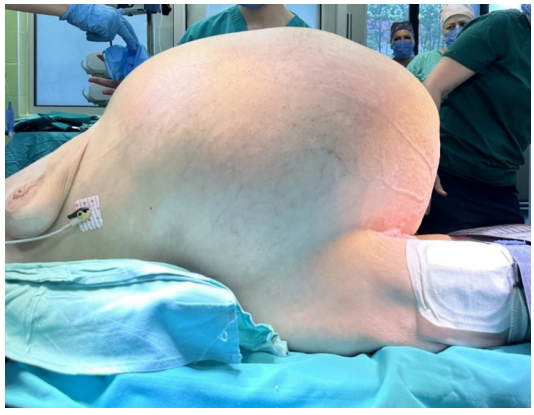

Figure 1. Preoperative appearance of the patient.

The abdominal circumference was 180 cm. Gynecological examination was limited by the size of the tumor. The exact size of the lesion and its borders could not be determined even by ultrasound, visualization of other intra-abdominal organs was difficult, and no free fluid in the peritoneal cavity was observed.

Laboratory tests, a chest and heart X-ray, and CT scans of the chest, abdomen, and pelvis were performed. These revealed an extremely large cystic lesion in the abdomen and pelvis, measuring 54 × 26 × 25 cm, with a soft-tissue thickening of the wall on the right side of up to 5.6 cm in thickness. No other intralesional wall thickenings or septations were clearly identified, features that could correspond to a serous or mucinous cystadenoma. Due to the mass effect, both hemidiaphragms were elevated and there was marked cranial and posterocaudal displacement of the abdominal and pelvic organs; the liver showed signs of disturbed perfusion, primarily due to vascular compression (Figures 2 and 3).

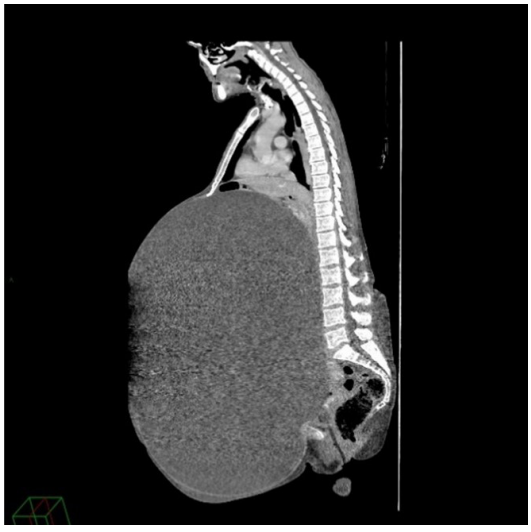

Figure 2. Abdominal CT – sagittal view of the tumor mass.

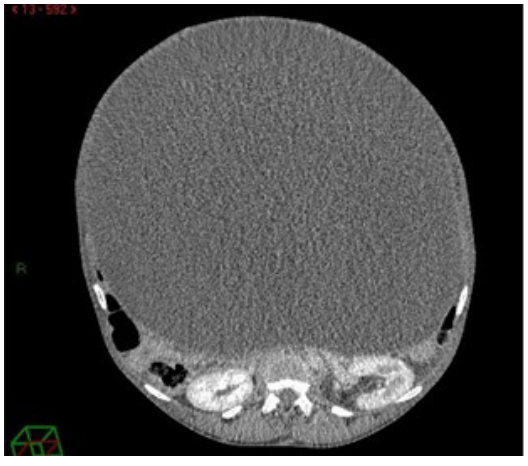

Figure 3. Abdominal CT – axial view of the tumor mass.

In the following days, additional internal medicine evaluations were performed. The management of giant ovarian tumors is complex and requires detailed preoperative planning. The size of the mass limits imaging evaluation, complicates anesthesia, and increases perioperative risk. Such cases demand a multidisciplinary approach involving gynecologists, anesthesiologists, abdominal and plastic surgeons. The anesthesiology team plays an important role in assessing cardiovascular and respiratory function, anticipating hemodynamic instability, and planning gradual decompression (8). Assessment of the risk of vascular complications was performed as part of the standard preoperative surgical and anesthesiological evaluation, including assessment of the patient's general and cardiovascular status, as well as laboratory and instrumental investigations according to institutional protocols. The patient was evaluated by an anesthesiologist, who performed ASA risk assessment and provided approval for the surgical procedure. At the same time, reconstructive expertise from abdominal and plastic surgeons were necessary to restore abdominal wall function and appearance following tumor excision, and the appropriate examinations were performed.

The patient provided written informed consent acknowledging the possibility of major complications, including death. After that, a midline laparotomy (lower, paraumbilical, and upper incisions) was performed. Intraoperatively, a large cystic tumor of ovarian origin was found, filling most of the abdominal cavity. It could not be mobilized or removed intact because of its size and pronounced adhesions between the tumor capsule and the parietal peritoneum. A puncture of the lesion was made and gentle aspiration of the majority of the tumor's mucinous content was carried out and 53L of fluid were aspirated at this stage. We found only couple more cases with bigger tumors (9-11). After reducing the tumor size and freeing the adhesions, it was determined that the tumor originated from the right ovary (Figure 4).

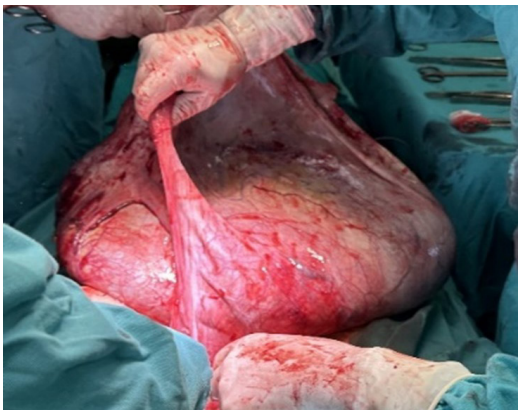

Figure 4. Appearance of the tumor after partial aspiration of its contents.

The tumor and the right fallopian tube were removed and sent for intraoperative pathological examination (frozen section). During this procedure, the tumor capsule ruptured and a small amount of fluid leaked into the peritoneal cavity. A sample was taken for cytological examination, the spilled fluid was aspirated, and the abdominal cavity was irrigated with saline.

The intraoperative pathology report indicated a borderline ovarian tumor. Therefore, the gynecological part of the operation continued with a total hysterectomy, left (contralateral) adnexectomy, and partial omentectomy of the hypoplastic omentum. Due to the extreme excess of abdominal fascia and skin and pronounced thinning of abdominal wall, reconstruction was performed in two steps by abdominal and plastic surgeons who were called for assistance. The abdominal surgeon released the fascial layers (Figure 5), reconstructed the fascial layers with a polypropylene (Prolene) mesh after excising redundant fascia and closed the fascia with a continuous suture after placing subfascial drains (Figures 6 and 7).

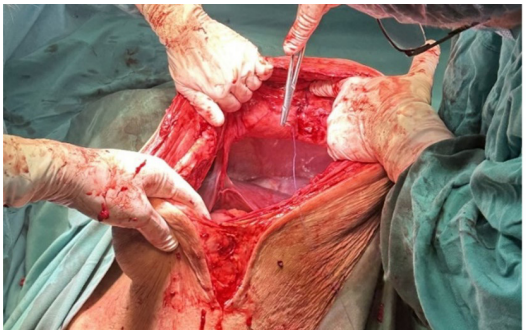

Figure 5. Excision of excess fascia and anterior abdominal wall tissue following tumor removal from the abdominopelvic cavity.

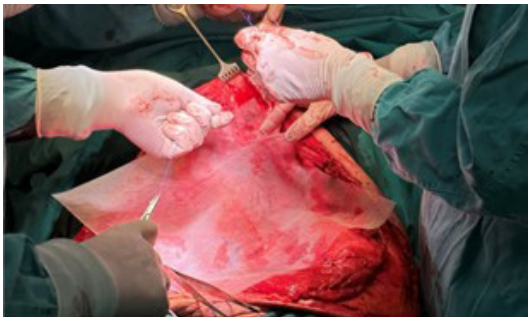

Figure 6. Polypropylene (Prolene) mesh placement.

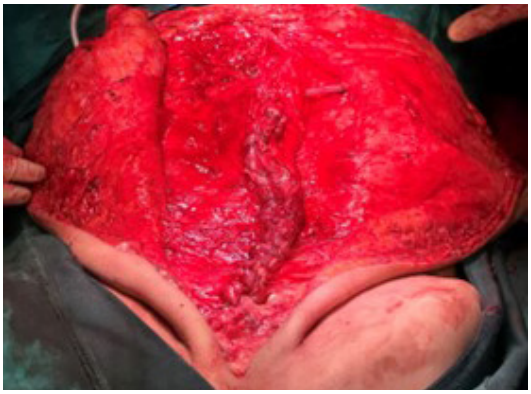

Figure 7. Reconstructed fascial layers with subfascial drains.

Subsequently, the plastic surgeon completed a Fleur-de-lis abdominoplasty, removing excess skin both vertically and horizontally to restore proper contour and tension and placed two subcutaneous drains (Figures 8 and 9).

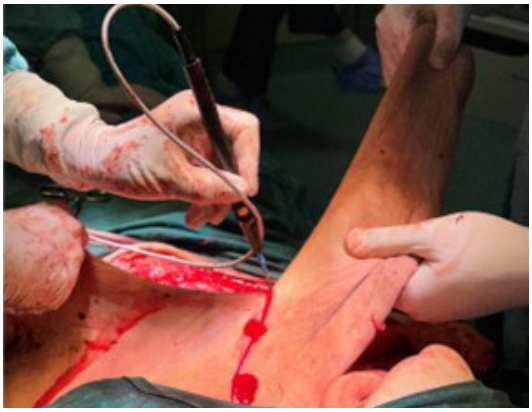

Figure 8. Fleur-de-lis abdominoplasty performed by plastic surgeon.

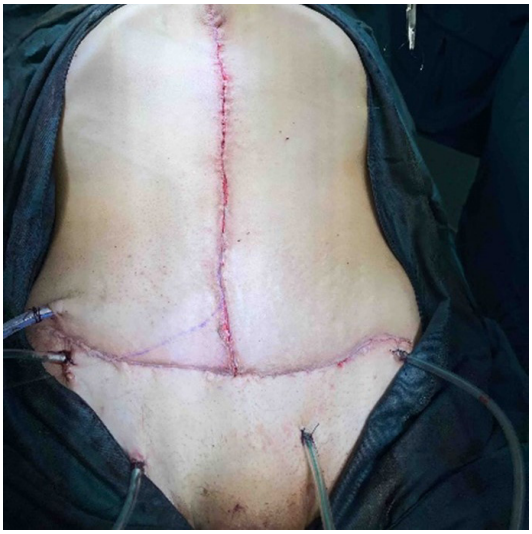

Figure 9. Postoperative appearance of the abdomen.

The postoperative course was without complications. Standard measures for the prevention of thromboembolic events were applied, including early mobilization, use of elastic compression stockings, and pharmacological prophylaxis with low-molecular-weight heparin, in accordance with current recommendations.

Final histopathological and immunohistochemical examination showed it was not a borderline tumor but a mucinous cystadenocarcinoma of the right ovary with a mucinous borderline tumor component at its base and focal parts of endometriosis (Figures 10 and 11).

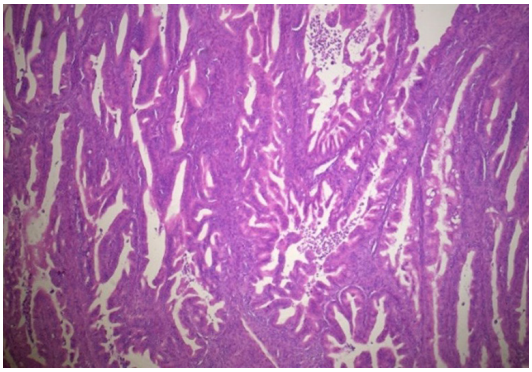

Figure 10. . Image of a focus of mucinous borderline ovarian tumor.

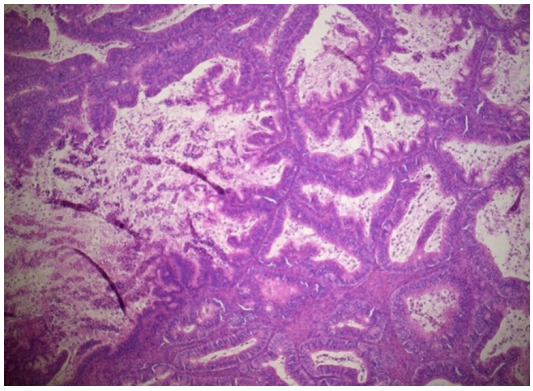

Figure 11. Image of a focus of mucinous ovarian adenocarcinoma.

The tumor was not found on the surface of the ovary, nor was there a tumor in the uterus, the left ovary or fallopian tube, the peritoneal washings, or the omentum. No lymphovascular invasion was present. Because of the intraoperative rupture of the ovarian capsule and a final staging of FIGO IC1, the Oncology Committee of the Cancer Institute, in accordance with current ESGO, ESMO, and NCCN guidelines, recommended and administered adjuvant chemotherapy: six cycles of paclitaxel (Taxol) and carboplatin given every three weeks. Postoperative follow-up one year later showed good recovery of the patient, no recurrence of disease, and a satisfactory cosmetic and functional status of the abdomen (Figure 12).

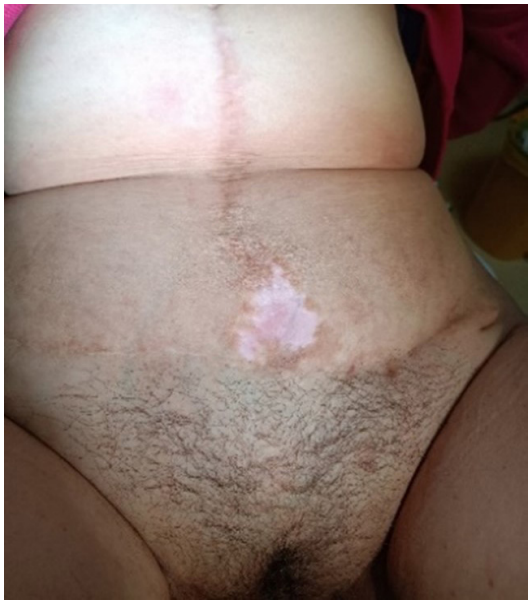

Figure 12. Appearance of the abdomen 1 year after surgery.

CONCLUSION

The treatment of giant ovarian tumors represents a significant challenge due to numerous problems in diagnosis, surgical management, and the postoperative period. Preoperative evaluation of the tumor is difficult, and sometimes impossible, because of unclear physical findings and the limitations of CT and MRI scanners with a greatly enlarged abdominal circumference. The perioperative risk is significantly increased due to more frequent complications, and fatal outcomes which have been reported, primarily due to hemodynamic instability with cardiovascular disturbances.

Their large volume and mass effect cause significant physiological disturbances that must be anticipated preoperatively. Rapid decompression of such tumors can lead to profound changes in venous return, cardiac output, and pulmonary function. For this reason, gradual aspiration and continuous hemodynamic monitoring are essential. Several authors have described sudden cardiovascular collapse as a rare but life-threatening complication of uncontrolled tumor evacuation. In this case, stepwise aspiration and careful anesthetic management ensured stable circulation throughout the procedure. The anesthesiologist plays a pivotal role in preventing hemodynamic instability by providing continuous monitoring and adjusting ventilation parameters during the gradual decompression phase.

Surgical difficulties are caused by the size of the tumor, its relationship with surrounding organs, potential intra-abdominal bleeding, and the need to use non-standard techniques for abdominal wall closure. Intraoperative pathologic diagnosis is important for deciding how radical the surgery should be - especially in younger patients, regarding the possibility of preserving fertility - but it is not sufficiently accurate. For all these reasons, the treatment of giant ovarian tumors requires a multidisciplinary approach in both the planning and execution of surgery. The gynecologist should coordinate a team that includes a radiologist, internist, cardiologist, anesthesiologist, pathologist, surgeons of various specialties, and possibly an oncologist and other specialists.

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