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Challenging the Norms: Tackling a Herculean Ovarian Carcinoma

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Abstract: ***Ovarian cancer is a significant health concern in India, with shifting trends in incidence, diagnosis, treatment, and outcomes over the past decade. This article highlights the evolving landscape of ovarian cancer in India, where the disease is projected to rise by 57.5 by 2040. We present a case of a massive borderline serous cystadenoma in a postmenopausal woman, emphasizing the challenges posed by such cases. The patient's presentation, diagnostic workup, surgical procedure, and pathological diagnosis are detailed. Additionally, a literature review of giant ovarian tumors is provided. This case underscores the need for a multidisciplinary approach and vigilant management to mitigate potential complications associated with large ovarian cysts during surgical removal.***

Keywords: ovarian cancer, India, serous cystadenoma, multidisciplinary approach, borderline tumor

1. Introduction

Over the past decade, India has witnessed significant shifts in the landscape of ovarian cancer. This deadly disease, which primarily affects women, has undergone notable trends in terms of incidence, diagnosis, treatment, and outcomes. Understanding these changes is crucial for healthcare professionals, policymakers, and the general public alike, as it sheds light on the evolving challenges and opportunities in the fight against ovarian cancer in India. According to the Global Cancer Observatory (GLOBOCAN) estimates, there were 19.3 million incident cancer cases worldwide for the year 2020[1]. India ranked third after China and the United States of America[2]. GLOBOCAN predicted that cancer cases in India would increase to 2.08 million, accounting for a rise of 57.5 per cent in 2040 from 2020.

The majority of ovarian malignancies (95 percent) are derived from epithelial cells (subtypes include high - grade serous, low - grade serous, endometrioid, clear cell, and mucinous) and patients with serous cystadenoma often experience symptoms only if the lesion is twisted or has a mass effect because of its size. Borderline tumours tend to remain confined to the ovary for long periods and are associated with a positive prognosis. As they predominantly occur in premenopausal women, we here present to you a case of a gigantic borderline serous cystadenoma in a postmenopausal woman.

2. Presentation of Case

A 67 years old, postmenopausal female with Para 4 Living 4 (3 vaginal deliveries followed by one LSCS) presented to the outpatient department at our tertiary care centre with complains of abdominal distension which was insidious in onset and gradually progressive since 4 years and recent multiple episodes of vomiting since 1 week. On examination: Patient was cachexic, pale and visibly in aguish due to respiratory distress. Her abdomen was tense and overdistended with gross ascites and an extensive firm to cystic mass extending to xiphisternum with horizontal and vertical diameters of approximately 80cm and 62 cm respectively was felt arising from the pelvis. Findings were confirmed with pelvic examination. (Fig.1)

Figure 1: Pre - operative images of the abdomen at presentation

Her menstrual history included menarche at 12 years of age and the patient had attained menopause 18 years ago. She had no surgical history and her family history was unremarkable. She was a known case of Hypertension,

Diabetes Mellitus, Hypothyroidism and Bronchial Asthma since 10 years making her an extremely high risk case.

A CECT Pelvis was performed a year back which was suggestive of: A well defined hypodense lesion measuring 23.5 x 35 x 31.3cm with multiple internal septae was noted arising from the pelvis and occupying the entire abdominal cavity reaching upto the epigastric level. The left ovary was not seen separate from the lesion. There was no evidence of calcifications/ nodularity. The radiological imaging was most likely suggestive of borderline serous cystadenoma. (Fig 2).

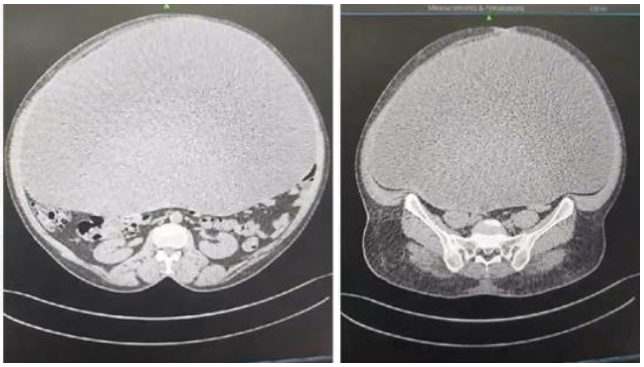


Figure 2: Pre - operative CT images of the ovarian mass.

A repeat CECT and MRI could not be conducted as the patient was uncooperative due to severe respiratory distress on lying supine.

A complete blood count, blood biochemistry and tumor markers were performed:

Hb: 7.9 gm/dl, Tumour markers: Carbohydrate antigen (CA) 125 = 39.5 U/mL, CA 19−9 = 22 U/mL, carcinoembryonic antigen (CEA) = 8.5 U/mL. Rest investigations were within normal limits. Cervical PAP smear showed no evidence of dyskaryotic or malignant cells.

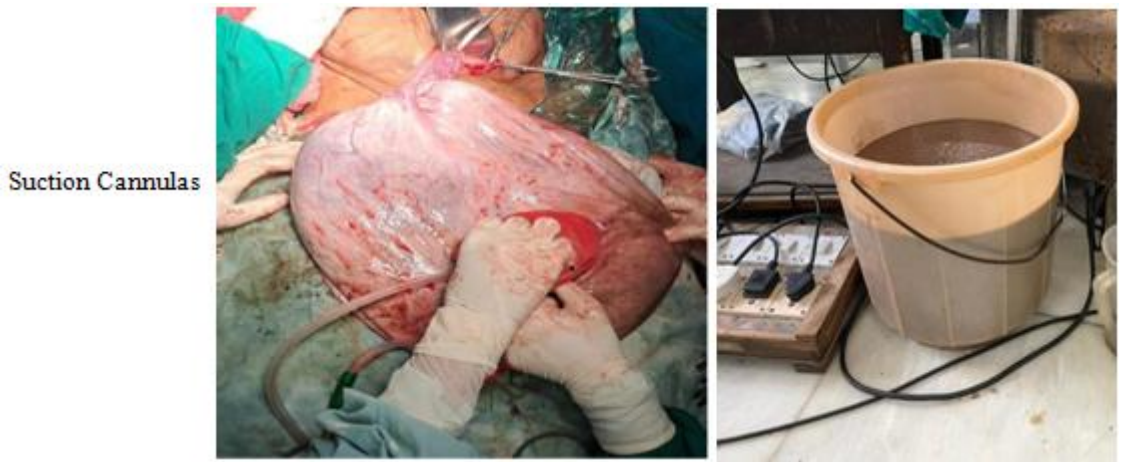
The calculated RMI (risk of malignancy index) was 1 × 3 × 39.5 = 355.5. Total score was USG score × menopausal score × Ca_{125} (U/Ml). USG score was as follows: 0 = no risk factor; 1 = one risk factor, 3 = 2–5 risk factors. High - risk factors in USG were multilocular cysts, solid areas, bilateral lesions, ascites, and evidence of metastasis. Menopausal status was as follows: 1, premenopausal; 3, postmenopausal. Score < 200 indicates low risk (risk of ovarian malignancy is 0.15 times). Score > 200 indicates high risk (risk of ovarian malignancy is 42 times) ([3])

3. Surgical Procedure

Patient was posted for Exploratory laparotomy with left ovariectomy with cystic fluid aspiration with cyst wall denudation with right Salphingoophorectomy with left salpingectomy with total abdominal hysterectomy and partial omentectomy under general anaesthesia after 1 PCV transfusion pre - operatively.

Infraumbilical incision was taken and intraoperative findings were as follows: A cyst of 30x25x25cm was observed arising from the left ovary and extending upto xiphisternum and the thick cyst wall was found adherent to the omentum at multiple sites throughout the abdomen. (Fig.3)

In order to perform a controlled decompression, 2 wide bore veress needles attached to suction were inserted into the ovarian tumor anteriorly.19.4 litres of cystic fluid was drained slowly and meticulously to avoid sudden decompression and decompensation and sent for histological diagnosis. (Fig.3, 4). Mass was delivered after draining and decompressing the cyst.



(A) (B)

Figure 3: (A) Delivery of ovarian cyst after controlled decompression was performed with the help of 2 wide bore veress needles and (B) 19.4 litres of cystic fluid suctioned.

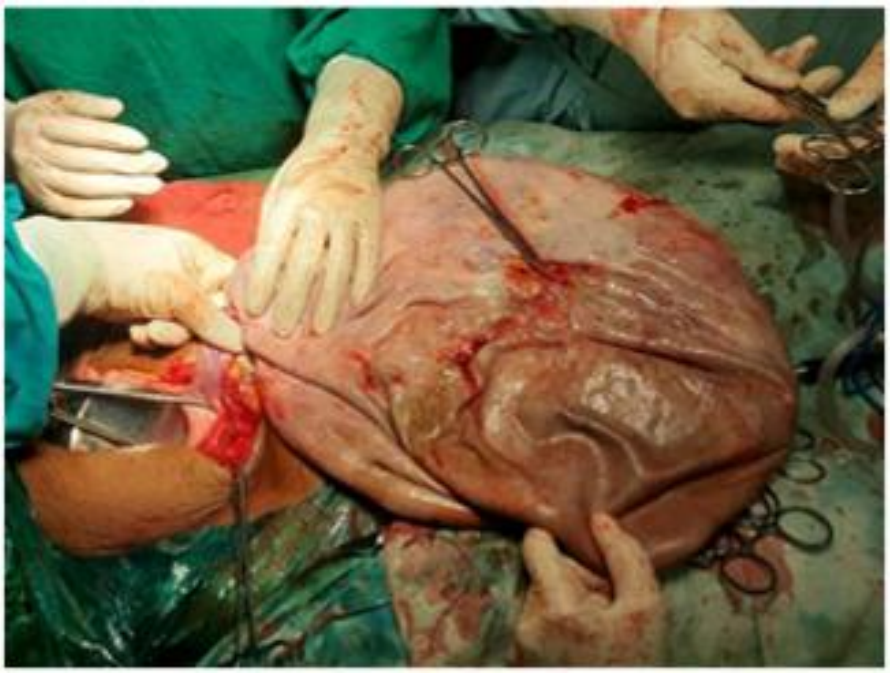


Figure 4: Intraoperative image of the cyst after decompression

Following which, we endeavoured to denude the cyst wall from it's abdominal adhesions and successfully resected the entire tumour with left ovary and proceeded with hysterectomy with B/L salpingectomy and right oophorectomy Samples were taken and sent for frozen section examination. No lymph node was palpable. In view of the intraoperative pathological diagnosis, we added complete omentectomy to our procedure.

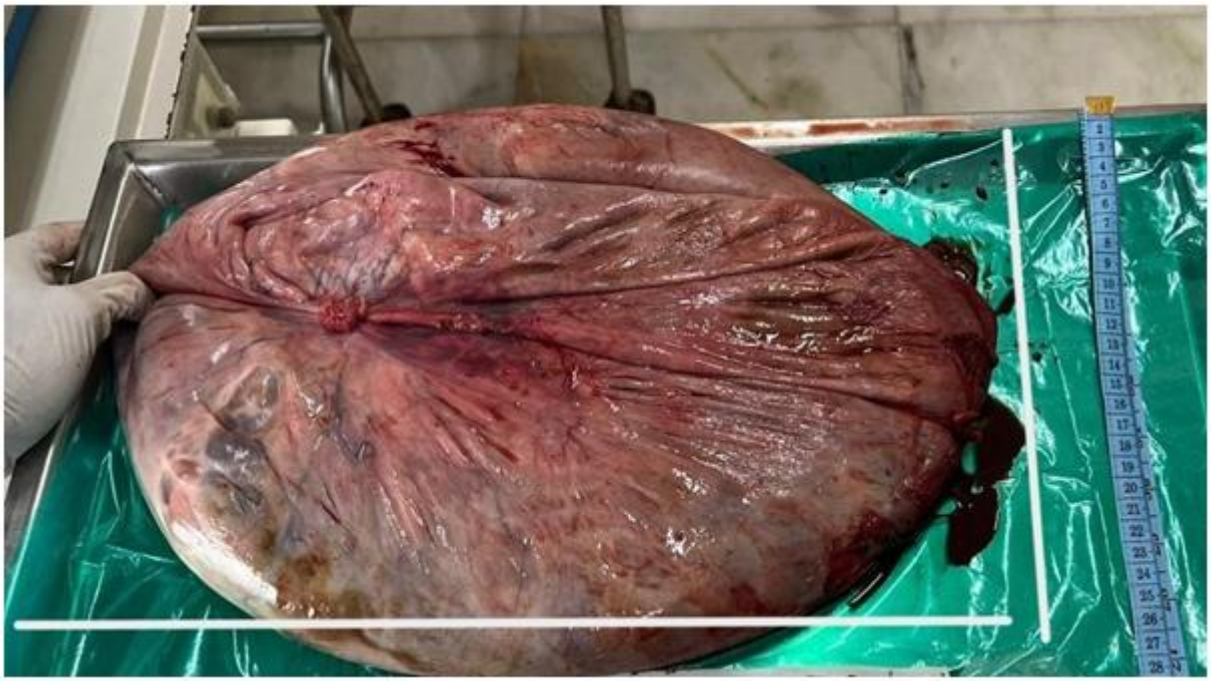


Figure 5: The resected specimen of the cyst measuring 40 cm x 27 cm

Her postoperative period was uneventful. Patient was transfused 2 pint PCV She was discharged on the 12th day postoperative day in good condition after suture removal.

Pathological Diagnosis: Ascitic fluid cytology was negative for malignancy. The intraoperative frozen section impression was of Low grade malignant neoplasm of ovary. Haematoxylin and eosin (HE) staining revealed High grade Serous Carcinoma, pTa - Tumor limited to one ovary (capsule intact)

Diagnosis: 67 years old P4L4 with High Grade Serous Left ovarian Carcinoma

Literature Review of Giant Ovarian tumors:

No.	Author	Age (yrs)	Symptom	Site	Size of the cyst	Tumor marker CA 125 (U/ml)	Type of the cyst	Surgery
1.	Banwari et al (2020) ([4])	16	Nausea and decreased appetite	U/L	25x15 cm	WNL	Mucinouscystadenoma	Cystectomy
2.	Fatema et al (2018) [5]	57	Asymptomatic	U/L	43x 15 cm	12	Benign serous cystadenoma	TAH + BSO
3.	Mounir et al (2022) ([6])	63	Cough and low back pain	U/L	30×36 cm	-	serous cystadenoma	Unilateral Adnexectomy
4.	Pramana et al (2021) [7]	40	Abdominal distension	U/L	19.48x 16cm		Mucinouscystadenoma	Unilateral Adnexectomy
5.	Tanaka et al (2021) (8)	54	Abdominal distension	U/L	48x40 cm	384.4	Ovarian Fibroma	Unilateral Adnexectomy

U/L = Unilateral, B/L = Bilateral, TAH + BSO = Total abdominal hysterectomy & bilateral salphingooophorectomy, WNL = Within Normal Limits.

4. Discussion

Ovarian cancer is the second most common gynaecologic malignancy in resource - rich countries and the third most common gynaecologic malignancy in resource limited countries [9]. The majority of ovarian malignancies (95 percent) are epithelial; the remainder arises from other ovarian cell types (germ cell tumours, sex cord - stromaltumours).

While it was previously presumed that epithelial ovarian cancers were derived from coelomic epithelium on the surface of the ovary or from ovarian inclusion cysts, it is now apparent that most serous carcinomas originate from the fallopian tube, while other subtypes (clear cell, endometrioid) are derived from endometriosis. ([10])

The most common epithelial ovarian cancer histologic subtype is serous. Approximately 90 percent of serous carcinomas are high - grade and 10 % of all ovarian serous tumours are categorised as tumour of low malignant potential or borderline tumours.

Serous epithelial ovarian cancers can be separated into two distinct subtypes – Type I (Low Grade) and Type II (High Grade) serous tumours as they differ considerably in the cell of origin, molecular pathogenesis, and their biologic behaviour. [(11)]

Low - grade serous carcinoma of the ovary or peritoneum appears to exist on a continuum with serous borderline tumours, they are genetically stable, do not have p53 mutations but may have mutations in *KRAS* and *BRAF*. They are likely precursor lesions and have a distinct pathology, clinical behaviour, and prognosis compared with high - grade serous carcinoma. Thus, a diagnosis of low - grade serous carcinoma may be made de novo or following an original diagnosis of serous borderline tumour. Furthermore, molecular studies have also supported that low - grade tumours are distinct from high - grade tumours and have a unique developmental pathway.

The histopathological criteria for diagnosis of serous borderline tumours/ tumour of low malignant potential is as follows: [(12)]

1) Epithelial hyperplasia in the form of pseudostratification, tufting, cribriform and micropapillary architecture.
2) Mild nuclear atypia and mild increased mitotic activity.
3) Detached cell clusters.4. Absence of destructive stromal invasion (i. e. without tissue destruction).

The value of tumour markers and ultrasonography to screen for epithelial ovarian cancers is not established by prospective studies. ([13])
The use of TVS with Doppler alone or in combination with CA 125 for early ovarian cancer detection has not proven effective in average - risk women to decrease mortality from ovarian cancer.

As ovarian cancer is staged surgically, thorough surgical staging and search for microscopic metastasis is performed when there is no visible or palpable disease in the intra - abdominal space outside the ovaries and fallopian tubes. Thereafter, subsequent treatment is determined as per the stage of the disease.

For large benign ovarian cysts which are usually of two varieties—serous or mucinous [(14),] during surgical removal of such large ovarian tumours due to the sudden decompression of a large mass, various intraoperative complications were reported in previous studies such as splanchnic dilatation, venous pooling leading to hypotension and pulmonary edema as a result of sudden re - expansion of a chronically collapsed lung. [15].

Hence, it necessitates a multidisciplinary approach for the management of these high risk cases along with intraoperative and postoperative strict vigilance to avoid unwanted ramifications.

Conflicts of interest: There are no conflicts of interest

Abbreviations:
CECT: Contrast Enhanced Computed Tomography

LSCS: Lower Segment Caesarean Section TVS: Transvaginal ultrasound

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