

## Management of giant ovarian teratoma

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### Abstract

The management of ovarian teratoma in normal condition is well established but in rare giant tumour (diameter over 15 cm) management approaches such as laparoscopy or laparotomy are controversial and may be therapeutically challenging for surgeons. Laparotomic resection is the preferred method for the en-bloc mass removal, adequate abdominal cavity irrigation, and avoidance of accidental mass rupture during management of giant ovarian teratoma. Here we discuss a case of a 43 year old multiparous lady suffering from a huge ovarian tumour of size 40 cm, admitted in Nepal Medical College Teaching Hospital on 15th May 2013. This patient underwent laparotomy on 21st May 2013 and left sided huge multiloculated ovarian cystic teratoma was removed en-bloc with no complications.

**Key words:** Giant, Laparotomy, Laparoscopy, Teratoma

### INTRODUCTION

Teratomas are germ cell tumours composed of multiple cell types derived from one or more of the three germ layers<sup>1</sup>. Teratomas generally arise from the gonads but have also been found in anterior mediastinum, retroperitoneum and gastrointestinal tract<sup>2-5</sup>. They typically occur at reproductive age in second to third decade of life, however it can occur in any age from one to 90 years<sup>6, 7</sup>. Ovarian cysts are traditionally labelled as large when they are over five cm in diameter and giant or voluminous when they are over 15 cm, more suitable designation for giant cysts may however relate the size of the cyst to the size of the peritoneal cavity in these patients<sup>8</sup>. With the tolerance of the abdominal cavity there may not be clear symptoms at the early stage of ovarian teratomas. Mature cystic teratomas grow slowly at an average rate of 1.8 mm/each year prompting conservative management of smaller (less than six cm) tumours<sup>8</sup>. The tumour tends to enlarge until specific organs are functionally influenced or incidentally discovery by ultrasound which prompt the patients to seek physician's advice<sup>8</sup>. Several studies have reported laparoscopic approaches generally

accepted in normal cases for their minimal invasiveness, few complications and quicker recovery as well as cosmetic advantage in young women<sup>2-4</sup>. However laparotomy is the preferred method to remove the giant tumour en-bloc, to avoid intraperitoneal spillage and to ensure oncological safety<sup>6</sup>. We want to publish this case because such a giant mature dermoid cyst which was managed successfully, has not been published in Nepal so far.

### CASE REPORT

A 43 year old multiparous lady presented with complains of irregular menstruation with an abdominal mass of increasing size of eight year duration. She had mild abdominal pain, on and off; and denied severe abdominal pain, vomiting, constipation or melena. Her appetite was normal. The patient belongs to low schedule caste and of low socioeconomic class and was brought to our hospital by her neighbours.

Physical examination at the time of admission revealed a malnourished cachectic looking lady. Abdominal examination demonstrated a bulged belly with a huge convex deformation approximately 40 by 40 cm, filling the whole abdomen and pelvis, extending laterally and filling both flanks. The mass was firm with cystic areas at places, smooth surfaced, non-tender and with restricted mobility. No other abnormalities were noted during physical examination. Sonographic examination revealed huge abdomino-pelvic cystic mass extending

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to bilateral paracolic gutters transversely. Low level internal echoes/debris with a few thin septations and small calcifications were seen. No definite solid components seen. Neither of the ovaries was visualised.

Serum markers and abdominal contrast computed tomography (CT) or magnetic resonance imaging (MRI) could not be done due to financial problem. The patient was primarily diagnosed with cystic ovarian tumour and underwent a median vertical exploratory laparotomy on May 21, 2013. The mass originated from the left ovary, was of approximately 40 cm size filling the pelvic cavity and extending up to the xiphisternum and under the diaphragm on both sides and laterally into paracolic gutters crossing superior to uterus and right ovary. Surface of the cyst was smooth and mobile in all directions without any adhesions. Palpation under the diaphragm revealed a semisolid outgrowth 6 × 6 cm on the upper surface of the cystic mass under the liver on right side and spleen in the left side. Similarly a solid lump of size 4 × 4 cm was felt on the lower border of the cystic mass deep into the pouch of Douglas. The fallopian tube was elongated by traction of the tumour. The uterus was enlarged to eight weeks size and was freely mobile. The right ovary was enlarged to size of 8 × 6 cm with semisolid feel with smooth shiny surface and was freely mobile. The giant tumour mass

was brought out of the abdominal incision with great difficulty due to its size. First the giant ovarian mass was removed en-block (left salpingo-oophorectomy). We closely inspected the pelvic and abdominal organs and found that no organ was infiltrated. In view of the patient's condition and lack of frozen section facility at our hospital, total abdominal hysterectomy, right salpingo-oophorectomy and omentectomy was carried out. The tumour mass weighed eight kg (Figure 1). Upon sectioning, approximately eight litres of a thick yellowish fluid was drained (Figure 2). The outgrowths on the top of the ovarian mass turned out to be multiloculated cyst and contained hair with sebaceous materials. Sectioning the outgrowth in lower pole of ovarian mass revealed hard cartilage like structure (Figure 3). The cut section of right ovary revealed hair and sebaceous material. All the specimens were sent for histopathological examination.

The patient recovered without any complications and was discharged nine days after surgery, and followed-up in the Gynaecological outpatient department (OPD) in six weeks. Histopathology report confirmed the left ovarian cyst was a mature cystic teratoma with strumacarcinoid tumour. Sections from the solid cartilage tissue revealed intimate mixture of carcinoid and thyroid tissue. The right ovary revealed mature cystic teratoma. Rest of the specimens were unremarkable.



**Figure 1:** Giant ovarian teratoma showing growth like projection from the upper surface of tumour mass.



**Figure 2:** Left giant ovarian teratoma with uterus and right ovary.



**Figure 3:** Cut section of the solid part showing cartilage like tissue.

## DISCUSSION

Cystic ovarian teratomas specifically mature ones (dermoid cyst) constitute 10 to 20% of all ovarian tumours and are the most common benign ovarian germ cell tumours<sup>5</sup>. Giant ovarian teratomas commonly present with acute abdominal pain caused by adnexal torsion, and unilateral tumour undergoing capsular distension, haemorrhage or necrosis<sup>9,10</sup>. They may present with abdominal distension due to rapid growth of the tumour. The patient may also have certain nonspecific abdominal complaints indicating mass effect including menoxenia, dyspnea and symptoms of other organs becoming influenced by tumour. In a study the rate of symptomatic teratomas (69.1%) was higher than reported previously (29.4%)<sup>6</sup>. Therefore the aim of treatment should be to reduce the severity of the teratoma related symptoms specially to reduce the mass effect due to raised abdominal pressure and to prevent the potential malignancy.

Following the primary assessment of the clinical presentation, CA 125, CA 19-9 or other tumour markers as clinically indicated and imaging evaluation are recommended<sup>11</sup>. At ultrasound mature cystic teratomas are characterised by echogenicity with acoustic shadow and calcification. However, dermoid cysts or mature cystic teratoma present various and complex ultrasonographic aspects. That is why the ultrasonographic diagnosis may be difficult and lead to confusion. In certain instances it is difficult to differentiate other germ cell tumours of ovarian origin including dysgerminoma and yolk sac tumours from teratoma. Compared with these germ cell tumours, teratomas tend to exhibit a more heterogeneous appearance with a mixture of fluid, fat and calcification. Benacerret et al reported a 15% failure rate in differentiation of benign and malignant cysts during transvaginal ultrasonographic diagnosis of complicated cysts<sup>12</sup>. However, a thorough analysis of all ultrasound features that characterise dermoid cysts can lead in majority of cases to an exact diagnosis<sup>13</sup>. At CT scan fat attenuation within a cyst is diagnostic. CT and MRI are straight forward as these modalities are more sensitive for fat and calcification within the cyst which is diagnostic for mature cystic teratomas<sup>14</sup>. Studies found CT evidence of fat in 93% cases, teeth and other calcification in 56% and tufts of hair in 65%, a Rokitsansky protuberance or "dermoid nipple" in 81%<sup>14, 15</sup>. A fat fluid level was found in 12% of ovarian dermoid and is considered diagnostic<sup>15</sup>. Immature teratomas consisting of elements with only partial somatic differentiation usually have a large, irregular solid component containing coarse calcification and

small foci of fat apparent on CT and MRI scans<sup>15</sup>. The pathological appearance of mature cystic teratoma is characteristic. Squamous epithelium lines the wall of the cyst and mesodermal (fat, bones, cartilage, muscle) and endodermal tissues (e.g. gastrointestinal and bronchial epithelium, thyroid tissue) are present in the cyst cavity in the majority of the cases<sup>16</sup>. The tumours are unilateral in 85% cases and filled with sebaceous material. Immature teratomas differ from mature tumours in that they demonstrate malignant biological behaviour, are much less common (one percent of ovarian tumours) and affect first two decades of life. Malignant transformation of the mature element within the dermoid cyst is a rare complication, occurring in only one to two percent of cases with squamous cell carcinoma being the most common type (80 to 90%) followed by adenocarcinoma<sup>17</sup>. Sarcoma, carcinoids, and adenocarcinoma have also been reported<sup>18</sup>. The risk of immature teratoma is strictly correlated with the histological grading based on the amount of embryo tissue present according to WHO classification<sup>19</sup>. Surgical management of teratomas are individualised by the possibility of chemical peritonitis and malignancy<sup>3, 4</sup>. In case of giant mature ovarian teratoma, as suggested by the preoperative examination and operative inspection, the excision of the tumour is advisable. Decision as to whether the whole ovary or only the cyst is to be removed is made according to the desire to retain fertility. Commerci et al<sup>2</sup> suggested that taking a close inspection of pelvic and abdominal organs with cytological sampling on entering the abdomen aimed at ruling out possible malignancy. Hysterectomy and bilateral salpingo-oophorectomy should be performed with every effort to keep an encapsulated mass intact during removal. Adnexectomy was also performed in patients with adnexal torsion during emergency surgery which mostly occurred in young females lacking routine gynaecological examination<sup>20</sup>.

Recently laparoscopic surgery is the preferred surgical approach for teratoma of normal size. Extraction of an intact cyst within a bag (closed technique) is the recommended technique for the removal of dermoid cyst<sup>20</sup>. Rupture of cyst with spillage of its fluid content may be deleterious with teratomas. Chemical peritonitis and granuloma formation with intestinal obstruction have been reported after laparoscopic removal of benign cystic teratoma due to spillage<sup>4,21</sup>. Teng et al<sup>22</sup> reported spillage rate of 44 to 100% during laparoscopic management and 0 to 13% during laparotomy. Irrigation of abdominal cavity document a lower incidence (0.3%) for the laparoscopic technique applied to the management of giant teratomas<sup>23</sup>. Pre-

laparoscopic decompression is necessary to allow room to establish pneumoperitoneum and manipulate the tumour, which is not possible in solid teratomas. Salem et al<sup>24</sup> reported 15 cases of large ovarian cysts removed following puncture of their walls. Dolan et al<sup>25</sup> presented a patient with giant ovarian cyst over 40 cm diameter who underwent minilaparotomy, drainage of the fluid followed by complete laparoscopic extirpation. A detail review of previous studies has revealed that the laparoscopic procedure has rarely been performed on masses greater than 10 cm diameter<sup>2</sup>. Howard in 1995 suggested that it should not be performed on tumour with a diameter greater than 15 cm<sup>26</sup>. Also the variability of manifestations means that giant ovarian teratoma is easily misdiagnosed as giant abdominal leiomyosarcoma or liposarcoma. Therefore median laparotomic exploratory incision and intra-operative frozen section

examination of integrated tumour delivery has been a routine practice<sup>6</sup>. Suspicion of malignancy based on pre-operative imaging and inspection should preclude the laparoscopic approach.

## CONCLUSION

The cornerstone of management of giant ovarian teratoma is proper evaluation of possible malignancy, accidental rupture, rapid growth, doubtful infiltration, size, origin and adjacent structures involvement. This is based on detailed preoperative work up including imaging and serum tumour markers. It seems that the prevalence rates of symptomatic tumours, ovarian torsion and accidental rupture are higher than those previously reported in giant teratomas. Laparotomic resection may be considered an alternative to laparoscopy in the management of Giant ovarian teratoma.

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