Laparoscopic Management of a Large Extragonadal Teratoma

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Abstract

Extragonadal teratoma of the omentum is a rare clinical entity. We report a case of a large omental teratoma in a postmenopausal woman who presented with 3 days history of right groin pain. She was previously diagnosed with right ovarian teratoma in 2013 but declined surgical intervention. Laparoscopy performed for suspected ovarian cyst torsion discovered a large omental teratoma measuring approximately 11 cm × 9 cm with the concurrent absence of the right fallopian tube and ovary. The mass was removed successfully via laparoscopic approach. The likely mechanism in this case is autoamputation of the adnexae due to chronic ovarian torsion. Establishing correct diagnosis preoperatively is difficult, however an extragonadal teratoma should be one of the differential diagnoses when a round, mobile mass is found in the abdomen. Laparoscopic management is feasible even in the presence of a large extragonadal teratoma.

Keywords: Adnexal mass, benign ovarian cyst, dermoid, extragonadal teratoma, omental teratoma

INTRODUCTION

Mature cystic teratomas (MCT) or dermoid cysts are the commonest type of ovarian germ cell tumors. Most MCTs are confined to the ovary, and teratomas of extragonadal origin are extremely rare.1 The pathogenesis of extragonadal teratoma remains unclear but there have been several theories proposed toward its development. Most of the reported cases of extragonadal teratoma were diagnosed intraoperatively. There has been only a handful of cases that has been managed laparoscopically. We report a case of a large extragonadal teratoma found during a laparoscopic procedure performed for a suspected ovarian cyst torsion. To our knowledge, this is the largest extragonadal omental teratoma successfully managed via laparoscopic approach.

CASE PRESENTATION

A 52-year-old postmenopausal woman, Para 3, presented with a 3-day history of mild to moderate intermittent right groin pain which worsened during urination and during bowel movement. She had no symptoms of dysuria, urinary frequency, or altered bowel habit. Past medical history revealed a previous diagnosis of the right ovarian teratoma in 2013. An ultrasound scan (USS) of her abdomen and pelvis done at the time revealed a normal-sized uterus, a cystic right ovarian mass measuring 12 cm × 9.7 cm with the partially echogenic area within the cyst. There were no ascites detected. The CA125 levels were not elevated. She declined surgical intervention and subsequently defaulted follow-up. She remained asymptomatic for 6 years. She also had Diabetes Mellitus type 2 with stage 4 chronic kidney disease, hypertension, and dyslipidemia. In addition, an infected diabetic foot ulcer had resulted in a right below-knee amputation sometime in the past. Her list of medications included amlodipine, linagliptin, metoprolol, prazosin, and rosvuvastatin.

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Examination revealed a soft abdomen with tenderness at the right groin area. There was a mobile, nontender, rounded mass measuring approximately 11 cm × 9 cm which was palpable at the right peri-umbilical region. Transabdominal USS revealed a large cystic mass measuring 11.8 cm × 8.4 cm, thought to be the previously detected right ovarian teratoma. The uterus was small and atrophic; the left ovary was not visualized.

A provisional diagnosis of a torsion right ovarian cyst was made. The patient subsequently underwent emergency laparoscopic surgery. During the operation, a cystic mass measuring approximately 11 cm × 9 cm was found attached to the omentum and mesentery close to the ileocecal junction [Figure 1]. There was no ligamentous connection to the pelvic organ. The uterus was small and anteverted, the left fallopian tube and left ovary were normal. The right fallopian tube and right ovary were absent [Figure 2]. There were no peritoneal adhesions. The mass was excised and removed intact using an EndoBag (Covidien, Mansfield, MA, USA) via a 10 mm trocar port. The postoperative period was unremarkable, and she was discharged home the next day.

Gross examination of the cyst showed infarcted cyst wall with the presence of hair and keratinous debris within its lumen, along with islands of cartilage and bone. Histopathological examination showed total infarction with “ghostly” remnant of scaffolding protein pattern consistent with structures within a cystic teratoma. Definitive assessment for immature elements and ovarian stroma tissue was not possible due to the extensive necrosis.

**DISCUSSION**

The incidence of MCT ranged from 5% to 25% of all ovarian tumors.[2] Extragonadal teratomas are tumors located at sites other than the ovary or testis, without the presence of tumor within the respective gonads.[3] They are an uncommon entity with a reported incidence of 0.4% of all ovarian teratomas. The sacrococcygeal area is the most common site with the prevalence of 1 in 27,000 live births.[3] Other rare locations of the tumor include intraperitoneal sites such as the omentum,[2] pouch of Douglas[4] and within an indirect inguinal hernia.[5] Extragonadal teratoma within the peritoneum has also been dubbed as a “wandering teratoma” as it does not always maintain the exact same position and have been known to “wander” within the pelvis.[6] Other terminologies which have been used to describe this tumor include “parasitic teratomas,”[3] because they leech blood from native tissue at their ectopic sites of implantation. This occurs as the tumor, gradually being deprived of their own blood supply, begin to become attached to the adjacent site and forms collateral connection with existing blood vessels.[3]

There are three proposed hypotheses as to its origin:[7] the first is a primary MCT, developing as a result of reproductive germ cell migration from the yolk sac during the fetal stage along the hindgut (route of mesentery) to the genital ridge (primitive gonad). The second possibility is an extragonadal teratoma arising from supernumerary ovaries. The third is a result of an autoamputation of an ovarian teratoma and reimplantation onto the greater omentum.

Autoamputation of teratoma was first described in 1881. For most of the suspected autoamputation cases, concurrent absence of the respective adnexal structure was found. The latter structures were believed to be implanted at the new site, along with the displaced teratoma.[8] For our case, the third hypothesis is the most likely explanation for the development of the omental teratoma supported by the concurrent absence of the right ovary and right fallopian tube found at laparoscopy.

It is estimated that 16.1% of ovarian teratoma undergo torsion.[2] Torsion tends to occur more frequently...
(approximately 60% of cases) in lesions of the right ovary due to hypermobility of the cecum and ileum. The proximity of the left ovary to the sigmoid colon presumably acts as a barrier to prevent torsion.[7] When torsion occurs, the blood supply to the ovary is acutely impaired, leading to ischemia and subsequent necrosis. However, if the torsion is incomplete, subacute or chronic ischemia occurs; in this situation collateral blood vessels develop. The cyst may then detach from its estranged original anatomical hold and attach to the new area of vascular supply. The abundant vasculature of the omentum provided a rich alternative blood supply for the mass. Indeed, the omentum typically plays a unique role in the intra-abdominal inflammation defense process, making it a likely structure to “rescue” the strangulated teratoma in need of such assistance.

Gross and histological examination of this patient’s specimen showed total infarction, indicating that the blood supply was acutely severed. She was previously diagnosed with large right ovarian teratoma in 2013 but refused to have surgery despite the strong recommendation by the gynecologist. From the establishment of the diagnosis in 2013 until the current presentation, we postulated that the teratoma underwent chronic torsion, with gradual atrophy from the original position at the right adnexal area and reimplanted onto the omentum. It is possible that due to the numerous complications of diabetes mellitus over the subsequent years, the blood supply to the omentum may have been acutely compromised, leading to total necrosis of the MCT which may have explained a sudden development of pain.

The diagnosis of omental teratoma is rarely established preoperatively as they are usually asymptomatic. Most of the diagnosis of omental teratomas were made during exploratory laparotomy or laparoscopically. The recommended treatment for mature teratoma is surgical excision, preferably laparoscopically.[9] Laparoscopic removal is feasible despite the large size of teratoma as demonstrated in our case as long as the specimen is placed in a plastic retrieval bag such as EndoBag (Covidien, Mansfield, MA, USA) to avoid spillage of cyst content which can lead to chemical peritonitis.

Malignant transformation of MCT is very rare, only occurring in 0.17%–2%.[10] In our case, due to the previously established diagnosis of right ovarian teratoma, the possibility of malignancy was deemed to be low. In hindsight, as she was a postmenopausal woman with a large ovarian tumor (>10 cm), the possibility of malignancy should be considered and ideally a contrast-enhanced computed tomography should be done before surgery.

In conclusion, extragonadal omental teratoma is a very rare clinical entity that can arise from chronic ovarian torsion leading to subsequent autoamputation. Often patient may be relatively asymptomatic as demonstrated in our case and preoperative diagnosis is often impossible. Clinician must have a high index of suspicion of its possibility in women who presents with a very mobile, round mass with changing location within the abdomen. Laparoscopic surgery is the recommended treatment and is very feasible even for a large teratoma as demonstrated in our case.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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