Laparoscopic Management of a Parasitic Mature Cystic Teratoma

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Abstract

Parasitic dermoid cysts may form from autoamputation of the ovarian mass secondary to torsion or rupture. It may then reimplant in surrounding structures and undergo subsequent neovascularization and further growth. The true incidence of these cases is unknown, however, a study reported a 0.04% incidence among 1,007 cases of dermoid cysts. This report describes the case of a 30-year-old multigravida who presented with an ultrasound finding of an ovarian dermoid cyst, which, upon laparoscopic surgery, turned out to be a parasitic dermoid cyst adherent to the bladder, with grossly normal bilateral ovaries. Theories on the development of parasitic dermoid cyst are also presented.

Key words: dermoid cyst, laparoscopy, neovascularization

Introduction

Mature cystic teratomas (MCTs) or more commonly referred to as "dermoid cysts", are one of the most common ovarian tumors, comprising 20-25% of all ovarian tumors. They are cystic growths of the ovary that contain derivatives from all three germ cell layers.[1] Dermoid cysts that originate from germ cells are usually found in paraxial and midline locations. Extragonadal dermoid cysts are most commonly found in the omentum and the Pouch of Douglas.[2]

Parasitic dermoid cysts may arise from autoamputation of the ovarian mass secondary to torsion or rupture. It may then reimplant in neighboring structures and undergo neovascularization and growth.[2] The true incidence remains unknown. However, a study done by Peterson, et al reported a 0.04% incidence among 1,007 cases of dermoid cysts.[3]

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The Case

A 30-year-old gravida 2 para 2 patient consulted at our outpatient department for an incidental finding of a dermoid cyst that was previously discovered during a routine antenatal ultrasound four years prior to this current consultation. She previously delivered vaginally and was advised surgery post-puerperium, but was lost to follow up. Three months prior to her admission, the patient noted a gradually enlarging abdomen with associated intermittent abdominal pain prompting consult and subsequent admission. Physical examination revealed an 8.0 cm x 6.0 cm cystic movable suprapubic mass with no associated tenderness. Transvaginal ultrasound

revealed a right adnexal mass described as a bilocular anechoic cyst measuring 8.1cm x 9.2cm x 6.6cm, with echogenic lines and 2 echogenic balls each measuring approximately 2.0cm x 2.0cm. The pre-operative work-up which included biochemical tests, complete blood count, coagulation profile, and urinalysis, were all normal. CA-125 level was normal at 24.5 U/mL.

Patient underwent operative laparoscopy. Intraoperatively, the mass was adherent to the surrounding omentum on its superior pole, to the right pelvic sidewall, and to the uterovesical fold and bladder dome on its posterior pole (Figures 1 and 2). The right fallopian tube was noted to be twisted several times on its ampullary portion with a hydrosalpinx distal to the stricture (Figure 3). Both the left and right ovaries were noted to have no anatomic connections to the cyst, and were both grossly normal (Figure 4). Adhesiolysis of the cystic mass from the surrounding omentum was done and the cyst contents were drained. Excision of the cyst was done leaving a 0.5-centimeter rim of capsule that was densely adherent to the bladder dome. Right salpingectomy was performed on the pathologic tube. The patient tolerated the procedure well with no intra-operative complications.

Figure 1. Cyst adherent to surrounding omentum and anterior abdominal wall.

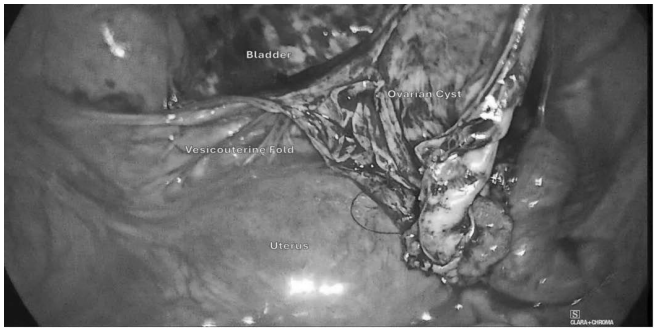

Figure 2. Cyst attached to the vesicouterine fold and bladder dome serosa.

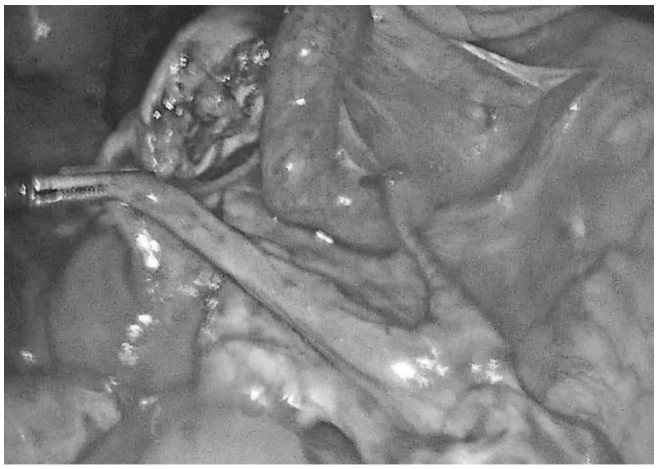

Figure 3. Right fallopian tube demonstrating torsion and distal hydrosalpinx.

Figure 4. Bilateral ovaries, grossly normal.

Patient was discharged on the second post-operative day. She was seen on follow-up one week and one month post-operatively at the outpatient department with no subjective complaints. Histopathology of the specimen showed a mature cystic teratoma with ovarian stroma (Figure 5).

Discussion

Mature cystic teratomas (MCTs) are found mostly in the ovary accounting for approximately 20% of all ovarian tumors. Although these most commonly occur in the ovaries, extragonadal teratomas have been documented. These are thought

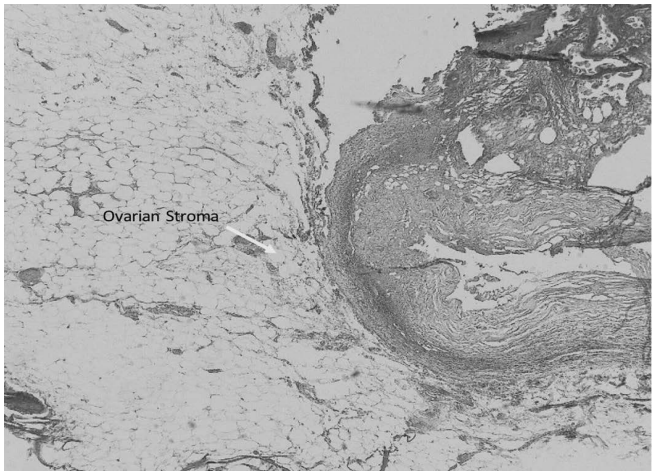

Figure 5. Histopathologic section of the specimen demonstrating mesenchymal derivatives such as fibroadipose and fibrocollagenous tissues, with scattered blood vessels with a rim of ovarian stroma.

to arise from the migration of germ cells during embryonic life. Complications that arise are usually related to the size of the mass with torsion of the pedicle being the most common complication. These occur in approximately 16.1% of cases.[4]

MCTs are thought to arise from germ cells that originate in mature gonads. Migration of germ cells from the yolk sac toward the genital ridge takes place during fetal development and these totipotential cells have the capacity to give rise to the three embryonic layers. There are three main theories on the explanation of extragonadal teratomas: 1) Autoamputation of an ovarian teratoma and reimplantation into an extragonadal site, 2) Development in a supernumerary ovary, and 3) Origination from displaced germ cells.[5]

In this case, the most likely theory that explains the presentation would be secondary to autoamputation of the teratoma with reimplantation. This mechanism was first described by J.K. Thornton in 1881.[6] Torsion of the pedicle would result in venous congestion and aseptic inflammation of the cyst wall. In an acute event, the tumor would undergo necrosis from the abrupt cessation of the blood supply. In chronic cases, attachment and neovascularization to adjacent structures may take place. Complete detachment of the tumor from its pedicle may occur resulting in the parasitic teratoma.[7] In the present case, the patient was already previously diagnosed with the dermoid cyst with episodes of intermittent abdominal pain. This would support the hypothesis of a subacute or chronic process that eventually led to the mass separation from its ovarian origin.

Most cases of parasitic dermoid cysts are detected intraoperatively. The difficulties in diagnosing these cases stem from the non-specific signs and symptoms that patients may present with. These typically include abdominal enlargement and non-specific abdominal pain.[4] For this case, close review of the ultrasonography done may aid in suspecting an atypical presentation. In figure 6, one can observe the mass superior to and compressing the bladder. It appears to be adherent to the isthmic border of the uterus, an unusual location as most larger masses would be floating in the abdomen if free. In cases where the interpretation is suspect, the sliding sign may be utilized to check adherence of the mass to the surrounding pelvic structures. Computed tomography scan or magnetic resonance imaging with contrast may also aid in diagnosis.[7]

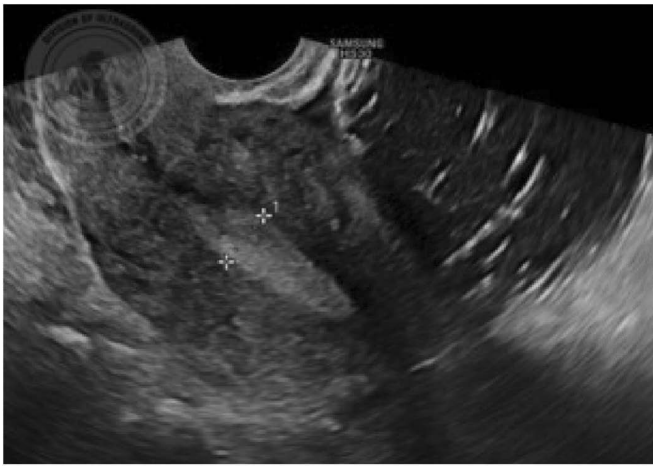

Figure 6. Transvaginal ultrasound demonstrating the mass in relation to the uterus.

The reported recurrence rate of MCT following surgical removal ranges from 3- 4%. Factors found to increase the risk of recurrence include younger age, lower gravidity and parity, and incomplete excision.[8] In the present case, incomplete resection was done due to the densely adherent remaining portion of the cyst capsule to the bladder serosa. There is a paucity on data on the recurrence rates of extragonadal MCTs due to the rarity of these cases but may be reasonably assumed to have similar incidences to ovarian MCTs.

Patients should be advised well regarding the possibility of recurrence following surgical management.

Conclusion

Parasitic dermoid cysts are rare entities that are difficult to detect pre-operatively and may lead to increased complexity of operations. Index of suspicion should be increased in patients presenting with history of pain over a prolonged period prior to the operation. Proper pre-operative diagnostics may provide assistance in detecting these cases that will aid in planning. Mastery of anatomic landmarks in atypical presentations is necessary for safe and proper surgical intervention

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