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Case report

Large benign schwannoma of the greater omentum with synchronous cervical cancer: A case report

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ABSTRACT

Introduction and importance: Schwannomas are uncommon tumors of the omentum with only 16 reported cases originating from the greater omentum in the literature. We report for the first time a synchronous presentation of an omental schwannoma and cervical cancer.

Case presentation: A 37-year-old female presented with an abdominal mass and heavy vaginal bleeding. An 11.5 × 14.6 × 16.6 cm complex omental mass and 5.4 × 6.2 × 4.4 cm lobulated heterogeneous cervical mass were noted on CT-scan. Wide excision of the complex mass and radical hysterectomy with bilateral salpingo-oophorectomy and pelvic lymph node dissection was performed. The final biopsy revealed benign omental schwannoma and poorly differentiated cervical adenocarcinoma.

Clinical discussion: Schwannomas originating from the greater omentum are less common than in the lesser omentum due to the paucity of nervous tissue in the former. They can undergo malignant transformation and the most common presentation is abdominal pain/discomfort. Larger tumors may cause catastrophic bleeding. Prompt surgery should be offered and wide local excision with sufficient margins be performed when there is suspicion of malignancy. Schwannomas presenting with multiple or synchronous lesions are commonly associated with neurofibromatosis type 2, schwannomatosis, and Carney's complex. Whether this co-occurrence is simply incidental or has a causal relationship remains to be established.

Conclusion: Benign schwannoma of the greater omentum is rare and only requires complete tumor excision. However, surgeons should be aware that synchronous presentation of cervical cancer is possible and that thorough examination of both sites should be undertaken when either primary tumor presents.

1. Introduction

Schwannomas, also known as neurilemmomas, are well-encapsulated nerve sheath tumors characterized as being benign with a slow-growth pattern. They originate from the neural crest and are composed of Schwann cells [1]. Up to 45% of schwannoma commonly occurs in the head and neck area [2]. Other locations commonly include the extremities and trunk, and less frequently in the mediastinum, gastrointestinal tract, retroperitoneum, adrenal, and thyroid glands [1,3]. Even rarer are schwannomas of the greater omentum with only 16 reported cases in the literature [4–9]. Herein, we report for the first time a synchronous presentation of a large benign schwannoma of the greater omentum and adenocarcinoma of the cervix in a young female. This case report is presented in line with the SCARE criteria [10].

2. Presentation of case

A 37-year-old Filipino female presented to our institution due to syncope and a 2-day episode of severe, painless vaginal bleeding. Upon review of medical history, it was noted that the patient had a 3-year onset of a slow-growing, palpable mass on the right upper quadrant of the abdomen. Six months prior, the patient developed intermittent, painless vaginal bleeding in between menstrual cycles consuming 2–3 moderately-soaked pads per day with an average of 7 days duration. During this time, the abdominal mass was also noted to increase in size.

The patient did not have any medical comorbidities or take any medication. There was no history of, weight loss, early satiety, change in bowel habits, or heredofamilial disease such as malignancy. The patient was nulligravid with no prior history of sexual intercourse.

In the emergency room, the patient was conscious, not in respiratory distress, with pallor. Pulse rate was 110 bpm with normal blood

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pressure. Digital rectal examination revealed a fixed, hard mass at the posterior cul-de-sac. The abdominal examination noted a 10 × 15 cm, round, smooth, movable mass occupying the right upper hemiabdomen.

Laboratory test showed baseline hemoglobin of 5.5 g/dL, platelet of 457,000, with normal bleeding parameters. Initial pelvic ultrasound showed a 5.4 × 4.2 × 5.2 cm endophytic, heterogeneous mass at the cervix and 1.4 × 1.4 × 1.0 cm thick-walled cystic structure within the left ovary. An intra-abdominal, multilocular, complex mass was also seen. Both uterus and right ovary were unremarkable.

Abdominal computed tomography (CT) scan with intravenous contrast was performed with findings of a large (11.5 × 14.6 × 16.6 cm) complex right abdominopelvic mass. It was predominantly composed of non-enhancing, septated, cystic fluid with a 21 Hounsfield unit admixed with enhancing soft tissue components (Fig. 1). Small central nodular calcifications were noted. Differential diagnoses include a complex mesenteric cyst, sarcoma, and gastrointestinal stromal tumor (GIST). Likewise, a lobulated, heterogeneously enhancing mass (5.4 × 6.2 × 4.4 cm) arising from the cervix extending to the lower uterine segment with small to borderline enlarged left internal iliac lymph nodes was noted. A primary cervical malignancy was considered. Other finding includes mild ureteropelvocaliectasia of the right ureter secondary to partial extrinsic compression from the abdominopelvic mass. The chest x-ray was unremarkable.

Intravenous fluid resuscitation was started, and a total of 6 units of packed red blood cells were transfused raising the hemoglobin to 11 g/dL. The patient adhered to the treatment plan and was then scheduled for surgery because of persistent vaginal bleeding and concern of malignancy. Preoperatively, a bilateral ureteral stent was placed endoscopically to guide the dissection through a midline laparotomy. Intraoperatively, a well-delineated 14 × 16 cm, movable, lobulated mass with solid and cystic components was noted originating from the greater omentum (Fig. 2). The mass was supplied by vessels coming from the gastroepiploic arcade. No invasion of adjacent structures within the abdominal cavity was noted. Wide excision of the omental mass with 2-cm margins using an ultrasonic device was performed. Consecutively, a radical hysterectomy with bilateral salpingo-oophorectomy (RHBSO) and bilateral pelvic lymph node dissection (BPLND) (Fig. 3) was done. The surgery was performed by senior residents and consultants from the general surgery and gynecology departments. The patient tolerated the procedure without intraoperative complications.

Postoperatively, the ureteral stents were immediately removed and the patient was started on a regular diet. Final biopsy of the omental mass and RHBSO-BPLND specimens were benign omental schwannoma (Fig. 4), and poorly differentiated adenocarcinoma of the endocervix with pathologic stage IB2 (pT1b2N0M0), respectively. Both ovaries harbored corpus luteum cysts. The patient was discharged after 5 days with an uneventful 30-day postoperative course. The patient was very thankful and reported relief of anxiety after having no more episodes of vaginal bleeding with complete removal of the omental mass and cervical cancer. Regular clinic visit was advised every 6 months. Due to the COVID-19 pandemic, patient follow-up was via telemedicine. At 8 months post-op, the patient was physically well and without any abdominal or gynecologic complaints.

3. Discussion

Although the greater omentum is mainly composed of lymphatic, vascular, and adipose tissue, most reported primary omental tumors are smooth muscle in origin. The most common primary malignant lesions of the omentum are leiomyosarcomas, liposarcomas, fibrosarcomas, and hemangiopericytomas. While benign lesions (with or without malignant potential) include lipoma, leiomyoma/leiomyoblastoma, mesothelioma, solitary fibrous tumor, and extra GIST. They behave sporadically with a diverse pathologic spectrum, and their true incidence remains uncertain [4,11,12].

Exceedingly rarer are omental schwannomas. There are more reported cases of lesser omental schwannoma compared to those in the greater omentum due to the paucity of nervous tissue in the latter. Regardless of location, they can undergo malignant transformation [4,12].

We searched PUBMED and non-English (translated) literature for “omental schwannoma” of the greater omentum and found a total of 17 reported cases including ours. Almost 60% of the reported cases originated from Japan. Whether there is racial/geographical predilection or association of an external factor(s) remains to be investigated. The mean age and tumor size on presentation were 52 years (range 20–74) and 13.4 cm (range 3–30), respectively. The female-to-male ratio was 1:1.8 and 64.7% of the cases were benign on final biopsy. The most common presentation was abdominal pain/discomfort especially with a tumor size of 7 cm and above. It is worth noting that this was present in all patients with malignant pathology. Only 1 patient was asymptomatic while the remainder presented with a palpable abdominal mass with fullness [4–9,13,14]. Tumoral bleeding was reported in 2 cases which caused hypovolemic shock, and intraoperative death due to heart failure, respectively [13,14].

Schwannomas of the greater omentum may cause diagnostic

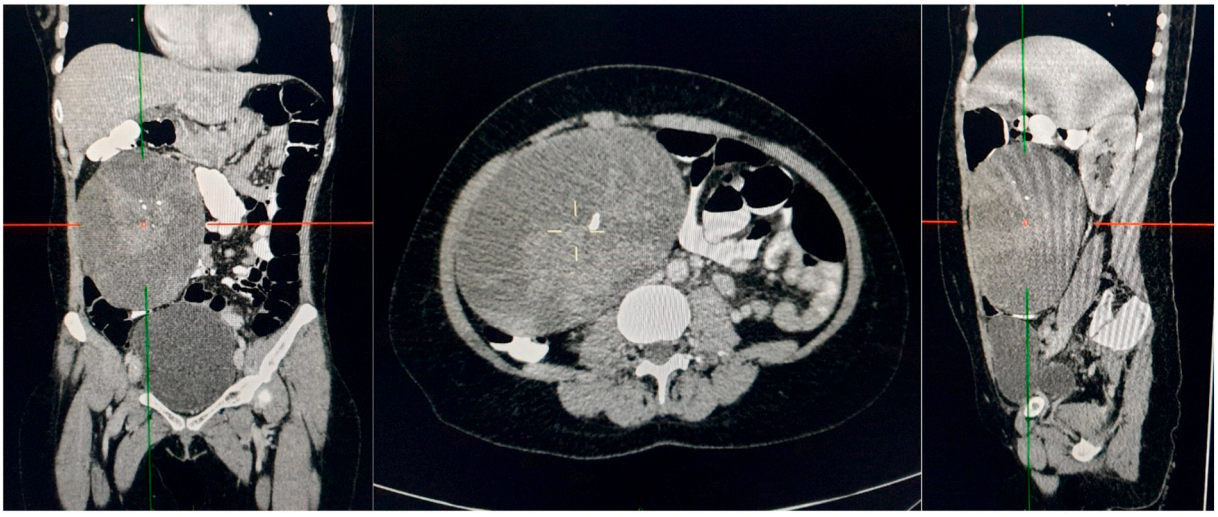

Fig. 1. Computed tomography (CT) scan with intravenous contrast revealing an 11.5 × 14.6 × 16.6 cm complex mass in the right abdomen with non-enhancing septated, cystic fluid admixed with enhancing soft tissue components, and small central nodular calcifications.

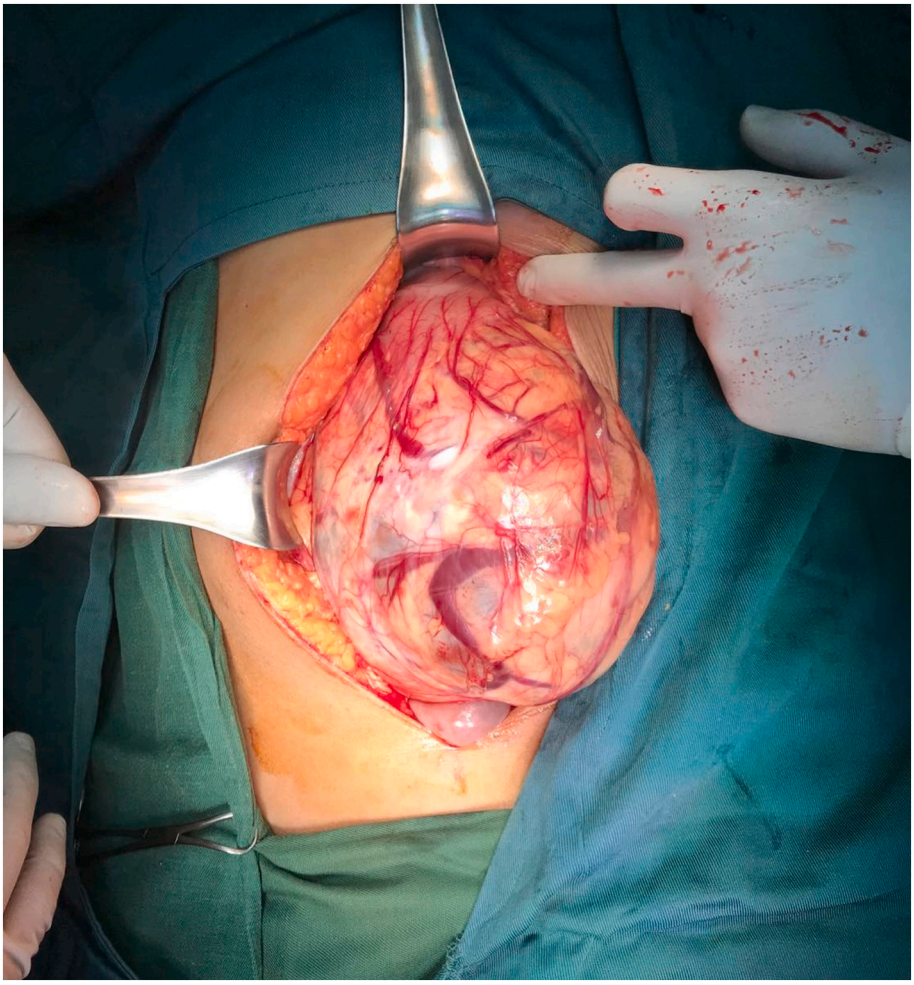

Fig. 2. A well-delineated 14 × 16 cm, movable, lobulated mass with solid and cystic components was noted originating from the greater omentum after midline laparotomy.

confusion since clinical presentation and tumor markers are non-specific [6–8]. On contrast-enhanced CT-scan, this tumor is characterized as well-defined, lobulated, with slight enhancement or low attenuation of the cystic component, highly enhancing solid and peripheral components, and central inhomogeneities and/or calcification [4,7–9,14]. However, malignancy should be considered when there is a loss of fat planes with infiltration to the adjacent structure(s) [9]. Moreover, this tumor is frequently supplied by the right gastroepiploic vessel which may be evident in both angiography and contrast CT-scan [6,7,9]. On MRI, benign omental schwannomas appear as hypointense and hyperintense on T1- and T2-weighted sequences, respectively [4,7].

Schwannomas are histologically composed of spindle-shaped cells with nuclear palisading arranged in a fascicular pattern with alternating loose structured areas. A positive S-100 protein stain confirms a tumor of nerve sheath in origin [4–9,13,14]. Features of malignancy include nuclear atypia, distinct giant cells, infiltrative growth pattern, necrosis, and mitotic activity [8,9]. Zhang et al. reported a melanocytic variant of an omental schwannoma which recurred in the abdominal subcutaneous area 2 years after the index operation. This was also noted by Chauhan et al. at 6 months postoperatively following a wide local excision (WLE) [5,9]. In contrast, benign omental schwannomas generally have a good prognosis.

Complete tumor excision is adequate. However, surgery should be offered promptly to patients since it can cause fatal complications and can be malignant on final histology [5,8,9,13,14]. A laparoscopic approach can be offered however it may be precluded by the size of the tumor on presentation [4]. If malignancy is suspected, a WLE with sufficient margins should be performed including careful tumor handling, adequate protection of the wound edges from the tumor during surgery, and close follow-up surveillance.

While schwannomas typically occur as a solitary mass, demonstration of multiple or synchronous lesions in the same patient is commonly associated with neurofibromatosis type 2, schwannomatosis, and Carney's complex [3]. Although there have been case reports of a synchronous schwannoma and adenocarcinoma, their tumor location is common to a contiguous organ (gastrointestinal tract) [15,16]. Such synchronous tumors with remote locations were only seen in 2 cases involving a colon and rectal adenocarcinoma with concurrent pelvic schwannoma [17,18]. Secondly, cancer of the cervix uteri is the 2nd most prevalent malignancy among females in our country [19]. The most common synchronous gynecologic malignancy involves the ovary and endometrium while cervical cancer frequently pairs with an endometrial pathology. However, their synchronic incidences are low at $<5\%$ and $<0.5\%$, respectively [20].

To our knowledge, this is the first case of a synchronous omental schwannoma and cervical adenocarcinoma. Whether this co-occurrence is simply incidental or has a causal relationship remains to be established.

4. Conclusion

Schwannoma of the greater omentum is rare. Prompt surgery should

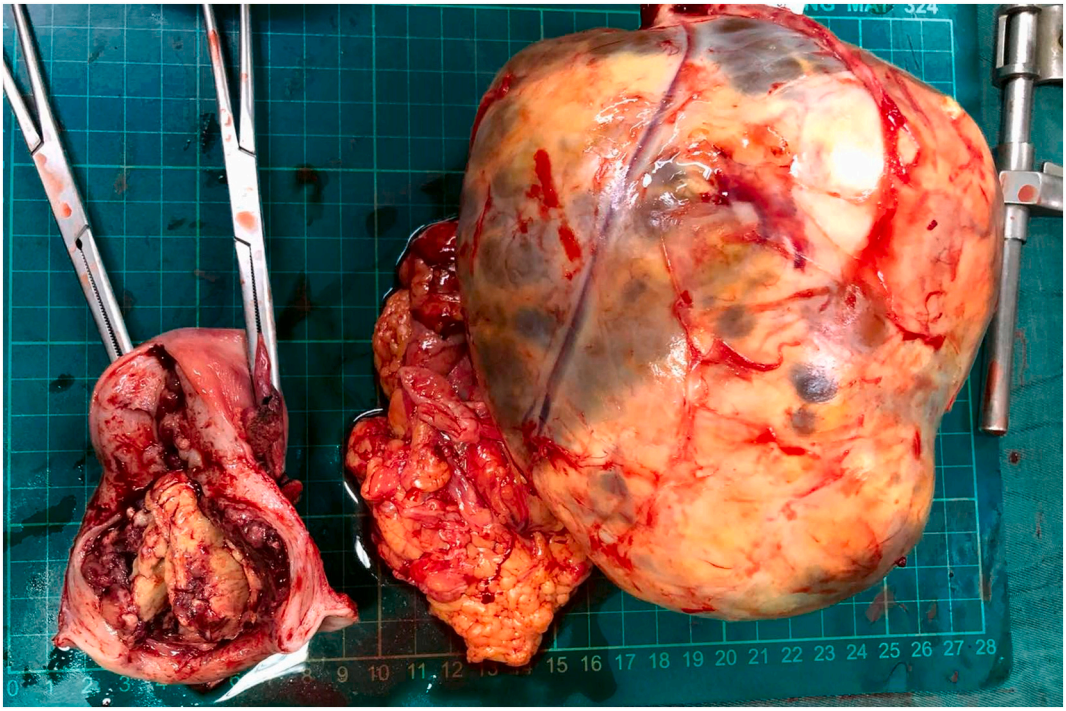

Fig. 3. Wide excision of the complex omental mass (right) and radical hysterectomy with bilateral salpingo-oophorectomy and pelvic lymph node dissection (left, specimen cut open) was performed.

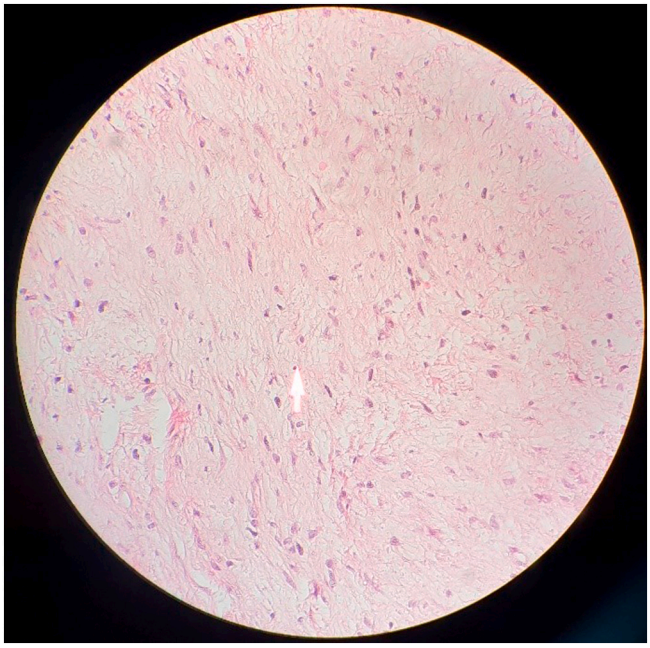

Fig. 4. Hematoxylin and eosin staining showed spindle-shaped cells with elongated eosinophilic cytoplasm and tapering nuclei mostly arranged in fascicles. Few areas were arranged haphazardly and formed a loose meshwork. No mitotic figures were seen. Pathologic findings were consistent with benign schwannoma.

be offered since this tumor can cause catastrophic bleeding as they increase in size, and maybe malignant on pathology. In such latter cases, more radical surgery should be performed. Surgeons should be aware that a synchronous presentation of cervical cancer is possible. Thus, the omentum or cervix (in a female patient) should also be examined thoroughly when managing a primary pathology from either site.

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None.

Ethical approval

Ethics approval is not needed for Case Reports in our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Registration of research studies

Not applicable.

Guarantor

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Provenance and peer review

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CRediT authorship contribution statement

Dr. Ralph Victor Yap: Study concept, data collection, writing the paper, and making the revision of the manuscript.

Dr. Al Marion Santos: Study concept, data collection, reviewing and validating the manuscript's credibility.

Dr. Vincent Matthew Roble II: Reviewing, making revision of the manuscript, and validating the manuscript's credibility.

Declaration of competing interest

None.

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