# Primary leiomyoma of the ovary in a young woman: literature review and report of a case

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**Summary**

Ovarian leiomyoma is a rare tumor. We present a case of ovarian leiomyoma in a 32-year-old virgin with the complaint of dysmenorrhea for six months. On magnetic resonance imaging, a 6 cm x 4 cm mass in the left ovary exhibiting hypointense signals on both T1-weighted and T2-weighted images was initially considered to be fibroma and/or thecoma. However, after surgery the pathological diagnosis of the removed tumor was leiomyoma of the left ovary. The literature on this rare tumor was also reviewed.

*Key words:* Leiomyoma; Ovary; Ovarian tumor.

## Introduction

Primary leiomyoma of the ovary is an extremely rare tumor, usually only a few millimeters in diameter [1]. Approximately 80% arise in premenopausal women [1, 2]. It is difficult to diagnose preoperatively because most patients are asymptomatic and tumors are usually not detected on pelvic examination. When symptoms are present, they are related to the presence of an adnexal mass becoming manifest as abdominal swelling and pain. Synchronous leiomyomas of the uterus frequently present at the same time as ovarian leiomyomas.

We report a case of asymptomatic primary leiomyoma of the left ovary in a young woman.

## Case Report

A 32-year-old virgin was admitted to Baskent University Hospital with a complaint of dysmenorrhea for six months. Her past history was unremarkable. Rectal examination revealed a mobile mass 4-5 cm in diameter on the left adnexal side. Pelvic sonography showed a solid lesion 51 x 48 mm in diameter in the left ovary containing both hypoechoic and hyperechoic areas and showing minimal vascularity Doppler sonography. The level of cancer antigen (CA)-125 was within normal limits (10.7 U/ml, normal = < 35 U/ml). Pelvic magnetic resonance imaging (MRI) showed a 6 x 4 cm mass in the left ovary exhibiting hypointense signals on both T1-weighted and T2-weighted images. MRI findings were strongly suggestive of an ovarian teratoma or fibroma.

At laparoscopy a solid tumor measuring 7-8 cm in diameter was found in the left ovary. There was no accompanying uterine mass. The right ovary and rest of the pelvis appeared normal. An attempt was made to dissect the mass from the ovary with laparoscopic graspers and scissors. Half-way through the dissection, it was assessed that it was impossible to remove this stone-hard 7-8 cm mass from the laparoscopic trocar site in toto. Thus the surgery was converted to a mini-laparotomy to facilitate the dissection and make removal of the mass possible. Immediate frozen sectioning of the specimen showed a benign spindle cell tumor suggesting fibroma/thecoma at the time of the surgery. The rest of the ovarian cortex was then sutured with 3-0 Vicryl and the abdomen was closed in routine fashion. The patient was discharged on the first postoperative day and her recovery period was uneventful.

The final histopathological examination revealed ovarian leiomyoma. The mass consisted mostly of smooth muscle cells without atypia and necrosis. Little mitotic activity was detected (Figures 1 and 2). An immunohistochemical study was performed and tumor cells stained with antibodies of α-smooth muscle actin (SMA).

## Discussion

Primary leiomyoma of the ovary is a rare tumor. Since Sangalli first described this tumor in 1862 [2], approximately 70 cases have been reported [3, 4]. It has been estimated that it accounts for approximately 1% of benign ovarian neoplasms [5]. This tumor usually occurs in women of reproductive age; approximately one sixth of cases occur after menopause [1, 2, 6]. Several cases have been associated with pregnancy [7-9]. In our case, the woman was in reproductive age.

The origin of this tumor is still controversial. Possibly, it originates from smooth muscle cells in the hilus or blood vessel walls or foci of smooth muscle metaplasia in the ovarian stroma [2, 10, 11]. The size of the tumor is usually < 3 cm, and there are incidental findings in most cases. Although the typical characteristics of an ovarian leiomyoma appear to be those of a small unilateral tumor associated with uterine leiomyomas, it can be giant and bilateral [2, 4, 12, 13]. Most of the patients are asymptomatic or have only mild complaints of lower abdominal pain. However, acute symptoms due to torsion or necrosis [14], hydroureteronephrosis due to the huge size of the tumor [15], ascites [7] or the hydrothorax [16] may be possible. Another reported case of ovarian leiomyoma with hilus cell hyperplasia at the periphery was associated with virilization due to elevated plasma testosterone levels [17]. Ovarian

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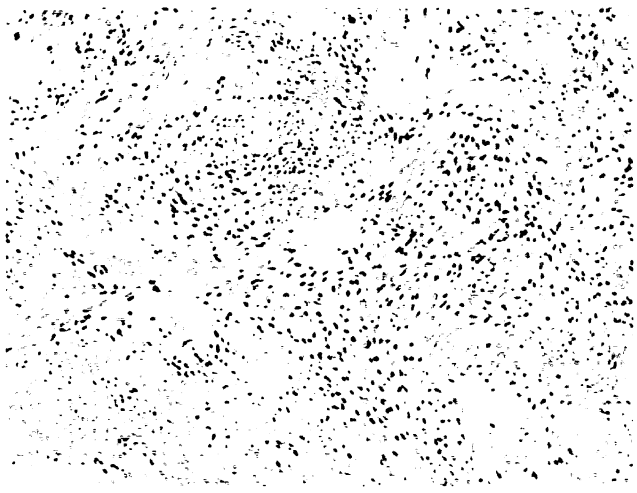

Fig. 1

Fig. 2

Figure 1. — Tumor composed of interlacing bundles of smooth muscle fibers; H&E x 200 magnification.
Figure 2. — Little mitotic activity is noted (arrow); H&E x 400 magnification.

leiomyoma is identical to uterine leiomyoma macroscopically and microscopically. Most of the tumors are solid, but secondary degeneration such as hyalinization, hemorrhage, calcification and cyst formation may occur to some degree, as in uterine leiomyomas [1, 2, 14, 18]. In the present case, the patient was asymptomatic when the unilateral solid tumor 7-8 cm in diameter was detected.

Primary ovarian leiomyomas are encountered as pure cases in most reports. This tumor has been reported to be associated with mucinous cystadenoma [19, 20], benign cystic teratoma [21], serous cystadenofibroma [22], and Meigs syndrome [23]. Parasitic leiomyoma, intravenous leiomyomatosis, disseminated peritoneal leiomyomatosis fibroma and/or thecoma of the ovary, spindle cell carcinoma and metastatic gastrointestinal stromal tumors should be considered in the differential diagnosis [24, 25]. The smooth-muscle origin of the tumor may be detected by immunochemical staining with antibodies such as SMA [13, 18]. In our case, it was a pure ovarian leiomyoma and tumor cells showed strong positive staining for SMA.

These tumors are difficult to diagnose in preoperative situations by ultrasonography. MRI findings can be useful in the diagnosis of ovarian leiomyoma; however, ovarian fibroma and thecoma can show low-signal intensity similar to a leiomyoma and cannot be differentiated [26, 27]. On the other hand, when a solid ovarian tumor is detected and shows similar findings to uterine leiomyoma by MRI, it could be considered ovarian leiomyoma. In the present case, MRI findings were similar to the cases in the literature and the initial diagnosis was ovarian fibroma and/or teratoma by MRI findings. However, the results of frozen section revealed fibrothecoma.

In conclusion, primary ovarian leiomyoma is a very rare tumor. Despite this, leiomyoma should be considered in the differential diagnosis when an ovarian tumor shows as a solid, spindle cell neoplasm. To more accurately assess primary ovarian spindle cell tumors, an immunohistochemical analysis is recommended.

## References


[1] Matamala M.F., Nogales F.F., Aneiros J., Herraiz M.A., Caracuel M.D.: "Leiomyomas of the ovary". *Int. J. Gynecol. Pathol.,* 1988, *7,* 190.

[2] Fallahzadeh H., Dockerty M.B., Lee R.A.: "Leiomyoma of the ovary: report of five cases and review of the literature". *Am. J. Obstet. Gynecol.,* 1972, *113,* 394.

[3] Doss B.J., Wanek S.M., Jacques S.M., Qureshi F., Ramirez N.C., Lawrence W.D.: "Ovarian leiomyomas: clinicopathologic features in fifteen cases". *Int. J. Gynecol. Pathol.*, 1999, *18,* 63.

[4] Yoshitake T., Asayama Y., Yoshimitsu K., Irie H., Aibe H., Tajima T. *et al.*: "Bilateral ovarian leiomyomas: CT and MRI features". *Abdom. Imaging*, 2005, *30,* 117.

[5] Beck R.P., Latour J.P.: "Review of 1019 benign ovarian neoplasms". *Obstet. Gynecol.,* 1960, *16,* 479.

[6] San Marco L., Londero F., Stefanutti V., Costa L., Rocco M.: "Ovarian leiomyoma. Case report". *Clin. Exp. Obstet. Gynecol.,* 1991, *18,* 145.

[7] Choudhuri P.K., Mukherji A.K.: "Leiomyoma of the ovary". *Am. J. Obstet. Gynecol.,* 1972, *113,* 1142.

[8] Kohno A., Yoshikawa W., Yunoki M., Yanagida T., Fukunaga S.: "MR findings in degenerated ovarian leiomyoma". *Br. J. Radiol.,* 1999, *72,* 1213.

[9] Zorlu C.G., Cengiz S., Harmanli H.O.: "Primary ovarian leiomyoma. A case report". *Gynecol. Obstet. Invest.,* 1993, *36,* 191.

[10] Lastarria D., Sachdev R.K., Babury R.A., Yu H.M., Nuovo G.J.: "Immunohistochemical analysis for desmin in normal and neoplastic ovarian stromal tissue". *Arch. Pathol. Lab. Med.*, 1990, *114,* 502.

[11] Okamura H., Virutamasen P., Wright K.H., Wallach E.E.: "Ovarian smooth muscle in the human being, rabbit, and cat. Histochemical and electron microscopic study". *Am. J. Obstet. Gynecol.,* 1972, *112,* 183.

[12] Macri C.I., Vasilev S.A.: "Bilateral giant primary ovarian leiomyomas. A case report". *J. Reprod. Med.,* 1993, *38,* 480.

[13] Lim S.C., Jeon H.J.: "Bilateral primary ovarian leiomyoma in a young woman: case report and literature review". *Gynecol. Oncol.,* 2004, *95,* 733.

[14] Vierhout M.E., Pijpers L., Tham M.N., Chadha-Ajwani S.: "Leiomyoma of the ovary". *Acta Obstet. Gynecol. Scand.,* 1990, *69,* 445.

[15] Khaffaf N., Khaffaf H., Wuketich S.: "Giant ovarian leiomyoma as a rare cause of acute abdomen and hydronephrosis". *Obstet. Gynecol.,* 1996, *87,* 872.

[16] Nicoll J.J., Cox P.J.: "Leiomyoma of the ovary with ascites and hydrothorax". *Am. J. Obstet. Gynecol.*, 1989, *161,* 177.

[17] Parish J.M., Lufkin E.G., Lee R.A., Gaffey T.A.: "Ovarian leiomyoma with hilus cell hyperplasia that caused virilization". *Mayo Clin. Proc.,* 1984, *59*, 275.
[18] Thamboo T.P., Lee Y.S.: "Pseudocystic leiomyoma of the ovary: a case report and literature review". *Pathology,* 2003, *35*, 534.
[19] Hameed A., Ying A.J., Keyhani-Rofagha S., Xie D., Copeland L.J.: "Ovarian mucinous cystadenoma associated with mural leiomyomatous nodule and massive ovarian edema". *Gynecol. Oncol.,* 1997, *67,* 226.
[20] Lifschitz-Mercer B., Dgani R., Jacob N., Fogel M., Czernobilsky B.: "Ovarian mucinous cystadenoma with leiomyomatous mural nodule". *Int. J. Gynecol. Pathol.,* 1990, *9,* 80.
[21] Coard K.C., Frederick J.: "Co-existing leiomyoma and benign cystic teratoma of the ovary". *West Indian Med. J.,* 1993, *42,* 82.
[22] Eren F., Akpulat S., Gokaslan H.: "Primary leiomyoma of the ovary co-existing with serous cystadenofibroma". *Apmis,* 2005, *113,* 145.
[23] Kurai M., Shiozawa T., Noguchi H., Konishi I.: "Leiomyoma of the ovary presenting with Meigs' syndrome". *J. Obstet. Gynaecol. Res.,* 2005, *31,* 257.
[24] Lerwill M.F., Sung R., Oliva E., Prat J., Young R.H.: "Smooth muscle tumors of the ovary: a clinicopathologic study of 54 cases emphasizing prognostic criteria, histologic variants, and differential diagnosis". *Am. J. Surg. Pathol.*, 2004, *28,* 1436.
[25] Kim J.C., Nam S.L., Suh K.S.: "Leiomyoma of the ovary mimicking mucinous cystadenoma". *Clin. Imaging,* 2000, *24*, 34.
[26] Kawano Y., Takai N., Shimano M., Nasu K., Miyakawa I.: "Magnetic resonance imaging findings in leiomyoma of the ovary: a case report". *Arch. Gynecol. Obstet.*, 2005, 1.
[27] Kobayashi Y., Murakami R., Sugizaki K., Yamamoto K., Sasaki S., Tajima N. *et al.*: "Primary leiomyoma of the ovary: a case report". *Eur. Radiol.,* 1998, *8*, 1444.

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