

# Mature cystic teratoma arising from the fimbrial end of the left fallopian tube. a case report

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## Abstract

We present a rare case of a woman with a mass containing soft tissue, fat, and calcified components attached to the fimbrial end of the left fallopian tube. A 38-year-old nulligravida woman who visited our clinic for infertility counseling had mild abdominal discomfort and a palpable mass in the lower abdomen. Multiple examinations were performed. Preoperatively, we considered that the patient had teratoma or teratocarcinoma of the left ovary. On exploratory laparotomy, we found that she had a mass with protuberances and a bulbous projection at one surface that was attached to the fimbrial end of the left fallopian tube. A histopathological examination showed a mature cystic teratoma that arose from the fimbrial end of the fallopian tube. Obstetricians should be aware of this abnormality. Early detection of this abnormality is advantageous for infertility counseling and planning of less invasive surgery in the hospital.

## Keywords

Fallopian tube, fimbrial end, infertility, teratoma, ovary, cystic lesion

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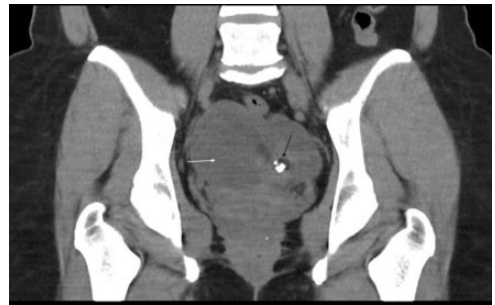
## Introduction

A benign neoplasm arising from the fallopian tube is rare. A tumor arising from the fimbrial end of the fallopian tube is even rarer, with less than five cases reported in the recent 15 years.<sup>1</sup> All of these cases were found intraoperatively and preoperative diagnosis of this type of tumor has not been reported. Appearance of these tumors is tentatively thought to be malignant because of the irregular shape and bulbous surface with solid and cystic components. The largest fimbrial end teratoma that was reported in the literature was approximately 30 cm and it was found in a woman who was nulligravida.<sup>2</sup> We experienced a mature cystic teratoma that arose from the fimbrial end of the fallopian tube in a patient, and the size of the tumor measured approximately 11 cm. Because of the large size of this type of tumor in the pelvic cavity, we believe that it influenced fertility of our patient.

## Case presentation

A 38-year-old married nulligravida woman visited our clinic for infertility counseling with mild abdominal discomfort and a palpable mass in the lower abdomen for approximately 4 months. There was no family history of congenital anomalies, no previous systemic or surgical disease, and no medications were taken in the past. Her menstrual cycle was regular with a 28-day interval and 5 days' duration, and she only had mild dysmenorrhea. Her husband's semen analysis was normal. We performed ultrasonography and found a pelvic mass of approximately 11 cm in diameter with cystic and solid components in the left adnexal region. Computed tomography was also performed and showed a lobulated space-occupying lesion approximately 11 cm in the pelvic cavity. Additionally, there were soft tissue, fat, and calcified components

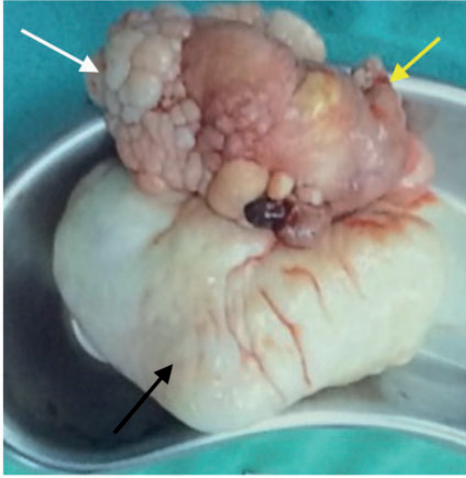
between the lesion and uterus, and bilateral adnexa were obscured. We initially considered the possibility of a teratoma or teratocarcinoma (Figure 1). Because of the large mass and the characteristics of the tumor suggested malignancy, we decided to perform exploratory laparotomy. In the surgical field, we found that she had an irregular-shaped mass with protuberances and a bulbous projection at one surface that was attached to the fimbrial end of the left fallopian tube (Figure 2). We carefully removed this mass and the course of the patient after surgery was uneventful.



**Figure 1.** Computed tomography of the tumor shows a lesion of approximately 11 cm in the pelvic cavity. The tumor consists of cystic (white arrow) and solid components with a calcified component (black arrow).



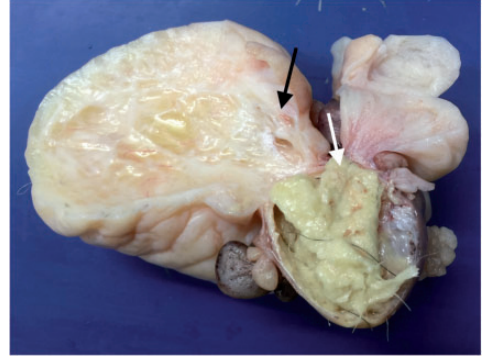
**Figure 2.** Intraoperative findings. The uterus, ovaries, and fallopian tubes are intact. The connection with the tumor (black arrows) is the fimbrial end of the left fallopian tube.



**Figure 3.** Gross appearance of the tumor. The external surface of the tumor has protuberances (black arrow) with bulbous projections (white arrow). Tubal fimbria-like structures (yellow arrow) can also be seen.

A histopathological exam showed a mature cystic teratoma that arose from the fimbrial end of the fallopian tube. The specimen consisted of one tumor mass that weighed 297 g and was  $11 \times 8 \times 6$  cm in size. Grossly, the external surface showed protuberances with bulbous projections. Tubal fimbria-like structures were also observed (Figure 3). On sectioning, we observed a multilocular cystic lesion of approximately 3.5 cm in diameter. Some locules contained yellowish sebaceous material mixed with matted hair and some contained translucent jelly-like material. The other portion of the mass showed a fibrous solid appearance (Figure 4).

Microscopically, the cystic lesion showed a mature cystic teratoma comprising skin, skin appendages, adipose tissue with ganglion cells, and the respiratory tract was lined by pseudostratified respiratory epithelium surrounded by muscular coats with mature cartilage. Additionally, there were abundant bronchial glands and mature glial tissue associated with ependymal lining and the



**Figure 4.** Cross-section of the tumor shows a multilocular cystic lesion with locules containing yellowish sebaceous material mixed with matted hair and some translucent jelly-like material (white arrow). The other portion of the tumor shows a fibrous solid appearance (black arrow).

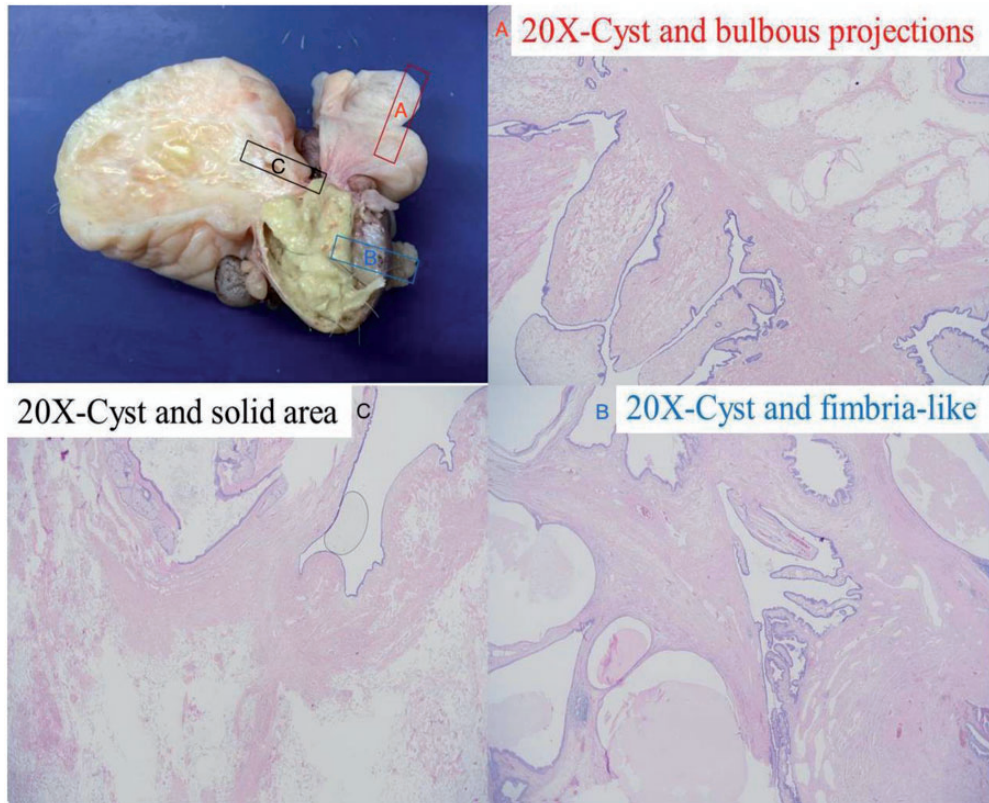
choroid plexus. The adjacent solid part of the mass and bulbous projections appeared to be enlarged tubal fimbriae of which central mesenchymal tissue was negative for desmin and smooth muscle actin immunostaining (Figure 5). The external surface of the entire tumor was covered by tubal-type epithelium and this was confirmed by positive PAX-8 and estrogen receptor immunostaining (Figure 6). No immature embryonal components were found.

Six months after surgery, a hysterosalpingogram was performed to check the tubal status, and it showed bilateral tubal patency. Currently, 2 years have passed since the surgery and the patient is still nulligravida.

The operation was performed in a local community hospital outside Taipei Medical University Hospital. This hospital (Chung San Hospital) has no ethics committee or IRB. The patient provided consent for publication of her case.

## Discussion

Tubal teratomas are rare. Sari et al. and Khatib et al.<sup>3,4</sup> reviewed the literature and



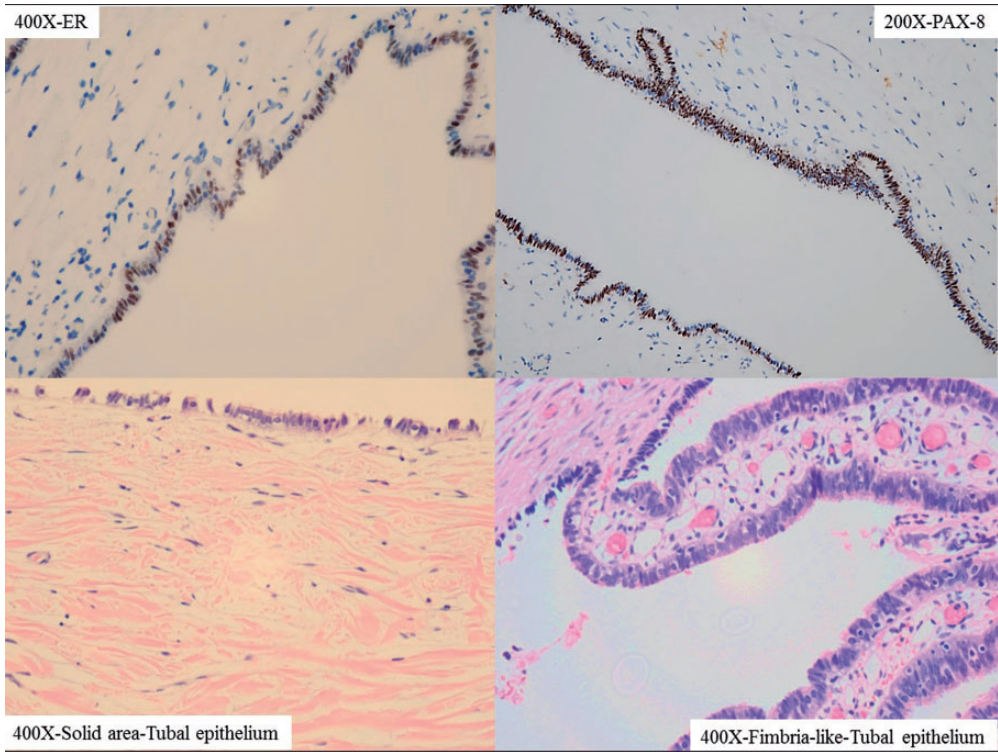
**Figure 5.** Cross-section of the tumor with boxes showing the corresponding sectioned areas (left upper panel). The area of the red box (a) shows the microscopic appearance of the cyst and bulbous projection (right upper panel, magnification of 20 $\times$ ). The area of the blue box (b) shows the microscopic appearance of the cyst and fimbria-like area (right lower panel, magnification of 20 $\times$ ). The area of the black box (c) shows the microscopic appearance of the cyst and solid area (left lower panel, magnification of 20 $\times$ ).

found approximately 75 cases of tubal teratomas that were mostly located in the ampullary portion of the fallopian tube. The ages of the reported patients ranged from 17 to 62 years and most patients were nulliparous. Tubal teratomas are mostly benign in origin.<sup>3</sup> Teratomas of the fimbrial end of the fallopian tube are extremely unusual and proving that these tumor arise from the fallopian tube and not from migration of ovarian tissue to the fimbrial end is difficult (3). In our case, the origin of this tumor arising from the fimbrial end was shown by pathology because the external surface of the

entire tumor was covered by tubal-type epithelium.

Previously reported symptoms of teratomas of the fallopian tube are intermittent lower abdominal pain, dysmenorrhea or menstrual irregularity, and postmenopausal bleeding.<sup>1</sup> However, in our case, the patient visited our clinic for infertility counseling, but she also had the symptom of low abdominal pain, which is consistent with symptoms reported by other authors.<sup>1,2,4</sup>

The pathogenesis of tubal teratomas is still unclear. Some theories postulate that extragonadal teratomas may arise from cells that migrate from the yolk sac to the



**Figure 6.** Histological analysis. Estrogen receptor immunostaining (left upper panel, magnification of 400 $\times$ ) PAX-8 staining (right upper panel, magnification of 200 $\times$ ), the solid area (left lower panel, magnification of 400 $\times$ ), and fimbrial-like tubal epithelium (right lower panel, magnification of 400 $\times$ ).

primitive gonads, but fail to reach their destination. These cells usually undergo atresia, and some of these cells survive and form germ cell tumors outside of the gonads.<sup>4</sup>

There are many methods for examining tubal patency,<sup>5</sup> but currently, there are still no adequate methods for examining tubal function. In our case, after surgery, a hysterosalpingogram showed that her tubes were patent and semen analysis of her husband was normal. However, the patient has still not conceived 2 years after the operation. Therefore, we suspect that tubal function was influenced by compression of the tumor.

For obstetricians, preoperative discovery of a fimbrial end teratoma is difficult

because of the absence of direct connections, the ability of the mass to change position in the pelvis, and the low incidence of this abnormality. These factors reduce the chance of early detection by routine gynecological examinations.<sup>1-3</sup> In our case, we also found that the mass was loosely connected to the left tubal fimbrial end intraoperatively. Because of the findings in our case, we believe that if a pelvic mass can be removed earlier when the mass is still small, there will be less compression of bilateral fallopian tubes, less effect on tubal function, and the possibility of natural conception will be higher. Early detection of teratomas in any site is another important issue because a teratoma is strictly a true neoplasm

and sometimes has malignant potential.<sup>6,7</sup> Therefore, early removal of the neoplasm is also recommended.

A high index of clinical suspicion of a tumor in the fimbrial end of the fallopian tube may help in preserving fertility. Additionally, early diagnosis of this condition is advantageous for preoperative counseling of less invasive surgery in the hospital.

### Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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