

Mature Cystic Teratoma of Ovary– a Case Report & Review of Literature

Sunita Nayak (✉ nayakdrsunita@gmail.com)

All India Institute of Medical Sciences <https://orcid.org/0000-0003-2127-0096>

Suren Prasad Dash

Sahara Diagnostics, Berhampur

Case report

Keywords: Case Report, Dermoid cyst, Ovarian teratoma

Posted Date: August 3rd, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-50261/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Mature cystic teratoma or dermoid cyst is the most common germ cell tumour of the ovary. The incidence ranges from 5 to 25% of all ovarian neoplasms out of which 13.7% are bilateral. Teratomas usually occur in the ovaries but they may be seen in other sites known as extragonadal teratomas the incidence of which is only 0.4%. Teratomas are usually benign but they may turn out to be highly malignant. Torsion is known to be the most frequent complication of ovarian teratomas followed by autoamputation. Teratomas are classified as "Mature" and "Immature" by WHO. Teratomas show good prognosis specially the mature ones. Surgery and follow up remains the standard approach. We report a case of mature cystic teratoma in the right ovary of a 28 years old nulliparous woman.

Introduction

Teratomas are germ cell tumors derived from one or more of the 3 germ layers. The word, "teratoma" is derived from the Greek word, "teras" meaning monster, which Virchow coined in the first edition of his book on tumors published in 1863^[1]. Teratomas may be classified as: benign, well-differentiated (mature) cystic lesions or solid and malignant (immature) ones. Some mature teratomas undergo malignant transformation.

Ovarian teratoma or dermoid cyst of the ovary is usually a benign tumour that typically contains a variety of tissues including hair, teeth, bone, thyroid, etc. A dermoid cyst may develop from a primary oocyte that is retained within the ovary. Being totipotential, this cell can give rise to tissues such as hair, bone, sebaceous material, neural tissue and teeth. Dermoid cysts are mostly detected in the childbearing years (the average being 30 years). About one tenth of the ovarian teratomas are bilateral^[1]. The size can range from 1 to 45 cm in diameter. These cysts can undergo torsion and impair the blood supply of the ovary. The larger the size of the cyst, the greater the risk of rupture which can result in spillage of the greasy contents resulting in adhesion and pain. Majority of them are benign but about 2% can turn malignant. Removal of the cyst is the mainstay of treatment which can be done by laparotomy or [laparoscopy](#). Torsion of the ovary by the cyst is an emergency and requires urgent surgery.

Case Presentation

A 28 years old female patient was referred for ultrasonography who came with the chief complains of swelling of right lower abdomen for last two months, no previous history of any illness. No h/o hypertension, diabetes or jaundice. Menstrual history was normal. No familial history of such illness.

All blood investigations were done. Complete blood count was within normal. Hemoglobin: 12.5gm%, Total RBC count: 5.04x10³/ml, Total WBC count: 9,800/ml. ESR: 04 mm in 1st hour. Differential count: Neutrophil- 40%, Lymphocyte- 55%, Eosinophil-03%, Basophil- 0%, Monocyte- 02%.

Serum alpha-fetoprotein (AFP) and beta-human chorionic gonadotropin (HCG) levels were normal. Urine routine examination and microscopic examination: normal; specific gravity: normal; pus cells: absent;

renal casts and epithelial cells: occasional. Urine culture: no organisms isolated.

Imaging Studies-

Ultrasonography (Fig.1): At right lower abdomen right lateral to uterus an anechoic cystic mass of 22.85 x 18.76 cm with internal echogenic large posterior acoustic shadow casting denture and tuft of echogenic lines like hair tuft along with echogenic debris seen. Transvaginal ultrasonography also reveals same findings clearly. No CT scan was done.

DIFFERENTIAL DIAGNOSIS

[Adnexal tumors](#), [Benign lesions of the ovaries](#), [Borderline ovarian cancer](#), [Ectopic pregnancy](#), [Endometrial carcinoma](#), [Endometriosis](#), [Germ cell tumors](#), [Granulosa-theca cell tumors](#), [Lymphoma](#), [Malignant lesions of the fallopian tube and broad ligament](#), [Malignant lesions of the ovaries](#), [Ovarian cysts](#), [Ovarian dysgerminomas](#).

As the serum alpha-fetoprotein (AFP) and beta-human chorionic gonadotropin (HCG) levels were within the normal range, it was suggestive of benign teratoma^[2]. Presence of the internal pultaceous, non haemorrhagic material, hair and denture, suggested the diagnosis of ovarian teratoma.

OUTCOME AND FOLLOW-UP

The detected ovarian teratoma was surgically removed and gross specimen examined and proved as teratoma (Fig. 2). When cut and opened, internal denture, hair and pultaceous material was seen. Written consent was taken from the patient for research and publication of her specimen. Histologically, the specimen was found to be a teratoma.

Discussion And Review Of Literature

The term, "Dermoid cyst" was coined by Leblanc in 1831 within the veterinary literature when he removed a lesion that resembled skin at the bottom of a horse's skull, which he called a "kyste dermoid"^[3]. Both "dermoid" and "teratoma" are now quite a century old, are in general use and sometimes used interchangeably. Earliest implications were that dermoids composed of elements like skin and its appendages, while teratomas had no such limits. Dermoids now are often being recognized as tergerminal and practically containing any kind of tissue.

Strictly speaking, dermoids are tumors that maintain orderly arrangements. They have well-differentiated ectodermal and mesodermal tissues surrounding endodermal components. Teratomas, specifically solid teratomas do not show any such organization. Thus, the presence of a point of organization, a high degree of cellular differentiation, and cystic structure differentiates dermoids from teratomas^[1]. The workup for cystic teratomas is essentially radiographic, and their appearance is analogous despite varying locations.

TREATMENT

Mature cystic teratomas of the ovaries can be removed by simple cystectomy instead of salpingo-oophorectomy. Removal of the dermoid cyst is generally the treatment of choice. This can be done by laparotomy (open surgery) or laparoscopy (with a scope). Torsion of the ovary by the cyst is an emergency and requires urgent surgery.

COMPLICATIONS

Complications of ovarian teratomas include torsion, rupture, infection, hemolytic anemia, autoamputation^[4] and malignant degeneration. Torsion is by far the most significant cause of morbidity, occurring in 3-11% of all cases. Several series have demonstrated that increasing tumor size correlates with increased risk of torsion^[2,5].

Rupture of a cystic teratoma is although rare but may be spontaneous or associated with torsion. Most case series report a rate of less than 1%^[1,2] though Ahan et al reported a rate of 2.5% in their report of 501 patients^[5]. Rupture may be a sudden occurrence, leading to shock or hemorrhage with acute chemical peritonitis. Chronic leakage can also occur leading to granulomatous peritonitis. Prognosis after rupture is usually favorable, but the rupture often results in formation of dense adhesions. Infection is uncommon and occurs in less than 1-2% of cases. Coliform bacteria are the organisms most commonly implicated^[5,6].

Autoimmune hemolytic anemia is also an association with mature cystic teratomas in rare cases. In these cases, removal of the tumor resulted in complete disappearance of symptoms. Pathogenic mechanisms may be: (1) Antigenically different tumor substances from the host produce an antibody response which cross react with native RBCs, (2) Coating of the RBCs by tumor substance can change the RBC antigenicity. Hence, radiologic imaging of the pelvis is done in cases of refractory hemolytic anaemia^[6,7].

Mature cystic teratoma of the ovary is almost always benign, but may undergo malignant transformation in 0.2 to 2% cases into one of its elements. The majority of the malignant ones are squamous cell carcinomas^[8]. Elevated serum alpha-fetoprotein and beta-human chorionic gonadotropin levels are suggestive of malignancy. The prognosis is poor for patients with malignant degeneration but generally depends on the stage and degenerated cell type^[9,10].

Conclusion

Ovarian teratomas are the most common germ cell neoplasm and, in many series, the most common excised ovarian neoplasm. Teratomas comprise a number of histologic types of tumors, the most common being the mature cystic teratoma. It contains mature tissues of ectodermal origin like skin or brain; mesodermal origin like muscle or fat; and endodermal origin like mucinous or ciliated epithelium. In

monodermal teratomas, one of these tissue types (e.g., thyroid tissue in struma ovarii, neuroectodermal tissue in carcinoid tumor) predominates.

Although the typical imaging manifestations of mature cystic teratomas are well described, the less common types of ovarian teratomas (e.g., immature teratomas, monodermal teratomas) have received less attention in the imaging literature. Recent studies of these tumors with magnetic resonance (MR) imaging have suggested that this modality may demonstrate specific features of teratomas). In this case, we discussed and illustrated typical manifestations of mature cystic teratomas (dermoid cysts), immature teratomas in ultrasonography (US).

Declarations

Ethics approval and consent to participate: Taken

Consent for publication: Taken

Availability of data and materials: Not applicable

Competing interests: None

Funding: None

Authors' contributions: S. Nayak: Data Collection, Manuscript writing; S.P. Dash: Data Collection, Manuscript writing

Acknowledgements: We acknowledge the patient for giving us the consent.

References

1. Pantoja E, Noy MA, Axtmayer RW, Colon FE, Pelegrina I. Ovarian dermoids and their complications. Comprehensive historical review. *Obstet Gynecol Surv.* Jan 1975;30(1):1-
2. Grosfeld JL, Billmire DF. Teratomas in infancy and childhood. *Curr Probl Cancer.* Sep 1985;9(9):1-53.
3. Kumar V, Abbas AK, Fausto N. *Robbins and Cotran Pathologic Basis of Disease.* 7th Philadelphia: Elsevier Saunders; 2005.
4. Keun Ho Lee, Min Jong Song, In Cheul Jung, Yong Seok Lee and Eun Kyung Park. Autoamputation of an ovarian mature cystic teratoma: a case report and a review of the literature. *World Journal of Surgical Oncology* (2016) 14:217
5. Ayhan A, Bukulmez O, Genc C, Karamursel BS, Ayhan A. Mature cystic teratomas of the ovary: case series from one institution over 34 years. *Eur J Obstet Gynecol Reprod Biol.* Feb 2000;88(2):153-7.

6. Buchwalter CL, Miller D, Jenison EL. Hemolytic anemia and benign pelvic tumors. A case report. *J Reprod Med.* Apr 2001;46(4):401-4.
7. Kim I, Lee JY, Kwon JH, et al. A case of autoimmune hemolytic anemia associated with an ovarian teratoma. *J Korean Med Sci.* Apr 2006;21(2):365-7.
8. Dos Santos L, Mok E, Iasonos A, et al. Squamous cell carcinoma arising in mature cystic teratoma of the ovary: a case series and review of the literature. *Gynecol Oncol.* May 2007;105(2):321-4.
9. Carver BS, Al-Ahmadie H, Sheinfeld J. Adult and pediatric testicular teratoma. *Urol Clin North Am.* May 2007;34(2):245-51; abstract x.
10. Momin YA, Kulkarni MP, Pandav AB, Sulhyan KR. Mucoepidermoid carcinoma in a mature cystic teratoma: A rare case report with review of literature. *Indian J Pathol Microbiol.* 2017 Jan-Mar; 60 (1): 117-118. doi: 10.4103/0377-4929.200038. PMID: 28195108.

Figures

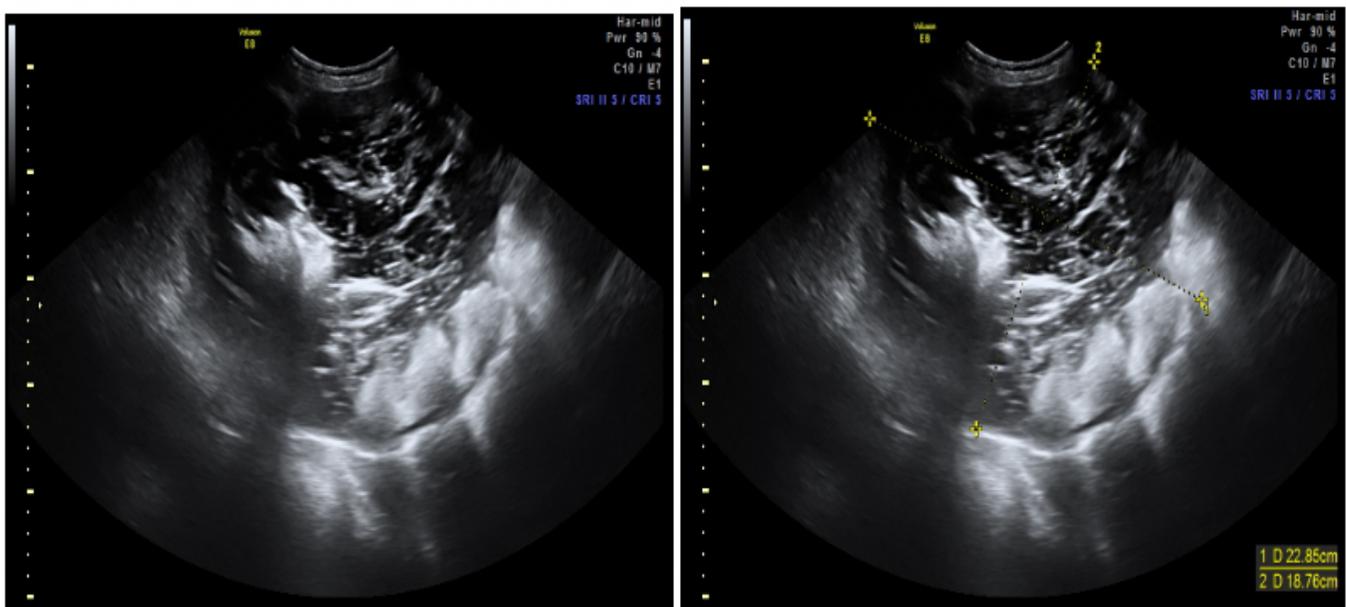
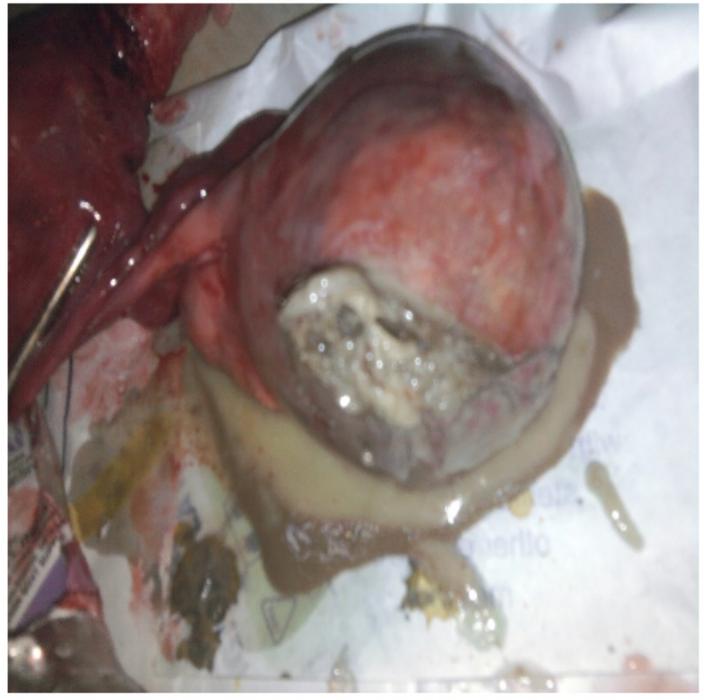


Figure 1

ULTRASONOGRAPHY IMAGES (Cystic structure with internal echogenic lines of hair and multiple echogenic shadow casting dentures)



(a) During Surgery



(b) After surgery

Figure 2

POST OPERATIVE (FOLLOW UP PHOTOGRAPHS)