IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 7 Ser.2 (July 2025), PP 46-49
www.iosrjournals.org

Collision Tumor: Benign Cystic Teratoma and Mucinous Cystadenoma in The Same Ovary- A Case Report

Meenu Gill[1], Akanksha[2*], Geetika Chawla[3], Vibhav Goel[4] , Veena Gupta[5], Sunita Singh[6]

[1.] *Professor, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: kalindik72@gmail.com*
[2.] *Junior Resident, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: ramakanksha05@gmail.com*
[3.] *Junior Resident, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: Geetikachawla45@gmail.com*
[4.] *Senior Resident, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: vibhavgoel12@gmail.com*
[5.] *Professor, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: gopal.veena67@yahoo.co.in*
[6.] *Senior Professor and Head, Department of Pathology, Pt. B. D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. Email: sunita62@gmail.com*
***Corresponding author:** Dr. Akanksha*

Abstract:
A collision tumor occurs when two adjacent but histologically different neoplasms coexist in the same organ without any mixing. The ovary is rarely affected (<1%) by collision tumors, however they have been documented in the gastrointestinal tract, lung, skin, adrenal glands, central nervous system, lymph nodes, and uterine. Here, we describe a case of a 22-year-old female patient who had both a benign teratoma and mucinous cystadenoma in the same ovary. Since both conditions have a significant impact on treatment, it is crucial to identify when both tumors coexist in the same ovary in order to make the right diagnosis.

Keywords: *Collision tumor, benign teratoma, Mucinous cystadenoma*

Date of Submission: 28-06-2025 Date of Acceptance: 06-07-2025

I. INTRODUCTION:

When two different tumors occur simultaneously in the same tissue without a transition zone or mixing interface, it is referred to as a collision tumor. The liver, bone, kidney, brain, and lung are various organs where collision tumors have been reported. However, Ovarian collision tumors are uncommon.[1] Most often, they are made up of cystadenoma or cystadenocarcinoma with teratoma. But there have also been reports of other histological combinations (such as sarcoma, cystadenocarcinoma, and teratoma plus granulosa cell tumor).[2] Thirty percent of ovarian tumors are cystadenomas, and ten to twenty percent are mature cystic teratomas. Mucinous cystadenomas are seen to be associated with teratomas in 2–10% of collision tumors.[1]

Here, we present a case of collision tumor in ovary, in a 22 year old female who complained of abdominal pain and discuss the histopathological findings.

II. CASE REPORT:

A 22-year-old female presented in OPD with pain abdomen since 1 year which was sudden in onset and progressive in nature. She also complained of retention of urine since 1.5 years which was more on waking up in the morning. On examination patient was conscious and vitals were stable. Per speculum examination showed cervix deviated to left side and uterus could not be felt. A 25x15 cm mass arising from pelvis, moving side by side was felt on per abdomen examination.

Investigations:

Laboratory investigations showed complete blood counts, liver function test and renal function tests to be within normal limits. Tumor markers were as follows: cancer antigen (CA) 125 level was 17.3U/mL (normal, 0–35U/mL), Alpha fetoprotein was 1.36 ng/ml (normal range 0–9ng/ml) and Prolactin levels were 25.19 ng/ml (normal range, 2.8-29.2ng/ml).

Radioimaging:

Transvaginal sonography revealed a cystic lesion measuring 25x12x15cm present in pelvis reaching upto umbilicus from right ovary, having an eccenteric solid lesion measuring 23x11mm and a solid cystic lesion measuring 60x30mm in posterior part. The left ovary, left fallopian tube and uterus were unremarkable. A subsequent magnetic resonance imaging showed a large pelvicoabdominal predominantly cystic non enhancing space occupying lesion measuring 10x20x25cm, arising from right ovary extending superiorly upto level of pancreas, inferiorly into pelvic cavity displacing uterus posteriorly. A radiological diagnosis of right ovarian cystic teratoma was established (ORADS 3).

The patient was admitted for exploratory laparotomy. A right ovarian cystectomy was done revealing a 25x20cm cyst arising from right ovary. Straw colored fluid (3.5 L) was drained. Cut sections revealed multiloculated cyst. One of the smaller cysts was filled with pultaceous material and hairs. The specimen was preserved in formalin and sent for histopathological examination. Left ovary, fallopian tube and uterus were unremarkable.

Pathological examination:

We received an already cut open right ovarian cyst measuring 10 x 8.5 x 2cm with smooth, gray white external surface. Wall thickness varied from 0.2-0.8cm. On further sectioning few congested areas along with solid areas were noted. Cut section of one of the solid areas revealed a cystic cavity partially lined by pultaceous material and filled with hairs. Haematoxylin and eosin stained sections from the cyst wall showed mucinous cystadenoma lined by columnar epithelial cells. While microsections from solid area revealed benign cystic teratoma composed of skin appendages, hair follicles, sebaceous glands and gastrointestinal mucosa. These two areas were sharply demarcated and despite serial sectioning no intermingling was observed . Based on histopathological findings, a final diagnosis of mucinous cystadenoma with benign cystic teratoma was made.

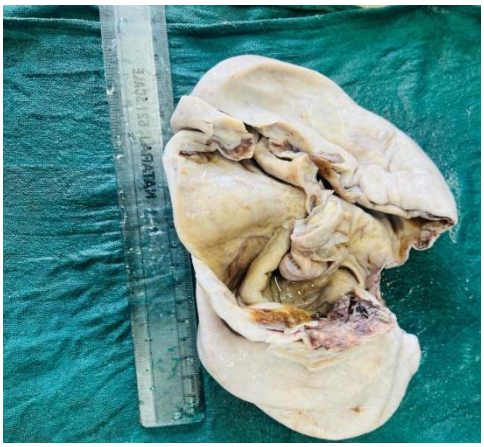

Figure 1. Gross view of ovarian cyst showing cystic and solid areas.

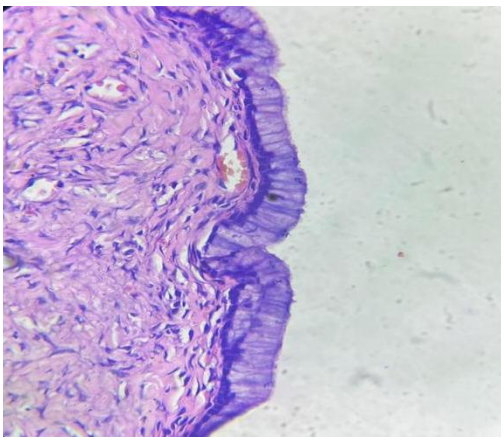

Figure 2. Mucinous cystadenoma: Section examined shows cyst lined by columnar epithelium. (H&E stain,400X)

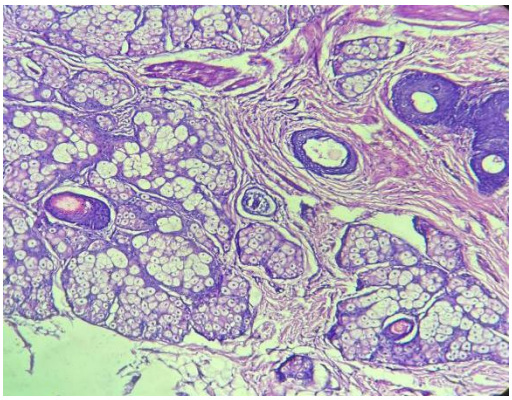

Figure 3: Dermoid cyst composed of sebaceous glands, hair follicles and muscle bundles.(H&E,400X)

III. DISCUSSION:

Ovarian neoplasms are believed to originate from three primary sources: surface epithelial-stromal cells, sex cord-stromal cells, and germ cells. Germ cell tumors represent around 30% of all primary ovarian tumors, with approximately 95% of these being mature cystic teratomas.[3] These tumors are most commonly found in young women of reproductive age. Histologically, they contain differentiated tissues derived from all three germ layers: ectoderm, mesoderm, and endoderm.[4]

Surface epithelial-stromal tumors are categorized into various subtypes including serous, mucinous, endometrioid, clear cell, transitional cell, and epithelial-stromal tumors.[3] Among these, mucinous cystadenomas comprise about 15% of all ovarian tumors. These tumors are typically multiloculated cysts, lined with epithelium that closely resembles that of the endocervix. [4]

A collision tumor is diagnosed when two distinct tumors are separated by normal tissue, with no histological blending at their junction.[1] Although collision tumors have been documented in several organs such as the esophagus, thyroid, lung, stomach, liver, and kidney their occurrence in the ovary is exceptionally rare.[3]

The most frequently observed histological combination in ovarian collision tumors is the coexistence of a teratoma with a mucinous cystadenoma.[1] Other documented combinations in the literature include cystadenocarcinoma with granulosa cell tumor, teratoma with granulosa cell tumor, and serous adenocarcinoma with steroid cell tumor.[3]

Several theories have been proposed to explain the development of collision tumors. The first suggests that the coexistence of two distinct primary tumors within the same tissue is merely a coincidental occurrence. The second hypothesis states that the presence of the initial tumor alters the local microenvironment, thereby promoting the emergence of a second primary tumor or facilitating the implantation of metastatic cells. The third theory proposes that both tumors may originate from a shared progenitor or stem cell. [3]

The presence of a transition zone between two tumors can complicate the distinction between a collision tumor and a true mixed tumor. However, a key differentiating feature lies in their histological arrangement: collision tumors exhibit a clear boundary of normal ovarian tissue separating the teratoma and cystadenoma components, whereas in teratomas with a cystadenoma component, the two histological elements are intermingled without a distinct separation.

The potential presence of an ovarian collision tumor should be thoroughly evaluated through clinical assessment, imaging studies, and histological examination to prevent misdiagnosis, particularly of a possible malignancy.[2] This case emphasizes the critical importance of meticulous gross examination to confirm the diagnosis and to distinguish it from closely related differential diagnoses. [3]

IV. CONCLUSION:

Ovarian collision tumors are extremely rare, and their occurrence alongside other benign ovarian neoplasms is even more uncommon. This case emphasizes the importance of correlating clinical and radiological findings with comprehensive tissue sampling, accurate documentation of gross features, detailed histological evaluation, and immunohistochemical analysis to ensure an accurate diagnosis of such peculiar malignancies.

Conflict of interest: None

Ethics: Informed consent was obtained from the patient.

REFRENCES:

[1]. Kalonia T, Kumari N, Malik A, Kumar A, Bahadur A, Kishore S. A rare combination of Dermoid cyst and Cystadenoma: Are collision tumors in the ovary a real entity?. Autops Case Rep 2021;11:e2021249. https://doi.org/10.4322/acr.2021.249
[2]. Ravikanth R. A rare case of collision tumor: Massive mucinous cystadenoma and benign mature cystic teratoma arising in the same ovary. Chrismed J Health Res 2017;4:201-3.
[3]. Bostanci MS, Yildirim OK, Yildirim G, Bakacak M, Ekinci ID, et al. Collision Tumor: Dermoid Cysts and Mucinous Cystadenoma in the Same Ovary and a Review of the Literature. Obstet Gynecol Cases Rev 2015;2:031.
[4]. Al-Zuheiri, Shatha TS, Fwakhrji SA. Ovarian mucinous cystadenoma arising from a mature cystic teratoma-a case report. Hamdan Med J 2017;10(4):257–60. http://dx.doi.org/10.7707/hmj. 649