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Case Report

Bilateral dermoid cyst of the ovary: an overview of two cases

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ABSTRACT

Dermoid cyst (also called as 'mature teratoma') is a type of germ cell tumour. The word 'teratoma' is derived from Greek work 'teraton' meaning monster. It was initially used by Virchow in 1863. The term 'dermoid cyst' was coined by Leblanc in 1831. The majority of dermoid cysts are unilateral with equal frequency in both ovaries; moreover, bilateral tumours are found approximately in 10-12% of cases and we presented two such cases of bilateral dermoid cysts of ovary.

Keywords: Bilateral, Torsion, Dermoid, Mature teratoma, Ovarian cyst, Ultrasound

INTRODUCTION

Dermoid cyst is a type of germ cell tumour comprising of well differentiated tissues and three germ cell layers, known as mature cystic teratoma.[1]

Peak incidence in females aged 20-40 years, comprises 10-20% of all ovarian neoplasms.

Mature teratomas are usually benign, but in 0.1-0.2% of cases, it may undergo malignant transformation.[2] They may remain asymptomatic or may present with acute abdomen due to torsion, infection, or rupture.

In very rare cases, symptoms are related to hormonal secretion (oestrogens, prolactin, etc) or paraneoplastic syndromes.[3]

The majority being unilateral, 10-12% cases are bilateral and we present two such cases of bilateral dermoid cysts in which they were enucleated with reconstruction of the remaining ovarian tissues.[4]

CASE REPORT

Case 1

26-year P1L1 came with abdominal discomfort and feeling of fullness. Cycles were regular. Vaginal examination revealed a normal sized uterus with anterior fornix mass of 12×10 cm cystic, not freely mobile and 10×8 cm on the left side. CA 125 level was within normal limits.

Ultrasound

Large complex solid cystic lesion noted in the right adnexa (10.5×6.8×9.5 cm), peripheral solid component hyper echoic-fat, calcific foci with post-acoustic shadowing, cystic component having mobile internal echoes and linear hyperechoic thin strands seen. Mild doppler vascularity

seen in the wall. Another thick walled complex solid cystic lesion left adnexa, peripheral solid component hyperechoic-fat low grade torsion- left bilateral dermoid cysts- ORADS 2.

Laparotomy findings

Large complex solid cystic lesion noted in the right adnexa (11×10 cm), torsion once- capsule intact, with no adhesions. Left ovary measuring 10×9 cm with a Rokitansky tubercle on the superior aspect. Hair follicles visualised through the cyst wall. Uterus anteverted normal in size. The anterior and lateral aspect had a considerable amount of normal ovarian tissue and hence bilateral ovarian cystectomy done retaining significant amount of normal ovarian stroma for menstrual function and future fertility. She went home on the fifth postoperative day. The patient came for follow-up after 1 month and also had a normal menstrual cycle. Histopathology confirmed the diagnosis of bilateral mature cystic teratoma.

Microphotographs

Microscopy of both ovaries show cyst wall lined by flattened squamous epithelium along with skin adnexal structures like hair follicles. Sebaceous glands and cartilage are also identified (Figures 3).

Case 2

28 years, para 1, live 1 came with right adnexal pain. Gynaecological examination showed an anteverted normal sized uterus; on the right side a mobile mass approximately 14 cm in diameter was palpable and the contralateral ovary with a diameter of about 10 cm. Abdominal and transvaginal US- the right ovary presented two complex masses of 7 and 6 cm in diameter localized in different ovarian regions, respectively. Left ovary showed normal parenchyma with a hyperechogenic complex mass of 9 cm in diameter. S/o multiple ovarian dermoid cysts. The woman underwent staging laparotomy to remove the ovarian masses; abdominal cavity and uterus being normal, the right and left dermoid cysts. Bilateral ovarian cystectomy was performed retaining significant amount of normal ovarian stroma for menstrual function and future fertility. Definitive pathologic examination confirmed the diagnosis of bilateral ovarian dermoid cysts.

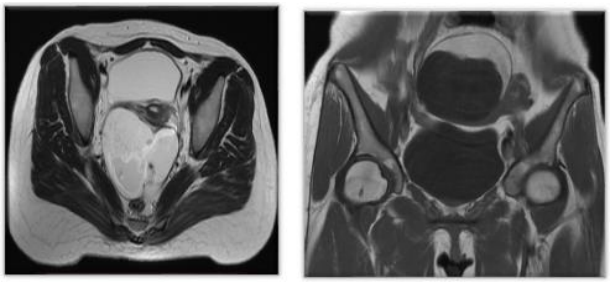

Figure 1: MRI pelvis- confirmed the presence of bilateral dermoid cysts.

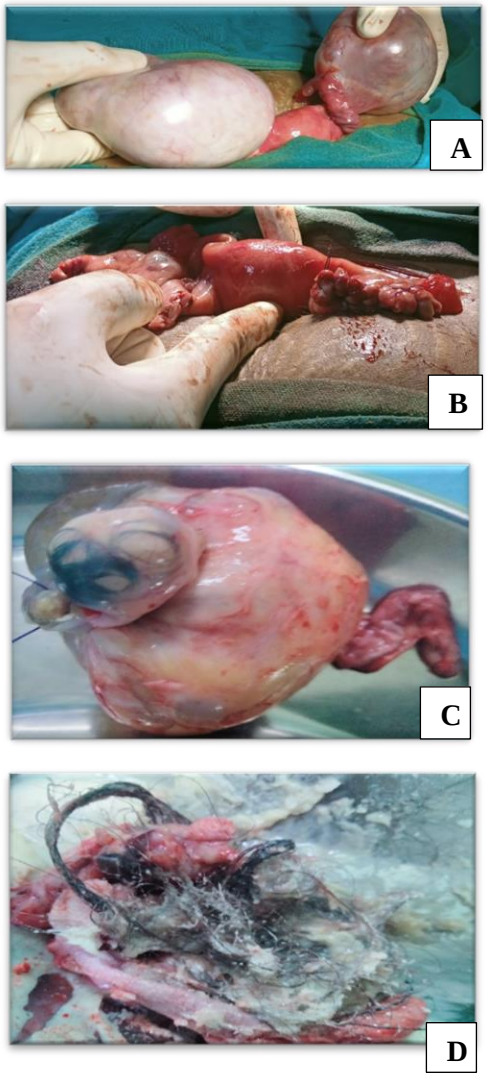

Figure 2: (A) Bilateral ovarian dermoid cyst intra-operative view- grossly both ovaries were cystic, right ovary measuring around 12×10 cm; (b) repair of the ovary after bilateral cystectomy; (c) note the Rokitansky nodule at the posterior wall with hyperintense parts that were proven to be fat and linear hair shafts arising from the nodule; and (d) in the macroscopic specimen, the floating ball corresponds to whitish creamy material containing hair and keratin.

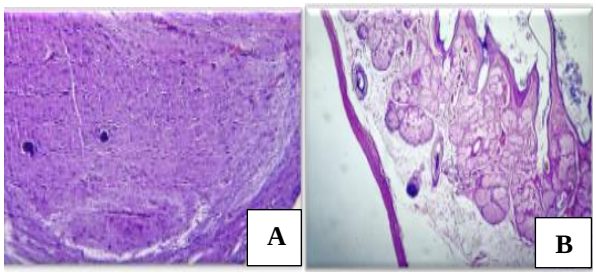

Figure 3: (A) Mature teratoma with glial tissue (40X); and (B) Squamous epithelium with underlying sweat glands, sebaceous glands and hair shaft (ectoderm) (4X).

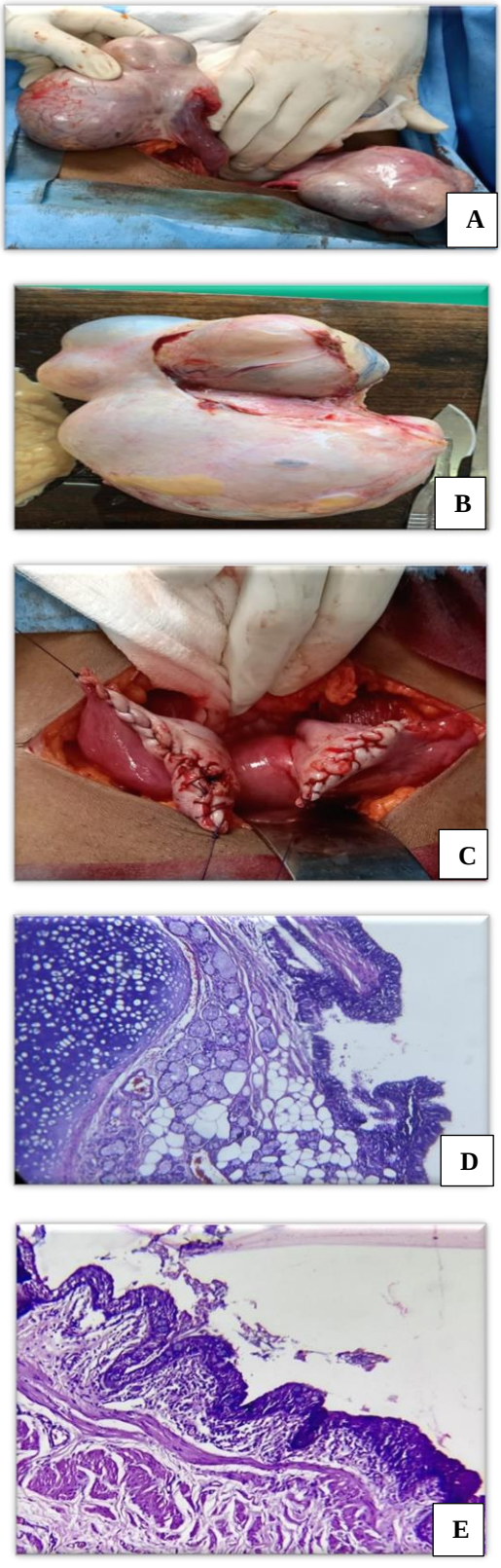

Figure 4: (A) Bilateral ovarian dermoid cyst intraoperative view; (B note the Rokitansky nodule; (C) repair of the ovary after bilateral cystectomy, retaining healthy ovarian tissue; (D) respiratory epithelium (endoderm) with cartilaginous lobule (10X); and (E) colonic epithelium (endoderm), and muscle bundle (mesoderm) (10X).

DISCUSSION

Mature cystic teratoma (MCT) is the most common neoplasm of the ovary and form 20% of all ovarian tumours.[5] Mean age is 30 years, younger than epithelial ovarian neoplasms.[6] Bilaterally seen in 12% of the cases.[7] In unilateral cases, MCT occurs more frequently on the right side (72.2%).[8] Ten per cent of dermoid cysts are diagnosed during pregnancy. It could co-exist with parasitic intraabdominal dermoid cysts or in the omentum, in the pouch of the Douglas or in the uterosacral ligament.[9-11] Ovarian teratomas are divided into sub-categories as follows: mature cystic teratomas, immature teratomas, mono-dermal (struma ovarii, carcinoid tumours, neuroectodermal tumours, sebaceous tumours) and fetiform teratomas.[3,12]

Surti et al postulate five mechanisms of origin: error of meiosis I, error of meiosis II, end reduplication of a haploid ovum, mitotic division of a premeiotic germ cell, and fusion of 2 ova.[13]

Pathology

MCT usually looks like a unilocular cystic cavity at macroscopic examination. Also it may include septa dividing the cyst into several compartments. The tumour cavity is filled with sebaceous material because of the squamous epithelia in the wall. This material is liquid at body temperature and semisolid at room temperature.[14] Rokitansky protuberance, projects into the cyst cavity with bone and tooth and is a common site of malignant transformation and should be sectioned appropriately during pathologic analysis.[3,5,15]

Also, most of the hair arises from this nodule and is seen floating together with keratin and sebum in the lumen. Fat is present in more than 93% of the cases.[16] Sebaceous liquid material contains most of the lipid content whereas adipose tissue is less common.[17]

Histologically, mature tissues from different cell lines lie within the wall. Walls of the cyst are frequently lined by squamous epithelium and often hyalinized, compressed ovarian stroma covers the external surface.[6] In an MCT, ectodermal elements are almost always present. When ectodermal tissues predominate, these teratomas are called as dermoid cysts.[15]

Endodermal tissues (mucinous or ciliated epithelium) can also be seen in the majority of cases and mesodermal tissues are present over 90% of cases.[17] The presence of any immature tissue warrants a diagnosis of immature teratoma.

Presentation

Benign and asymptomatic unless a complication or a paraneoplastic syndrome develops growing slowly at a rate of 1.8 mm/year.[18]

Ovarian mature cystic teratomas (MCTs) have a wide spectrum of radiological presentation

Transvaginal sonographic evaluation using pattern recognition by experienced operators is the optimal approach to the diagnosis of dermoid cysts.[19] Hypoechoic hair balls with posterior acoustic shadowing. Tip of the iceberg sign created by amorphous echogenic interfaces of fat, hair and tissues in focus in the foreground that shadow and thus obscure the structure behind it.[20-22] Rokitansky nodule (dermoid plug)- curvilinear or globular calcification in the Rokitansky nodule, in the tumour wall or in/near the septa, may show acoustic shadowing due to hair, teeth and the fat content.[23]

Chemical shift artefact (86%) This tuft of matted hair in layered debris is usually mixed with whitish, cheese-like material and pronounced on MR images.[20] Echogenic shadowing calcific or dental (tooth) components.[24,25] The presence of fluid-fluid levels.[26,27] The dot-dash pattern (dermoid mesh)- the classic sonographic appearance of echogenic hair floating within an MCT, which has the highest positive predictive value (98%).[26,28,29] When two or more characteristic signs are present, the diagnosis of MCT can be made with a high positive predictive value.[26] Intra-cystic hyper-echoic floating balls sign are an uncommon pathognomonic feature of MCT These balls are hyperechoic because of cheese-like sebaceous material, keratin and hair, with keratin being the major component.[30-32]

Intra-tumoral fat and typically CT images demonstrate fat (areas with very low Hounsfield values), fat-fluid level, calcification (sometimes dentiform), Rokitansky protuberance, and tufts of hair. The presence of most of the above tissues is diagnostic of ovarian cystic teratomas in 98% of cases. Whenever the size exceeds 10 cm or soft tissue plugs and cauliflower appearance with irregular borders are seen, malignant transformation should be suspected.[33,34] Pelvic MRI usually tends to be exquisitely sensitive to fat components (both fat suppression techniques and chemical shift). 83% accuracy in diagnosing ovarian lesions imaging in younger populations of women with suspected pelvic lesions was seen in a study.[35]

Complications

The complications were- ovarian torsion as 3-16% of ovarian teratomas; rupture as 1-4%; malignant transformation in 1-2% women with bilateral or multiple dermoid cysts have a greater tendency for future ovarian germ cell neoplasms; nearly 80% of the histological type of malignant transformations is squamous cell carcinoma (SCC), followed by adenocarcinoma, carcinoid tumour, melanoma, and sarcoma; superimposed infection as 1%; autoimmune haemolytic anaemia as <1%; hyperthyroidism (in struma ovarii only); and carcinoid syndrome (rare).[36,37]

Differential diagnosis

Differential diagnosis were haemorrhagic ovarian cyst, endometrioma, pedunculated lipo-leiomyoma of the uterus, and ovarian serous or mucinous cystadenoma/cystadenocarcinoma.

Ovarian cystectomy through Laparotomy has been the preferred procedure for management because of the risk of chemical peritonitis resulting from spillage of its contents, although laparoscopy is now preferred by some using endo-bags and special precautions.[39] If intraoperative spillage does occur, cyst contents should be removed immediately from the peritoneal cavity by repeated washing and aspiration.

During cystectomy, a cleavage plane is created between the cyst wall and blunt dissection of capsule done. Cysts which were easy to access and larger ones are removed first and the cyst wall is removed completely. Both the ovarian reconstruction with vicryl no. 2-0 with simple intra-corporeal sutures is achieved. Perfect haemostasis is ensured. Utmost care is taken not to rupture the cyst and the peritoneal cavity is irrigated with saline.

Recurrence

The recurrence risk of ovarian dermoid cyst within 2 years is 7.6%, following laparoscopic cystectomy.[40] According to Harada et al young age (8 cm), and bilateral occurrence are predictive risk factors for recurrence, with the risk of recurrence being especially high was reported.[41]

CONCLUSION

Bilateral ovarian cystectomy is performed to retain significant amount of normal ovarian stroma for menstrual function and future fertility since 10-12% cases are bilateral as in our case series.

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