

## Coexistence of Mature Cystic Teratoma and Endometrioma in an Ovarian Cyst

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### Abstract:

A rare association mature cystic teratoma (MCT) with endometrioma in the left ovary is reported in English literature. Coexistence MCT and endometrioma in the same ovary is extremely rare and its diagnostic is a challenge clinically and radiologically. To our knowledge we report the third case coexistence of a nonneoplastic endometrioma and benign neoplastic mature cystic teratoma in ovary.

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Association between mature cystic teratoma (MCT) and cyst endometrioma in the same ovary is extremely rare and less than five cases of this entity have been reported in the literature.

Teratomas, habitually named dermoid cyst, predominantly occur in young women. They account for 10-20% of all ovarian tumors and are bilateral in 10 to 15 % of cases (1). They arise in the ovary but can be located at the midline and in paraxial regions of the body and unusual locations, including lungs or ilea, were described (2).

Pathologically, they are composed of tissues derived from one or more of the three primitive germ layers and have often a cystic structure with a mean larger diameter of 8 cm. Typically it contains mature tissues of ectodermal (skin, brain), mesodermal (muscle, fat) and dermal (mucinous or ciliated epithelium) origin (3). The initial biological event that leads to teratoma is not yet understood. Stenens LC and Varnum DS,1974. (4) and Hiaro Y and Eppig JJ (1997) (5) postulated that teratomas were derived from oocytes that undergo maturation and spontaneous parthenogenic activation followed by embryonic development within the ovarian follicles. MCT is usually asymptomatic and doesn't have any specific symptoms. MCT can be associated with acute complications including torsion, rupture, infection or haemolytic anaemia (6). Malignant transformation occurs in 1% of cases (7).

A transabdominal or transvaginal ultrasound reveals a large hyperechoic mass with posterior shadow-cone because of the sebaceous and hair materials or a hypoechoic cyst if it contains only sebaceous material liquid. The bones and teeth appear hyperechoic (8). MCT are sometimes difficult to distinguish on ultrasound from hemorrhagic cysts, mucinous cystic neoplasm and endometriomas (9). In these cases, the magnetic resonance imaging (MRI) plays an important role in diagnosis. Cystic teratoma appears as a large pelvic monocular cyst with a solid nodule named Rokitansky protuberance attached to a thin wall and protrudes in the cyst lumen Figure 2 . Standard T1 weighted images with fat saturated T1 weighted images establish the diagnosis when the fat removed and the fluid-fat levels is also seen. The sebaceous component of cystic teratoma is hyper-intense on T1-weighted images

Figure 4. Findings of calcifications are variable and difficult to detect Figure 3. However, 7% of MCT don't contain any fat or calcifications (10). IV contrast gives a small nodule and wall cyst enhancement. The relationship between the teratoma and other anatomic pelvic structures can be well evaluated (11).

However, a complex cystic appearance may be mistaken for malignancy in 1-2% of large tumours. In these instances, demonstrating fat and Rokitansky protuberance can aid in the diagnosis of MCT, but contrast material IV is not useful in the evaluation of the endometriomas and can't differentiate it from other benign or malignant neoplasms.

Despite the association between ovarian mature cystic teratoma and cystic endometrioma being uncommon, this possibility must be considered in the differential diagnosis of multiple ovarian tumors in the same ovary. The correct radiological diagnosis is of great value in planning treatment with the most favourable prognostic.

Endometriosis is a complex pathology with various presentations affecting 10-15% of women of reproductive age and its physiopathology is still unclear. Several pathogenic theories are proposed: metastatic theory, metaplastic theory, induction theory, growth factors and immunity. It is defined as the presence of functional endometrial glands outside of the uterine cavity, ranging from microscopic implants to large cysts (endometrioma)(12).The ovary is the first site of occurrence but endometrioma can appear in soft tissues, the gastrointestinal or urinary tracts and the chest (13). Clinically, endometriosis symptoms don't correlate with the severity and extension of the disease. Infertility, dyspareunia, dysmenorrhoea, and chronic pelvic pain are nonspecific for endometriosis. Ultrasound (US) shows a unilocular or multilocular structure with multiple separate cysts. Generally, the endometrioma is homogeneous, with a smooth echogenic wall, well-defined and has hypo-echoic content within the ovary. Endometrioma can have variable features sonographically and mimic other cystic ovarian neoplasms (14). MRI reveals a hyper-intense ovarian mass on T1-weighted that doesn't disappear in saturated fat and demonstrating a gradient of low signal intensity (shading) on T2-weighted images. Many endometrioma

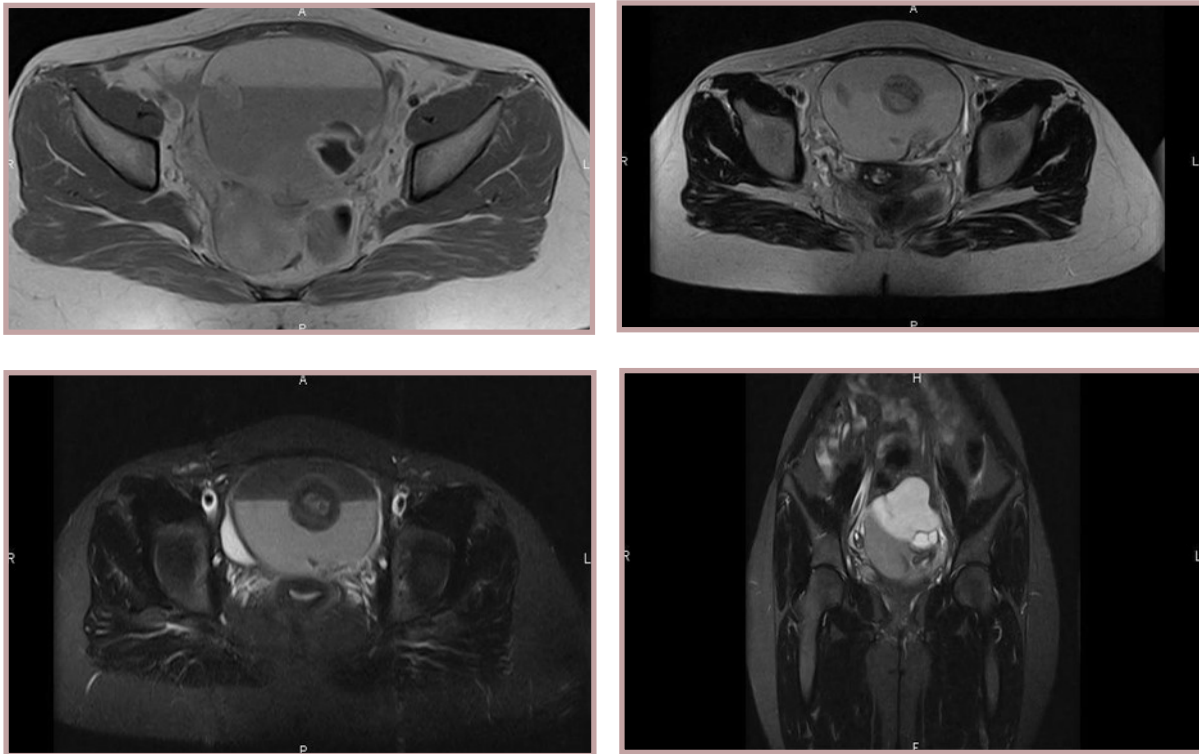


Fig .1- (a,b,c,d ) : Two lesions within cystic component measuring 6 x 7 x 8 cm. MRI reveals a large and well-defined encapsulated tumour. Two solid components with an intermediate signal in T2 and T1 with a moderate contrast enhancement on T1 weighted.

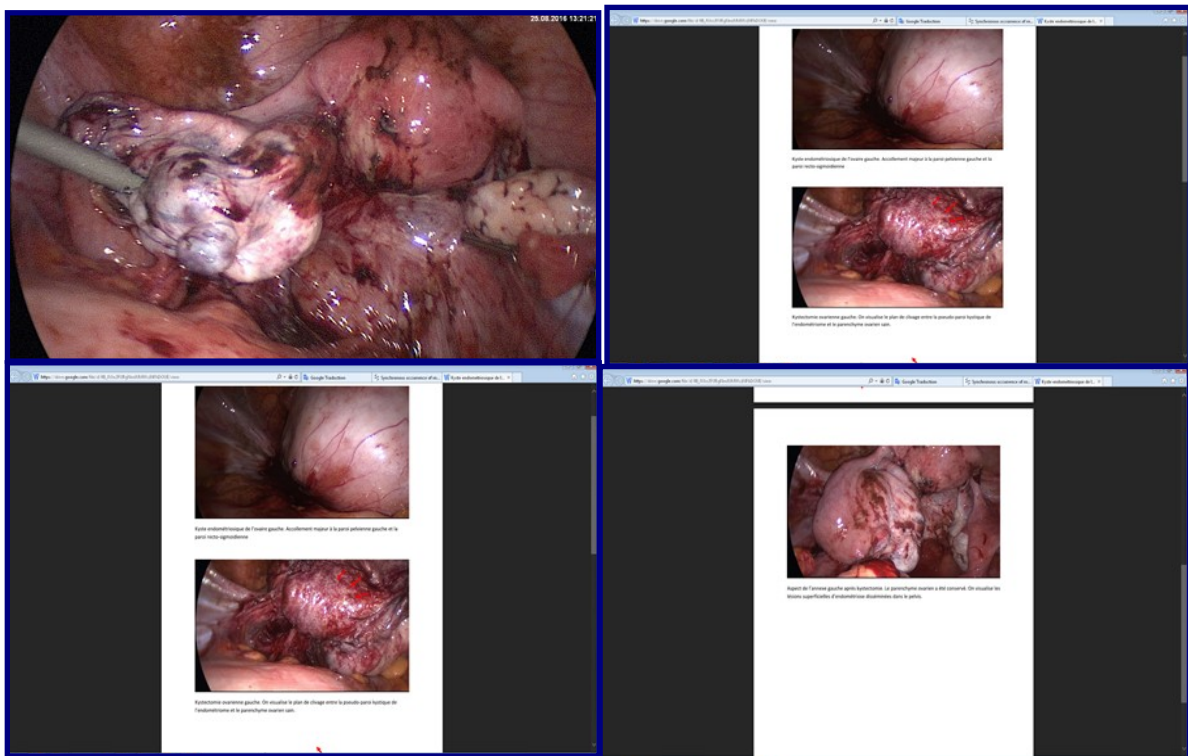
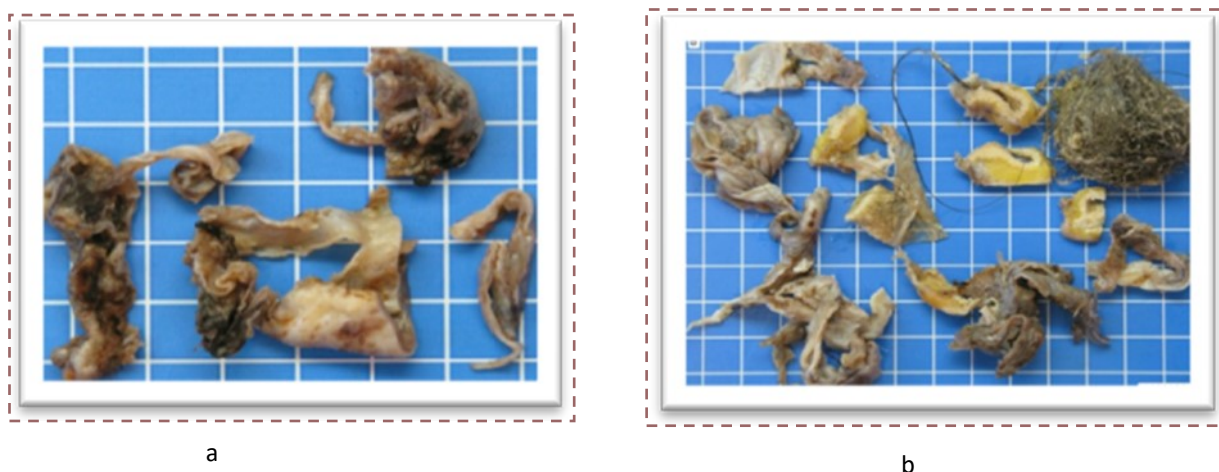
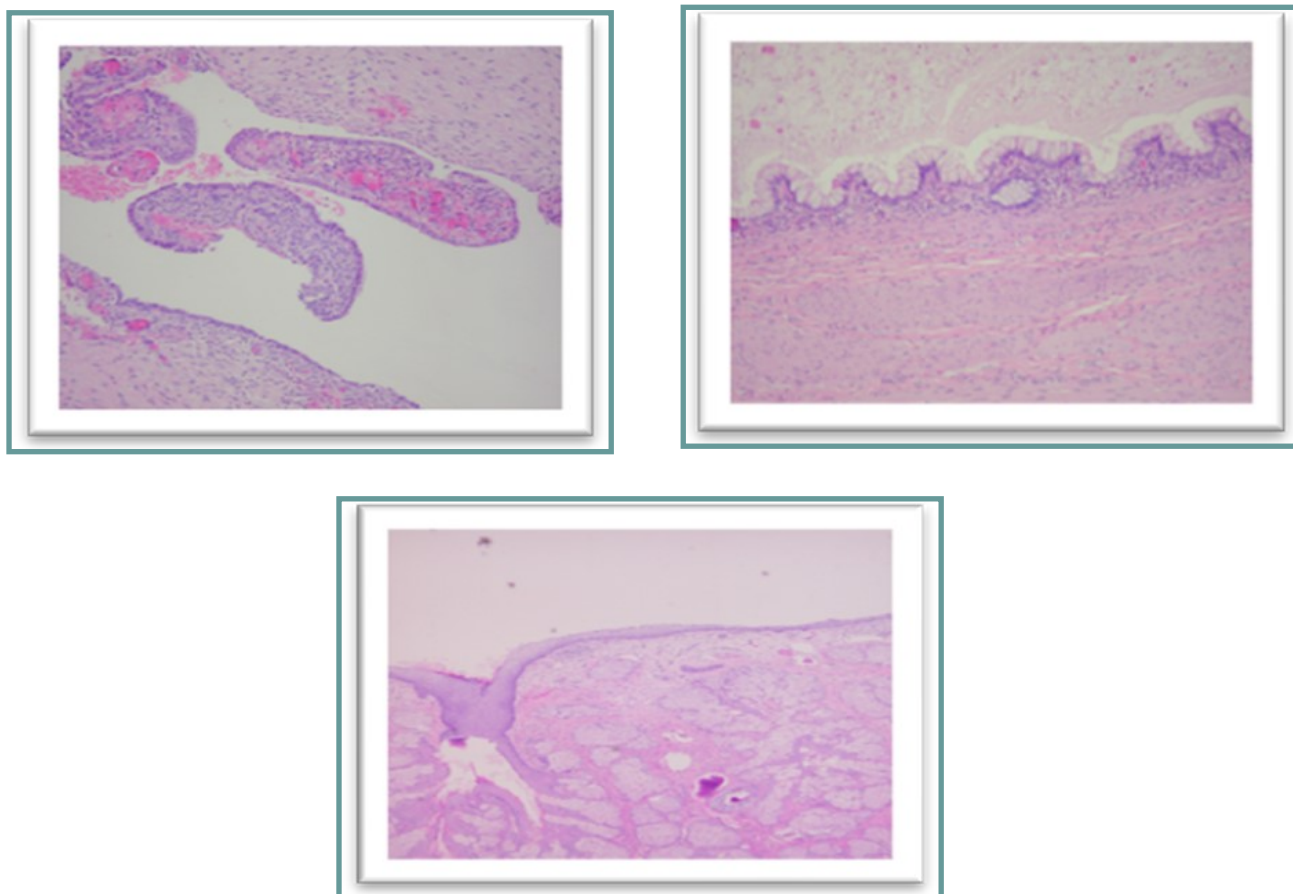


Fig.2-(a, b, c, d), Surgical finding showing (a, b) left ovarian cystectomy. We visualize the cleavage plane between the pseudo-cyst wall of endometria and the healthy ovarian parenchyma. (c) Appearance of left remaining adenexa after cystectomy. (d) Ovarian parenchyma was preserved.



**Fig.3-(a, b)**, a, Gross findings of the endometrioma with brown internal surface. b, Mature cystic teratoma with fat tissue and hair.



**Fig.4 (a, b, c):** Histological examination. **a**, cyst lined by endometrial epithelium overlying its endometrial stroma corresponding to an endometriosis cyst. **b**, a portion of the cystic mature teratoma lined with intestinal-type mucosa. **c**, skin surface-like structure with many sebaceous glands found on another part of the cyst.

had shadows with varying degrees of signals of low to intermediate intensity according to the different stages of blood products present inside of the cyst. The differential diagnosis for ovarian endometriosis includes hemorrhagic cyst, mature cystic teratoma and mucinous cystic neoplasm. Figure 1 Large masses with wall nodularities should be carefully sampled to rule out malignancy (15). The rarity of coexistence of teratoma with ovarian endometrioma adds to the difficulty to differentiate it from malignancy. This association constitutes a major diagnostic challenge radiologically, clinically and biologically, which ends in a treatment also challenging in itself. Since the first description of a possible link between endometriosis and ovarian cancer in 1925 by Sampson (16), many groups have investigated the association between malignant and benign tumours. Ottolenghi-Preti, Hennessy et al revealed a coexistence of a ovarian carcinoma with dermoid cyst (17), and Mareial Rojas and Ramiret De Arellano (18) revealed a coexistence of the malign melanoma with dermoid cyst. However, association between MCT and cystic endometrioma in the same ovary is extremely rare. Only few cases have been described in the English literature by E. Ferrario in 1960 (19), Caruso et Pirrelli in 1997 (20) and Frederick J and DaCosta V, in 2003 (21).

This shows that there is still a lack of knowledge on the association between various types of tumours in the same ovary. Clinicians remain unable to diagnose simultaneous presence of two distinct pathologies in a single ovary. Moreover, it was reported that the level of serum CA-125 is often elevated in women with endometriomas and in cystic teratomas (22).

Despite advances in radiological technics, the coexistence of dual pathology tumour in the same ovary constitutes a major diagnostic challenge in radiology. The study of Benvancalster et al showed that ultrasound examiners assigned a correct specific diagnosis to at least 80% of endometriomas and 84% of dermoid cysts (22).

MRI characterizes with certainty the following benign injuries: cyst adenoma, serous, or fibrous tumors (Brenner tumor, fibroma and fibrothecoma), mature teratoma with fat as pathognomonic component and ovarian endometriomas (23).

However, a complex cystic appearance may be mistaken for malignancy in 1-2% of large tumours. In these instances, demonstrating fat and Rokitansky protuberance can aid in the diagnosis of MCT, but contrast material IV is not useful in the evaluation of the endometriomas and can't differentiate it from other benign or malignant neoplasms.

Despite the association between ovarian mature cystic teratoma and cystic endometrioma being uncommon, this possibility must be considered in the differential diagnosis of multiple ovarian tumors in the same ovary. The correct radiological diagnosis is of great value in planning treatment with the most favourable prognostic.

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