

# Squamous Cell Carcinoma Arising in Mature Cystic Teratoma of the Ovary: A Case Report with Review of Literature

<sup>1</sup>Gayathri BN, <sup>2</sup>Kalyani R, <sup>3</sup>Vidyavathi K

<sup>1</sup>Assistant Professor, Department of Pathology, Sri Devaraj Urs Medical College, Kolar, Karnataka, India

<sup>2</sup>Professor, Department of Pathology, Sri Devaraj Urs Medical College, Kolar, Karnataka, India

<sup>3</sup>Associate Professor, Department of Pathology, Sri Devaraj Urs Medical College, Kolar, Karnataka, India

**Correspondence:** Gayathri BN, Assistant Professor, Department of Pathology, Sri Devaraj Urs Medical College, Tamaka Kolar-563101, Karnataka, India, Phone: 09880386126, e-mail: gayu\_ub08@rediffmail.com

## ABSTRACT

Up to a quarter of ovarian masses originate from germ cells and many of these are mature cystic teratomas (MCT). The secondary development of malignancy is a rare but well-known phenomenon in patient with ovarian teratomas. The incidence of malignant transformation in mature cystic teratoma of the ovary is less than 2% as reported in gynecological and pathological literature. Here, we present a case of malignant transformation in MCT of the ovary.

**Keywords:** Mature cystic teratoma, Squamous cell carcinoma, Ovary.

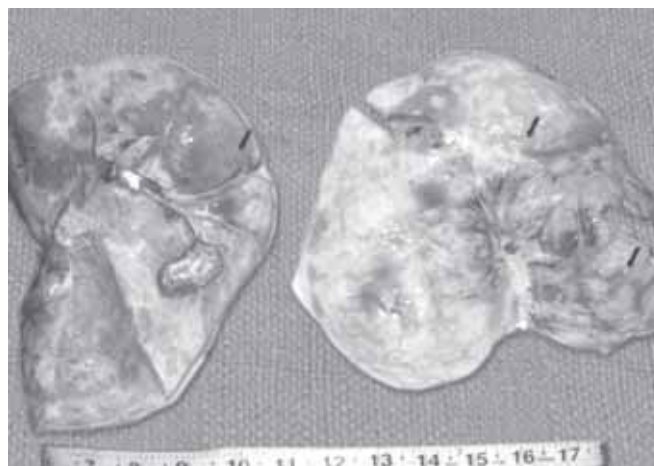
## INTRODUCTION

Benign cystic teratoma (dermoid cyst) is one of the most common ovarian neoplasms. It accounts for 95% of all ovarian teratomas, composed entirely of mature adult tissues, usually representing all three germ layers. The typical dermoid cyst contains a prominent unilocular cavity filled with hair and sebaceous oily fluid.<sup>1</sup> Squamous cell carcinoma accounts for 80% of secondary malignant transformation in MCT of ovary.<sup>2</sup> The remainder are adenocarcinoma, sarcoma, melanoma and other rare tumors.<sup>3</sup>

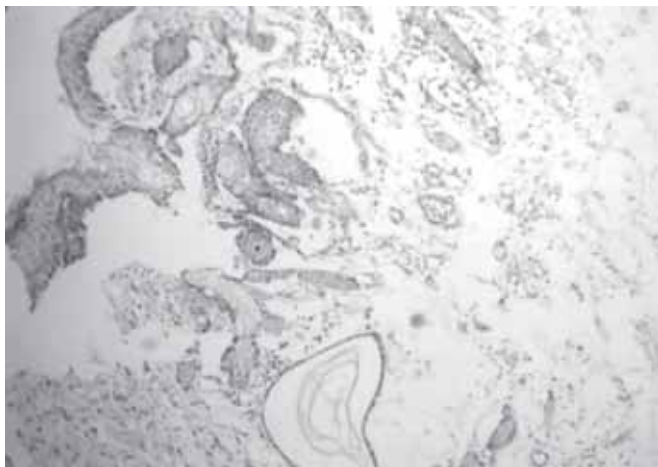
## CASE REPORT

A 65-year-old postmenopausal female presented with abdominal mass of long duration. She was P2L2 and last child birth was 28 years back. No history of pain in abdomen or abnormal vaginal bleeding. General physical examination was normal. Per abdomen examination revealed mass measuring 30 × 25 cm in left lower quadrant of abdomen. There was no ascites. Clinical diagnosis of ovarian tumor was made. Preoperative ultrasonological diagnosis revealed left sided dermoid cyst. Total abdominal hysterectomy with bilateral salpingo-oophorectomy was done; there were no adhesions or peritoneal implants. On gross examination, left ovary was cystic measured 20 cm in diameter. Cut section showed multilocular cyst, cyst wall measured 0.1 to 0.2 cm in thickness and contained pultaceous material with hair ball. Focal small multiple grey white nodules were seen in the inner surface of cyst measuring 0.1 to 0.2 cm (Fig. 1). No solid areas were seen on the outer surface of the cyst. Uterus, cervix, fallopian tubes and right

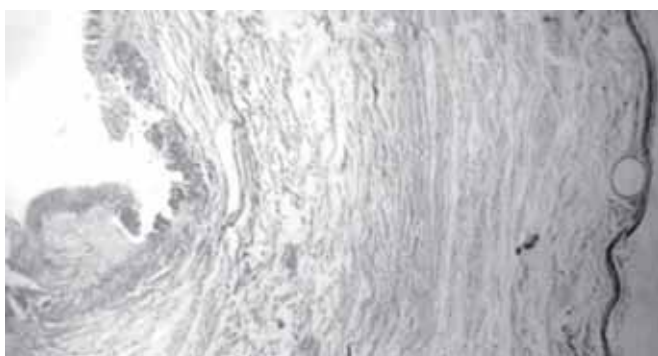
ovary were unremarkable. Microscopic examination from cyst wall showed mature squamous epithelium with hair follicle, adnexal structures and fat (Fig. 2). A focus of cyst wall was lined by malignant squamous epithelium (Fig. 3). Sections from grey white nodules showed islands of tumor cells having eosinophilic cytoplasm, vesicular nucleus and mild to moderate pleomorphism. Mitosis was frequent, and focal intracellular and extracellular keratin were present showing squamoid differentiation with mild inflammation and extensive necrosis (Fig. 4). Sections from cervix, endometrium, myometrium, right and left tube and right ovary were unremarkable. Diagnosis of primary moderately differentiated squamous cell carcinoma arising in a mature cystic teratoma was made. TNM staging (FIGO) of T1aN0M0 with final pathologic classification of



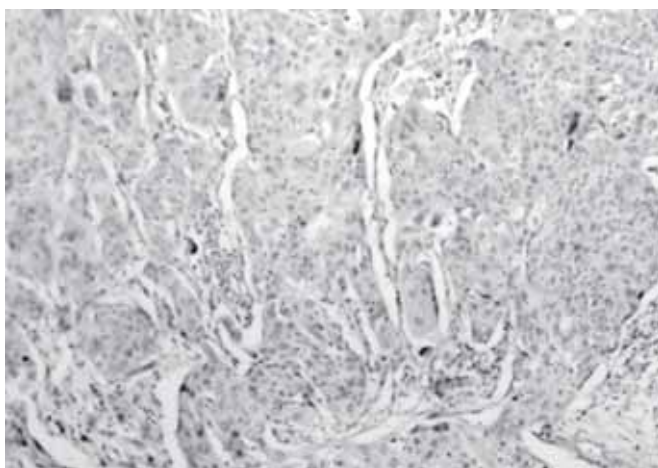
**Fig. 1:** Multiloculated ovarian cyst with hair ball and grey white nodules (arrows)



**Fig. 2:** Microphotograph showing mature squamous epithelium with adnexal structures (H&E, x100)



**Fig. 3:** Microphotograph showing cyst wall lined by malignant squamous epithelium (left), mature squamous epithelium (right) (H&E, x40)



**Fig. 4:** Microphotograph showing islands of tumor cells with moderate nuclear pleomorphism (H&E, x100)

stage 1A was made. The patient had an event-free postoperative course and there was no evidence of local recurrence or metastasis.

## DISCUSSION

Squamous cell carcinoma (SCC) arising in MCT is extremely rare and there has been even less discussion on its

histomorphological analysis and preoperative diagnosis. Average age of SCC arising in MCT had been reported to be 58.2 years as compared to 37.5 years with MCT. Our case was in the older age group. It has also been mentioned that mean size of SCC was 152.3 mm compared to 48.2 mm in MCT, as was noted in our case. SCC antigen has been suggested to be of help in differential diagnosis of MCT and SCC arising in MCT, but has no bearing on the prognosis.<sup>4</sup>

Two origins, epidermal and respiratory, have been suggested for squamous cell neoplasms *in situ* occurring either alone or in the vicinity of and in transition with invasive squamous carcinoma. Some SCCs have originated from respiratory epithelium and histologically may resemble some types of carcinomas of the bronchus. In our case, the carcinoma was arising from the squamous lining of the cyst wall.<sup>1</sup>

The malignant component of this tumor sometimes exists in only part of the lesion causing difficulty in its identification grossly. A tumor arising in MCT may appear grossly as polypoidal mass, mural nodule, mural plaque or as an area of hemorrhage and necrosis, so every case of MCT should be carefully grossed. The malignant component in this case presented as small grey white nodules.<sup>5</sup>

SCC arising in MCT can be seen microscopically as nests of squamous cells infiltrating the stroma as well as cyst lined by malignant squamous cells. Other histological patterns are papillary, insular, verruciform as well as spindle cell pattern. In high-grade tumors, squamous differentiation is inconspicuous. In our case tumor cells were arranged in nests infiltrating the stroma.<sup>5</sup>

As SCC arising in MCT is quite rare, one must exclude metastasis particularly from cervix. Stromal invasion by malignant appearing epithelium should be definite criteria for categorizing MCT with malignant transformation. Modes of infiltration of tumor cells in the stroma are classified into three patterns. In alpha mode, the tumor cells invade the stroma expansively with a well-defined border between the tumor and the stroma, while in gamma mode; the tumor cells diffusely invade the stroma without a clear border. Beta mode shows intermediate features between alpha and gamma mode. In addition to the mode of infiltration, stage, grade, vascular involvement and residual tumor are also important prognostic factors in teratomas with malignant transformation.<sup>5</sup>

Mode of infiltration of tumor cell in the stroma was first described by Kikkawa et al. They studied 32 cases of SCC arising in MCT and noticed that 11 patients with alpha mode remained alive without disease, whereas 12 patients showed beta mode, four out of them died within 20 months. Nine patients showed gamma mode; all of them died within 19 months. Thus, their analysis showed significant differences among these three groups, suggesting that the mode of infiltration is a good predictor of recurrence and prognosis. In our case gamma mode of tumor infiltration was seen.<sup>6</sup>

The spread of SCC from a cystic teratoma is principally by direct extension to pelvic structures. While the prognosis seems highly dependent on surgical stage, there is a lack of consensus in the literature regarding adjuvant treatment. Platinum-based chemotherapy with pelvic radiation may be a reasonable adjuvant therapy for early-stage disease.<sup>7</sup>

## CONCLUSION

Malignant transformation of an MCT should be borne in mind by the clinicians when faced with MCT, especially in older patients. SCCs arising in MCT are commonly large ovarian neoplasms and usually present as an incidental pathologic finding. All cystic tumors of the ovary irrespective of their gross appearance, have to be sent to histopathological examination to rule out malignant focus. The prognosis is generally poor, so early detection is important for long-term survival.

## ACKNOWLEDGMENT

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