

# Clinicopathological features of ovarian Brenner tumors in Montenegro

## Research Article

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**Abstract:** Aim: The aim of this study was to describe the clinicopathological characteristics of ovarian Brenner tumors in Montenegro. Methods: Twelve female patients (aged 53-80 years; mean 65 years) with ovarian Brenner tumors were selected from our histopathology records between 2010 to 2012. Results: Tumor size ranged between 1 and 13 cm (mean 8 cm): of these, ten were benign (83%) and two were malignant (27%). Eight tumors (67%) were found incidentally. One patient (8%) had bilateral Brenner tumors. Nine patients (75%) had coexisting tumors: five (42%) coexisting mucinous cystadenomas, one (8%) mucinous cystadenocarcinoma, two (17%) endometrial carcinomas of the endometrium, and one (8%) endometrial polyp. Conclusions: Brenner tumors are most frequently solid neoplasms of the ovary, found by chance, and may be associated with other ovarian or uterine epithelial neoplasms.

**Keywords:** Brenner tumor • Clinicopathological features • Montenegro

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## 1. Introduction

Brenner tumors are rare ovarian neoplasms. The most common age at presentation is fifty years with 70% of patients being over 40 years [1]. It represents around 3% of all ovarian tumors, occurring more commonly after the menopause. These tumors are usually benign, with malignant change found only in around 5% of patients [2]. Brenner tumors are usually solid, unless they are associated with other cystic ovarian tumors [3]. Microscopically, such tumors consist of numerous islets of transitional or squamous epithelium, with some small tubules lined with cylindrical cells surrounded by fibrous tissue. In malignant tumors, the epithelium shows cytological atypia with differentiation through pure or mixed transitional and squamous epithelium, or undifferentiated or anaplastic carcinoma.

### 1.1 Objective

The aim of this study was to present the clinical and pathological characteristics of Brenner tumors removed between 2010 and 2012 at the Clinical Center of Montenegro.

## 2. Methods

Pathological records from 2010 until 2012 at the Clinical Center of Montenegro were searched for the term 'Brenner tumor', and matching records were identified and reviewed retrospectively. Twelve cases of ovarian Brenner tumors were found. Sections of 4-5 micrometers were cut from paraffin-embedded tissue and stained with hematoxylin-eosin. From pathohistological analysis we determined the size of tumors, gross appearance and color, tumor type and coexistence of other ovarian or uterine neoplasia.

## 3. Results

Patients were aged between 53-80 years (mean 65 years). Eight tumors (67%) were found incidentally. Five (42%) of the twelve tumors were on the left ovary; six (50%) on the right ovary; and one (8%) patient had bilateral Brenner tumors (Table 1).

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**Table 1.** Localization of Brenner Tumors.

	N (%)
Left ovary	5 (42%)
Right ovary	6 (50%)
Bilateral	1 (8%)

In nine cases (75%), coexisting ovarian or uterine neoplasms were present. Six (50%), lesions which associated with Brenner tumors were found in the ipsilateral ovary (Figure 1 and 2), and three (25%) were located in the endometrium (one endometrial polyp and two endometrial carcinomas) (Table 2).

**Table 2.** Neoplasms Associated With Brenner Tumors.

Type of Neoplasm	N (%)
Mucinous cystadenoma	5 (42%)
Mucinous cystadenocarcinoma	1 (8%)
Carcinoma endometrii	2 (17%)
Polypus endometrii	1 (8%)
Leiomyoma uteri	2 (17%)

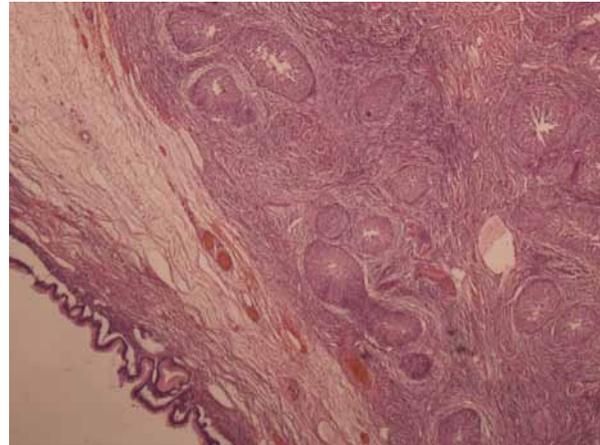
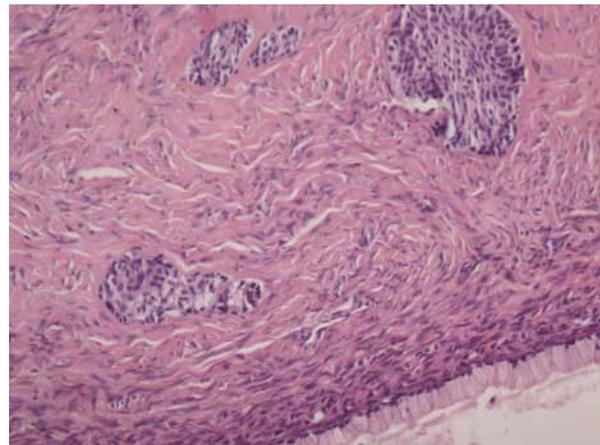
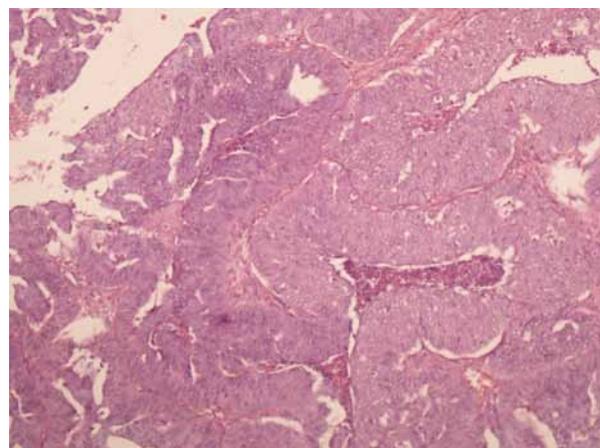
Five (42%) tumors were seen with coexisting mucinous cystadenomas, one (8%) with a mucinous cystadenocarcinoma, two (17%) with endometrial carcinomas, and in one case a patient had an endometrial polyp. In two cases (17%) we found a coexisting Brenner tumor, ovarian mucinous cystadenoma and leiomyoma of the uterus (Table 2).

Pathological examination revealed the Brenner tumors ranged in size from 1 to 13 cm (mean 8 cm). Ten (83%) tumors were benign, and two (17%) were malignant (Figure 3). Nine (75%) tumors were solid of which two were found as an intramural node in the wall of a cystic adenoma. Most tumors were macroscopically solid, brown-yellow in color and firm. Three (25%) of the tumors were partially cystic.

The two patients with malignant tumors were 65 and 67 years old. In the first case the tumor was located in the right ovary (13 cm in size), with foci of necrosis and hemorrhage. In the second case the tumor was bilateral, solid in the right ovary (4 cm in size), and partially cystic in the left ovary (11 cm in size). Both malignant tumors were diagnosed in 2011, and therefore we do not have enough information about the subsequent clinical course.

## 4. Discussion

Brenner tumors of the ovary, on the basis of histological appearance and their resemblance with urothelial epithelium, are classified as tumors of transitional epithelium. Brenner tumors arise from the superficial ovar-

**Figure 1.** Association between mucinous cystadenoma (left) and Brenner tumor (right) in the ovary (HE 40x).**Figure 2.** Nests of transitional epithelium surrounded by fibrous stroma (Brenner tumor). On the bottom cylindrical mucinous epithelium (mucinous cystadenoma) (HEx200).**Figure 3.** Nests of papillary arranged atypical cells in malignant Brenner tumor (HEx100).

ian epithelial cells, or from metaplastic change in the mesothelium. Of all ovarian tumors, Brenner tumors represent around 3% [4]. As some of these tumors are asymptomatic during one's lifetime, the real incidence is probably higher.

The mean age of the patients in our study was 65 years. Other authors have reported mean ages of 46.5 to 63 years [3,5]. Age also correlates with the disease type: benign Brenner tumors are usually found in patients aged between 35 and 65 years [6], while malignant and borderline tumors tend to occur in older patients [7]. Both our patients with malignant Brenner tumors were over 55 years old.

Brenner tumors are usually found incidentally. We did not find significant differences in a side predilection.

Common presenting symptoms of Brenner tumors include vaginal bleeding, pain and symptoms relating to the tumour mass-effect. Rarely, tumors can produce estrogen and this may be a cause of vaginal bleeding [7]. We observed three (25%) patients with vaginal bleeding: two of them with a coexisting endometrial carcinoma and one with an endometrial polyp.

We found a high incidence (50%) of coexistence between Brenner and other ovarian tumors in comparison to the 30% previously reported in the literature [7]. Should we include uterine tumors in our cohort, that incidence would be even higher (75%). Our incidence of bilaterality (8%), is

similar to that reported in the literature (5% to 7%) [8].

On histopathological inspection, Brenner tumors consist of epithelial islets within hyalinised stromal tissue (Figure 1-3). Stroma is sparse in malignant tumors, in contrast with benign tumors. Most benign Brenner tumors are usually solid at radiological and pathologic examination. In our study, 75% of Brenner tumors were solid. Benign tumors are well-confined, with a yellow-grey, cut surface. Where calcium deposition occurred, the tissue was firm. Borderline Brenner tumors can be partially cystic with warty masses on the cystic lumen. Malignant tumors have an infiltrative appearance and may be solid or partially cystic [6].

Tumor size may correlates with tumor type: benign tumors are usually smaller than 4.5 cm at presentation, whereas malignant tumors tend to be larger than 5 cm. Two Brenner tumors in our study were malignant, with sizes of 11 cm and 13 cm.

## 5. Conclusion

Brenner tumors can be found in coexistence with other types of ovarian and uterine epithelial neoplasm. The cystic parts of the tumors are usually associated with the presence of other cystic ovarian neoplasms, such as cystadenomas of a serous or mucinous type.

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