VOLUME - 15, ISSUE - 09, SEPTEMBER - 2026 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Histopathology

HISTOPATHOLOGIC AND CLINICAL SPECTRUM OF OVARIAN SEROMUCINOUS TUMORS: A DIAGNOSTIC PERSPECTIVE

Dr. Sonali Sahu* Professor and Head of Department, Department of Pathology, Chhattisgarh Institute of Medical Sciences, Bilaspur *Corresponding Author

Dr. B. P. Singh Director Professor and HOD, Department of Pathology, CIMS Bilaspur, Chhattisgarh.

Dr. Chitrangi P. Barpande Associate Professor Department of Pathology, Chhattisgarh Institute of Medical Sciences, Bilaspur

ABSTRACT

Background: Ovarian seromucinous tumors are uncommon epithelial tumors showing mixed Müllerian differentiation. Under the WHO 2020 classification, seromucinous carcinoma is no longer retained as a distinct carcinoma category and tumors with this morphology are generally classified within the endometrioid carcinoma spectrum. **Objectives:** To study the clinical and histopathological spectrum of ovarian seromucinous tumors and re-evaluate the cases in light of the WHO 2020 classification. **Materials and Methods:** This retrospective study included 12 cases diagnosed over 5 years. Clinical details and histopathological findings were reviewed, and previously diagnosed seromucinous carcinomas were reassessed according to WHO 2020. **Results:** The patients were 27–69 years old (mean 45.5 years). Seven cases (58.3%) were benign, three (25.0%) were borderline, and two (16.7%) were carcinomas in the original diagnostic series. Ten cases (83.3%) were unilateral and two (16.7%) were bilateral. Two cases previously diagnosed as seromucinous carcinoma were reclassified as endometrioid carcinoma with mucinous differentiation. No statistically significant association was reported between tumor category and laterality ($p>0.05$). **Conclusion:** Accurate interpretation of ovarian seromucinous tumors requires awareness of the updated WHO classification, particularly the reclassification of the former seromucinous carcinoma category.

KEYWORDS : Seromucinous Tumor, Ovary, Endometriosis, WHO 2020, Endometrioid Carcinoma

INTRODUCTION

Ovarian epithelial tumors encompass a wide variety of neoplasms with diverse morphology and biological behavior.[2] Seromucinous tumors were introduced as a separate entity in the WHO 2014 classification because of their mixed Müllerian epithelial differentiation.[2]

These tumors show a strong association with endometriosis, suggesting a possible origin from endometriotic epithelium.[3] Consequently, they are considered among endometriosis-related ovarian neoplasms.

Subsequent morphologic and molecular studies demonstrated substantial overlap between tumors previously classified as seromucinous carcinoma and established ovarian carcinoma histotypes, particularly endometrioid carcinoma. The WHO 2020 classification therefore removed seromucinous carcinoma as a distinct category and places such tumors within the endometrioid carcinoma spectrum.[1]

The present study analyzes the clinicopathological features of ovarian seromucinous tumors and re-evaluates the cases according to the updated WHO classification.

Objectives

1. To study the histopathological spectrum of ovarian seromucinous tumors.
2. To evaluate clinical characteristics including age and laterality.
3. To analyze the distribution of benign, borderline, and malignant tumors.
4. To reclassify tumors according to the WHO 2020 classification.
5. To highlight diagnostic challenges.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of Pathology over a period of 5 years. A total of 12 cases diagnosed as seromucinous tumors were included.

Clinical details such as age, laterality, and tumor size were obtained from records. All specimens were processed routinely, and sections were stained with hematoxylin and eosin. Histopathological examination included evaluation of epithelial characteristics, stromal invasion, and the presence of associated endometriosis.

Reclassification approach: All cases were reviewed in light of the WHO 2020 classification. Cases previously labelled as seromucinous carcinoma were reassessed and reclassified as endometrioid carcinoma with mucinous differentiation.

Statistical Analysis

Descriptive statistics were used to summarize the study findings. Association between tumor category and laterality was assessed using Chi-square/Fisher's exact test, as appropriate. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 12 cases were analyzed. Patient age ranged from 27 to 69 years, with a mean age of 45.5 years.

Tumor spectrum: Seven cases (58.3%) were benign, three (25.0%) were borderline, and two (16.7%) were carcinomas in the original diagnostic series.

Laterality: Ten cases (83.3%) were unilateral and two (16.7%) were bilateral.

Benign tumors showed cystic architecture with simple epithelium. Borderline tumors exhibited papillary projections and epithelial stratification, while the carcinoma cases showed malignant epithelial features including stromal invasion.

Endometriosis was identified in selected cases. Two cases initially diagnosed as seromucinous carcinoma were reclassified as endometrioid carcinoma with mucinous differentiation according to WHO 2020.[1]

No statistically significant association was reported between tumor category and laterality ($p>0.05$).

Table 1. Clinicopathological Data of Cases in the Series (N=12)

S.No.	Age (years)	Laterality	Size (cm)	Histological diagnosis
1	32	Left	11×7.0×9.0	Benign seromucinous cystadenofibroma
2	69	Right	22×21×8.0	Borderline seromucinous tumor
3	27	Right	10×4.0×7.5	Benign seromucinous cystadenoma
4	40	Left	12×10×10	Seromucinous carcinoma
5	41	Bilateral	R: 16×14×13; L: 12×10×9.0	Seromucinous borderline tumor / atypical proliferative tumor of mixed epithelial type with microinvasion
6	51	Bilateral	R: 9.0×7.0×4.0; L: 12×11×5.0	R: Borderline seromucinous tumor; L: Benign seromucinous cystadenofibroma
7	59	Left	23×20×15	Seromucinous carcinoma
8	65	Right	26×23×21	Benign seromucinous cystadenoma
9	45	Right	9.0×5.5×3.5	Benign seromucinous cystadenofibroma
10	55	Right	30×25×15	Benign seromucinous cystadenofibroma
11	30	Left	9.0×3.0×2.0	Benign seromucinous cystadenoma
12	32	Right	12×5.0×8.5	Benign seromucinous cystadenoma

Graphs

Table 2. Reclassification According to Who 2020

Original Diagnosis	Cases	Revised diagnosis	Cases
Seromucinous carcinoma	2	Endometrioid carcinoma with mucinous differentiation	2
Borderline seromucinous tumor	3	No category change	3
Benign seromucinous tumors	7	No category change	7

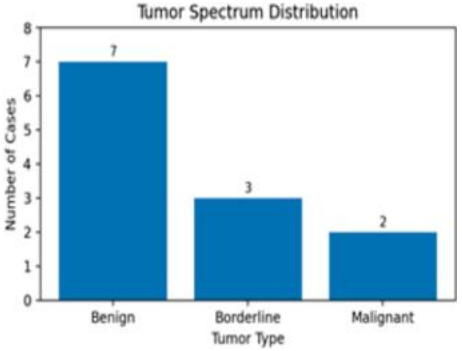

Figure 1. Distribution of Cases by Tumor Category: Benign 7 (58.3%), Borderline 3 (25.0%), and Carcinoma 2 (16.7%).

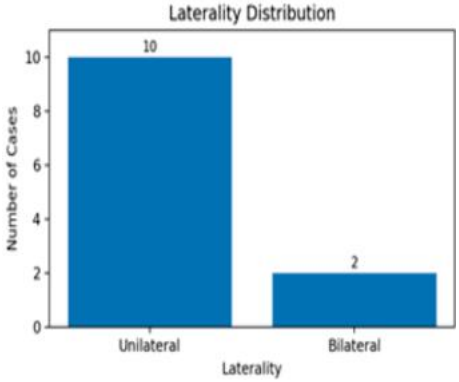

Figure 2. Laterality Distribution: Unilateral 10 (83.3%) and Bilateral 2 (16.7%).

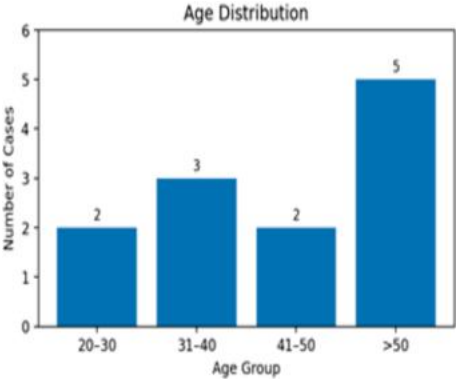

Figure 3. Age-group Distribution dased on the 12 cases: 20–30 years (2), 31–40 years (3), 41–50 years (2), and >50 years (5).

DISCUSSION

Seromucinous tumors are characterized by mixed Müllerian differentiation and are frequently associated with endometriosis.[3] This association supports a relationship with endometriosis-associated ovarian neoplasia.

In the present 12-case series, benign tumors formed the largest group (7/12; 58.3%), followed by borderline tumors (3/12; 25.0%) and two cases originally diagnosed as seromucinous carcinoma (2/12; 16.7%). The predominance of benign and borderline lesions is in keeping with the overall spectrum described in the literature.

A key finding was the re-evaluation of the two carcinoma cases according to WHO 2020. The former seromucinous carcinoma category is no longer retained as a distinct ovarian carcinoma type, because morphologic, immunophenotypic and molecular findings overlap substantially with established histotypes, particularly endometrioid carcinoma.[1] Accordingly, the two carcinoma cases were reclassified as endometrioid carcinoma with mucinous differentiation.

The reported lack of a statistically significant association between tumor category and laterality ($p>0.05$) should be interpreted in the context of the small number of cases.

CONCLUSION

Ovarian seromucinous tumors show a spectrum ranging from benign and borderline lesions to tumors historically diagnosed as seromucinous carcinoma. In this series, benign lesions predominated, and two former seromucinous carcinoma cases were reclassified within the endometrioid carcinoma spectrum according to WHO 2020. Awareness of current classification criteria and careful histopathological assessment are therefore essential for consistent diagnosis.

Figure 4A. Gross Specimen of Ovarian Seromucinous Tumor Showing a Multiloculated Cyst with a Smooth External Surface.

Figure 4B. Gross Specimen Showing Solid Areas Within a Multiloculated Ovarian Cyst.

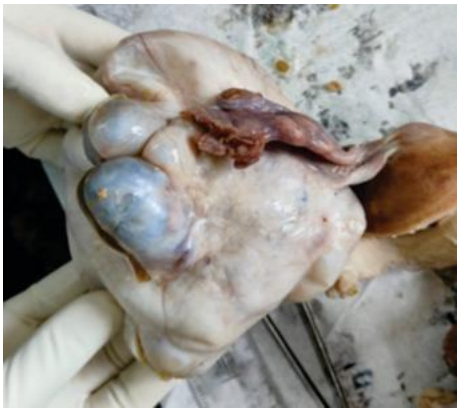

Figure 4C. Gross Specimen Showing Papillary Excrescences.

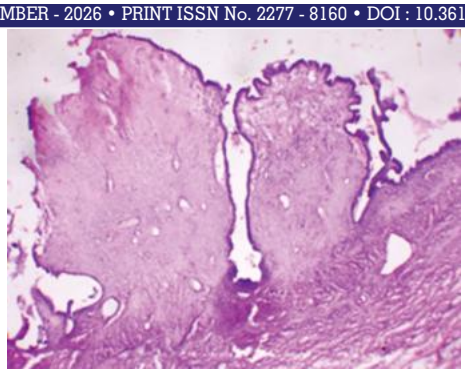

Figure 5. Benign Seromucinous Cystadenoma Showing Cuboidal and Mucin-secreting Columnar Epithelium (H&E, 10×).

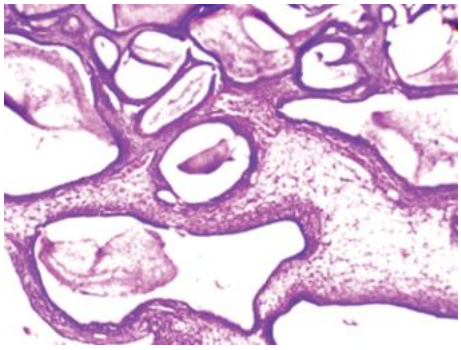

Figure 6. Benign Seromucinous Adenofibroma (H&E, 10×).

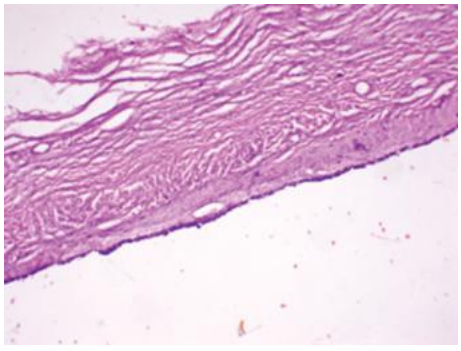

Figure 7. Borderline Seromucinous Tumor (H&E, 10×).

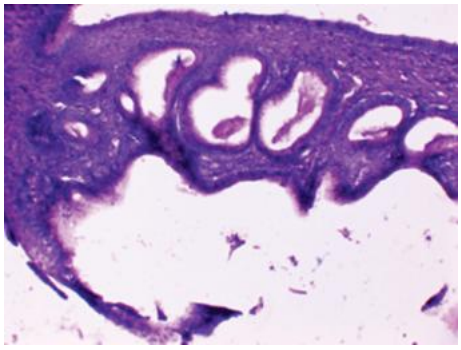

Figure 8. Borderline Seromucinous Tumor (H&E, 10×).

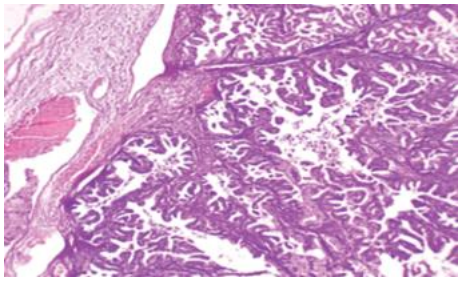

Figure 9. Complex Papillary Branching and Finger-like

Projections in a Tumor Originally Diagnosed as Papillary Seromucinous Carcinoma (H&E, 10×).

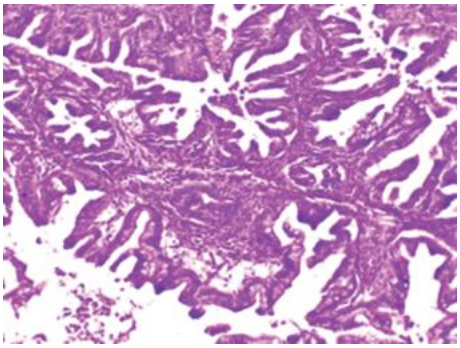

Figure 10. Higher-power View of a Tumor Originally Diagnosed as Papillary Seromucinous Carcinoma (H&E, 40×).

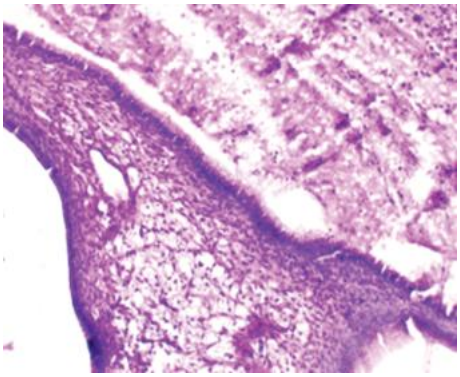

Figure 11. Additional Representative Photomicrograph from the Study Series.

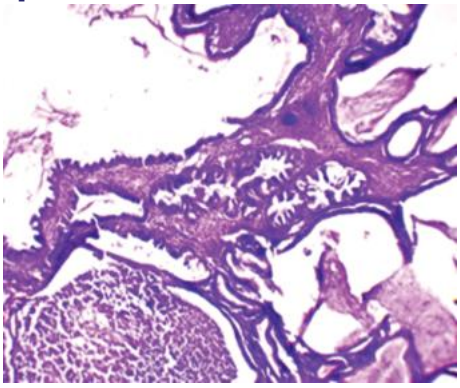

Figure 12. Additional Representative Photomicrograph from the Study Series.

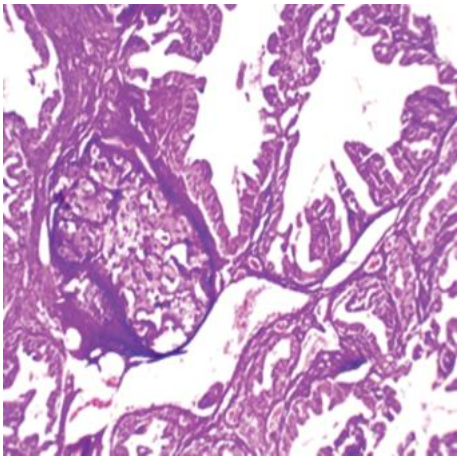

Figure 13. Endometriosis Adjacent to the Tumor, with Endometrial Glands and Stroma (H&E, 10×).

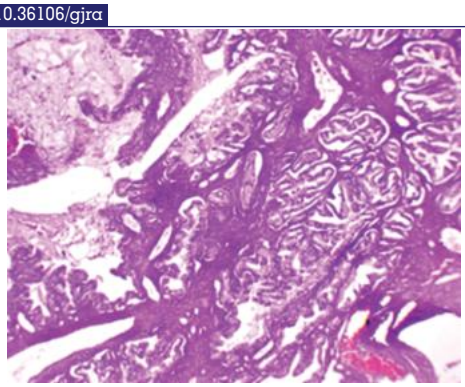

Figure 14. Mixed Müllerian-type Epithelium Comprising Serous, Mucinous, and Endometrioid Cells (H&E, 40×).

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