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Incidental Ovarian Neoplastic and Tumor-Like Lesions in Hysterectomy Specimens: Incidence, Histopathological Spectrum and Clinical Significance - A Retrospective Observational Study from a Tertiary Care Centre

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Abstract: ***Background: Incidental ovarian lesions are unsuspected ovarian pathologies identified during surgery or histopathological examination performed for unrelated gynecological conditions. Although most lesions are benign, occasional borderline and malignant neoplasms may be encountered, carrying important diagnostic, prognostic, and therapeutic implications. Aim: To determine the incidence, histopathological spectrum, and clinical significance of incidental ovarian neoplastic and tumor-like lesions identified in hysterectomy specimens. Materials and Methods: A retrospective observational study was conducted in the Department of Pathology, Indira Gandhi Medical College, Shimla, from January 2021 to December 2024. Eight hundred hysterectomy specimens with unilateral or bilateral salpingo-oophorectomy were reviewed. Cases with clinically or radiologically suspected ovarian neoplasms were excluded. Histopathologically confirmed incidental ovarian neoplastic and tumor-like lesions were analyzed. Results: Seventeen incidental ovarian neoplastic and tumor-like lesions wereidentified among 800 hysterectomy specimens, yielding an incidence of 2.50%. Surface epithelial neoplasms constituted the largest category. Benign lesions accounted for 60.0 %, borderline lesions for 25.0 %, and malignant lesions for 15.0 %. Conclusion: Incidental ovarian neoplastic and tumor-like lesions encompass a broad histopathological spectrum ranging from benign lesions to occult borderline and malignant neoplasms. Thorough gross examination and meticulous histopathological evaluation of all adnexal structures remain indispensable for accurate diagnosis and optimal patient management.***

Keywords: Ovarian incidentaloma, incidental ovarian lesion, ovarian neoplasm, hysterectomy, borderline ovarian tumor, ovarian carcinoma

1. Introduction

Ovarian incidentalomas are asymptomatic ovarian lesions detected unexpectedly during imaging, surgery, or histopathological examination performed for unrelated indications. Increasing utilization of pelvic imaging and routine pathological evaluation of adnexal structures has resulted in greater recognition of these lesions.[1,2]

Incidental ovarian lesions are frequently encountered in clinical practice. Ross and Kebria reported prevalence rates ranging from 8% in premenopausal women to 14–18% in postmenopausal women.[3] Similarly, Glanc et al. described incidental adnexal masses as common findings requiring careful risk stratification to avoid unnecessary intervention.[4]

Although most incidental ovarian lesions are benign, a subset comprises borderline tumors and occult malignancies. Such lesions are clinically important because ovarian neoplasms often remain asymptomatic during their early stages and may escape detection during routine clinical and radiological evaluation.[1,5]

Mansour et al. emphasized that increasing age, papillary projections, septations, solid components, and vascularity are associated with greater malignant potential in ovarian incidentalomas.[1] Boos et al. demonstrated that simple incidental ovarian cysts detected on CT imaging possess an extremely low risk of malignancy, whereas complex lesions warrant detailed assessment.[6]

Unexpected ovarian malignancies continue to be diagnosed despite advances in imaging and surgical evaluation. Joder et al. highlighted that incidental postoperative diagnoses of borderline ovarian tumors and ovarian cancers frequently require additional surgical procedures and oncological management.[5]

The present study was undertaken to determine the incidence, histopathological spectrum, and clinical significance of

incidental ovarian neoplastic and tumor-like lesions identified in hysterectomy specimens received at a tertiary care center.

2. Materials and Methods

Study Design
Retrospective observational study.

Study Setting
Department of Pathology, Indira Gandhi Medical College, Shimla.

Study Duration
January 2021–December 2024.

Study Population
Eight hundred hysterectomy specimens with unilateral or bilateral salpingo-oophorectomy.

Inclusion Criteria
- Hysterectomy specimens containing ovarian tissue.
- No clinical suspicion of ovarian neoplasm.
- No radiological evidence suggestive of ovarian malignancy.
- Histopathologically confirmed incidental ovarian neoplastic and tumor-like lesions.

Exclusion Criteria
- Known ovarian neoplasms.
- Radiologically suspected ovarian masses.
- Previously diagnosed ovarian malignancies.

Histopathological Evaluation
All specimens underwent detailed gross examination. Representative sections were routinely processed and stained with hematoxylin and eosin. Histopathological diagnosis was established according to the WHO Classification of Female Genital Tumours (5th edition).[7]

Statistical Analysis
Data were analyzed using descriptive statistics and expressed as frequencies and percentages.

3. Results

Incidence
Twenty incidental ovarian tumors and tumor-like lesions were identified among 800 hysterectomy specimens, corresponding to an incidence of **2.50 %**.

1Table 1: Histopathological Spectrum of Incidental Ovarian Neoplastic and Tumor-Like Lesions

Diagnosis	Cases	Percentage (%)
Serous cystadenoma	2	10.0
Benign Brenner tumor	2	10.0
Borderline Brenner tumor	1	5.0
Micropapillary serous borderline tumor	1	5.0
Serous surface papillary borderline tumor	1	5.0
Borderline endometrioid tumor	1	5.0
Atypical proliferating mucinous tumor	1	5.0
Sex cord tumor with annular tubules	2	10.0
Luteoma of pregnancy	2	10.0
Sclerosing stromal tumor	2	10.0
Ovarian hemangioma	1	5.0
Primary ovarian leiomyoma	1	5.0
Endometrioid carcinoma	1	5.0
Low-grade serous carcinoma	1	5.0
Squamous cell carcinoma	1	5.0
Total	20	100

Table 2: Tumor Categories

Category	Cases	Percentage (%)
Benign	12	60.0
Borderline	5	25.0
Malignant	3	15.0

Table 3: Indications for Surgery

Indication	Cases
Fibroid uterus	8
Carcinoma cervix	2
Ruptured ectopic pregnancy	2
Endometrial carcinoma	2
Adenomyosis	3
Prolapse uterus	2
Abnormal uterine bleeding	1

4. Discussion

Incidental ovarian neoplastic and tumor-like lesions represent a heterogeneous group of pathologies identified unexpectedly during surgery or histopathological examination. In the present study, the incidence was 2.13%. The lower incidence compared with imaging-based prevalence studies may be explained by the inclusion of only histopathologically confirmed lesions and exclusion of clinically suspected ovarian tumors.[1,3]

Ross and Kebria reported prevalence rates ranging from 8% in premenopausal women to 14–18% in postmenopausal women for incidental ovarian cysts.[3] Similarly, Mansour et al. reported that most ovarian incidentalomas are benign and require risk stratification based on radiological morphology.[1]

Surface epithelial tumors constituted the predominant category in the present study, consistent with established epidemiological patterns of ovarian neoplasia described in the WHO classification.[7] Serous cystadenoma and Brenner tumors represented the most frequent benign epithelial tumors identified.

Borderline tumors comprised 25 % of cases and included micropapillary serous borderline tumor, serous surface papillary borderline tumor, borderline Brenner tumor, borderline endometrioid tumor, and atypical proliferating mucinous tumor. Borderline ovarian tumors occupy an intermediate position between benign and malignant neoplasms and possess recurrence potential despite the absence of destructive stromal invasion.[7]

Recent evidence indicates that borderline ovarian tumors and ovarian malignancies continue to be diagnosed unexpectedly despite improvements in imaging modalities and surgical assessment. Joder et al. demonstrated that incidental postoperative diagnoses frequently necessitate additional surgical procedures and may delay definitive treatment.[5]

Boos et al. demonstrated that simple incidental adnexal cysts identified on CT imaging possess an extremely low risk of malignancy.[6] Consequently, conservative management is appropriate for selected patients with simple cystic lesions. However, complex ovarian masses exhibiting papillary projections, solid areas, septations, or vascularity require careful evaluation because these characteristics are associated with increased malignant potential.[1]

Two cases of sex cord stromal tumor with annular tubules (SCTAT) were identified in the present study. SCTAT is a rare ovarian sex cord stromal neoplasm and may occur in association with Peutz–Jeghers syndrome. Although most sporadic tumors follow a benign course, malignant behavior has been documented in a minority of cases.[8]

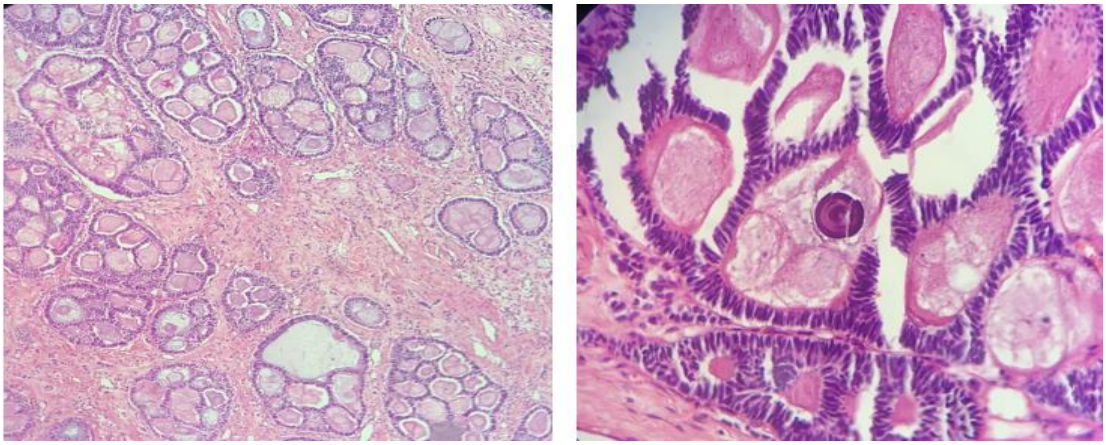

Figure 1 : Sex Cord Stromal Tumour with Annular Tubules

Two cases of sclerosing stromal tumor was identified. Sclerosing stromal tumors are uncommon benign ovarian stromal tumors that often affect younger women and may mimic malignant ovarian neoplasms clinically and radiologically.[7]

Two cases of luteoma of pregnancy were encountered incidentally in specimens removed for ectopic pregnancy. Although non-neoplastic, luteoma of pregnancy is an uncommon tumor-like lesion characterized by proliferation of luteinized stromal cells and may clinically simulate an ovarian neoplasm.[7]

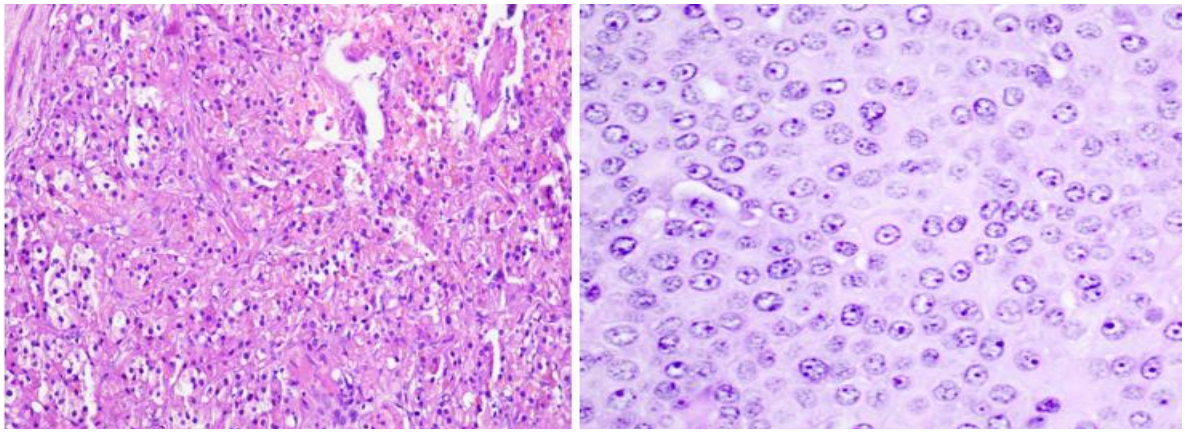

Figure 2 : Luteoma of Pregnancy

The identification of low-grade serous carcinoma, endometrioid carcinoma, and squamous cell carcinoma underscores the importance of meticulous histopathological examination of ovarian tissue. Low-grade serous carcinoma is recognized as a distinct Type I ovarian carcinoma that frequently develops through a serous borderline tumor pathway.[9]

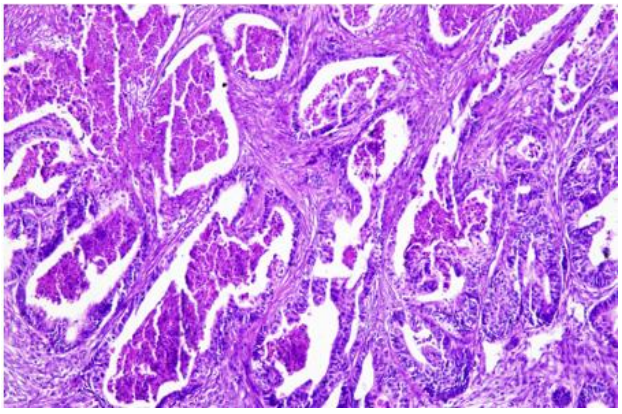

Figure 3: Endometrioid Carcinoma of ovary

One case of ovarian hemangioma was identified in the present study. Ovarian hemangioma is an exceptionally rare benign vascular neoplasm, with fewer than 60 cases reported in the English literature. Clinical and radiological findings are usually nonspecific, and the lesion may present as an incidental adnexal mass or mimic borderline or malignant ovarian tumors because of overlapping imaging features. Consequently, definitive diagnosis relies on meticulous histopathological examination. Surgical excision is curative, and the prognosis is excellent. Although ovarian hemangiomas have been reported in association with stromal luteinization and endometrial proliferative lesions, the exact pathogenetic relationship remains uncertain.[10]

One case of primary ovarian leiomyoma was encountered incidentally in the present study. Primary ovarian leiomyoma is a rare benign mesenchymal tumor, accounting for approximately 0.5–1% of benign ovarian neoplasms. Most lesions are unilateral, small, and asymptomatic, and are discovered incidentally during surgery or histopathological examination. Because there are no characteristic clinical or radiological features, ovarian leiomyoma frequently mimics other solid ovarian neoplasms such as fibroma or thecoma, making preoperative diagnosis difficult. Histopathological evaluation supplemented by immunohistochemistry, particularly smooth muscle actin (SMA) positivity, is essential for establishing the diagnosis and excluding malignant spindle cell tumors.[11] Unexpected ovarian malignancies continue to pose diagnostic and therapeutic challenges despite advances in imaging and clinical evaluation. Similar observations have been reported by Li et al., who described ovarian malignancies incidentally identified during cesarean section despite routine antenatal ultrasonography.[12] Roy and Babu likewise highlighted the clinical significance of unexpected ovarian neoplasms discovered during obstetric surgery.[13]

The present study demonstrates that grossly unremarkable ovaries may harbor clinically significant pathology, including borderline and malignant neoplasms. Therefore, careful gross examination, adequate sampling, and comprehensive histopathological evaluation of all adnexal structures remain indispensable components of routine pathological practice.[1,14]

5. Clinical Significance

- Grossly normal ovaries may harbor significant pathology.
- Nearly one-fourth of lesions in the present study were malignant.
- Borderline tumors constituted almost one-third of all lesions.
- Detection of occult malignancies may alter staging and management.
- Histopathological examination remains the gold standard for diagnosis.

6. Limitations

- Retrospective study design.
- Single-center experience.
- Small sample size.
- Lack of long-term follow-up data.

7. Conclusion

Incidental ovarian neoplastic and tumor-like lesions were identified in 20 of 800 hysterectomy specimens, yielding an incidence of 2.5%. The lesions encompassed a broad histopathological spectrum, including surface epithelial, sex cord-stromal, mesenchymal, and vascular neoplasms, as well as pregnancy-associated tumor-like lesions. Although most lesions were benign, clinically unsuspected borderline and malignant neoplasms were also encountered in grossly unremarkable ovaries. These findings underscore the importance of meticulous gross examination, adequate tissue sampling, and comprehensive histopathological evaluation of all adnexal structures removed during gynecological surgery to ensure the detection of clinically significant occult ovarian pathology.

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