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A case of ectopic decidual reaction of omentum masquerading as peritoneal carcinomatosis: a rare case report

Geet Bhuyan [1]*

[1] Department of Pathology, Lakhimpur Medical College, Lakhimpur, Assam, India

Abstract

Introduction: Omental deciduosis is a rare form of ectopic decidua characterized by the presence of decidual tissue outside the uterus. Although benign and self-limiting, its gross appearance may closely mimic intra-abdominal malignancy or infectious pathology, posing a diagnostic challenge.

Case presentation: We report a case of a 29-year-old woman who underwent caesarean section, during which multiple nodular deposits were incidentally observed on the omentum. These lesions were initially suspected to represent metastatic disease. The patient was otherwise asymptomatic, with no significant medical or surgical history. Histopathological examination revealed sheets of large polygonal cells with abundant eosinophilic cytoplasm and no evidence of atypia or mitotic activity, confirming the diagnosis of omental deciduosis.

Discussion: Omental deciduosis, though uncommon, is most often associated with pregnancy and usually regresses spontaneously in the postpartum period. Its clinical importance lies in its close resemblance to conditions such as peritoneal carcinomatosis, tuberculous peritonitis, or deciduoid mesothelioma. Frozen section and immunohistochemistry may aid in difficult cases, but in most instances, routine histopathology is sufficient for diagnosis. Awareness of this entity among both surgeons and pathologists is crucial to prevent misinterpretation and avoid unnecessary aggressive interventions.

Conclusion: Omental deciduosis is a rare but benign condition that can mimic serious intra-abdominal pathology. Recognition of its characteristic histopathological features ensures accurate diagnosis and helps prevent overtreatment.

Keywords: Carcinomatosis, Tuberculous peritonitis, Mesothelioma, Decidual

Corresponding Author: Geet Bhuyan

✉ Email: geetbhuyan.aiims@gmail.com

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Introduction

Decidual cell aggregates occurring outside the endometrium are termed “ectopic decidua” or “deciduosis,” a phenomenon first described by Walker in 1887 (1). While deciduosis most commonly involves the ovaries, uterus, and cervix, localization in the peritoneum or omentum is distinctly uncommon. These rare sites are clinically significant because of their potential to mimic malignant or infectious conditions (2–5).

Ectopic decidua is generally a benign, self-limiting process, most often associated with pregnancy and typically regressing postpartum. Nevertheless, its gross and microscopic appearance can closely resemble serious pathologies such as peritoneal carcinomatosis, tuberculous peritonitis, or, more rarely, deciduoid mesothelioma (6,7). Such lesions, when encountered incidentally—particularly during cesarean section—may be misinterpreted as metastatic disease, leading to unnecessary concern and investigations.

Histopathological confirmation remains essential for diagnosis. Omental deciduosis is characterized by large polygonal cells with abundant eosinophilic cytoplasm and an absence of significant mitotic activity. Recognition of these features is crucial to avoid misdiagnosis and to reassure both clinicians and patients.

Recent literature underscores the importance of heightened awareness among pathologists and surgeons, as peritoneal and omental deciduosis, though rare, may occur in reproductive-age women and mimic malignancy both macroscopically and microscopically (7–9). It should also be emphasized that ectopic deciduosis is a normal, albeit uncommon, hormonally mediated phenomenon occurring during pregnancy and generally has no adverse effect on future fertility or the ability to achieve a successful pregnancy (7).

We present a case of omental deciduosis in a 29-year-old asymptomatic woman, detected incidentally during cesarean section. Intraoperatively, multiple nodular deposits were noted on the omentum, initially raising concern for metastatic disease. Subsequent histopathological evaluation revealed extensive decidualization, thereby confirming its benign nature. This case underscores the clinical significance of recognizing omental deciduosis, as its atypical presentation and striking resemblance to malignant pathology can create considerable diagnostic challenges.

Case presentation

A 29-year-old woman, gravida 1 para 0, presented at 36 weeks of gestation with pregnancy-induced hypertension and signs of fetal distress. She was admitted for close monitoring and managed with antihypertensive therapy. On admission, her blood pressure was 160/100 mmHg. Laboratory investigations revealed elevated liver enzymes (Alanine aminotransferase [ALT] 245 U/L, Aspartate aminotransferase [AST] 310 U/L) and proteinuria (dipstick 3+), findings consistent with preeclampsia.

Fetal heart rate monitoring demonstrated persistent non-reassuring patterns, necessitating an emergency cesarean section. Preoperative ultrasonography confirmed a viable fetus with reduced amniotic fluid index and features suggestive of placental insufficiency.

Intraoperatively, multiple small, whitish lesions measuring 1–4 mm were observed on the peritoneal surfaces of the posterior uterine wall, broad ligament, ovaries, sigmoid colon, and omentum. A representative omental tissue specimen was excised and submitted for histopathological examination to exclude malignancy or other pathological conditions.

Pathological Findings

The specimen consisted of a fibrofatty soft tissue fragment measuring 4 × 3 × 2 cm. On gross examination, multiple discrete whitish nodules, ranging from 1 to 4 mm in diameter, were scattered throughout the tissue (Figure 1).

Microscopically, the fibroadipose tissue was composed predominantly of mature adipocytes with mild chronic inflammatory cell infiltrates. The submesothelial regions revealed decidual cells arranged singly as well as in small focal nodular clusters. These cells were large and polygonal, with abundant finely granular

eosinophilic cytoplasm. Their nuclei were round, bland, and contained a single prominent nucleolus, without atypical features such as pleomorphism, hyperchromasia, or increased mitotic activity (Figure 2). Importantly, no epithelioid cell granulomas were identified, thereby excluding granulomatous inflammation.

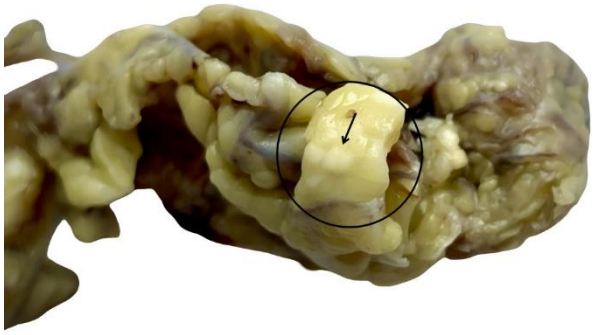

Figure 1. Gross image of peritoneal tissue showing whitish nodules (Black arrow) in the parenchyma.

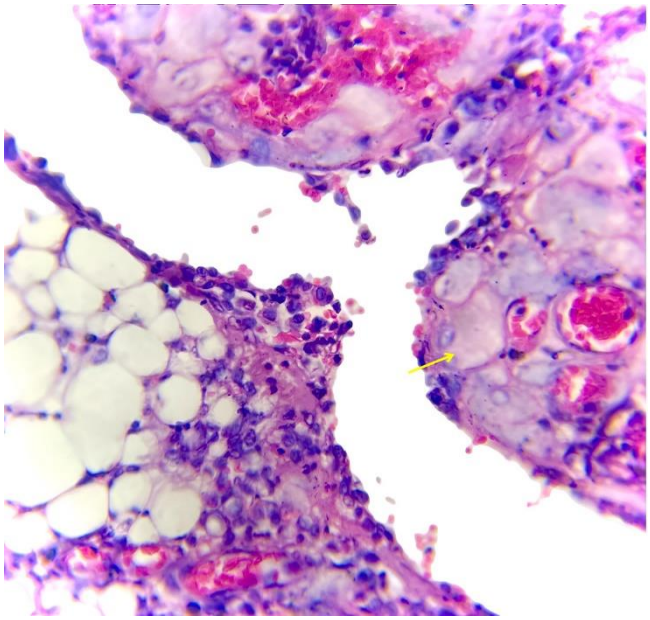

Figure 2. (H&E, 10X)Sections showing decidual tissue invading the peritoneal tissue. A decidual cells is seen with abundant eosinophilic cytoplasm and round to oval nucleus and vesicular chromatin (Yellow arrow).

Overall, the histopathological features were consistent with ectopic decidua (deciduosis), confirming the benign nature of the nodular deposits and ruling out malignancy or infectious granulomatous disease.

Discussion

Ectopic decidua, also termed deciduosis, is most often an incidental microscopic finding identified during pregnancy-related surgical procedures, such as cesarean sections, postpartum tubal ligations, appendectomies, or in association with ectopic tubal pregnancies. The condition is usually asymptomatic and detected only through histopathological evaluation. In rare instances, however, ectopic decidua may lead to significant complications, including hemoperitoneum, pseudo-acute appendicitis, pulmonary involvement, or obstructed labor secondary to extensive peritoneal deposits (10–13). These uncommon but serious outcomes highlight the clinical importance of recognizing ectopic decidua, particularly when lesions are diffuse or symptomatic (14).

The pathogenesis of ectopic decidua remains incompletely understood, though it is generally attributed to a heightened hormonal response of endometrial stromal cells to elevated progesterone levels during pregnancy. Zaystev et al. proposed two main hypotheses: the more widely accepted mechanism involves progesterone-induced metaplasia of subcoelomic mesenchymal cells, which typically regress as hormone levels decline postpartum (15). Alternatively, the de novo development of decidual cells from peritoneal surfaces has been suggested, though this is less favored. The hormonal basis of metaplasia accounts for the transient and self-limiting nature of the condition (16,17).

Histologically, ectopic decidua can closely resemble malignant processes, making accurate differential diagnosis essential. Decidual cells may occasionally show mild atypical features such as hyperchromasia, pleomorphism, or focal hemorrhagic necrosis, changes that can mimic deciduoid malignant mesothelioma (17). In our case, the histopathological evaluation demonstrated decidual cells possessing abundant eosinophilic cytoplasm and round nuclei with prominent nucleoli. The absence of overt cellular atypia and atypical mitoses supported the benign nature of the process, leading to the diagnosis of an ectopic

decidual reaction. These features are consistent with previously reported cases and underscore the importance of distinguishing this benign condition from malignant mimics.

Immunohistochemistry (IHC) plays a pivotal role in distinguishing benign deciduosis from malignancy. Mesotheliomas typically express cytokeratin MNF116, HBME-1, and calretinin, with epithelial membrane antigen (EMA) showing focal brush border-like positivity, in contrast to benign decidual cells, which show progesterone receptor (PR) and CD10 positivity (18,19). Other important differential diagnoses include metastatic melanoma (positive for S-100 and HMB-45) and signet-ring cell carcinoma (cytokeratin-positive) (18). Accurate identification is crucial to prevent unnecessary aggressive management.

Clinically, ectopic decidual reaction is regarded as a benign, physiological response to progesterone during pregnancy. Lesions usually regress spontaneously within 4–6 weeks postpartum and do not require specific treatment (8,17). Awareness among clinicians and pathologists of this entity is therefore essential to avoid misdiagnosis and overtreatment (20).

In the present case, the patient responded well to treatment, and follow-up ultrasonography showed no evidence of recurrence. She has remained disease-free for 18 months post-surgery, underscoring not only the benign nature of omental deciduosis but also the importance of accurate diagnosis to prevent unnecessary aggressive interventions.

Limitation

We acknowledge the absence of frozen section evaluation in this case. We also emphasize the potential role of immunohistochemistry in better distinguishing omental deciduosis from its close mimics. However, in the present case, the diagnosis was confidently established based on clinical presentation and characteristic histopathological features.

Conclusion

This case highlights the critical importance of distinguishing ectopic deciduosis—a benign condition—from its malignant mimics. Accurate diagnosis through histopathological examination is essential, enabling appropriate management and preventing unnecessary treatment.

Author contribution

GB concept, design, literature search, data acquisition, manuscript preparation, manuscript editing and review.

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Conflicts of interest

There are no conflicts of interest.

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