Ovarian cancer is fifth most common gynecologic malignancy and is the leading cause of cancer death in women. According to American Cancer Society, the overall 5-year survival rate for all ovarian cancers is 44%.

### Epidemiology

Ovarian cancer is sporadic in 90% of the cases. The other 10% are due to hereditary syndromes such as BRCA-1 and BRCA-2 mutations and Lynch syndrome. Ovarian tumors are categorized on the basis of tumor origin as epithelial, germ cell, sex cord-stromal, or metastatic.

Imaging features on grayscale ultrasound will show thick septations, echogenic mural nodularity or papillary projections in cystic mass. There may also be a solid component with cystic mass. Color Doppler will help identify vascularity in complex cystic mass. Non-enhanced CT identifies cystic adnexal mass with septations and soft tissue density with papillary projections. There will be enhancement of mural nodule on contrast enhanced CT. CT also facilitates detection of peritoneal implants and distant metastasis. On T1WI MR there may be low to intermediate signal intensity mass or high signal due to fat or hemorrhage. Cystic masses will be high signal on T2WI and intermediate T2WI signal within mural nodules. T2WI with contrast enhancement facilitates detection of papillary projections in cystic mass, tumor necrosis and peritoneal implants.

Management includes CT of abdomen and pelvis for pre-operative staging. CT is also used to follow-up after treatment. Treatment of malignant ovarian cancer includes surgical cytoreduction, chemotherapy and radiation.

### Pathology

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### CT features of Malignant Ovarian Mass

Imaging features of malignant tumors include solid-cystic complex mass, thick, irregular wall; thick septations; papillary projections in a cystic lesion, and a larger size of the lesion.

**Figure 1.** Contrast-enhanced coronal and axial images demonstrating a large lobulated complex solid-cystic mass with thick wall and septations in the left adnexa. This was papillary serous adenocarcinoma with metastasis.

**Figure 2.** Contrast enhanced axial images demonstrating large cystic mass with internal papillary projections, located in the pelvis. This was mixed endodermoid and serous epithelial tumor originating from bilateral ovaries.

**Figure 3.** Contrast enhanced coronal and axial images demonstrate large multi-lobulated solid and cystic mass with thick, some irregular walls in the pelvis. This was a mixed Mullerian cancer of ovarian origin, which is classified as an epithelial tumor.

**Figure 4.** Contrast-enhanced axial and coronal images demonstrating large cystic mass with enhancing mural nodule in right adnexa. This was a mucinous cancer of right ovary.

**Figure 5, 6, and 7.** Contrast-enhanced axial and coronal images demonstrate large amount of ascites in the peritoneal cavity encasing intra-abdominal structures. There is nodular thickening and peritoneal masses as well as omental caking.

### CT features of Metastasis

Metastatic findings include peritoneal thickening and peritoneal masses frequently associated with ascites. Presence of lymph node metastasis is an important prognostic indicator.

### Conclusion

Computed Tomography remains the modality of choice for pre-operative staging to determine if patients are candidates for neo-adjuvant therapy prior to surgery. CT has also been used for post-therapy surveillance. Prompt recognition of malignant ovarian tumor and metastatic involvement is crucial for any radiologist.

### References