

# Carcinoid Tumors Of The Ovary: An Observational Cohort Study Of 67 Primary And Metastatic Cases

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## Introduction:

- Ovarian neuroendocrine tumors are exceptionally rare (0.1% of ovarian neoplasms).
- While more indolent than other ovarian malignancies they can be aggressive and resistant to treatment
- Primary ovarian carcinoids are typically found incidentally, and are often slow growing, unilateral, and associated with benign teratomas or mucinous tumors. Patients rarely have symptoms associated with their disease.
- Carcinoids metastatic to the ovary are often of gastrointestinal primary and bilateral in nature.
- High grade carcinoid tumors are defined as those showing cellular pleomorphism, high mitotic rate and Ki67 index, and necrotic features.
- Approximately 95% of primary ovarian carcinoids are benign, however, in some cases may pursue a malignant course. This clinical course has usually been associated with high grade pathologic features.

## Aim:

- The purpose of this study is to assess the clinical outcomes and pathologic features of metastatic ovarian carcinoids, as compared to primary malignant and benign ovarian carcinoids.

## Methods:

- All patients with ovarian neuroendocrine tumors treated at a single institution between 1994 and 2015 were retrospectively reviewed. Clinical Outcomes and pathologic features are described.

## Results:

### Metastatic Carcinoids (n=38)

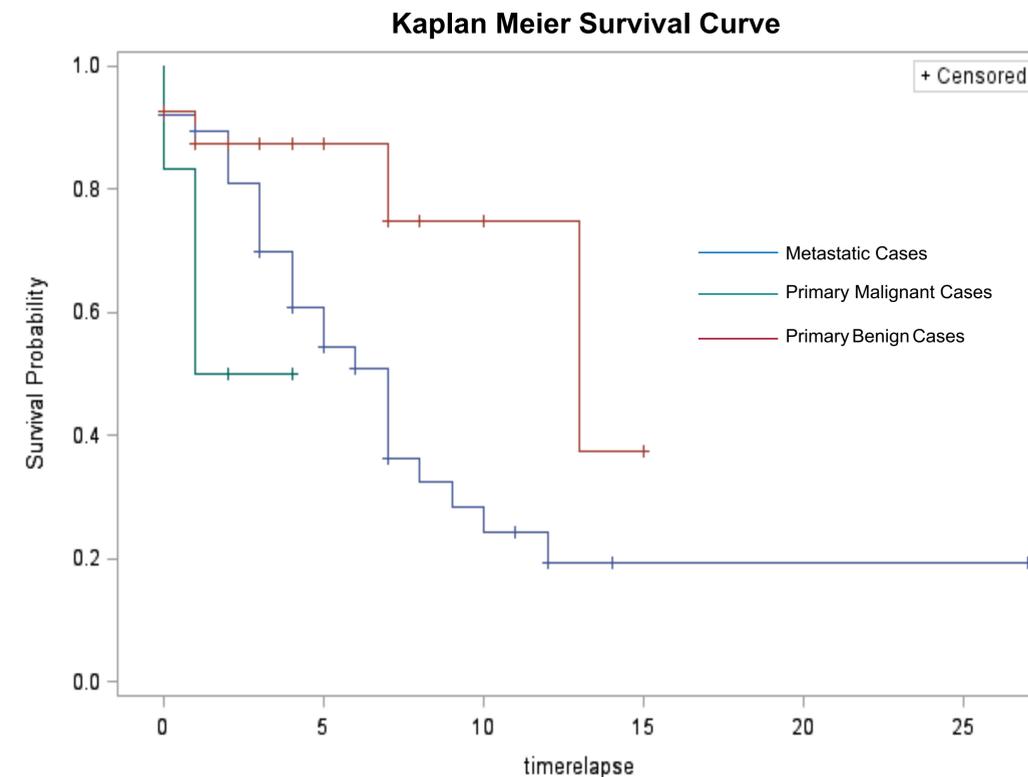
- Mean Age: 53 years
- Bilateral Disease: 27 (71%)
- Carcinoid Syndrome: 18 (47%)
- Primary Location: 31 (82%) of GI origin
  - 52% from small bowel
- High Ki67 noted in only 5 cases
- Histologically severe atypia present in 6 (16%)
- 5 Year Survival – 54%

### Primary Carcinoids (n=29)

- Mean Age: 48.6 years
- Bilateral Disease: 2 (7%)
- Carcinoid Syndrome: 1 patient
- Malignant Disease: 6 (22%)
  - 3 Mucinous
  - 1 Insular
  - 2 Undifferentiated
- Malignant: 4 Year Survival – 50%
- Benign: 5 Year Survival – 86%
  - no disease specific death

## Conclusions:

- Ovarian carcinoids are more indolent than the common ovarian carcinomas
- Carcinoid Syndrome and bilateral disease are much more common with metastatic tumors
- The low-grade histologic features of carcinoid do not always correlate with the metastatic potential of the tumors and patients' survival, requiring personalized therapeutic strategies

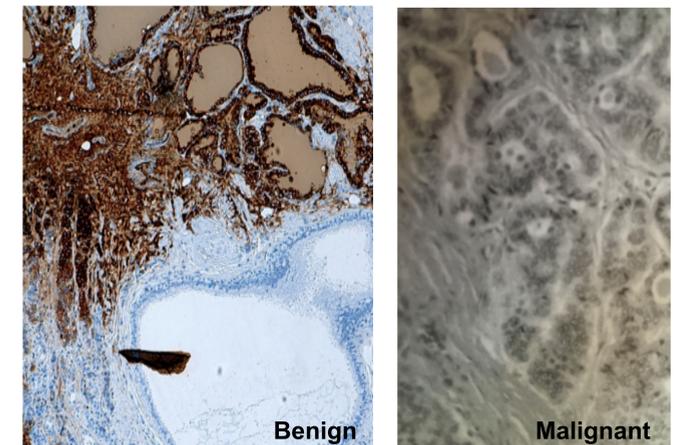


## Graph (Left)

- Kaplan Meier analysis shows a 54% 5-year survival for patients with metastatic disease
- There were no deaths due to disease in patients with benign disease, 86% 5-year survival

## Images (Below)

- Struma ovarii adjacent to benign carcinoid tumor, positive for chromogranin (L)
- Primary Malignant Mucinous Carcinoid (R)



## References:

- Davis, K.P., Hartmann, L.K., Keeney, G.L. and Shapiro, H., 1996. Primary ovarian carcinoid tumors. *Gynecologic oncology*, 61(2), pp.259-265.
- Reed, N.S., Gomez-Garcia, E., Gallardo-Rincon, D., Barrette, B., Baumann, K., Friedlander, M., Kichenadasse, G., Kim, J.W., Lorusso, D., Mirza, M.R. and Ray-Coquard, I., 2014. Gynecologic Cancer InterGroup (GCIG) consensus review for carcinoid tumors of the ovary. *International Journal of Gynecological Cancer*, 24(9), pp.S35-S41.
- Strosberg, J., Nasir, A., Cragun, J., Gardner, N. and Kvols, L., 2007. Metastatic carcinoid tumor to the ovary: a clinicopathologic analysis of seventeen cases. *Gynecologic oncology*, 106(1), pp.65-68.