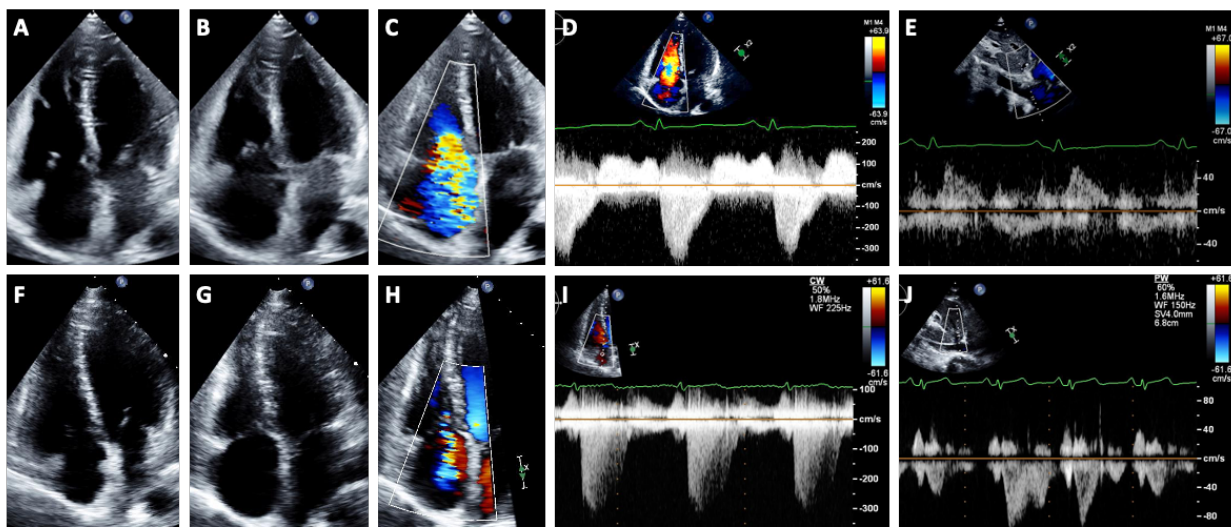


## Recovery of Tricuspid Valve Function after Resection of a Primary Ovarian Carcinoid Tumor

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**Clinical Presentation:** A 51-year-old woman presented with a >1-year history of bilateral leg edema, diarrhea, and facial flushing. Examination revealed a large abdominal mass, which CT scan confirmed to be a 15x11x13 cm ovarian mass with solid and cystic components. She underwent hysterectomy and bilateral salpingo-oophorectomy. Histopathology revealed a 17 cm ovarian dermoid cyst containing an insular carcinoid tumor. Her post-operative urinary 5-hydroxyindoleacetate (HIAA) level was 23 umol/d (normal 10-40 umol/d) and chromogranin-A level was 95 ug/L (normal <94 ug/L), but positron emission tomography (PET) scan showed lymph node metastasis, prompting initiation of lanreotide, a somatostatin analogue. A perioperative echocardiogram revealed thickened, fixed, and retracted tricuspid and pulmonic valves with severe tricuspid and pulmonary regurgitation consistent with carcinoid heart disease. The right ventricle was dilated but showed preserved systolic function. Valve intervention was considered but deferred as right heart catheterization 15 weeks after surgery showed normal right-sided pressures. A follow-up echo 8 months post resection showed unchanged pulmonary regurgitation but significant improvement in tricuspid valve mobility with a corresponding reduction in tricuspid regurgitation to a mild-to-moderate level.

### Imaging Findings:



**Figure 1** Serial echocardiograms performed immediately prior to resection of a primary ovarian carcinoid tumor (top panel) and eight months after surgery (bottom panel). Prior to treatment, tricuspid valve leaflets are thickened, fixed, and retracted with significant malcoaptation as seen at end-diastole (A) and end-systole (B), resulting in severe tricuspid regurgitation evidenced by the large jet area on color flow Doppler (C), the dense triangular continuous wave (CW) Doppler signal (D), and systolic flow reversal at the hepatic vein on pulsed wave (PW) Doppler (E). After treatment, tricuspid valve leaflets are thin and pliable with improved coaptation as seen at end-diastole (F) and end-systole (G), resulting in less tricuspid regurgitation (mild-to-moderate) suggested by the smaller jet area on color flow Doppler (H), the less dense parabolic CW Doppler signal (I), and the systolic-predominant flow at the hepatic vein on PW Doppler (J).

**Summary/Discussion:** Thickened and fixed tricuspid valve leaflets with significant regurgitation represents a hallmark of carcinoid heart disease that can lead to progressive right heart failure, often necessitating surgical intervention. This is a rare case of carcinoid heart disease where there was marked improvement in tricuspid valve function after surgical resection of a primary carcinoid tumor and initiation of somatostatin analog therapy. It highlights the potential for timely treatment to reverse the deleterious effects of carcinoid tumors on cardiac valves, which may ultimately spare the need for cardiac surgery.

**Word Count:** 310