

# FIGO Staging for Carcinosarcoma: Can the New Staging System Predict Overall Survival?

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## Abstract

### Objective:

The purpose of this study is to determine whether the revised FIGO 2009 staging of patients with carcinosarcoma can accurately predict patient survival, in comparison with previous FIGO staging.

### Methods:

From March 1988 until January 2010, patients with a diagnosis of carcinosarcoma were retrospectively identified from tumor registry records at two large teaching institutions. Data was collected via tumor registry data, medical chart records, and social security death records. Patients were excluded if they had dual primary malignancies, if they did not undergo hysterectomy, and if data were missing. Patients were grouped into both broad stages (1-4) and all FIGO substages in order to detect differences. Time-dependant receiver operating characteristic curves were generated to predict death before the end of the second year post-diagnosis for both the new and revised system. Kaplan-Meier estimated median survival time was utilized to compare actual patient survival.

### Results:

Of 112 patients with carcinosarcoma, 37 patients (33%) had FIGO Stage I disease, 15 patients (13.4%) had Stage II disease, 36 patients (32%) were diagnosed as Stage III, and 24 patients (21.4%) had Stage IV disease. 106 of 112 (94.6%) patients underwent lymph node dissection (pelvic, +/- para-aortic); and of these 106 patients, 71 also underwent infracolic omentectomy and/or additional biopsies. Only 4 patients (3.6%) were downstaged when utilizing broad staging criteria: 2 patients were downstaged from Stage II to Stage I, and 2 patients were downstaged from Stage III to Stage I and II respectively. When looking at substage, the area under the receiver operating curve was 0.67 for the old staging system, and 0.65 for the revised staging for carcinosarcoma. Kaplan-Meier estimated median survival time post-diagnosis was 610 days (95% CI [478,930]).

### Conclusions:

Based upon our reclassification of 112 patients with uterine carcinosarcoma, the revised 2009 FIGO staging system does not predict survival more accurately than previous staging. Based upon our analysis, carcinosarcoma has an overall poor prognosis and better indicators of survival are needed.

## Objectives

Uterine carcinosarcomas are rare and aggressive tumors accounting for 1-10% of all uterine malignancies.<sup>1</sup> Surgery has remained the cornerstone of treatment. However, about 35% of patients present with extra-uterine spread at the time of diagnosis.<sup>2</sup> The exact type of surgical staging procedure including the extent and type of surgery is not standardized.

Gynecologic Oncologists utilize the International Federation of Gynecologists and Obstetricians (FIGO) staging system to classify uterine carcinosarcomas. In the 1970s and early 1980s, uterine sarcomas were staged clinically. In 1988, surgical staging was developed and in 2009, FIGO proposed a new staging system which was to be applied to uterine carcinosarcomas. An acceptable staging system must be valid, practical and reliable.<sup>3</sup> It must give the oncologist valuable information regarding prognosis. Given the rarity of these tumors and the wide range of surgical procedures utilized to stage these patients, it is unknown whether the revised FIGO staging system can accurately predict overall survival.

Therefore, the purpose of this study is to determine whether the revised FIGO 2009 staging of patients with uterine carcinosarcoma can accurately predict patient survival, in comparison with previous FIGO staging.

## Materials and Methods

From March 1998 until January 2010, patients with a diagnosis of uterine carcinosarcoma were retrospectively identified from tumor registry records at two large tertiary medical centers, Downstate Medical Center and Kings County Hospital Center. Demographic and surgical data were collected via tumor registry data, medical chart records and social security death records.

Patients were excluded if they had dual primary malignancies. They were also excluded if they did not undergo their primary surgery at one of our two institutions and if they did not undergo a hysterectomy at minimum for type of surgery. Patients were grouped into four broad stages (FIGO Stage I-IV) from all substages (for example IA,IB) in order to detect differences.

Using the method of Heagerty et al.,<sup>4</sup> time dependent receiver operating characteristic curves (ROC) were generated to predict death before the end of the second year post-diagnosis for both the new and revised system. Kaplan-Meier estimated median survival time was utilized to compare actual patient survival to the predicted survival from the ROC.

## Results

A total of 112 patients with uterine carcinosarcoma were identified. The age range of all patients was 42-87 years with mean age of 66.8 years. The majority of patients were black (97 patients, 86.6%), 6 patients were white (5.4%), 5 (4.5%) were unknown, 2 were Hispanic (1.8%), 1 was Asian (0.9%) and 1 was classified as other (0.9%). The type of surgical procedure performed can be seen in Table 1.

Of all patients with carcinosarcoma based on original stage, 37 patients (33%) had FIGO Stage I disease, 15 patients (13.4%) had Stage II disease, 36 patients (32%) were diagnosed as Stage III and 24 patients (21.4%) had Stage IV disease. Figure 1 illustrates the subclassification of stages for the original FIGO 1998 surgical staging.

Four patients were downstaged when using broad staging criteria; only one of these four discrepancies was discordant by more than one stage. Two patients were downstaged from Stage II to I, and two were downstaged from Stage III to Stage I and II respectively. Once restaged using broad staging criteria, 39 patients (34.8%) had FIGO Stage I disease, 15 patients (13.4%) had Stage II disease, 36 patients (30.4%) were diagnosed as Stage III and 24 patients (21.4%) had Stage IV disease. Figure 2 demonstrates the subclassification for the revised FIGO 2009 surgical staging.

Kaplan-Meier estimated medial survival time post diagnosis for all patients was 610 days (95% CI [478, 930]). Receiver operating characteristic (ROC) curves were generated for both the old staging system (10 substages) and the new staging system (9 substages), predicting death before the end of the second year (730 days). Area under the ROC curve was 0.67 for the original staging system and 0.65 for the new staging system.

## Conclusions

Based upon our analysis, the extent to which patients were restaged in any major way by the new staging system was minimal. Therefore, the ability of the FIGO 2009 staging system to predict death within 2 years was found to be similar to the FIGO 1998 staging system, and in both cases is a poor predictor of overall survival.

Since the goal of a staging system is to provide information regarding prognosis, based upon our reclassification of these 112 patients with uterine carcinosarcoma, the revised staging system does not predict overall survival more accurately than previous staging.

Uterine carcinosarcoma has an overall poor prognosis and better predictors of survival are needed.

## References

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Figure 1

FIGO 1988 Old Stage

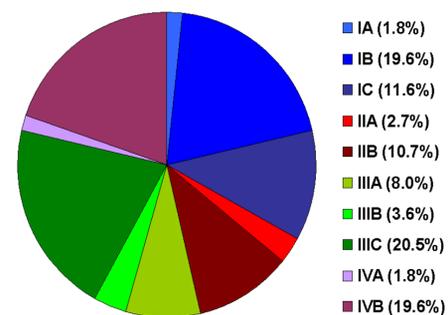


Figure 2

FIGO 2009 New Stage

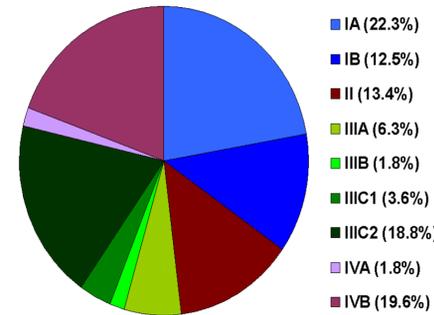


Table 1: Surgical Procedure

Surgical Procedures Performed	Number	Percentage
Total Abdominal Hysterectomy / Bilateral Salpingoopherectomy	6 / 112	5.4%
Total Abdominal Hysterectomy / Bilateral Salpingoopherectomy / Pelvic Lymph Node Dissection	8 / 112	7.1%
Total Abdominal Hysterectomy / Bilateral Salpingoopherectomy / Pelvic and Para-aortic Lymph Node Dissection	27 / 112	24.1%
Total Abdominal Hysterectomy / Bilateral Salpingoopherectomy / Pelvic and/or Para-aortic Lymph Node Dissection / Omentectomy	56 / 112	50%
Total Abdominal Hysterectomy / Bilateral Salpingoopherectomy / Biopsies and/or Other Procedures	15 / 112	13.4%

