**Objectives** The study aimed to evaluate factors associated with 30-day severe post-operative morbidity classified by Clavien-Dindo classification (CDC) ≥ grade IIIa and time to adjuvant chemotherapy (TTC) after cytoreductive surgery for primary advanced stage epithelial ovarian cancer (AEOC).

**Methods** Patients undergoing cytoreductive surgery for primary AEOC were enrolled from February 2018 to September 2020. Post-operative complications were graded according to the CDC. Logistic regression analysis was used to evaluate risk predicting CDC grade ≥ IIIa and TTC > 42 days.

**Results** Three hundred eligible patients were included for analysis. CDC grade ≥ IIIa occurred in 51 (17%) patients. In multivariable analysis, age (p=0.019), cardiovascular comorbidity (p=0.011), diaphragmatic surgery (p=0.001), intraoperative urinary tract injury (p=0.008) and other visceral injury e.g., pancreas, stomach, liver and spleen (p=0.011) were factors related to CDC grade ≥ IIIa. Thirty percentage of patients received chemotherapy > 42 days. Median TTC in patients with CDC grade ≥ IIIa was 39 (29–50) days while median TTC in patients without CDC grade ≥ IIIa was 33 (25–41) days, p=0.008. Patients with the following factors: WHO grade ≥2 (p=0.043), presence of ascites (p=0.012), para-aortic lymph node resection (p=0.001), intra-operative bowel injury (p=0.007), other visceral injury (p=0.008), pneumothorax (p=0.030), post-operative visceral organ leakage (p=0.012), delirium (p=0.034) and pneumonia (p=0.001) had a higher adjusted odds of developing TTC >42 days.

**Conclusions** Patients with CDC grade ≥ IIIa had a significant longer median TTC compared to those without CDC grade ≥ IIIa. Intra-operative visceral injury was the significant factor related to both severe complications and delayed time to chemotherapy.

**Objectives** The comprehensive complication index (CCI) is an instrument for reporting the cumulative post-operative complications while Clavien-Dindo classification (CDC) reports the most serious event. This study aims to validate the CCI for advanced stage epithelial ovarian cancer (AEOC) after cytoreductive surgery and compare its diagnostic performance with CDC.

**Methods** Complications after cytoreductive surgery for primary AEOC were classified using CDC and CCI. Logistic regression was used to determine the association between CDC and CCI with prolonged length of hospital stays (PLOS), intensive care unit (ICU) admission, readmission and time to chemotherapy (TTC). Area under the receiver operating characteristic (AUC) was used to establish the diagnostic performance of each classification.

**Results** Totally, 300 patients were included from February 2018 to September 2020. Thirty days post-operative complications occurred in 146 patients of whom 30% had multiple complications (range 2–6 events). Severe complications were diagnosed in 17% of patients when using the CDC while the percentage increased to 30% when using the CCI. In regression analysis, both CDC and CCI presented as predictors for PLOS (≥9 days), TTC >42 days, ICU admission and readmission (all p <0.05). AUC demonstrated that CCI (0.843, 95% CI 0.79–0.90) performed better than CDC (0.813, 95% CI 0.75–0.88) for PLOS. Both systems equally showed a fair diagnostic performance for TTC >42 days (both AUC 0.630, 95% CI 0.55–0.71).

**Conclusions** The cumulative score of CCI had shown a superior diagnostic performance for PLOS than CDC in AEOC. The use of the CCI should be considered in other gynecological evaluations.