**Objective:**
To determine whether artificial intelligence might be useful in weighting the importance of clinical and US variables predicting the risk of malignancy (ROM) in women undergoing surgery for ovarian masses.

**Methods:**
Retrospective study evaluating 1,053 patients having surgery for ovarian masses in gynecologic oncology unit of three referral centers in Italy. Using artificial neuronal network (ANN) analysis was estimated the importance of different variables, used in predicting ROM. Clinical and US (according to IOTA Terms) variables were evaluated. ANN simulates a biological neuronal system. Like neurons, ANN acquires knowledge through a learning-phase process and allows weighting the importance of covariates, thus establishing how much a variable influences a multifactor phenomenon.

**Results:**
Overall, 43% (458/1053) of patients had malignant masses detected at surgery. Using ANN we observed that the three main US factors predicting ROM included: color score (importance: 0.259), presence of solid area(s) (importance: 0.212) and cysts' diameter (importance: 0.099). Looking at connections between clinical/ personal factors and ROM, we observed that CA125 levels (importance: 0.100), increasing in age (importance: 0.042), and family history positive for breast cancer (importance: 0.033) were the most important variables predicting ROM.

**Conclusions:**
According to our results, color score and presence of solid area should be considered the most important factors predicting ROM. Moreover, clinical and anamnestic features might have a role in predicting ROM.