Introduction/Background Epithelial ovarian cancer is the leading cause of death among all gynaecological cancers in developed countries, mainly due to the lack of early diagnosis coupled with the frequent acquisition of resistance to available treatments. In particular, platinum-refractory and resistant patients have the worst outcome and the fewest therapeutic options. Early identification of these patients could limit useless undesirable effects and explore more effective therapeutic options. Short-term ex vivo assays might address such unmet needs, adopting a patient-centric perspective rather than a ‘one-size-fits-all’ approach.

Methodology Organotypic tumour slice cultures (OTSC) are three-dimensional ex vivo models obtained by precision cutting and cultured in an air-liquid interface to preserve viability. These 350 µm thick slices retain the complexity of tumour microenvironment without extensive manipulation and the fast tissue processing (2–6 days) allows short-term assays.

The primary objective is to evaluate the feasibility of OTCS establishment in high-grade serous ovarian cancer patients. Secondary endpoints include OTCS accuracy in predicting patients’ treatment response. Specifically, measurement of the redox index and reducing potential, through confocal microscopy and real-time luminescence, will be adopted to evaluate cell viability before and after treatment (carboplatin, paclitaxel, bevacizumab, PARPi, and immunotherapeutic drugs).

Finally, OTCS multi-omics characterization has been planned to investigate their mutational and transcriptional landscape.

Results The study is recruiting patients at Fondazione Policlinico Universitario Gemelli IRCCS in Rome. Results are expected in January 2025.

Conclusion If proven effective and reliable, OTSC could be considered an empirical predictor of patients’ response to treatments. The short-term drug screening evaluation that OTCS allow may provide useful information in a clinically meaningful window of time.

Disclosures The authors declare no disclosures.