

# Preoperative staging of advanced ovarian cancer: comparison between ultrasound, computed tomography (CT) and whole-body MRI with diffusion-weighted sequence (WB-DWI/MRI)

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**Introduction / Background:** To compare the diagnostic accuracy of ultrasound (US), CT and WB-DWI/MRI in preoperative staging and assessment of optimal operability in patients with ovarian cancer.

**Methodology:** Patients planned for ovarian cancer surgery were enrolled. They underwent preoperative work-up with US, CT and WB-DWI/MRI, following evaluation form. Findings were compared to the reference standard (intraoperative and histopathological evaluation forms).

**Results:** From 67 patients enrolled, 51 (76%) had advanced and 16 (24%) early stage ovarian cancer. Ultrasound showed the best results in the detection of pelvic carcinomatosis, in contrast with MRI and CT (AUC 0.94, 0.91, and 0.82, respectively), and in the evaluation of the depth of rectosigmoid infiltration (AUC 0.96, 0.81, and 0.85). In the upper abdomen, all three methods showed comparable results in the detection of liver involvement (AUC 0.78, 0.79 and 0.76 for US, CT and WB-DWI/MRI), while US had the lowest AUC in the assessment of diaphragm (AUC 0.73, 0.84, 0.81). In the middle abdomen, ultrasound reached the highest AUC in the assessment of greater omentum and anterior wall (AUC of 0.87 and 0.76), in comparison with MRI (AUC 0.85 and 0.74), followed by CT (AUC 0.80 and 0.66). Ultrasound, MRI and CT showed comparable results in the assessment of bowel surface involvement (AUC 0.70, 0.69, 0.71), and ultrasound and MRI were better than CT (AUC 0.64, 0.71 and 0.76) in mesenterial involvement detection. In the assessment of retroperitoneal LNs, ultrasound and MRI were comparable (AUC 0.83), followed by CT (AUC of 0.76). All three modalities showed similar AUC in the prediction of optimal operability (AUC of 0.79 for US and CT and 0.80 for MRI).

**Conclusion:** This is the first prospective study documenting the potential role of ultrasound in ovarian cancer staging, compared to the method of choice (CT) and a novel technique (WB-DWI/MRI).

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Mean age	61 years
Advanced stage	79% (53/67)
Tubal cancer	76% (51/67)
High grade serous ca	81% (54/67)
Mean CA 125	602 (U/mL)
Surgery	
- Diagnostic laparoscopy	16% (11/67)
- Primary debulking surgery	72% (48/67)
- Combined LPS+LPT	12% (8/67)
<b>Macroscopic residuum (R2)</b>	<b>30% (20/67)</b>

