**64. 3D Patient-Specific Virtual Models for Presurgical Planning in Patients with Recto-Sigmoid Endometriosis Nodules: A Pilot Study**

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Abstract

*Background and Objective:* In recent years, 3D printing has been used to support surgical planning or to guide intraoperative procedures in various surgical specialties. An improvement in surgical planning for recto-sigmoid endometriosis (RSE) excision might reduce the high complication rate related to this challenging surgery. The aim of this study was to build novel presurgical 3D models of RSE nodules from magnetic resonance imaging (MRI) and compare them with intraoperative findings.

*Materials and Methods:* A single-center, observational, prospective, cohort, pilot study was performed by enrolling consecutive symptomatic women scheduled for minimally invasive surgery for RSE between November 2019 and June 2020 at our institution. Preoperative MRI were used for building 3D models of RSE nodules and surrounding pelvic organs. 3D models were examined during multi-disciplinary preoperative planning, focusing especially on three domains: degree of bowel stenosis, nodule's circumferential extension, and bowel angulation induced by the RSE nodule. After surgery, the surgeon was asked to subjectively evaluate the correlation of the 3D model with the intra-operative findings and to express his evaluation as "no correlation", "low correlation", or "high correlation" referring to the three described domains.

*Results:* seven women were enrolled and 3D anatomical virtual models of RSE nodules and surrounding pelvic organs were generated. In all cases, surgeons reported a subjective "high correlation" with the surgical findings.

*Conclusion:* Presurgical 3D models could be a feasible and useful tool to support surgical planning in women with recto-sigmoidal endometriotic involvement, appearing closely related to intraoperative findings.

Keywords: anatomical models; endometriosis; magnetic resonance imaging; minimally invasive surgical procedures; three-dimensional image.