

Authors: Gioia Brachini, Emanuele Casciani, Bruno Cirillo, Gianluca Costa, Barbara Frezza, Marco la Torre, Silvia Lanciotti, Ida Mastroiacovo, Andrea Mingoli, Paolo Sapienza, Annarita Speranza

Inter-Observer Agreement of Computed Tomography and Concordance to Surgical Findings in Acute Complicated Diverticulitis. A Translational Leakage.

Background: A preoperative standardized and reliable classification system between clinical and computed tomography (CT) findings to better plan surgery in acute complicated diverticulitis (ACD) is lacking.

Aim: We studied the inter-observer agreement of CT scan data and their concordance with the preoperative clinical findings and the adherence with the intraoperative status using a new classification of diverticular disease (CDD).

Methods: One-hundred and fifty-two patients operated on for acute complicated diverticulitis (ACD) were retrospectively enrolled in the present analysis. All patients were preoperatively studied with CT scan within 24 hours before surgery and CT images were blinded reanalyzed by 2 radiologists (A/B). Kappa value was used to evaluate the inter-observer agreement between radiologists and to assess the concordance between CDD, preoperative clinical findings and findings at operation. Univariate and multivariate analysis were used to evaluate the predicting values of CT classification and CDD stage at surgery on postoperative outcomes.

Results: Overall inter-observer agreement for the CDD was high, with a kappa value of 0.905 (95% CI = 0.850-0.960) for observers A and B, while the concordance between radiological and surgical findings was weak (kappa values = 0.213 and 0.248, respectively and 95% CI=0.106 to 0.319 and 95% CI=0.142 to 0.355, respectively). When overall morbidity, mortality and the need of a terminal colostomy were considered as main endpoints no concordance was observed between surgical and radiological findings and the CDD (P=NS).

Discussion: CDD is based only on radiological findings and we suggest its integration with clinical and more detailed CT scan data to better classify patients affected with complicated diverticulitis and provide useful information to the surgeon for the best treatment strategy. We propose to modify the CDD classification with the integration of the Sartelli classification by including the stages 2B (distant air >5 cm from inflamed bowel segment), 3 (diffuse fluid without distant free air, no hole in colon), and 4 (diffuse fluid with distant free air, persistent hole in colon) into the CDD stage 2c and adding laboratory thresholds values to better characterize patients affected with ACD.