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Predictive Factors and Risk Model for Positive Circumferential Resection Margin Rate After Transanal Total Mesorectal Excision in 2653 Patients With Rectal Cancer

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Abstract

Objective: The aim of this study was to determine the incidence of, and preoperative risk factors for, positive circumferential resection margin (CRM) after transanal total mesorectal excision (TaTME).

Background: TaTME has the potential to further reduce the rate of positive CRM for patients with low rectal cancer, thereby improving oncological outcome.

Methods: A prospective registry-based study including all cases recorded on the international TaTME registry between July 2014 and January 2018 was performed. Endpoints were the incidence of, and predictive factors for, positive CRM. Univariate and multivariate logistic regressions were performed, and factors for positive CRM were then assessed by formulating a predictive model.

Results: In total, 2653 patients undergoing TaTME for rectal cancer were included. The incidence of positive CRM was 107 (4.0%). In multivariate logistic regression analysis, a positive CRM after TaTME was significantly associated with tumors located up to 1 cm from the anorectal junction, anterior tumors, cT4 tumors, extra-mural venous invasion (EMVI), and threatened or involved CRM on baseline MRI (odds ratios 2.09, 1.66, 1.93, 1.94, and 1.72, respectively). The predictive model showed adequate discrimination (area under the receiver-operating characteristic curve >0.70), and predicted a 28% risk of positive CRM if all risk factors were present.

Conclusion: Five preoperative tumor-related characteristics had an adverse effect on CRM involvement after TaTME. The predicted risk of positive CRM after TaTME for a specific patient can be calculated preoperatively with the proposed model and may help guide patient selection for optimal treatment and enhance a tailored treatment approach to further optimize oncological outcomes.