Optical diagnosis of T1 CRCs and treatment consequences in the Dutch CRC screening programme

With great interest, we have read the article by Backes *et al*,[1] on the pre-resection accuracy of the real-time optical diagnosis of T1 colorectal cancer (T1CRC) in large non-pedunculated colorectal polyps. In this multicentre, prospective study, the authors developed and validated the OPTICAL model, in which a sensitivity of 78.7% (95% CI: 64.3 to 89.3) for optical diagnosis of T1CRC was obtained.

With the implementation of the Dutch bowel cancer screening programme (BCSP) in 2014, a shift has occurred towards the more frequent diagnoses of early AJCC (American Joint Committee on Cancer) stage I cancers.[2] Estimating the risk of a T1CRC is crucial to determine the optimal treatment strategy, and to select cases for more elaborative and expensive endoscopic *en bloc* resection techniques such as endoscopic submucosal dissection, transanal minimally invasive surgery or endoscopic full-thickness resection. Current studies mainly report on the outcomes of advanced imaging by expert centres with dedicated endoscopists,[3 4] whereas data on the accuracy of T1CRC detection at the community level are scarce.

We aimed to determine the magnitude of the problem of missing T1CRCs in daily practice at the community level. Therefore, we collected all Dutch faecal immunochemical test (FIT)-based BCSP colonoscopies in five representative, screening certified endoscopy units in the Southeast Netherlands between February 2014 and August 2015 and evaluated T1CRCs for correct optical diagnosis. Prediction of histology was a mandatory query in the standardised BCSP report. Endoscopists were certified for participation in the BCSP but did not receive additional training in the optical diagnosis of T1CRC.

A total of 115 T1CRCs were diagnosed in 2845 BCSP colonoscopies. Out of 115 diagnosed T1CRCs, only 24 were initially recognised as being malignant. The overall sensitivity for optical T1CRC recognition at the community level was therefore 20.9%. A subanalysis showed that non-pedunculated T1CRCs were more easily recognised than pedunculated T1CRCs

Table 1 Optical diagnosis of T1CRCs of different morphology and size*

	Optically diagnosed	Total amount of T1CRCs	Sensitivity	Significance
Pedunculated	3	43	7.0%	p=0.013
Non-pedunculated	17	66	25.8%	
Size 0–9 mm	0	4	0%	p=0.389
Size 10–20 mm	11	66	16.7%	
Size >20 mm	8	38	21.1%	

*In 6 cases, morphology was not reported and in 11 cases exact size was not reported.
T1CRC, T1 colorectal cancer.

(25.8% vs 7.0%). The optical recognition of T1CRCs did not differ according to size (table 1).

For treatment consequences, the 91 initially non-recognised T1CRCs were categorised into low-risk T1CRCs (defined as the absence of three features: lymphovascular invasion, poor differentiation and (R1-)resection margin <1 mm) and high-risk T1CRCs (defined as the presence of at least one of these features). In the salvage surgery cases, 30 (33.0%) were high-risk T1CRCs, of which 19 (63.3%) showed only R1-resection margins as a histological risk factor (figure 1). There was no significant difference in curative (R0) endoscopic resection between pedunculated and non-pedunculated T1CRCs (57.5% vs 46.3%; p=0.315).

Incorrect optical diagnosis thus results in non-curative endoscopic resection in both pedunculated and non-pedunculated T1CRCs. This often leads to salvage surgery, which in a substantial number of cases seems to be unnecessary.

When interpreting our data, some shortcomings need to be acknowledged.

First, the assessment of colorectal lesions and the use of image enhancement was not standardised and the level of confidence of optical diagnosis was not assessed.

Second, we included both pedunculated and non-pedunculated T1CRCs. For pedunculated T1CRCs, the depth of submucosal invasion is more difficult to assess, whereas for non-pedunculated lesions, the increase in the surface and vascular pattern disruption reflects the depth of submucosal invasion.[5] This is supported by the lower sensitivity for pedunculated T1CRCs in our study.

To conclude, our study showed a poor sensitivity of only 20.9% for T1CRC optical diagnosis in daily clinical practice at the community level, where most of the screening colonoscopies are being performed. Poor recognition of T1CRCs leads to non-curative endoscopic resection, which might lead to unnecessary additional surgical treatment in low-risk cases.

Improvement in recognition of T1CRCs is urgently needed. Implementation of the validated OPTICAL risk chart in daily practice provides guidance by estimating CRC risk. It should be considered as a standardised component of the BCSP training and BCSP accreditation.

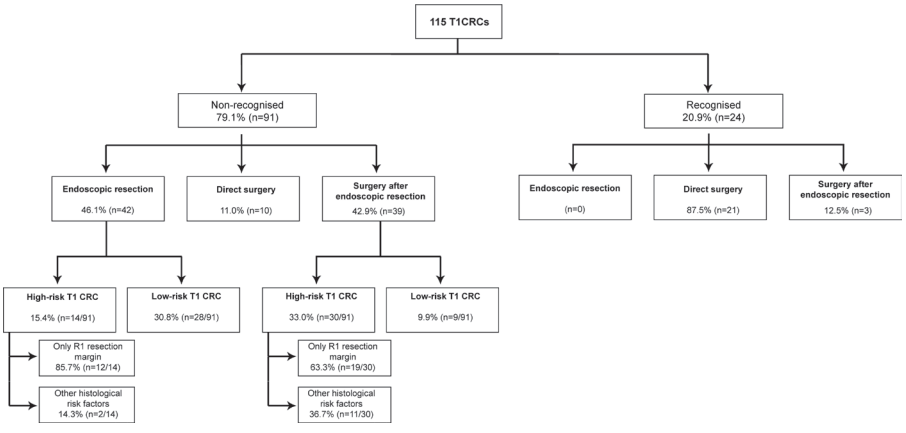

Figure 1 Flowchart of optical diagnosis and treatment of T1CRCs in BCSP. Endoscopic resection: only R1 resection margin = (R1-)resection margin <1 mm; other histological risk factors=lymphovascular invasion and poor differentiation. BCSP, bowel cancer screening programme; T1CRC, T1 colorectal cancer.

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