# Non-granular laterally spreading tumors: potential superficial cancers that artificial intelligence does not easily detect

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Artificial intelligence (AI) and especially deep learning have recently shown promising results in various medical fields involving endoscopic images [1,2]. But as AI becomes more and more powerful, we must remain careful and attentive in detection. We showed recently in a case report that real-time computer-aided detection systems (CADe) may have difficulties in detecting flat colorectal sessile serrated adenomas/polyps (SSA/P) [3]. Among the difficult lesions to detect, non-granular laterally spreading tumors (LST-NG) represent a challenge because in addition to their flat macroscopic form which is difficult to identify, they are associated with advanced histology, since 27% of invasive cancers are found in the sur-elevated NG forms and 47% in the pseudo-depressed ones [4]. It is therefore a major challenge for diagnostic endoscopy not to miss them, as they are potential interval cancers that will become advanced at the next surveillance colonoscopy 3 or 5 years later.

We therefore aimed to assess the efficiency of a recent CADe system to identify LST-NG, using the ENDO-AID software in combination with the EVIS X1 video column (Olympus, Tokyo, Japan).

We report the case of three patients with LST-NG lesions measuring more than 4 cm each, not correctly detected by CADe (video 1). Because of their less visible edges, it seems like the tested CADe system is sometimes not efficient enough to identify the flat shape of these lesions, with incomplete detections and false positives (figures 1, 2 and 3).

This case illustrates that potential superficial cancers such as LST-NG or SSA/P can still be hard to detect, even for a recent CADe system. Deep learning algorithms have to be trained further to detect those rare lesions that can be hard to detect for human eye in practice and where CADe assistance would be extremely valuable.

References

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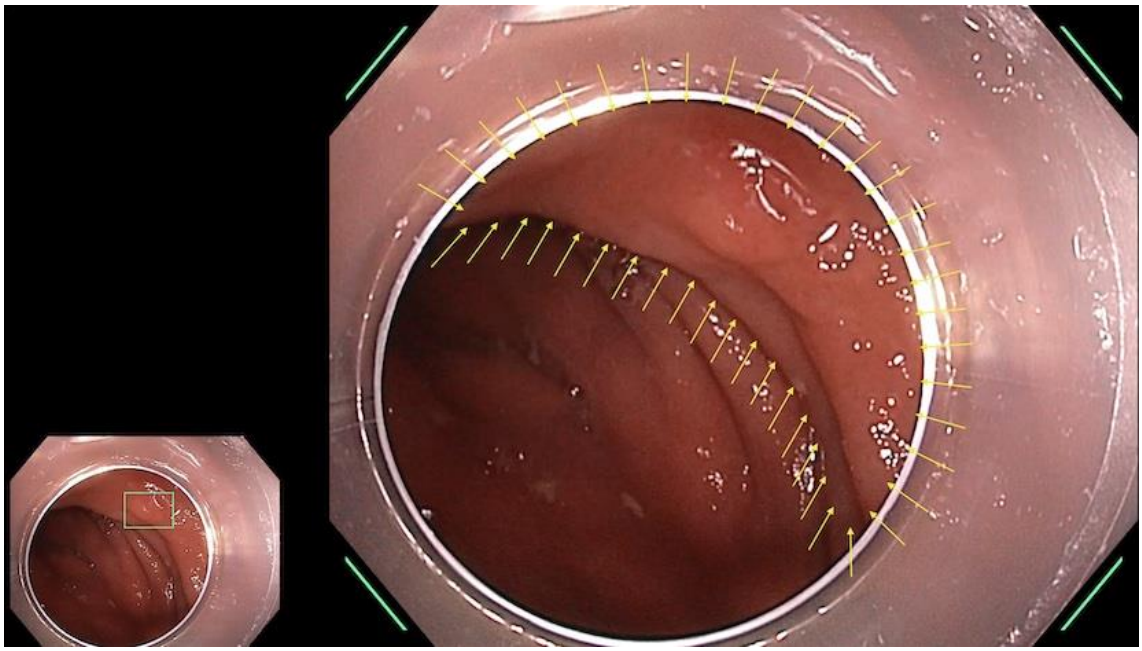

Figure 1: White light view of the lesion with CADe screen in the lower left corner. The green rectangle represents the CADe detection area, while the yellow arrows point to the real boundaries of the LST.

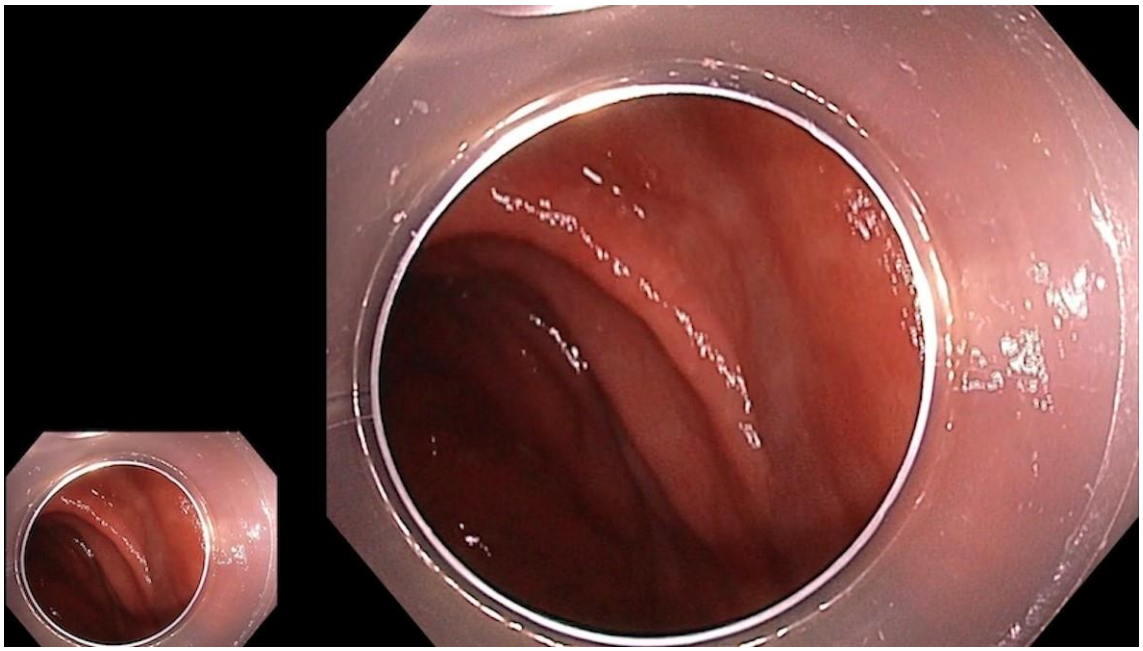

Figure 2: White light view of the same lesion with no detection by CADe.

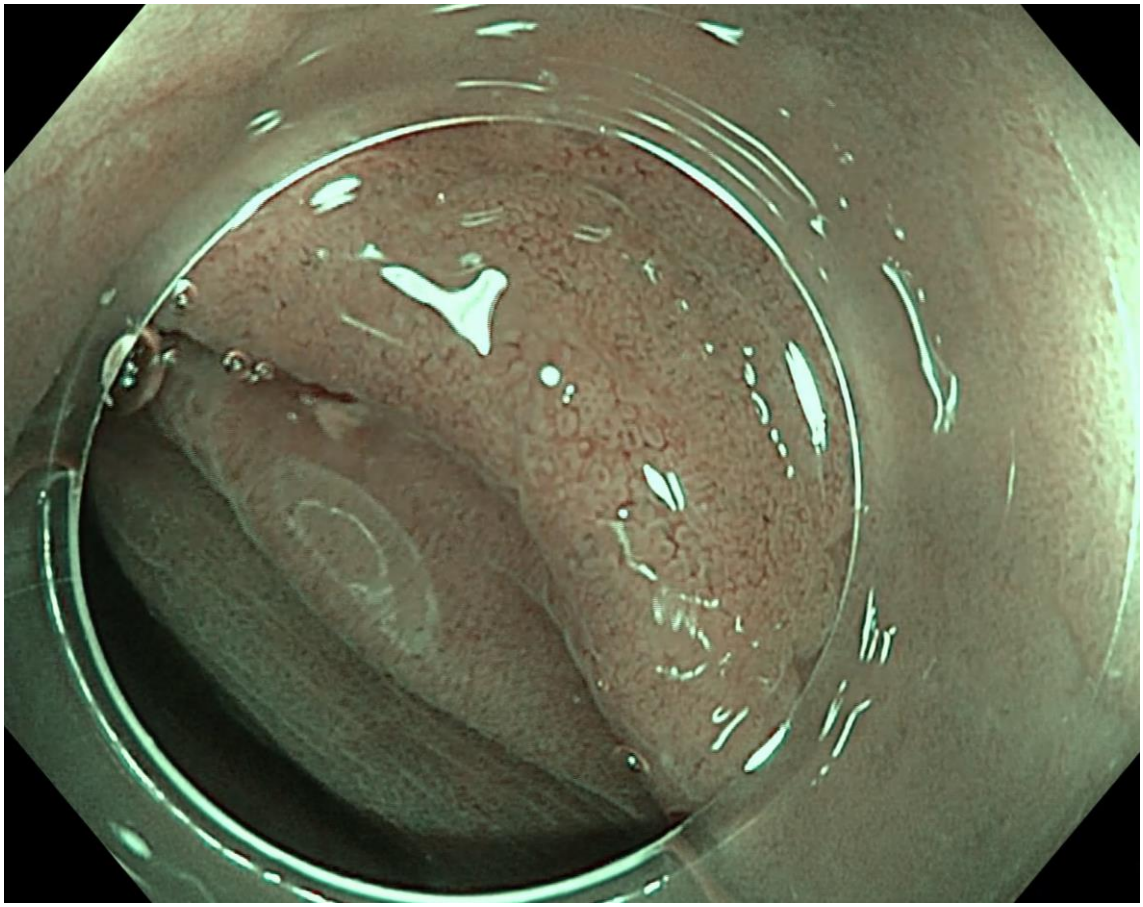

Figure 3: NBI corresponding view of the lesion (focus).