
BACKGROUND AND STUDY AIMS:
Endoscopic mucosal resection (EMR) of early gastrointestinal cancers has been shown to be effective in treating mucosal malignancies, but en bloc resection (where the entire tumor is removed in one piece) is often not achieved using conventional cap EMR. Other techniques, developed in Japan, include the application of different types of knife such as the insulated-tip instrument. We report our preliminary experience of the use of this knife, in conjunction with other techniques, in attempting en bloc resection of early mucosal cancers and adenomas and in the removal of submucosal tumors (SMTs) of the upper gastrointestinal tract.

PATIENTS AND METHODS: A total of 37 patients (26 men, 11 women, age range 53 - 86) were included in the study; 23 patients had 24 mucosal lesions amenable to EMR, and 14 patients had SMTs shown on endosonography to spare the muscularis propria. Lesions were located in the esophagus (n = 13), the stomach (n = 24), and the duodenum (n = 1); 40 % of the mucosal lesions were 20 mm or larger (mean size 18mm), whereas the mean size of the submucosal lesions was 23 mm. After submucosal saline injection, circumcision and dissection of the mucosal lesions was attempted with the aim of achieving en bloc resection. For SMTs, cap mucosectomy of the overlying mucosa was done first, and...
the tumors were then freed using saline injection, and finally resected using snare polypectomy.

RESULTS: The strict aim of the study, i.e. complete tumor removal in a single piece, was achieved in only 25% of the mucosal lesions (some failures were due to unrecognized submucosal infiltration) and 36% of the SMTs. When a more liberal definition of success was assumed, this rate increased to 65% for mucosal lesions (piecemeal, no tumor found at surgery or follow-up endoscopy with biopsy) and 79% for SMTs (piecemeal). No severe complications necessitating surgery or leading to major morbidity occurred. However, clinically significant complications were found in six patients (minor perforation managed conservatively \( n = 1 \), severe pain without perforation \( n = 1 \), bleeding requiring reintervention \( n = 3 \), and aspiration \( n = 1 \)). CONCLUSIONS: Although we are convinced that methods of achieving en bloc resection of mucosal cancers and SMTs must be pursued, the insulated-tip knife in conjunction with conventional endoscopes still has limitations. Innovative endoscope design (double-channel scopes) as well as the development of new accessories will help to overcome the current limitations and further promote endoscopic tumor resection.