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New Concept of External and Independent Next-to-the-Scope Intraluminal Grasping Device (EINTS)

Karl-Hermann Fuchs, Boban Sudarevic, Joel Troya, Alexander Hann, Alexander Meining
Interventional and Experimental Endoscopy (InExEn), Department of Internal Medicine II, Gastroenterology,
University of Würzburg, Würzburg, Germany

Abstract

Background: Interventional endoscopic procedures require complex manipulations and precise maneuvering of end-effectors. One focus in research on improved endoscopic instrument function was based on surgical experience to gain additional traction. The idea has emerged using assisting instruments by applying external tools next-to-the endoscope to follow surgical concepts. The aim of this study is the assessment of flexible endoscopic grasping instruments regarding their function and working-radius introducing the concept of an intraluminal "next-to the-scope" endoscopic grasper.

Methods: In this study endoscopic graspers are evaluated (1:through-the-scope-grasper, TTS-G;2:additional-working-channel-system AWC-S;3:external-independent-next-to-the-scope-grasper EINTS-G) regarding their working-radius, grasping abilities, maneuverability and the ability to expose tissue with varying angulation.

Results: The working radius of the tools attached or within the endoscope (TTS-G and AWC-S) benefit from the steering abilities of the scope reaching 180-210 degrees in retroflexion; EINTS-G is limited to 110-degrees. The robust EINTS-grasper has the advantage of stronger grip for grasping and pulling force, which enables manipulation of larger objects. The independent maneuverability during ESD-dissection provides better tissue-exposure by changing the traction-angulation.

Conclusion: The working radius of tools attached to the endoscope benefit from scope- steering. The EINTS-grasper has the advantage of stronger grasping force and pulling within the GI-tract and independent maneuverability enables improved tissue-exposure.

WC200

Key words: interventional endoscopy, ESD, EFTR, endoscopic graspers, working radius, endoscopic instruments, therapeutic endoscopy