A NOVEL RETRACTER-ASSISTED RECTAL ESD METHOD THAT UTILIZES A TRANSANAL PLATFORM AND DECREASES BOTH EN BLOC POLYPECTOMY TIMES BY 45% AND MUSCLE INJURIES

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Introduction

Endoscopic submucosal dissection (ESD) is the gold standard polypectomy method for large benign and sessile polyps, allowing for en bloc removal and assessment of lateral and deep margins. During this technique, retraction is obtained with gravity and a dissection cap on the end of the colonoscope that allows for pressure to be applied to the mucosal edge or submucosa. Despite the benefits of ESD, the challenge of adequate retraction accounts in large part for the low ESD adoption rate in Western countries. This study presents a novel ESD retraction method for rectal polyps that uses a transanal minimally invasive surgery (TAMIS) transanal platform, endoscopic grasper, and a curved-tip overtube. Preliminary ex vivo bovine large bowel data is presented.

Methods

Bovine large bowel was used. Four 2 cm round lesions per colon were tattooed onto the mucosa with a hot wire 15-30 cm from the anus. The GelPOINT Path device method (Applied Medical, CA) plastic anal sleeve was inserted across the sphincter after which the gel faceplate (through which the colonoscope had been passed) was attached. For each colon, two lesions were removed using standard ESD technique (needle knife and dissection cap post lift) and two were removed with a needle knife using the novel grasper-assisted method* in the following manner. After outlining the planned resection with spot burns, the lift was established and a circumferential mucosal incision made with a needle knife. Next, the overtube, through which the grasper has been passed, is inserted through the gel faceplate into the rectum. The overtube and retractor are then advanced to the distal mucosal cut edge. The overtube is then rotated (spun) externally such that the retractor can make contact with and grasp the mucosal edge. By rotating the overtube's curved tip the grasped cut edge is lifted into the lumen which exposes and stretches the submucosal fibers which facilitates detachment. Case length and number of perforations and deep wall injuries were noted, as well as resected pelt rents and incomplete margins. Statistical analyses were done via unpaired one-tailed t tests.

**Grasper and overtube are components of the Boston Scientific ORISE TRS System (transanal rectal endoscopy platform no longer on the market).*

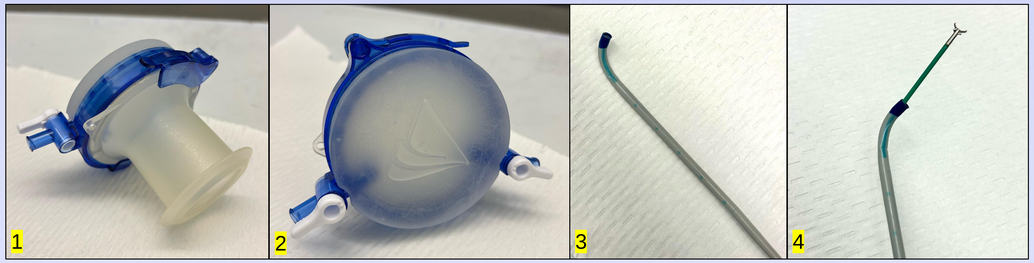


Figure 1: Device Photos

1) Transanal GelPOINT Path device: anal sleeve and attached gel faceplate
2) GelPOINT Path device gel faceplate
3) Plastic overtube with flexible curved tip
4) Plastic overtube with endoscopic grasper extending from curved tip

Results

A total 11 ESD resections were done (5 standard ESD [SESD], 6 Grasper-Assisted [GA]). The mean case length for the SESD cases was 37.13 minutes whereas for the GA cases it was 20.53 minutes (p=0.003). There were no perforations in either group but there were significantly more deep muscle partial thickness injuries in the SESD group (mean number of injuries 4.8) vs the GA cases (mean of 0.3 per case, p=0.007). The resected pelts of the grasper group had fewer rents and incomplete margins (SESD, 1.6/pelt vs GA, 0.2/pelt, p=0.03).

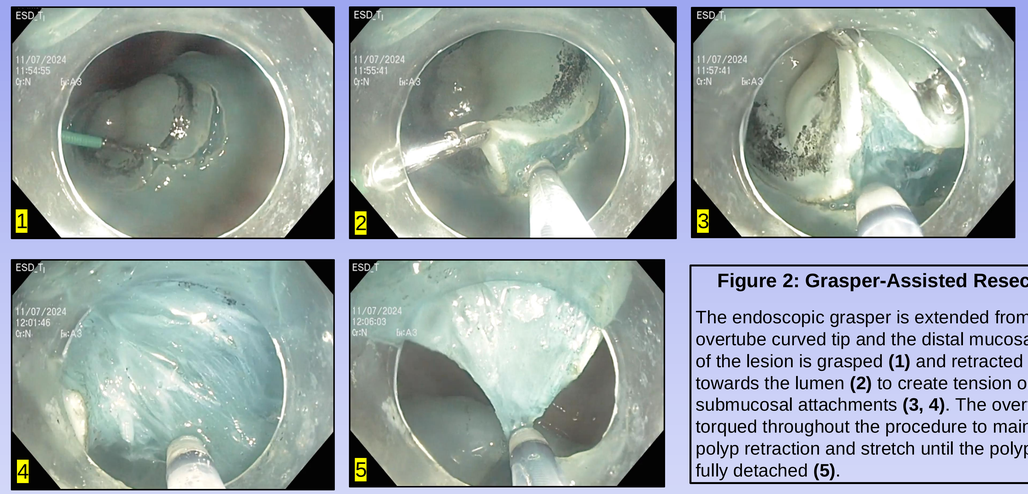


Figure 2: Grasper-Assisted Resection

The endoscopic grasper is extended from the overtube curved tip and the distal mucosal edge of the lesion is grasped **(1)** and retracted towards the lumen **(2)** to create tension on distal submucosal attachments **(3, 4)**. The overtube is torqued throughout the procedure to maintain polyp retraction and stretch until the polyp is fully detached **(5)**.

Conclusion

This novel grasper and overtube retraction method, in conjunction with a transanal gel device, provides reliable retraction that exposes distal submucosal attachments and greatly shortens resection times. Furthermore, it improves the quality of the polypectomy and avoidance of deep wall muscle injuries. For distal lesions this retraction strategy holds great promise and warrants further investigation.

References

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