Colorectal Endoscopic Submucosal Dissection in the West: A Systematic Review and Meta-Analysis

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BACKGROUND

- The advantages of endoscopic submucosal dissection (ESD) over endoscopic mucosal resection for large sessile and laterally spreading colorectal neoplasms are well established
- Due to increased frequency of adverse events, technical challenges, and lack of adequate training in ESD limit its widespread adoption in the western world.

AIM

- To evaluate the rate of R0, En bloc and curative resections of colorectal neoplasms with ESD in the Western setting
- To evaluate the rate of ESD-related adverse events in patients undergoing ESD for colorectal neoplasms

METHODS

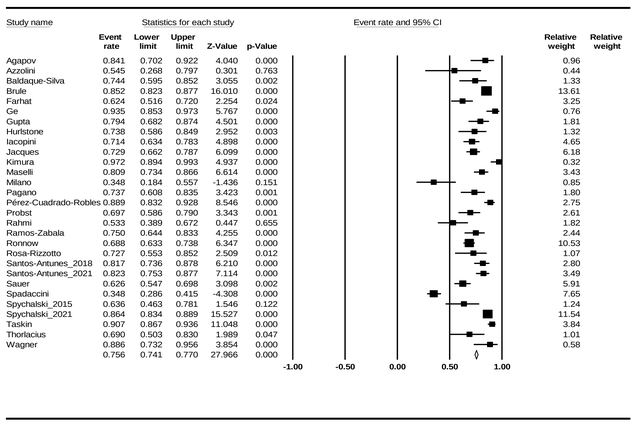
- A comprehensive literature search was performed in electronic databases for published manuscripts and abstracts of studies performed in non-Asian countries (Europe, Americas, or Australia) that evaluated effectiveness of ESD for colorectal neoplasms
- Random effects model was used to obtain pooled (weighted) en bloc and R0 resection rates, and adverse events, like colonic/rectal perforation, lower gastrointestinal bleeding.
- Tumor recurrence on follow up endoscopy was also assessed.

Clinical Outcomes of Patients with Colorectal ESD

Clinical Outcomes (Number of studies)	Number of outcomes (%)†	95% Confidence interval	Q-value (P-value)	I^2 Statistics
R0 resection (29)	3,067 (75.7%)	69.8%-80.8%	361 (<.01)	92.25
En Bloc resection (31)	3,549 (84.6%)	83.3%-85.9%	244.6 (<.01)	87.74
Curative resection (21)	2,443 (81.9%)	78.6%-84.9%	74.17 (<.01)	73.03
Surgery for invasive Cancer¶ (23)	260 (4.8%)	2.4%-9.4%	419.5 (<.01)	94.75
Adverse events				
Perforation (25)	182 (5.5%)	4.2%-7.0%	33.14 (.27)	12.50
Bleeding (26)	111 (4.1%)	3.0%-5.5%	45.08 (<.01)	48.98
Delayed bleeding (26)	66 (3.4%)	2.5%-4.7%	35.89 (.07)	30.34
Surgery for complication (30)	42 (1.8%)	1.3%-2.4%	53.11 (<.01)	54.81

¶ After ESD, † pooled estimate using random effects model

Forest Plot of R0 Resection Rates among Patients who Underwent Colorectal ESD



RESULTS

- 30 retrospective and three prospective) comprising 3,958 ESD procedures met the inclusion criteria
- 96.7% (2,817/2913) of polyps were ≥2 cm
- Pooled en bloc resection rate (31 studies) was 84.6%, R0 resection rate (29 studies) was 75.7%, and curative resection was 81.9%
- Surgery for invasive cancer was performed in 4.8% of patients (23 studies)
- ESD-related perforation rate was (25 studies) 5.5% and delayed bleeding was observed in 3.4% of ESD procedures

DISCUSSION

- En bloc and R0 resection rate of ESD for large colorectal polyps is acceptable in the Western countries.
- Both these rates have improved compared to previous reports from non-Asian countries.(1)
- Major complications, like perforation and clinically significant bleeding are still observed in 5-10% of ESD procedures.
- Continued efforts at training therapeutic endoscopists will probably improve the safety and effectiveness of colorectal ESD in the West.

Reference:
1. Fuccio L, Hassan C, Ponchon T, et al. Clinical outcomes after endoscopic submucosal dissection for colorectal neoplasia: a systematic review and meta-analysis. Gastrointestinal Endoscopy 2017;86:74-86.e17