Safety of powered non-thermal endoscopic ablation device for removal of colonic polyps: a systematic review and meta-analysis

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ABSTRACT

Introduction

Endoscopic mucosal resection is a procedure commonly utilized for the resection of colonic polyps. However, polyp recurrence over a scarred submucosal base can make resection of residual lesions difficult using conventional techniques. EndoRotor® is a non-thermal endoscopic mucosal resection device that has been recently evaluated in the resection of colonic polyps, non-dysplastic Barrett's esophagus, and pancreatic necrosis, but the studies are limited to small sample sizes. Therefore, we performed a systematic review and meta-analysis to evaluate the safety and efficacy of EndoRotor® for the resection of colonic polyps.

Methods

A systematic review of the literature was performed using Medline, Embase, Web of Science, and the Cochrane library database until June 2022 to identify all studies that evaluated the safety of non-thermal endoscopic resection devices for the removal of colonic polyps. Our primary outcome of interest was the technical success rate, and secondary outcomes included rates of residual lesions and adverse events. All analyses were conducted using comprehensive meta-analysis software.

Results

Three studies, including 54 patients who underwent resection of 60 lesions, were included in the analysis. The pooled technical success rate was 93.9% (95% CI: 77.7-98.6%, I2=25.5%). Among patients with a repeat endoscopic evaluation, 20 patients had a residual lesion. The pooled residual lesion rate after the first session was 39.8% (95% CI: 15.3-70.8%, I2=74.5%). There were eight instances of intraoperative bleeding and four cases of post-procedural bleeding. The pooled rate of intraoperative bleeding was 13.2% (95% CI: 6.7-24.3%, I2=0%) and post-procedural bleeding was 8.5% (95% CI: 3.4-19.8%, I2=0%). There was only one event of major bleeding, and no perforations were reported.

Discussion

Our study revealed that EndoRotor® is successful in removing scarred colonic polyps, but the residual lesion rate is high and may require multiple sessions for complete removal. Larger prospective studies, especially randomized controlled trials, are needed to evaluate further the efficacy and safety of EndoRotor® for removing colonic polyps.

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INTRODUCTION

- Endoscopic mucosal resection (EMR) is a procedure commonly utilized for the resection of colonic polyps[1]
- However, local polyp recurrence over a scarred submucosal base can make resection of residual lesions difficult using conventional techniques[2]
- EndoRotor® is a non-thermal endoscopic mucosal resection device that aspirates tissue into a catheter with an inner cannula with a rotating blade, combining the abilities of suction, resection, and collection for further pathological examination[3]
- This device may allow for the resection of non-pedunculated colonic lesions without the need for submucosal lift or cauterization

OBJECTIVE

To conduct a systematic review and meta-analysis of available literature to evaluate the safety and efficacy of EndoRotor® for the resection of colonic polyps.

METHODS

- A systematic review of the literature was performed using Medline, Embase, Web of Science, and the Cochrane library database until June 2022 to identify all studies that evaluated the safety of non-thermal endoscopic resection devices for the removal of colonic polyps
- Our primary outcome of interest was the technical success rate, and secondary outcomes included rates of residual lesions and adverse events including intraoperative and post-procedural bleeding
- All analyses were conducted using Open Meta Analyst software

RESULTS

Three studies, including 54 patients who underwent resection of 60 lesions, were included in the analysis.

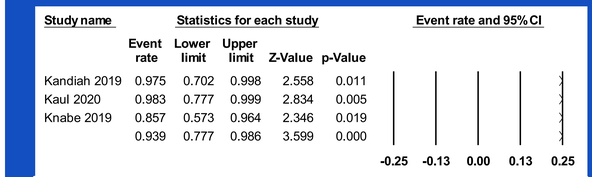

Figure 1. Technical Success. The pooled technical success rate was 93.9% (95% CI: 77.7-98.6%, I2=25.5%).

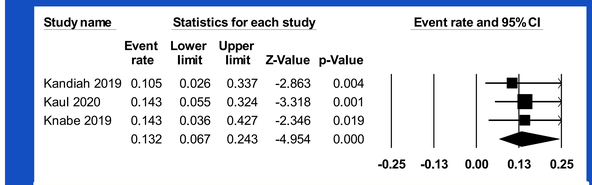

Figure 2. Intraoperative bleeding. The pooled rate of intraoperative bleeding was 13.2% (95% CI: 6.7-24.3%, I2=0%).

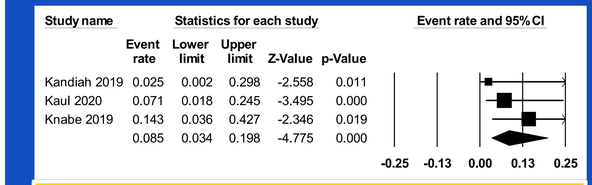

Figure 3. Post-procedural bleeding. The pooled rate of post-procedural bleeding was 8.5% (95% CI: 3.4-19.8%, I2=0%).

The pooled residual lesion rate after the first session was 39.8% (95% CI: 15.3-70.8%, I2=74.5%). No perforations were reported.

DISCUSSION

- The technical success rate of EndoRotor® is comparable to the success rate of EMR in the current literature[4,5]
- The rates of residual lesions and bleeding with EndoRotor® in our study are higher than the reported rates after EMR[4,5], likely because the studies included in our analysis included patients with recurrent polyps over scarred bases or a history of previous resection, which may be more difficult to fully remove and prone to bleeding than intervention-naïve lesions
- No head-to-head trials have been performed to compare residual lesion rates after EndoRotor® versus conventional EMR for the resection of recurrent polyps with scarred bases, or to compare the efficacy of EndoRotor® to conventional EMR for initial resection of intervention-naive polyps

CONCLUSIONS

- Our study revealed that EndoRotor® is successful in removing scarred colonic polyps, but the residual lesion rate is high and may require multiple sessions for complete removal
- Larger prospective studies, especially RCTs, are needed to further evaluate the efficacy and safety of EndoRotor® for removing colonic polyps

References

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