

## The Application of Robotic Surgical Approaches in the Management of Midgut Neuroendocrine Tumours: A Systematic Review

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**Abstract :** Background: Robotic-assisted surgery (RAS) promises good outcomes in midgut adenocarcinoma surgery. However, its effectiveness in midgut neuroendocrine tumours (MNETs) is unknown. This study aimed to assess the current use, user interface, and any emerging developments of RAS in MNET treatment using the literature available. Methods: This review was carried out using PRISMA guidelines. MEDLINE, EMBASE, and Web of Science were searched on 22nd October 2022. All studies reporting primary data on robotic surgery in midgut neuroendocrine tumours or carcinoid tumours were included. The midgut was defined to be from the duodenojejunal flexure to the splenic flexure. Methodological quality was assessed using the Joanna Briggs critical appraisal tool. Results: According to our systematic review protocol, nineteen studies were selected. A total of twenty-six patients were identified. RAS was used for right colectomies, right hemicolectomies, ileal resections, caecal resections, intracorporeal anastomoses, and complete mesocolic excisions. It offered an optimal user-interface with enhanced visuals, fine dexterity, and ergonomic work position. Innovative developments in tumour-healthy tissue boundary and vasculature visualisation were reported. Conclusion: RAS for MNETs is safe and feasible, although the evidence base is limited. We recommend large prospective-randomised controlled trials comparing it with laparoscopy and open surgery. Developments in intraoperative contrast dyes and tumour-specific probes are very promising.

**Keywords :** robotic surgery, colorectal surgery, neuroendocrine neoplasms, midgut neoplasms

**Conference Title :** ICSA 2023 : International Conference on Surgery and Anesthesia

**Conference Location :** Paris, France

**Conference Dates :** January 23-24, 2023