

# First-in–New Zealand RAMIO: launching a robotic oesophago-gastric surgery programme in a general surgical unit

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**W**e report the successful implementation of a robotic oesophago-gastric surgery programme at our tertiary centre and describe New Zealand's first robotic-assisted minimally invasive oesophagectomy (RAMIO). RAMIO combines the benefits of minimally invasive surgery with enhanced precision and surgeon ergonomics. This is particularly relevant in oesophago-gastric surgery, where complex anatomy and challenging access can be addressed using robotic surgery's enhanced three-dimensional visualisation and highly articulating instruments, resulting in improved surgeon ergonomics and control.<sup>1</sup> This development was built on a minimally invasive oesophagectomy (MIO) programme established by the senior author in the preceding year.

A 74-year-old man with locally advanced distal oesophageal adenocarcinoma underwent RAMIO following four cycles of neoadjuvant chemotherapy. The abdominal phase was performed robotically and the thoracic phase thoracoscopically. Total theatre time was 515 minutes. Post-operatively, he required a 4-day ICU stay and developed transient delirium and rapid atrial fibrillation, with a negative septic workup. There was no conduit necrosis or anastomotic leak. Histopathology confirmed residual adenocarcinoma with clear resection margins and 4/19 positive lymph nodes (ypT2N2). All oncological benchmarking parameters were achieved. The patient was discharged on post-operative day 7 and referred for adjuvant chemotherapy.

New Zealand's first RAMIO was led by the senior author and built on an established minimally invasive oesophagectomy programme. The implementation of RAMIO represents a milestone in the evolution of minimally advanced surgery. Adoption necessitates a long-term vision and co-ordinated departmental collaboration with the aim to develop industry-leading service provision. Successful

introduction needs to be underpinned by meticulous planning, interdisciplinary collaboration and strict protocolised driven peri-operative care. Patient safety is always the number one priority, and this is ensured by continuous monitoring of quality indicators including failure-to-rescue.<sup>2</sup> Implementation of a robotic programme must be done gradually, with careful audit of key outcomes to ensure oncological standards are maintained.<sup>3</sup>

Compared with conventional laparoscopy, there is promising evidence that RAMIO is associated with a lower incidence of post-operative complications and a trend toward higher lymph node yield. Oncological outcomes appear equivalent; however, long-term survival data remain under investigation.<sup>4–6</sup> Current evidence suggests greater precision during lymphadenectomy and the potential for improved resection margins in anatomically complex or advanced cases.<sup>7,8</sup> Extended or high mediastinal lymphadenectomy is enhanced by superior articulation and three-dimensional visualisation. In addition, there are ergonomic and exposure benefits, especially in patients with very high BMI, allowing stable visualisation and improved dissection.<sup>7</sup> Adoption of RAMIO not only has pragmatic benefits leading to better patient outcomes and surgeon experience, but also enhances the global recognition and reputation of the institution, thereby attracting leaders in minimally invasive surgery.<sup>6</sup>

This report aims to document the first RAMIO performed within New Zealand's public health system and to outline how it can be safely adopted locally. The case involved a publicly funded patient and was performed by the senior author, who has formal oesophago-gastric and robotic training and certification. The senior author had successfully implemented a formal MIO programme at the institution and demonstrated its safety and feasibility prior to progressing to a robot-assisted oesophagectomy. Given that this was the

first case nationally, a stepwise introduction was undertaken to ensure safe implementation. This began with the demonstration of good MIO outcomes (laparoscopic abdominal and thoracoscopic chest phases), followed by the gradual introduction of the robotic phase in the abdominal component while maintaining a thoracoscopic chest phase. We highlight the prerequisites for wider adoption in New Zealand, including structured training

and proctoring, as well as institutional support. While cost savings are unlikely in the current health environment, RAMIO may offer clinical value through more precise lymphadenectomy, improved access in complex cases and technical advantages in high-BMI patients.<sup>5,7</sup> These considerations provide a feasible pathway for replication in other centres with appropriate expertise.

**COMPETING INTERESTS**

Nil.

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