

# Robotic-assisted minimally invasive esophagectomy: is it advantageous over thoracoscopic esophagectomy?

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To improve surgical outcome and reduce surgical morbidity, minimally invasive approaches, including thoracoscopic and laparoscopic approaches, have been explored in the surgical treatment of esophageal cancer. The value of minimally invasive esophagectomy (MIE) is well established and oncologic results obtained with MIE are comparable to those of open esophagectomy.

Recent reports increasingly include the use of robotic-assisted MIE (1). Robotic surgery offers clear advantages of a clean, three-dimensional view of the surgical field and of excellent maneuverability with the highly articulated robotic forceps, allowing improved visualization when performing mediastinal lymph node dissection during esophagectomy and a fine dissection of the esophagus and surrounding structure. However, as a relatively new surgical technique, the information regarding the safety, feasibility and oncologic outcomes of robotic-assisted MIE is limited. To this date there is no consensus regarding the superiority of robotic-assisted MIE versus thoracoscopic-assisted MIE.

In this article, Dr. Hodari *et al.* reported their experience of robotic-assisted minimally invasive Ivor Lewis esophagectomy with real-time perfusion assessment (2). Under the assistance of the robotic system with its superior visual field, it was possible for them to easily perform intrathoracic anastomosis. The surgical outcomes they obtained, with low morbidity and mortality rates and short length of hospital stay, demonstrate the safety and technical

feasibility of the approach.

In addition to the advantages in surgical instrumentation, other potential benefits of robotic-assisted MIE may be derived from its advanced diagnostic imaging, which makes possible fluorescence imaging for real-time perfusion assessment of the gastric conduit, sentinel lymph node dissection and intraoperative margin detection. The authors have eloquently described details of their technique of using Firefly fluorescence imaging with injections of dilute indocyanine green to assess perfusion to the gastric conduit and esophageal remnant, and have demonstrated their excellent postoperative results. The use of real-time perfusion assessment can prevent postoperative complications. No anastomotic leaks were noted after the use of this assessment was begun in their series.

Of course, there are still some disadvantages of robotic-assisted MIE, including higher hospital costs and longer set-up times. Cost-effectiveness is the major point to address regarding robotic surgery. We are called upon to continue to innovate in this field to improve the surgical treatment of esophageal cancer. More such procedures should be performed by multiple institutes to corroborate the safety, feasibility and equal oncologic results of robotic-assisted MIE.

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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