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Initial results of robotic esophagectomy for esophageal cancer☆,☆☆

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ABSTRACT

Introduction: There is scant experience with robot-assisted esophagectomy in cases of esophageal and gastro-esophageal junction cancer. Our aim is to report our current experience.
Patients and methods: Observational cohort study of the first 32 patients who underwent minimally invasive esophagectomy for esophageal cancer from September 2011 to June 2014. The gastric tube was created laparoscopically. In the thoracic field, a robot-assisted thoracoscopic approach was performed in the prone position with intrathoracic robotic hand-sewn anastomosis. Patient and tumour characteristics, surgical technique, short-term outcomes (morbidity and mortality) and oncological results (radicality and number of removed nodes) were evaluated.
Results: Thirty-two patients, with a mean age of 58 years (34–74), were treated by a totally minimally invasive esophagectomy: robotic laparoscopy and thoracoscopy (11 McKeown and 21 Ivor-Lewis). Twenty-nine received neoadjuvant chemoradiotherapy. There were no conversions to open surgery. Console time was 218 min (190–285). Blood loss was 170 ml (40–255). One patient died from cardiac disease. Nine patients had a major complication (Dindo-Clavien grade II or higher). There was no case of respiratory complication or recurrent laryngeal nerve palsy. Five patients had intrathoracic fistula, 4 radiological and one clinical. Three had chylothorax, 2 cervical fistula and one gastric tube necrosis. The median hospital stay was 12 days (8–50). All the resections were R0 and the median of removed lymph nodes was 16 (2–23).
Conclusions: Our results suggest that minimally invasive esophagectomy with robot-assisted thoracoscopy is safe and achieves oncological standards.

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Resultados iniciales de la esofaguectomía robótica en el cáncer de esófago

Palabras clave:
Cáncer de esófago
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Toracoscopia
Cirugía robótica

RESUMEN

Introducción: La experiencia con la esofaguectomía robótica en el cáncer de esófago y de la unión esofagogástrica es limitada. El objetivo de este estudio es presentar nuestra experiencia actual.

Pacientes y métodos: Estudio prospectivo, de vigilancia observacional, de las primeras 32 esofaguectomías mínimamente invasivas por cáncer con toracoscopia robótica entre septiembre de 2011 y junio de 2014. La plastia gástrica se realizó por vía laparoscópica. La toracoscopia robótica se llevó a cabo con el paciente en decúbito prono y la anastomosis intratorácica, siempre de forma manual. Se evaluaron las siguientes variables: características clínicas y patológicas, técnica quirúrgica, resultados a corto plazo (morbimortalidad) y resultados oncológicos (radicalidad y ganglios extirpados).

Resultados: A 32 pacientes con una edad media de 58 años (rango 34-74) se les realizó una esofaguectomía mínimamente invasiva en su totalidad: laparoscopia y toracoscopia robótica (11 McKeown y 21 Ivor Lewis). En 29 casos se administró quimiorradioterapia neoadyuvante. No hubo conversiones a cirugía abierta. El tiempo medio de consola fue 218 min (rango 190-285) y la pérdida de sangre fue de 170 ml (rango 40-255). Un paciente falleció por causa cardiológica y 9 presentaron complicaciones mayores (grado II o más de Dindo-Clavien). No hubo complicaciones respiratorias ni parálisis recurrencial. Hubo 5 fístulas intratorácicas, 4 radiológicas y una clínica, 3 quilotórax, 2 fístulas cervicales y una necrosis de la plastia. La mediana de la estancia hospitalaria fue 12 días (rango 8-50). Todas las resecciones fueron R0 y se extirparon una mediana de 16 (rango 2-23) ganglios linfáticos.

Conclusiones: Nuestros resultados indican inicialmente que la esofaguectomía mínimamente invasiva con toracoscopia robótica es segura y respeta los principios oncológicos.

Introduction

The standard treatment of oesophageal cancer is surgery, whether it is associated or not to neoadjuvant chemotherapy or chemoradiotherapy. Oesophagectomy continues to have a high mortality rate within elective gastrointestinal surgery, with rates that range from 5% to 18%, depending on the volume of the centre.[1]

The use of minimally invasive surgery (MIS) with the purpose of reducing the surgical trauma, and with that the associated morbidity and mortality, should be especially beneficial in such a complex and aggressive surgical technique such as oesophagectomy,[2,3] especially when intrathoracic oesophagogastric anastomosis is performed.

The robotic system ''Da Vinci'', with a tridimentional and amplified vision and more freedom of movements, resolves some limitations of conventional MIS for a more precise surgical dissection and the performance of manual anastomosis. In a lot of surgical fields, such as the thorax, and without the need of frequent changes of equipment,[4,5] these advantages are clearer.

So far, a few groups have adopted this kind of surgery.[6–14] One of them is our group,[15] which adopted such surgery with the description of a first series of robotic Ivor-Lewis in prone position and with manual anastomosis. The initial results of this series, without respiratory complications or mortality, anastomotic leak rate (7.1%) and 3 radiological fistulas (21.4%), and oncological results comparable to the ones of other approaches, point out that the technique is feasible and safe despite the scarce number of tested cases.

For that reason, we think it is interesting to show our current experience with a new series that increases in over double the number of cases of the previous publication.[15]

The incorporation of new cases will allow us to prove, in a still not commonly used technique, if the morbidity, mortality and oncological results are stable, which should be the first objective at the time of incorporating new procedures. On the other hand, due to the lack of new publications in the last year, we think every new contribution in that sense is appropriate.

The aim of this study is to describe the technical aspects of robotic oesophagectomy in oesophageal cancer and the short-term results of our extended series.

Patients and Methods

Between April 2008 and June 2014, 66 patients were operated on for oesophagus and oesophagogastric junction cancer, and in 51 (77%) patients, a minimally invasive oesophagectomy was entirely performed. In all cases, the gastric tube was performed through laparoscopy. In the first 19 patients, the thoracic time was performed through a conventional thoracoscopy and, in the last 32 cases (study group), through a robotic thoracoscopy (11 McKeown and 21 Ivor-Lewis).

The clinical data were collected prospectively in a database. All the patients were diagnosed through endoscopy and biopsy. The extension study included upper GI series,