

Surgery for Resectable Esophageal Cancer in Japan

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Introduction

In Japan over 10,000 new cases of esophageal cancer and a little less than 10,000 deaths occur annually. Carcinoma of the esophagus occurs six times more frequently in males than females, and is the sixth most common carcinoma in males. Although adenocarcinoma is the most common form (more than 50%) in North America and many western European countries, approximately 90% of esophageal carcinoma is squamous cell carcinoma in Japan. Approximately 50% develop in the middle thoracic and about 20% occur in the lower thoracic esophagus, so it is evident that 75% of esophageal cancers occur in these middle and lower parts of the esophagus. One-quarter of the invasive tumors diagnosed are at the T1 level and one-half at the T2 and T3 levels. Sixty percent to 70% of patients are in need of surgery since the cancer is classified as submucosal to T3 levels. In fact, esophagectomy is performed for 60% of total cases, and the extended three-field lymphadenectomy is the general procedure in Japan.¹⁾

Endoscopic mucosal resection (EMR) is increasingly performed for mucosal cancer,^{2,3)} and has proved to be a safe and curative procedure that has provided a good quality of life (QOL) following resection. Chemoradiation therapy or chemotherapy are performed, if possible, for cases with many lymph node metastases or T4 tumors.⁴⁾ If downstaging is achieved, surgical treatment is reviewed. Thoracic esophageal cancer often involves not only mediastinal lymph nodes but also cervical and abdominal lymph nodes. Adequate dissection of mediastinal lymph nodes should be performed (especially along the recurrent laryngeal nerve⁵⁾), under right-sided thoracotomy and all of the thoracoabdominal esophagus needs to be resected. Since lymph node metastasis along the lesser curvature of the stomach occurs frequently, this part of

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the stomach is also generally resected. Therefore right-sided thoracotomy is usually performed and all of the thoracoabdominal esophagus is resected. The lesser curvature of the stomach is usually resected where lymph node metastasis frequently arise. Lymph node metastasis frequency to the superior mediastinum is comparatively low in superficial esophageal cancer in the lower thorax and it is assumed that it is sufficient to remove the middle and lower esophagus.⁶⁾ Three-field lymph node dissection is basically required for patients with upper or middle esophageal cancer.⁷⁾

Endoscopic surgery has advanced dramatically in recent years, and the number of facilities capable of providing endoscopic surgery in thoracic and abdominal operations has also increased.^{8,9)} It is sensible to reduce potential complications of such an invasive procedure as esophageal cancer resection by performing minimally invasive surgery. However, as the operation is technically difficult only 15% of Japanese facilities take part in thoracoscopic surgery.

Video-assisted Thoracoscopic Surgery

We have been successfully performing minimally invasive esophagectomy through a 10-cm thoracotomy and two trocar ports. Esophagectomy can be performed safely and efficiently via thoracoscopy. We have also adapted hand-assisted laparoscopic surgery (HALS) for the abdominal procedure through a 7-cm laparotomy and three trocar ports. One of the important points of esophagectomy for thoracic esophageal cancer is performing lymphadenectomy near either side of the recurrent laryngeal nerve. Another important point is to preserve the bronchial branch of the vagus nerve and both bronchial arteries if they are without cancerous invasion. We also preserve the azygos vein and the thoracic duct to minimize surgical invasion. Standard thoracotomy and laparotomy are significantly invasive procedures with well-recognized potential complications and prolonged healing; minimally invasive esophagectomy has the potential to minimize morbidity and decrease healing time.

Surgery for the Cervical Esophageal Cancer

In regard to surgery for the cervical esophageal cancer surgery, it is important to consider the balance of QOL and adequate preservation of the larynx if a complete cure with an acceptable postoperative QOL is achieved.¹⁰⁾ Postoperative voice training tends to be difficult with elderly patients in particular, but larynx preservation often leads to aspiration pneumonia. Therefore we have to carefully consider adaptation of laryngectomy and the operative method should be chosen appropriately.

References

1. Isono K, Sato H, Nakayama K. Results of a nationwide study on the three-field lymph node dissection of esophageal cancer. *Oncology* 1991; **48**: 411–20.
2. Fujita H, Sueyoshi S, Yamana H, et al. Optimum treatment strategy for superficial esophageal cancer: endoscopic mucosal resection versus radical esophagectomy. *World J Surg* 2001; **25**: 424–31.
3. Kodama M, Kakegawa T. Treatment of superficial cancer of the esophagus: a summary of responses to a questionnaire on superficial cancer of the esophagus in Japan. *Surgery* 1998; **123**: 432–9.
4. Ohtsu A, Boku N, Muro K, et al. Definitive chemoradiotherapy for T4 and/or M1 lymph node squamous cell carcinoma of the esophagus. *J Clin Oncol* 1999; **17**: 2915–21.
5. Shiozaki H, Yano M, Tsujinaka T, et al. Lymph node metastasis along the recurrent nerve chain is an indication for cervical lymph node dissection in thoracic esophageal cancer. *Dis Esophagus* 2001; **14**: 191–6.
6. Tabira Y, Lida S, Ichimaru T, et al. Is upper mediastinal lymphadenectomy necessary in squamous carcinoma of the lower thoracic oesophagus? *Int Surg* 2000; **85**: 277–80.
7. Tabira Y, Okuma T, Kondo K, Kitamura N. Indications for three-field dissection followed by esophagectomy for advanced carcinoma of the thoracic esophagus. *J Thorac Cardiovasc Surg* 1999; **117**: 239–45.
8. Akaishi T, Kaneda I, Higuchi N, et al. Thoracoscopic en bloc total esophagectomy with radical mediastinal lymphadenectomy. *J Thorac Cardiovasc Surg* 1996; **112**: 1533–40.
9. Osugi H, Takemura M, Higashino M, et al. Learning curve of video-assisted thoracoscopic esophagectomy and extensive lymphadenectomy for squamous cell cancer of the thoracic esophagus and results. *Surg Endosc* 2003; **17**: 515–9.
10. Shiozaki H, Tsujinaka T, Inoue M, et al. Larynx preservation in surgical treatment of cervical esophageal cancer—combined procedure of laryngeal suspension and cricopharyngeal myotomy. *Dis Esophagus* 2000; **13**: 213–8.