Sentinel Node Navigation Surgery for Early Stage Gastric Cancer

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Early gastric cancer has nodal metastases with an incidence of approximately 15%. Therefore, gold standard of surgery for early gastric cancer is a resection of more than two thirds of the stomach with D2 node dissection. The curative rate was 97% and the operative death rate was 0.5%. On the other hand, at least two thirds of the patients who received this procedure have complaints such as early satiety, gallstone attacks, dumping symptoms, diarrhea and so on. If the node-negative early gastric cancer patients are detected less aggressive surgery is indicated in these cases.

When the blue dye is injected around a gastric cancer, the lymphatic basins, the draining lymphatic channels and sentinel nodes of the tumor are stained. Since February 1993, 298 patients with clinically early stage gastric cancer were enrolled for the intraoperative endoscopic lymphatic mapping (IELM), The dye, 2% patent blue was injected into the submucosal layer around the tumor through a gastrofiberscope. The stained nodes were resected during operation and were examined with frozen sections with hematoxylin and eosin staining. Blue nodes were identified in 290 patients (97%). The median number of blue nodes per a patient was 6 (1～16). The sensitivity and accuracy of blue node biopsy were 86% (36/42) and 98% (284/290), respectively. Four false-negative cases had clinical metastasis, which was diagnosed at surgery and 2 were misdiagnosed at frozen sections.

Establishing accuracy of sentinel node biopsy in 1996, we have performed limited surgery with lymphatic basin dissection in 159 patients who had cancer-negative sentinel nodes and 1 or 2 lymphatic basins. Limited surgery consisted of segmental resection, wedge resection, proximal gastrectomy and limited distal gastrectomy. Patients who had node-positive or had 3 lymphatic basins were treated with D2 or D3 dissection. The median size of the tumor was 25 mm (range 4～98). There was no recurrence in patients treated with less aggressive surgery and the group of the patients with limited surgery showed almost same crude survival curve as that of the patients treated with D2 distal gastrectomy. Limited surgery navigated with sentinel node biopsy has prevented small gastric symptoms, unpleasant body weight loss, dumping symptoms and gallstone formation.

Conclusively, intraoperative endoscopic lymphatic mapping with the blue dye has a high accuracy to predict nodal status of the early stage gastric cancer. Sentinel node navigation surgery presents the node-negative patients better quality of life.