Surgical Treatment of Perforation with Esophageal Carcinoma

OBJECTIVE To determine the ideal method of surgical preoperative treatment for perforation with esophageal carcinoma.

METHODS 36 cases of perforation with esophageal carcinoma were treated surgically in this series. Perforations occurred into the right lung in 14 cases, the mediastinum in 17 cases and trachea in 5 cases. Open thoracic surgery was performed in 34 cases, in which the right thoracic approach using a 3-incision method was applied in 16 cases, and operation by stages in 15 cases. Of the 34 cases, retrosternal substitution of the esophagus with stomach or colon was performed in 26 cases.

RESULTS Surgery was successful in 31 cases and operative death occurred in 3 cases. The postoperative follow up study was from 3–72 months. Of these cases 15 were alive at 7–12 months, 2 at 24 months, and 1 at 72 months. The results can be considered satisfactory.

CONCLUSION The therapeutic results of surgical treatment of perforation with esophageal carcinoma were markedly superior to that of conventional conservative treatment. The authors suggest that surgical intervention without delay should be undertaken for patients having a perforation with carcinoma of the esophagus. A right thoracic approach with a 3-incision method (retrosternal replacement of esophagus with stomach or colon) or operation by stages is preferable.

Keywords: esophageal neoplasm, esophageal perforation, surgery.

Perforation with esophageal carcinoma is a severe condition that threatens the patient's life. It often occurs in the late stage of progressive esophageal carcinoma or the late stage of radical radiotherapy for esophageal carcinoma, as well as from iatrogenic esophageal perforation resulting from dilation by a medical instrument of the narrow part of an esophageal carcinoma.10 Once perforation occurs, the patient's symptoms become significantly severe involving infections difficult to control or threatening symptoms, such as mediastinal abscess, lung abscess or esophago-tracheal fistula, etc. The patient will die immediately if the carcinoma perforates into adjacent large blood vessels. We treated 36 cases surgically of esophageal carcinoma perforation in this series from December, 1986 to March, 2001. The results were satisfactory.

MATERIALS AND METHODS

Clinical data
Among the 36 cases, there were 24 male patients and 12 female. Their ages ranged from 39 to 72, with a mean of 53; 14 cases were more than 60 years old (38.8%). The length of their carcinomas were 4–6 cm in 16 patients and 7–8 cm in 15 patients, with the longest one being 9 cm. Pathological diagnoses after operation: squamous carcinoma was found in 30 cases, among which 20 cases were complicated with
metastasis to the upper mediastinal lymph nodes or subcarinal lymph nodes (71.4%). Four cases demonstrated fibrosis after radiotherapy of squamous carcinoma. The tumors all were located in the upper or middle part of the esophagus.

In this series, 28 patients underwent radiotherapy before perforation. In 22 patients (78.5%) the irradiation dose was more than 60 Gy. The times between the termination of radiotherapy and perforation were as follows: 4-9 months for 16 cases and 12 months for 6 cases. The other 7 cases suddenly developed a perforation during radiotherapy and then received a surgical operation.

Size of perforations
The 36 patients all received an esophageal barium meal or an iodipin examination. The results demonstrated that contrast medium flowed into the mediastinum in 17 cases and into the right lung in 14 cases. In the other 5 cases contrast medium flowed into the trachea demonstrating a significant esophago-tracheal fistula.

In 11 of the 36 patients, the diameter of the perforation was less than 1 cm, 1-2 cm in 20 cases and more than 2 cm in 5 cases. Thirty cases had been perforated prior to hospitalization, and the other 6 cases perforated 2-11 days after hospitalization.

Clinical manifestations
Sixteen cases presented with fever after perforation (44.4%); 30 cases presented with intensified chest or back pain (83.3%) and 32 cases presented with a significant elevation in blood leucocyte count (88.8%). Chest X-ray examinations showed a broadened shadow of the mediastinum in 12 cases and a shadow of the lung in 14 cases; among them 1 case had dysphagia and chest pain again 5 months after radiotherapy and the X-ray examination showed "recurrence after esophageal radiotherapy with perforation". But another X-ray examination in our hospital 6 days later showed there was vomica of about 10.0 x 4.5 cm in size in the right lung, showing a typical manifestation of lung abscess. One case demonstrated a narrow anastomotic stoma after an esophageogastrostomy for esophageal carcinoma in another hospital. This was followed by an esophago-tracheal fistula 1 year after treatment with a membrane-covered self-expanding metallic stent.

RESULTS

Operation technique

In the 36 patients, 16 received a right thoracic anterolateral approach with a 3-incision method. Of these patients, 4 underwent substitution of the esophagus with stomach via the esophageal bed; 10 were treated with retrosternal substitution of esophagus with stomach; 1 received retrosternal substitution of the esophagus with the colon; and 1 underwent esophageal exteriorization with gastric stoma. Eighteen patients received retrosternal esophageal carcinoma removal, left cervical esophageal outlay and gastric stoma. Of these 15 were treated in stages which meant that 1-2 months after the operation, a retrosternal substitution of the esophagus with stomach (or colon) was performed to reconstruct the digestive tract. Two patients (including 1 esophago-tracheal fistula) only asked to receive a gastrostomy because of expense and then were discharged. Four cases of esophago-tracheal fistula (Fig. 1) received closure of their tracheal fistula by using the same-side intercostal muscle with blood vessels. Of these, 3 cases received filling of the surrounding tracheal fistula by using large omentum with a blood vessel pedicle.

Dealing with infection focus inside the chest
In this series, carcinoma invaded into the right lung in 14 cases; 6 showed a lung abscess (Fig.2). For the smaller vomica, we performed an incision and drainage. We did not suture the abscess wall for those without an obvious air leakage. We performed a pulmonary segment resection or pulmonary lobectomy for bigger vomica (Fig.3).

Carcinoma invaded into the mediastinum in 17 cases (Fig.4). For small perforations, we removed the mediastinal abscess when removing the carcinoma (Fig. 5). For bigger abscesses or if the abscess invaded into important organs such as part of the aorta or trachea, then part of the abscess wall remained and was washed and fulgurized during the operation.