

Esophagectomy in Combination with a Resection of Involved Lung for Esophageal Cancer

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The combined resection with involved lung for esophageal carcinoma was evaluated in terms of surgical indication and outcome in the 6 patients who underwent subtotal esophagectomy with pulmonary resection. It was confirmed that the operation was technically feasible but the surgical results were unsatisfactory. It was reasoned that grave surgical insult and adjuvant therapy to prevent recurrence result in immunodepressive status of the host and tends to accompany postoperative complications related to operative death.

In conclusion, prevention of immunosuppression for the host is required by meticulous cares of nutrition and elimination of surgical stress by staged operation in order to obtain satisfactory result after surgery.

Introduction

The surgical outcomes of esophageal carcinomas were unsatisfactory even though their pathogenesis and etiology had been elucidated. The reason is attributable to far advanced extension of carcinoma on the basis of anatomical specificity of the esophagus which is adjacent to the organs surrounding the loose tissue and devoid of the serosal layer, probably playing a role in the barrier of extension of cancer infiltration.

In advanced esophageal carcinomas, it is not infrequently encountered that cancer infiltration extends outside the wall of the esophagus and involves the neighbouring organs. At

that time, surgeons attempt to perform a combined resection with involved organs in an effort to accomplish operative radicality despite grave insult surgery.

The combined resection with involved organ should be striven for establishment of surgical safety in terms of immunodepression of the patient by surgical stress, determination of surgical indication for the poor risk patients and prevention of surgical complications related to operative death.

The aim of this study is to clarify the validity of the combined resection of the esophageal lesion with the involved lung on the basis of the result of our clinical experience.

Patients

Six patients were eligible to this study (Table 1). They underwent the combined resection of the esophagus with the lung for thoracic esophageal carcinomas.

The ages ranged from 56 to 72 with an average of 63.2 years. The ratio of men to women was equivalent. The histologic type was squamous cell carcinoma in all. The tumor locations were Im in 3, Im + Iu in 2 and Im + Ei in one, respectively.

The length of shadow defect varied from 4.5cm to 11.0cm. The histologic findings of resected lungs were graded as the following categories (Fig. 1, 2, 3), Grade 0: no evidence of histologic cancer invasion to the lung with

Table 1. Patient Profile

Age	Reconstruction	Pulmonary resection	Shadow defect	Histology or involved lung	n	Ajuvant therapy
56	two stage	r-middle, lower lobectomy	5.5cm	Grade 3	3	non
58	one stage	1-S8 partial resection	5.5cm	Grade 3R	4	Bleo 40Gy
71	two stage	1-S6 partial resection	11.0cm	Grade 2	0	R40Gy
65	two stage	1-S6 partial resection	7.5cm	Grade 2	0	R14Gy Bleo
72	two stage	1-S6 partial resection	8.0cm	Grade 3R	4	R14Gy
56	one stage	1-upper lobectomy	4.5cm	Grade 3	2	CDDP R40Gy

r:right, l:left, R:preoperative irradiation

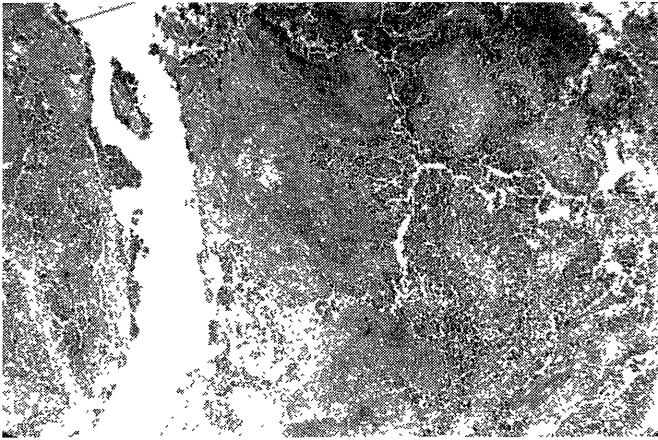


Fig. 1. Histology of Grade 1 showing involvement of the visceral pleura

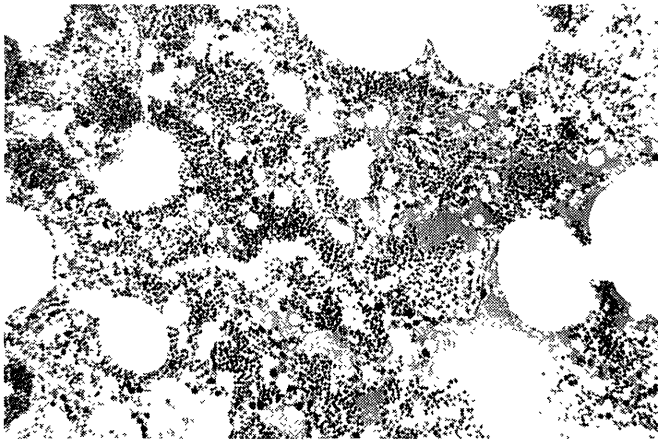


Fig. 2. Histology of Grade 2 revealing preferable involvement of small bronchi and vessels

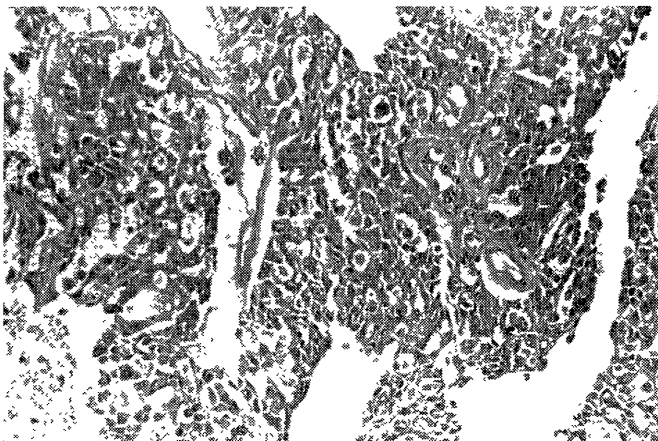


Fig. 3. Histology of Grade 3 illustrating a dense cancer infiltration regardless of alveolar and interstitial spaces

dense fibrous adhesion to carcinoma. Grade 1: cancer infiltration with the involved visceral pleura, scattering cancer invasion to alveolar walls and interstitial spaces. Grade 2:

cancer infiltration preferable to the bronchial and vessel walls in the pulmonary parenchyma. Grade 3: dense cancer infiltration to the lung regardless of the alveolar and the interstitial spaces. Although preoperative shadow defect ranged from 4.5cm to 11.0cm in length, a longer shadow defect was not proportional to the degree and the range of the involved lung.

Two out of 6 had no evidence of histologic cancer invasion to the lung. These received preoperative radiation of 14 Gy, and bleomycin was prescribed in one. It is not ascertained as to whether involved lungs were benefited from irradiation therapy. Histologic finding revealed that Grade 3 was seen in 4, in which two received preoperative irradiation therapy. Grade 2 was indicated in 2. A n_4 category was also histologically assessed. Two patients were categorized in n_4 , one in n_3 , one in n_2 and the other two in n_0 , the respectively. Preoperative irradiation therapy was done in 5, radiation dosis ranging from 40 Gy to 14 Gy, and preoperative chemotherapy was bleomycin in two and CDDP in one, respectively. The operative procedure was subtotal esophagectomy in all in whom reconstruction was performed by the two staged operation in three. The operative procedures concurrently used were bilobectomy in one, lobectomy in one and partial resection in 4. As postoperative complications we have encountered respiratory failure in one, heart failure in one and minor anastomotic insufficiency in 3. The two operative deaths, of heart failure and acute respiratory failure, were encountered on the first day and on the 12th day of surgery, respectively. The other 4 patients have expired of pneumonia in one and cancer recurrence in 3, at 4 to 7 months after surgery.

The surgical outcome was unsatisfactory. The reason for the unsatisfactory result remains obscure but main reasons are grave operative insult and far advanced carcinoma of the disease stages.

Discussion

In recent years, operative procedures for esophageal carcinomas have become more radical and extensive. A wide range of patients in terms of ages and underlying diseases have been subjected to surgical treatment. As the results, severe postoperative complications have been encountered. Many researches had clarified risk factors related to these complications, which included malnutrition (1), respiratory hypofunction (2), underlying diseases (3), and perioperative inadequate cares (4). The combined resection with involved lungs is now reasonably established and feasible in clinical use. On the other hand, it remains unsolved as to grave operative procedures leading to the acquired failure in host defense mechanisms (5, 6). A wide range of abnormalities in defense mechanisms contributes in part to operative mortality as well as enhancement of local recurrence and distant metastasis. These abnormalities of host

defensive mechanisms include deficiency in cell-mediated immunity and antibody-producing capacity and enhancement in neutrophil cytotoxic capacity and protease inhibitors (1, 7, 8).

In determination of the surgical indication for advanced cancer-bearing patients, surgeons should be aware of tumor-related factors which cause protein-calorie malnutrition (PCM) and immunodeficiency (9). Needless to say, the patients requiring the combined resection with the lung have severely advanced carcinomas. Therefore, accurate assessment of preoperative patient's status is needed for determination of operative indication and selection of operative procedures. Muller et al (10) reviewed 1201 reports on surgical treatment for esophageal carcinoma and they found that selection of patients and operative skill of surgeons are the key factors related to operative mortality (11).

As a result, the surgical outcome was not satisfactory as compared with that of conventional subtotal esophagectomy. This is due to grave operative insult which is associated with a large amount of bleeding and requirement of massive blood transfusion needed at the combined resection with the lung and a wide nodal dissection.

Risks in perioperative care and treatment are in association with pre- and post-operative nutritional and anticancer therapy (11). Attention should be paid for high mortality rates in relation to irradiation and anticancer drug infusion therapy prior, during and after surgery. In fact, attempts to prevent recurrence are fought with difficulty in applying for irradiation and anticancer drug infusion. Surgical techniques are available for palliation of advanced cancer patients. However, avoidance of operative complications is not yet established, and poor knowledge on recurrence

prevention has made surgeons reluctant to prescribe preventive management, because host defense mechanism is impaired by itself in addition to surgical stress. The ultimate goal in judging the effectiveness of adjuvant therapy requires more accumulation of experiences.

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