Letter to the Editors

Radionuclide Evaluation of Esophageal Regurgitation after Valvulofundoplasty†

Shinichi OKUYAMA, Hitoshi MISHINA and Takashi MATSUSHIRO*
Departments of Radiology, *Surgery, Tohoku Rosai Hospital
3-21, Dainohara 4-chome, Sendai-shi 980, Japan
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Regurgitation esophagitis is a constant and intractable complication of the conventional esophagogastrostomy. A simple valvular and fundic formation was seen to abolish the distress. No visual regurgitation was proved on the upper G.I. series as studied in 17 cases. Using a radioisotopic method, the present study was designed to demonstrate the absence of esophageal regurgitation among those patients who underwent that operation as contrasted to those of the conventional esophagogastrostomy.

1. Cases and Methods

Patients were asked to swallow aliquots of 74 MBq (2 mCi) of $^{99m}$Tc pertechnetate solution and scintigraphed placing the regions of interest (ROIs) for the terminal esophagus and stomach. Then, the esophageal radioactivity was irrigated with 60 ml of saline. Deep inspirations were seen to induce radioisotopic regurgitation from the stomach in the patient under the conventional operation (Fig. 1A) and the patient had heartburn, too.

2. Results

When patients with Matsushiro's operation were studied, no regurgitatory abnormalities were observed: The valvular formation consisting of the gastric mucosal pouch is shown in Fig. 2A and B. The ROIs were placed as guided by the scintigram (Fig. 2C). No radioisotopic abnormality was recorded in spite of forced deep resprations. No heartburn was felt (Fig. 1B).

3. Discussion

Preparation of radiocolloids seems to be meticulous and hazardous in terms of radiation exposure to the preparing personnel. The technique using $^{99m}$Tc pertechnetate is simple and sensitive enough for the detection of esophageal regurgitation when the esophagus is irrigated vigorously with saline. Studies can be extended to those patients with heartburn from other etiologies such as peptic ulcer, chronic gastritis, and so on.

Reference

Fig. 2 Valvular formation at the esophagogastric junction following the valvulofundoplastic surgery. A and B: Location of the valvular pouch. C: Scintigraphic ROIs for the study of esophageal radioisotopic reflux. Two mCi of $^{99m}$Tc pertechnetate was mixed with 60 ml of saline, and the patients were asked to swallow aliquots thereof. After the ROIs placed, the esophagus was irrigated with saline. A small dose of $^{99m}$Tc phytate was also injected in this particular patient in order to superimpose the heart and liver. (1 mCi = 37 MBq)