Risk Factors for Food Residue after Distal Gastrectomy and a New Effective Preparation for Endoscopy: The Water-Intake Method

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Background/Aims: Food residue is frequently observed in the gastric remnant after distal gastrectomy, despite adequate preparation. We devised a water-intake method to reduce food residue in the gastric remnant by drinking large quantities of water in a short time. The aims of this study were to identify the risk factors for food residue and to study the effectiveness of this new method for endoscopy preparation. Methods: A cohort of 708 patients who underwent distal gastrectomy for gastric cancer was reviewed prospectively. Sixty patients with large amounts of food residue were randomly divided into two groups: a water-intake group (n=40) and a prolonged fasting group (n=20). Results: The incidences of a large amount of food residue were 15.7%, 5.8%, 7.5%, and 2.8% at 3, 12, 24, and 36 months, respectively, after distal gastrectomy. Independent risk factors for food residue were endoscopy at 3 months, diabetes mellitus, a body mass index of <19.5, and laparoscopic surgery. The proportion of successful preparations at follow-up endoscopy was higher for the water-intake group (70%) than for the prolonged fasting group (40%, p=0.025). Conclusions: The water-intake method can be recommended as a preparation for endoscopy in patients who have had repetitive food residue or risk factors after distal gastrectomy. (Gut and Liver 2009;3:186-191)

Key Words: Stomach neoplasms; Distal gastrectomy; Endoscopy; Food residue

INTRODUCTION

The gastric remnant after distal gastrectomy has a high risk of metachronous cancer and adenoma in the patient with gastric cancer. The prognosis of patients can be improved through early detection by endoscopic surveillance and endoscopic or surgical resection for recurrent cancer or adenoma occurring in the gastric remnant. Regular endoscopic surveillance has become important for follow-up programs for patients who have undergone a distal gastrectomy for the early detection of cancer or adenoma, as well as for functional evaluation.

Incidences of food residue during upper endoscopic examination are known to vary from 18% to 42% in gastric cancer patients after distal gastrectomy because of varying dietary habits and methods of preparation for endoscopy. Food residue in the gastric remnant interferes with close endoscopic observation, and may increase the risk of pulmonary aspiration during upper endoscopy. Furthermore, it is common that food residue still remains even if an endoscopic examination is performed again after prolonged fasting or liquid diet as with other methods of preparation in those patients with large amounts of food residue at prior endoscopy. In patients with distal gastrectomy, food residue during endoscopic examination is a very important clinical consideration, but there have been few studies or discussions related to effective methods of preparation for reducing food residue.

Food residue can be reduced through dietary preparation, such as prolonged fasting or liquid diet, or through combined medication, but these methods are not effective
in some patients. For such patients, we devised water intake method, which reduces food residue in the gastric remnant by drinking a large quantity of water in a short time. This method was expected to reduce patient’s inconvenience imposed by prolonged fasting and to be easily applied without side effects.

The present study was proposed to identify the risk factors for food residue in the gastric remnant during endoscopic examination in patients who had previously undergone distal gastrectomy for gastric cancer, and to examine the utility of the water intake method for reducing food residue as a new method of preparation for endoscopy to be compared with a conventional preparation of prolonged fasting.

MATERIALS AND METHODS

1. Patients

We evaluated the incidence and risk factors for food residue through a prospective investigation of 708 patients who met the criteria for inclusion among 818 patients who had distal gastrectomies for gastric cancer followed by upper endoscopic examination during the period from January to September, 2008. We excluded those who did not follow the defined preparation for endoscopy (n=84), those who had anastomotic stricture or recurrent advanced cancer (n=17), those who had a poor general condition ≥1 on a physical score (n=6) and those who had a serious systemic disease like another cancer (n=8).

Among the 708 patients, 60 patients had moderate or large amounts of food residue that made it impossible for close endoscopic observation. These 60 patients were randomly assigned to either a water intake group (n=40) or a prolonged fasting group (n=20). We excluded those who had renal failure or congestive heart failure and those who had uncontrolled diabetes mellitus or previous hypoglycemic event in diabetes mellitus in order to avoid adverse events related to prolonged fasting and fluid overload in water intake group. The amount of food residue was assessed again after 1-2 weeks by endoscopic examination in order to evaluate the effects of the water intake method.

From all patients, we obtained consent for providing their clinical information for the research and for their participation in the research. Endoscopic surveillance for patients with distal gastrectomy for gastric cancer was scheduled at 3 months after their operations, and then once a year.

![Fig. 1. Endoscopic classifications for degrees of food residue in the gastric remnant. (A) Grade 0 was defined as no food residue. (B) Grade 1 was a small amount of food residue. (C) Grade 2 was a moderate amount of food residue in which only the side of the posterior wall and the lesser curvature could be observed. (D) Grade 3 was a large amount of food residue in which endoscopic observation was impossible.](image-url)