

An effective and safe gastric endoscopic submucosal dissection in the right lateral position using an inverted overtube

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Direction of gravity; Right lateral position; Appropriate angle and distance

Core tip: In gastric endoscopic submucosal dissection (ESD), the patient's position must be altered according to the direction of gravity to use an appropriate angle and distance between electric knife and mucosa for safety as well as colorectal ESD.

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Abstract

Previously, we reported the efficacy of a newly developed inverted overtube in shortening the hemostatic time and obtaining a clear endoscopic view in emergency endoscopic hemostasis. This device also helped us to perform gastric endoscopic submucosal dissection (ESD) more safely by changing the direction of gravity in the right lateral position. To perform a safe ESD, it is important to make an appropriate angle and distance between the electric knife and the gastric mucosa. In this position, the distance to gastric mucosa is reduced, and the angle of the electric knife changes from vertical to somewhat oblique, facilitating safer cutting.

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Key words: Gastric endoscopic submucosal dissection;

INTRODUCTION

As endoscopic submucosal dissection (ESD) for early gastric cancer was developed to resect *en bloc* specimens of larger lesions safely, which is a determinant factor for histological assessment of resected specimens^[1-3]. The rate of complications such as perforations and bleedings is still high^[4-6]. One of the factors of difficulty level depends on the location, which may be located in the esophagogastric junction, fornix, or lower body of the lesser curvature, among other locations. In these regions, it is very difficult for us to make appropriate distance and appropriate angle between gastric mucosa and electric knife^[7-9]. On the other hand, we perform colonoscopy both in the left lateral position and right lateral position by rotating patients to take advantage of gravity. We investigated the efficacy and safety of gastric ESD by rotating patient's position from conventional left lateral position to right lateral position using inverted overtube.

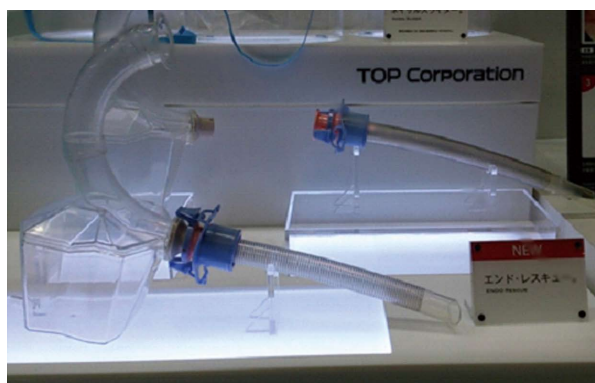


Figure 1 Outer appearance of the inverted overtube (TOP co., Tokyo, Japan).



Figure 2 Simulated model in the right lateral position using the inverted overtube.

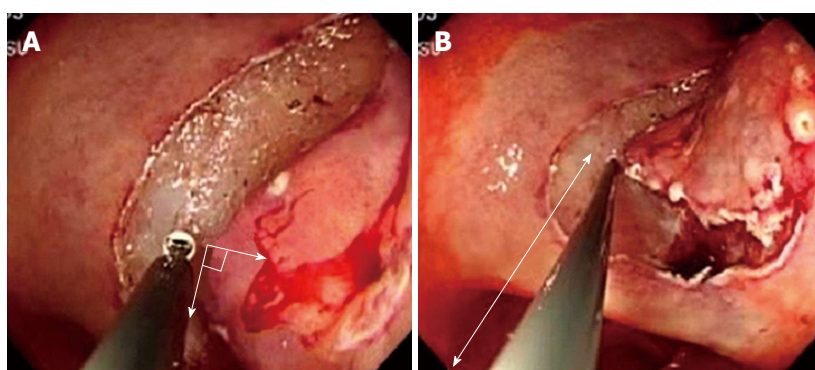


Figure 3 Conventional endoscopic submucosal dissection in left lateral position when pull (A) and push (B) the endoscope. A: The electric knife is located vertically toward the gastric mucosa of the lower body of the lesser curvature of the anterior wall in the conventional left lateral position; B: The resected line is located farther from the endoscope, making it more difficult to approach.

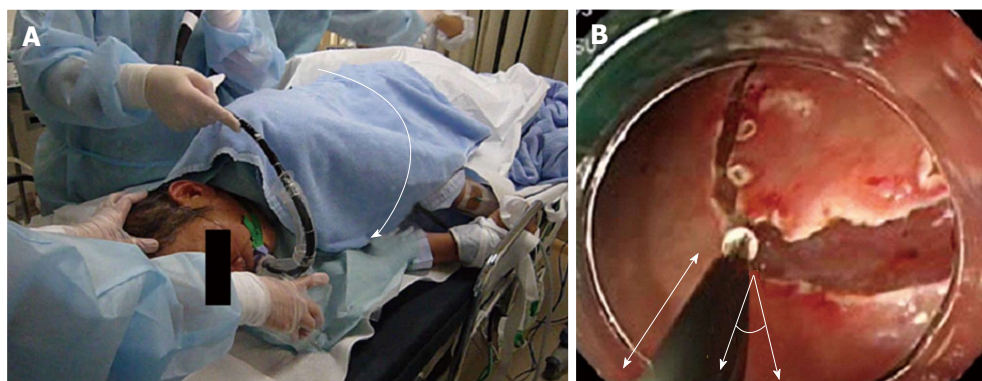


Figure 4 New right lateral position endoscopic submucosal dissection using gravity (A) and location and approach direction of electric knife the during right lateral endoscopic submucosal dissection (B). A: The rotation of the patients to the right lateral position (curved arrow) allows the inverted overtube to be placed through the mouth; B: As the direction of gravity to the stomach changes, the angle between the electric knife and the gastric mucosa is decreased to approximately 20 degrees, and the mucosa is located closer to the endoscope.

CASE REPORT

The outer appearance of the inverted overtube is shown in Figure 1 (TOP co., Tokyo, Japan), and the simulated model of using the inverted overtube is shown in Figure 2. The inverted overtube was approved by the Institutional Ethics Committee of Kagawa University Hospital, Kagawa, Japan. Additionally, the inverted overtube was approved by the Japanese Pharmaceutical Law.

Sixty-three-year-old and seventy-two-year-old men underwent ESD due to early gastric cancer located in the lower body of the lesser curvature. In both patients, we

began to perform ESD in the left lateral position. After marking the resection line, we realized that the electric knife was located vertically relative to the gastric mucosa in the conventional left lateral position (Figure 3A). The resected line was located farther from the endoscope and was thus difficult to approach (Figure 3B).

We rotated the patients' positions to the right lateral position and placed the inverted overtube into their mouths (Figure 4A). As the direction of gravity to the stomach changed, the angle between the electric knife and the gastric mucosa changed to approximately 20 degrees, facilitating safe cutting (Figure 4B).

DISCUSSION

In order to perform a safe ESD, it is important to use an appropriate angle and distance between the electric knife and the gastric mucosa^[7,8]. The level difficulty depends on the location, which may be located in the esophagogastric junction, fornix, or lower body of the lesser curvature, among other locations^[9]. In the right lateral position, the distance between the electric knife and the gastric mucosa is reduced, and the angle of the electric knife changes from vertical to somewhat oblique, facilitating safer cutting. In gastric ESD, the patient's position must be altered according to the direction of gravity, as in done colonoscopies^[10].

Furthermore, most endoscopists perform endoscopic treatment procedures with the patient lying in the left lateral position. Performing gastric ESD from the opposite side, with the patient lying in the right lateral position is very difficult. Therefore, the use of the inverted overtube is the best method to help endoscopists perform gastric ESD with less stress because they are in their conventional standing position relative to patients rotated to the right lateral position. This new ESD technique is the most effective way to make appropriate distance and appropriate angle between gastric mucosa and electric knife by gravity. The present technique dramatically changed the conventional concept of endoscopic procedure and enabled the endoscopist to perform the endoscopic treatment procedures from the conventional standing position while freely and easily changing the patient's position according to their needs of the direction of gravity.

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