CASE REPORT

A Case of Asymptomatic Aspiration of a Capsule Endoscope with a Successful Resolution

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Aspiration is a very rare complication of capsule endoscopy, but it is potentially life-threatening and should be considered an emergency requiring immediate intervention since it can evolve into major airway compromise and obstructive pneumonitis. We experienced a case of asymptomatic aspiration of a capsule in a 75-year-old man. The aspirated capsule was diagnosed on routine chest and abdomen X-rays to confirm its position after ingestion. The capsule was removed via bronchoscopy using a net, without sequelae, after inducing the patient to cough. To prevent this complication, a thorough history of swallowing disorders is needed before capsule ingestion, and patients with swallowing difficulties should have the capsule placed in the duodenum endoscopically. Moreover, on capsule aspiration, cough induction is the most effective method of capsule removal. (*Gut Liver* 2010;4:114-116)

Key Words: Aspiration; Capsule endoscopy; Cough

INTRODUCTION

Aspiration of a capsule endoscope is a rare complication that has been reported only ten times previously in the English literature.¹⁻¹⁰ It is potentially fatal and should be considered an emergency requiring immediate management as it may lead to hypoxic shock and chronic lung disease such as obstructive pneumonitis. We treated a patient who showed no respiratory symptoms after capsule aspiration. The capsule was removed successfully via bronchoscopy using a net after inducing a cough.

CASE REPORT

A 75-year-old man was referred for capsule endoscopy to evaluate small bowel bleeding. Gastroscopy, colonoscopy, and computed tomography (CT) of the abdomen with contrast performed at another hospital had not revealed a source of the bleeding. Although he had experienced a cerebrovascular accident 5 years earlier, he had no difficulty in swallowing prior to admission. In order to evaluate the risk of aspiration, a neurologic examination was given to him, but he showed intact motor and sensory function. Therefore, we decided that he could swallow a PillCam SB capsule endoscopy (Given Imaging,

Fig. 1. Chest X-ray showing the localization of the capsule.

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Fig. 2. (A) Bronchoscopic view of the capsule in the main bronchus. (B) Capsule be turned inside out after the patients' cough.

Yoqneam, Israel). The patient swallowed the capsule in the presence of a doctor, coughing several times. Subsequently, he did not complain of any dysphagia or respiratory symptoms.

A plain abdominal X-ray was taken 2 hours later to confirm the capsule position, but the capsule was not seen. We therefore took a chest X-ray to locate the capsule and the capsule was found in the left chest (Fig. 1). Accordingly, we performed an immediate bronchoscopy to confirm pulmonary aspiration of the capsule while monitoring the oxygen saturation. The capsule was impacted tightly in the left main bronchus (Fig. 2). We attempted to grasp the aspirated capsule with a Roth Net retrieval device (US Endoscopy Inc., Mentor, OH, USA) used endoscopically to remove foreign bodies, but it could not pass through the narrow passage between the bronchial wall and capsule. We induced a cough by irritating the bronchial wall to avoid bronchial injury and were able to grasp the capsule in the net successfully.

After endoscopic removal of aspirated capsule, we recommended video-fluoroscopic swallowing study to evaluate his swallowing function in detail, but he did not want any other examinations. So, we could not carry on the video-fluoroscopic swallowing study, but he did not show any symptom of swallowing difficulty during his stay at the hospital.

DISCUSSION

Capsule endoscopy has allowed the evaluation of obscure gastrointestinal bleeding and iron-deficiency anemia since 2001,¹¹ and its indications have been expanded to screening for small bowel Crohn's disease, tumors, and familial polyposis.^{11,12} The most common complication is retention, which has been reported in 0.75-2% of cases.¹³⁻¹⁵

Aspiration of the capsule is a rarer but more important complication. To our knowledge, since Schneider first reported M2A capsule aspiration in 2003, ten cases of capsule aspiration have been reported in English worldwide.¹ Although 480 cases of capsule endoscopy have been done at our hospital since 2003, this is the first time that the complication of capsule aspiration arises. There has not been any report that a patient received surgery due to the aspiration of capsule. However, several severe cases have been reported that general anesthesia was done to remove the aspirated capsule safely or respiratory distress was showed after capsule aspiration into nasopharynx or bronchus.⁸⁻¹⁰ As these previous reported cases, aspiration of the capsule may lead to hypoxic shock, obstructive pneumonitis, and removal of an aspirated capsule from the bronchus may cause bronchial injury. Therefore, preventing capsule aspiration is preferable to managing it. To prevent this complication, a careful history of swallowing disorders should be evaluated prior to capsule ingestion, and patients with swallowing difficulties should have the capsule placed in the duodenum endoscopically.^{2,3}

Although a variety of tools are available for removing an aspirated capsule, a net was shown to be the most effective tool in two cases reported by Fleischer and Ali.^{4,5} These devices, however, may be useless if the aspirated capsule is impacted in the bronchus tightly, as in our case. Under this circumstance, inducing the patient to cough may help to remove the capsule. Although we first tried to grasp the aspirated capsule bronchoscopically with a net, we could not because it was impacted in the bronchus tightly. We removed the aspirated capsule by inducing a cough, which bounced the capsule safely.

In five of the ten published cases, the patient was able to cough up the capsule unaided.^{1-3,6,7} If the aspirated capsule is not removed by inducing a cough, using a Roth Net retrieval device following cough induction can help

remove the aspirated capsule without bronchial injury.

In conclusion, the aspiration of a capsule endoscope is a rare but important complication that may progress to hypoxic shock and chronic lung disease. A careful history and endoscopic insertion of the capsule in high-risk patients can prevent pulmonary aspiration of the capsule. If the capsule is aspirated into the bronchus, inducing the patient to cough may facilitate bronchoscopic removal using a net.

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