

Sengstaken-Blakemore tube malposition with esophageal rupture

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To the Editor,

A 60-year-old man with liver cirrhosis Child's score C secondary to chronic hepatitis C was scheduled for elective ligation of esophageal varices. During endoscopy, four esophageal varices with red whale signs were found. During the ligation procedure, active bleeding was suddenly seen from one of the earlier ligated varix. Unfortunately, further attempted ligations on the bleeding varix failed to secure hemostasis. As a result, SB tube (CLINY, Hokkaido, Japan, type 42, 18 Fr, 6.0-850) was inserted as an emergency measure. When the gastric balloon of the SB tube was inflated, the patient complained of acute sharp pain in his epigastrium. Auscultation failed to confirm the position of gastric balloon and subsequent chest roentgenogram is as shown in Fig. 1a. The ovoid shape gastric balloon was seen above the diaphragm indicating malposition of the balloon. Therefore, immediate deflation and subsequent readjustment of the SB tube position was performed. Patient was seen to have immediate relief of pain, however, another similar episode of severe but persistent epigastric pain occurred the next day. The pain was accompanied with subcutaneous emphysema. Urgent computed tomography of the chest uncovered the cause of pain being due to esophageal rupture and pneumo- mediastinum. (Fig. 1b) Conservative treatment was decided by the family despite a suggestion for emergency surgery. Unfortunately, patient expired one week later after an episode of massive hematemesis in the intensive care unit.

Discussion

SB tube stops bleeding by direct compression of varices by inflated esophageal balloon with a hemostasis rate of up to 90%. While highly effective, complications may occur with the use of balloon tamponade. Aspiration pneumonia is the most common complication, whereas esophageal rupture is a rare but highly fatal adverse event. Nadler et al reported that approximately 3% of esophageal rupture can occur with the balloon tamponade (1).

Six cases of postmortem study of lethal esophageal rupture following SB tube indwelling have been reported

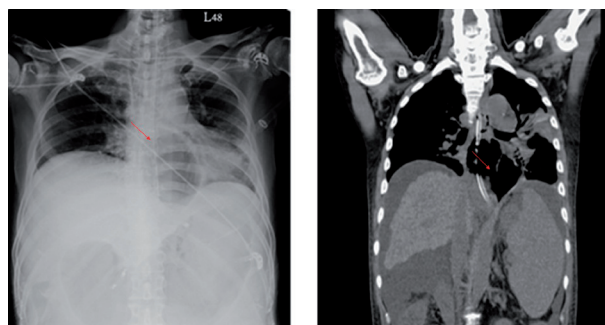


Fig. 1. — a : CXR reveals malposition of SB tube (arrow) above diaphragm. b : Computed Tomography of chest shows communication between esophagus and left lung, (arrow) compatible with esophageal rupture.

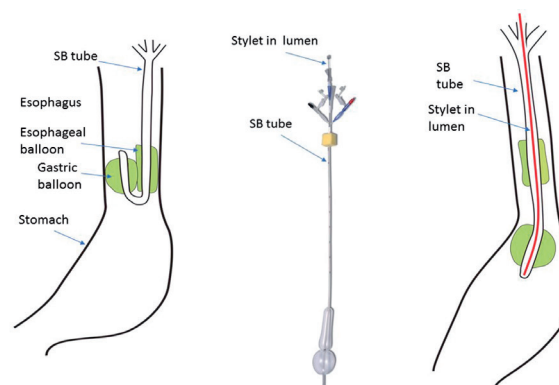


Fig. 2. — a : The possible cause of kinking during SB tube indwelling when stylet is removed. b : SB tube with stylet in the lumen. c : The proposed way for the insertion of SB tube with the guidance of stylet.

(2). Among the six cases, four were assessed with auscultation to confirm the intra-gastric balloon position before the full inflation of gastric balloon. Therefore, auscultation may not be reliable enough as the single method of confirmation of the gastric balloon position during balloon tamponade. Alternative methods are needed beside auscultation to confirm balloon position.

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X-ray assessment before and after full expansion of the gastric balloon, ultrasound assessment and even endoscopy during SB tube insertion have been reported as alternatives (3,4). Chong et al proposed the use of two methods, auscultation and the use of X-ray, to prevent the malposition of gastric balloon (4).

It is generally recommended that the passage of SB tube should be at least 50 cm from the incisors. Yet, malposition of the gastric balloon in the esophagus occurred in this patient despite the adherence to this general rule. Many reported cases have no detailed elaborations of the underlying mechanism but kinking of the SB tube at distal end of esophagus may have been the reason for these cases including ours. When SB tube approaches the distal esophagus, kinking easily occurs in the process because of the tight lower sphincter but also the soft texture allows easier kink into a 'U' shape with the gastric balloon proximally (Fig. 2a). To prevent the kink, we suggest to have a stylet in the lumen of the SB tube during insertion (Fig. 2b). The intra-luminal stylet allows the distal gastric balloon to advance across the tight lower sphincter and at the same time provides the 'skeleton' to the soft SB tube (Fig. 2c). A second method (X-ray, sonography guidance or direct visualization with endoscopy) is then used in addition to auscultation to confirm position.

It must be borne in mind that primary prophylaxis with band ligation is not always recommended. As such, it is important to review indications of band ligation so that bleeding complications can be minimized. However, if bleeding after band ligation did happen, SB tube is only a temporizing measure (maximum 24 hours) and there are alternative treatment modalities which include endoscopic sclerotherapy, stenting and transjugular intrahepatic portosystemic shunt (TIPS) that can be tried. Endoscopic sclerotherapy with bucrylate injection may be used when endoscopic variceal ligation fails to achieve hemostasis, however, it is inferior than variceal ligation because of greater rebleeding rates and stricture formation. Recently, a specially designed covered self-expanding metal stents (SEMS) has claimed a hemostasis rate of 96% in refractory bleeding. Experts have also recommended TIPS being the preferred definitive therapy if endoscopic treatment

fails to control bleeding. Both antibiotics and vasoactive agent such as somatostatin have roles in acute variceal bleeding. Prophylactic antibiotics may reduce overall infectious events and the risk of recurrent bleeding (6). Whereas, somatostatin helps to improve hemostasis, reduce transfusion requirement and reduce duration of hospitalization.

Author contributions

Y.Y. Chuah performed the chart and literature review and wrote the manuscript ; SS Kao and WC Chen took care of the patient and revised the first draft of manuscript ; YY Lee helped in proofreading the manuscript and giving precious advices.

Supportive foundations

Nil.

Institutional review board statement

This study was reviewed and exempted by the Institutional Review Board at our institution.

Conflict-of-interest statement

The authors have no conflict of interest to disclose.

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