Closure of a Tracheoesophageal Fistula by Bronchoscopic Application of Fibrin Glue and Decontamination of the Oral Cavity*

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A tracheoesophageal fistula was successfully closed with a fibrin adhesive applied by means of a fiberoptic bronchoscope, instead of by esophagoscopy. To facilitate closure of the fistula, the technique was combined with decontamination of the oral cavity, to avoid bacterial contamination. The procedure is proposed as an alternative to surgery for critically ill patients. (Chest 1991; 100:578-79)

Endotracheal intubation can cause late complications, mainly due to the cuff of the tracheal tube. Cuff pressure can cause impairment of the capillary perfusion of the mucosa, inducing the onset of ulceration, necrosis, and formation of a tracheoesophageal fistula, tracheomalacia, or stenosis.1

Acquired fistulas between the esophagus and the tracheobronchial tree are relatively rare. Trauma and infection are the most common causes of nonneoplastic esophageal respiratory fistula.2

We have treated a tracheoesophageal fistula resulting from a posttraumatic emergency intubation in a case of Guillain-Barré syndrome. We describe the closure of this fistula with the use of fibrin sealant applied by means of fiberoptic bronchoscopy together with the decontamination of the oral cavity.

CASE REPORT

The patient was a 19-year-old man with postinfluenza, rapidly progressive Guillain-Barré syndrome. Before admission to our intensive care unit, the patient had been intubated by a general practitioner under emergency conditions.

Fifteen days after admission the patient underwent a tracheostomy for long-term respiratory assistance, and enteral feeding by nasogastric tube was started. The patient’s course was further complicated by pneumonia, a subphrenic abscess treated surgically, and renal failure.

After two months, recovery from respiratory paralysis was sufficient to allow successful weaning from the ventilator. Because a satisfactory swallowing reflex was present, oral feeding was begun. Shortly thereafter, the patient experienced immediate coughing on ingestion of liquids. A meglumine diatrizoate (Gastrografin) swallow study showed a communication of the superior third of the esophagus with the trachea 2 cm below the tracheostomy port (Fig 1) and 1.5 cm above the cuff of the tracheostomy cannula.

Bronchoscopic inspection demonstrated that the tracheal site of the fistula was epithelialized, supporting the possibility that the fistula could be a complication of the previous orotracheal intubation. An initial fiberoptic bronchoscopic attempt was made to close the tracheoesophageal fistula with the aid of a fibrin adhesive (Tissucol Imuno, Heidelberg, Germany). The adhesive was applied selectively into the fistula tract via a 5-F Swan-Ganz catheter passed through the working channel of the bronchoscope (Olympus IT 10) (Fig 2). The epithelialized edge of the fistula was at the same time eroded with a biopptic forceps in order to accelerate the healing process.

Every ten days for a period of two months the procedure was repeated, with selective instillation of an additional 2 ml of fibrin adhesive into the fistula opening on each occasion.

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Noninvasive Methods in the Diagnosis of Ruptured Aneurysm of Valsalva

Usefulness of Magnetic Resonance Imaging and Doppler Echocardiography

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A ruptured aneurysm of noncoronary sinus of Valsalva was diagnosed noninvasively by magnetic resonance imaging (MRI), as well as by Doppler echocardiography. Diagnosis of this disease by MRI has not been reported previously.

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Although uncommon, an aneurysmal rupture of the sinus of Valsalva is a well-known clinical entity. Without surgical correction, the prognosis following rupture is poor. Determination of the site of the rupture is important for operation. In recent years, the site of the rupture of the sinus of Valsalva aneurysm can be confirmed noninvasively due to the advent of Doppler and two-dimensional echocardiography. However, the application of another noninvasive technique, MRI, for the diagnosis of this disease, has not been reported previously. This report describes a patient with ruptured noncoronary sinus of Valsalva aneurysm which was correctly diagnosed by MRI, as well as Doppler echocardiography prior to left heart catheterization and surgery.

Case Report

A 24-year-old Japanese man was admitted to Nagoya University Hospital for the evaluation of a heart murmur in August 1989. He was of normal build and height with normal mental and sexual development. On physical examination, his general condition was good with blood pressure of 120/60 mm Hg and pulse rate of 72 beats per minute. He had a to and fro murmur, grade 4/6 systolic ejection and 3/6 diastolic, which was most strongly audible over the fifth intercostal space 3 cm lateral to the left sternal border. Jugular venous distention and peripheral edema were not present. The results of further physical examinations were normal. The chest x-ray film showed no abnormality. Electrocardiogram showed left axis deviation. The results of routine laboratory analysis of blood and urine were within normal limits.

On a two-dimensional echocardiogram, the cardiac structures of the left side were normal. Parasternal short axis view showed an aneurysm as a ring-like structure with central echolucency existing in the right atrium. A color Doppler echocardiogram revealed an aliasing jet located in the aneurysm during systole and in the right atrium during diastole (Fig 1). However, the whole shape of the aneurysm was not clearly described by these echocardiograms. Moreover, it was difficult to differentiate between a shunt jet originating from the aneurysm and tricuspid regurgitation. On the other hand, subsequent MRI clearly indicated the aneurysm from noncoronary sinus of Valsalva and the shunt jet located in the right

References


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