

Tracheal and esophageal injury by fish bone

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=Abstract=

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Tracheal injury associated with esophageal injury due to fish bone is very rare. Also, treatment of mediastinitis due to esophageal perforation when it is diagnosed late remains controversial. We report the case that we have successfully experienced treatment of mediastinitis due to tracheal and esophageal injury by fish bone.

Key words: Esophageal perforation, Tracheal injury, Mediastinal infection

. Case

An old man aged 57 with a fever and chilling sensation lasting one day before was referred to an emergency room of our hospital. Although the patient had felt a sticking in his throat after lunch at 4 days ago, he was not given any medical treatment for last 4 days. Because the patient had heavily felt a fever and chilling sensation from 2 a.m. of the last day, when he was referred to our hospital, an endoscopic examination was employed to the patient. Based on the endoscopic finding, healed ulcer was found at 30cm below the incisor. After the chest CT in which the pneumomediastinum was found, the patient was requested to the thoracic surgery. On admission, the body temperature was taken up to 38.4 degrees and the number of white blood cells was increased to 19070. Also the CRP was measured in 17.5. We inserted the nasogastric tube, made him fast, and began an antibiotic treatment to the patient.

On the first hospital day, the patient was examined by the esophagography in which the leakage of the contrast media was not found and thus continued the antibiotic treatment to the patient. On the fifth hospital day, we found a pooling of the pleural effusion fluid at the right side of the thoracic cavity. We inserted the chest tube and about 1,300cc turbid nature pleural fluid was drained.

On the seventh hospital day, although there was no contrast leakage finding at the esophagography, because there was multiple large abscess at the neck, mediastinum, and the right side of the thoracic cavity from the chest CT (Fig. 1A), we executed the operation for abscess drainage to the patient. In the operation, we inserted the chest tube after abscess drainage using the thoracoscopy at the right side of the thoracic cavity, and the barovac drain after abscess drainage using the J-incision at the left side of the neck.

We continued the treatments of fast, abscess dra-



Fig. 1. Chest CT (A) Post admission 7th day, pre-operation (B) Post admission 90th day, discharge

image, and antibiotics to the patient. On the 20th hospital day, since the purulent sputum was increased and the negative pressure of the barovac drain was not maintained to the patient, we performed the bronchoscopy, and found a 1cm sized hole at the 7.5cm below the glottis and in the direction of 3 o'clock. Around the hole, purulent sputum and granulation tissue was found. The respiratory difficulty or other symptoms of the patient was not observed. (Fig. 2A)

On the 34th hospital day, we performed the tracheal anastomosis through right thoracotomy. After the thoracotomy and adhesiolysis of the severe adhesion part, we found the 1.5cm sized rupture of the trachea at the 2cm over the azygous vein and the back side

of the superior vena cava. We successfully finished the trachea anastomosis through the excision of the necrotic tissue around the ruptured trachea and the primary closure.

On the 37th hospital day, we executed the esophagography and found much leakage of the contrast media which was not found at the previous esophagography. We executed the operation at the same position of the previous right thoracotomy, and there was no problem at the trachea anastomosis site. But, we found the 0.5cm sized esophageal rupture at the same level of trachea rupture. We excised of the necrotic tissue at the edge of the esophagus rupture portion, executed the primary repair and the rein-

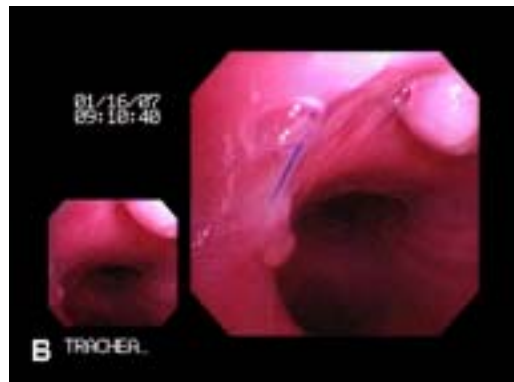
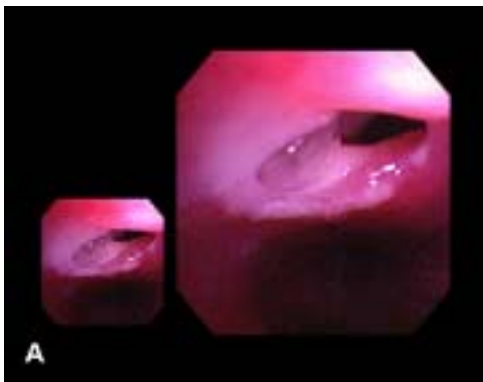


Fig. 2. bronchoscopy (A) Post admission 20th day, pre-operation (B) Post admission 90th day, discharge

forcement was performed with serratus anterior muscle.

At the esophagography after operation, we found decreased leakage of the contrast.

On the 71th hospital day, we executed the esophagography and found a little leakage of the contrast media. Because there are no problem at the nature of the chest tube drainage and no sign of infection, the patient started the oral intake. On the 95th hospital day, because the abnormality was not found, the patient was discharged.

After discharge, the patient has been followed up for 6 months and done well with no problem at chest CT(Fig. 1B) and bronchoscopy(Fig. 2B).

. Comment

In this report, we experienced a case that the esophagus and trachea was damaged by the fish bone. Many reports reported the cases that fish bone damages to the esophagus and aorta simultaneously, resulting in the aorto-esophageal fistula[1], damage of the left atrium and the pericardial tamponade[2]. These cases show that fish bone can damage to the unexpected internal organ when it punches through the esophagus and advances to the mediastinum, because fish bone is a semilunar shape in some degree.

There are little clinical experience about the esophageal rupture because of the low develop incidence. Treatment of the esophageal rupture is varied in many hospitals. Fernandez and Richter [3] mentioned that treatment of the esophageal rupture should be defined with consideration of many factors, including the rupture level, the range of injury, the initial time from injury to treatment, combined disease, and general condition. Therefore, it is difficult to define a uniform treatment of the esophageal rupture and so treatment for the esophageal rupture should be differentiated by the state of each patient.

In treatment of the esophageal rupture, the primary closure is agreed by many authors,if it is executed

to the patient experiencing the rupture within the last 24 hours. Late after 24 hours from the esophageal rupture, other treatment was then recommended because of the high operative mortality and technical difficulties which were resulted from serious infection and edema of the esophageal tissue in the operation.

However, Grillo and Wilkins presented that the primary closure is better than other treatment that was not affected by the period from the rupture to the operation in 1975[4]. After this report, many papers argued the equitableness of the primary closure irrespectively to the period from the rupture to the operation [5]. Also, some papers show that only the active drainage without the closure of rupture was enough to the treatment of the mediastinitis that was caused by the esophageal rupture [6]. In recent years, only the decortication and mediastinitis drainage was executed without the thoracotomy because of development of the thoracoscopy [7].

In the reconstruction to the simultaneous rupture of the esophagus and trachea, prevention of the recurrence of the esophagus or trachea rupture was most important because the recurrence is very dangerous. The closure of the esophageal rupture was executed as 1-layer or 2-layer by the operator preference and the reinforcement using the intercostals muscle, pleura or serratus anterior muscle was required after the closure.

The reconstruction of the tracheobronchial rupture should be properly executed by the primary repair, and especially desired the mostly safe and perfect treatment at combined mediastinitis. In other words, high attention is required to the careful debridement of the rupture edge, the closure technique by the proper suture material, the reinforcement of the anastomosis site by the muscle flap after the anastomosis, the appropriate position of the drain around trachea, and the effective drainage of the secretion in the trachea after the operation [8].

In this case, we infer that fish bone may damage the esophagus and trachea, although we cannot confirm fish bone by the naked eye. We have a question

to the change of the patient's treatment course if the operation is executed when we inserted the chest tube and drainage. However, we cannot confirm the exact position of the rupture and the possible treatment is only the drainage operation at that time. In this report, we present a rare case that we experienced in our hospital in order to share the experience.

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