Spontaneous Rupture of the Esophagus*

HENRY L. RIGDON, M.D. and N. DOUGLAS ELLIS, M.D.

Florence, South Carolina

Perforation of the esophagus for any reason or at any level is always a grave lesion and one which, if untreated, is not compatible to life. The clinical symptoms of spontaneous rupture of the esophagus are not generally recognized. The majority of the cases thus far recorded in the literature, now more than 66, were not diagnosed before death and in many instances were not even suspected before the postmortem examination.

Since the first classical description of the condition by Boerhave\(^1\) published in 1724, there have appeared in the literature isolated cases of this condition. Eliason and Welty\(^2\) reported three fatal cases of spontaneous rupture of the esophagus and reviewed the theories as to their etiology, plus the usual clinical and autopsy findings. Apparently the predominating cause is the sudden increase in intra-esophageal pressure brought on by forceful vomiting, straining or external trauma to the abdomen or thorax. In practically all cases coming to autopsy a linear tear is found in the esophagus just proximal to the cardia. Associated with this are variable degrees of mediastinitis and pleuritis. Whether or not preexisting pathologic changes must be present in the esophagus wall before rupture can occur has not been decided definitely.

More recent reports include that of Scholefield\(^3\) who described two cases that were diagnosed correctly. One patient died before surgery could be performed; the other was operated upon and recovery was prompt. This was the third successful surgical repair recorded in the literature.

Cliffton\(^4\) recently reported three cases, one of which was treated successfully by surgery; the second, a fatal case of rupture, was diagnosed incorrectly; the third case was diagnosed as a spontaneous perforation of the esophagus and was treated by laparotomy, with survival after late diagnosis and thoracotomy drainage.

It is generally accepted that thoracotomy with primary repair of the rupture is the procedure of choice, especially in tears in the intrathoracic portion of the esophagus. However, Temple\(^5\) advocates expectant therapy in cervical perforations, especially where the tear is small and easily accessible.

---

*From the Department of Surgery, The McLeod Infirmary, Florence, South Carolina.

598
Frink, in recording a case of spontaneous rupture of the esophagus with recovery following thoracotomy drainage, reviewed the literature and pointed out that most frequently the patient with a ruptured esophagus is a male between 35 and 40 years of age who has been a heavy drinker. After an episode of forceful vomiting with or without hematemesis the patient is seized with a sudden agonizing upper abdominal substernal pain so severe that the usual dose of morphine gives no relief. An important observation is the early presence of subcutaneous emphysema in the neck and face. At the time of his report Frink wrote that there has been no report of survival in a patient with spontaneous rupture.

Moore and Murphy reported one patient with spontaneous rupture who recovered following laparotomy and thoracotomy drainage, and later primary repair of the esophageal tear.

Case Report

A 38 year old white male was admitted to the hospital on February 9, 1950 with the complaint of mild epigastric pain and a history of having vomited a small amount of bright red blood a few hours previously. He volunteered the information that he had been drinking rather heavily for a few days and had not eaten adequately. He said that five years previously he had a roentgenographic examination at another hospital. A diagnosis of peptic ulcer was made and he was placed on a diet, but since then there were no symptoms suggestive of ulcer. The past history and family history were noncontributory.

A physical examination revealed a well nourished white male of 38 in no apparent distress. His blood pressure was 122 mm. of mercury systolic and 74 mm. diastolic. No abnormal physical findings were noted other than slight epigastric tenderness. Urinalysis was essentially negative and the blood count was within normal limits.

He was admitted to the hospital for overnight observation and placed on a bland diet. Approximately six hours after admission he complained of dyspnea, cyanosis, and severe chest pain. Examination at this time showed that there was definite emphysema of the neck and he was drenched in sweat. He was cyanotic and it was apparent that he was suffering excruciating pain. This pain had started a few minutes previously when he vomited a small amount of bright blood. The chest was resonant throughout, although there was a decrease in breath sounds which was attributed to shallow respiration. A tentative diagnosis of spontaneous pneumothorax with mediastinal emphysema or a ruptured esophagus was made.

The patient was given one-half grain of morphine. A roentgenographic examination was made with the following findings: “Barium was given and passed down the esophagus, then appeared to leave the esophageal lumen above the diaphragm. The films show marked emphysema throughout the mediastinum and neck. The barium appears to extravasate from the lower esophagus and is shown filling the lower mediastinal tissues above the diaphragm to the size of a tangerine. Diagnosis: probably ruptured esophagus.”
A fluoroscopic examination was made approximately two hours after the onset of pain. Plans were made for immediate operation, he was matched for blood, and oxygen was administered by intranasal catheter. Under intratracheal cyclopropane-oxygen-ether anesthesia the left pleural cavity was entered through the eighth interspace. The mediastinal tissues were found to be edematous and discolored from barium, gastric juices, and bile. The mediastinal surface of the lung was likewise discolored, although apparently the process had not ruptured through into the pleural cavity. The mediastinal pleura was divided and the esophagus exposed directly above the diaphragm. There was a laceration about two and one-half cm. long just over the diaphragm on the left side of the esophagus. A finger was placed in this rent and was found to enter into the cardia of the stomach. This perforation was closed with two layers of interrupted cotton sutures. The pleural cavity was then drained by inserting a No. 18 rubber catheter in the ninth interspace and bringing it out through a stab wound. The chest was closed in layers and all excess air aspirated from the left pleural cavity.

Immediately after operation the patient appeared cyanotic. His pulse was rapid and almost imperceptible. It became apparent that there was some obstruction to the right major bronchus. The left lung was partially collapsed as a result of the pneumothorax caused by the operation. The patient expired before bronchoscopy could be performed.

Postmortem Findings

A postmortem examination showed that extending upward 9 cm. from the cardiac opening there was a soft striated light grayish red to grayish white and yellow tissue. At a distance of 2.5 cm. above the cardia a small opening was found in the tissue about the esophagus, from which a thin bloody fluid exuded. Four cotton sutures were visible along the left border of the esophagus.

Considerable emphysema and bubbly aeration of the fat were seen anterior to the pericardium and about the root of both lungs. Some of these lobules of fat were distended to form prominent lugs.

Examination of the right side of the esophagus, the posterior surface of the root of the right lung, and the tissue upward from the diaphragm revealed no evidence of trauma.

The right lung was dark purplish red and doughy, except for blotchy light grayish red areas over the upper and middle lobes.

There was a small area of pinkish gray crepitant lung at the apex of the upper lobe of the left lung, otherwise the tissues of both lungs appeared to have entirely collapsed. Crepitation was present throughout all of the tissues of the mediastinum.

Dark red submucosal hemorrhage extended 5 cm. above the upper end of the repaired area. The mucosa was bluish gray and finely granular, and revealed superficial denudations. Above this level the mucosa and wall were normal.

An incision into the right bronchus and trachea showed the tubes to be filled with a dark red jelly-like blood clot mixed with gray mucus. This material also entirely filled the left bronchus. The trachea was opened to the larynx and contained the same type of material.

Dissection of the neck was made and the pharynx opened. Thin blood was found draining down the posterior pharyngeal wall from the nasopharynx.
The tissue from the right lung floated in water; that from the left lung sank in water.

The air passages were obstructed completely by blood and mucus, as previously mentioned.

There was no evidence of injury to the epiglottis, larynx, trachea or bronchi to account for the large amount of clotted blood found.

The extensive light pinkish gray to grayish yellow softening seen in the tissues about the left bronchus and the lower esophagus was caused by the digestive action of gastric juice.

There was no evidence of erosion, ulceration or thickening of any part of the esophageal wall.

No interesting observations were made other than the hemorrhages noted in the wall of the esophagus above the repaired tear.

**Comment**

Surgical repair of the esophagus following spontaneous rupture is the radical procedure to follow on a desperately ill patient. To be successful it must be done within the first few hours after the rupture has taken place, when an accurate diagnosis usually is most difficult.

It is felt that the patient reported here would have had an excellent chance of recovery if the trachea and bronchus had not become occluded by blood; the origin of this blood in the bronchi is as yet unexplained. Even after autopsy it was impossible to determine its origin.

In retrospect it was noted at the time of operation that there was a blood stain on the right side of the patient's face near his mouth. It was assumed that this was the result of the vomiting of blood. No areas of trauma were observed in the nasopharynx or trachea that could possibly have bled as a result of trauma from introduction of the intratracheal tube. It is extremely regrettable that this patient died from such an unusual cause after an early diagnosis and a surgical repair that was carried out within three hours of perforation.

**SUMMARY**

1) A case of spontaneous rupture of the esophagus is reported.

2) It must be emphasized that although this is a rare condition and one that produces a high rate of mortality, it should be considered in differential diagnosis in patients with severe upper abdominal pain or pain in the chest associated with emphysema of the neck and face.

**RESUMEN**

1) Un caso de ruptura espontánea del esófago se refiere.

2) Debe recalzarse que aunque es un accidente raro y que produce una elevada mortalidad, debe ser considerado su diagnóstico
diferencial en enfermos con dolor intenso en el abdomen alto o en el tórax asociado con enfisema de la cara y del cuello.

RESUME
1) Les auteurs rapportent une observation de rupture spontanée de l’oesophage.
2) Il s’agit d’un accident rare dont l’évolution est mortelle dans une grande proportion. Cependant il y a lieu de discuter ce diagnostic chez les malades qui sont atteints de douleur violente de la partie supérieure de l’abdomen ou de douleur thoracique associée à un emphysème du cou et de la face.

REFERENCES