Esophagopleural Fistula in a Newborn Infant

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Rupture of the esophagus in the newborn with resulting esophagopleural fistula is an uncommon condition which will cause death if not treated promptly. This is an emergency situation due to progressive tension pneumothorax. A review of the literature reveals only two such cases. In one of these reported by Weisman et al1 in 1959, the esophagus opened into the right side of the chest in the midthoracic region. Treatment by thoracotomy and suture of the defect was successful. In another case reported by Chunn and Geppert2 in 1962, the patient had an esophageal opening into the left side of the chest in close proximity to the diaphragm. Successful repair was done by thoracotomy and suture.

The purpose of this report is to present an additional case of spontaneous rupture of the esophagus in the newborn with emphasis on diagnosis and a method of closure.

Report of a Case

This female infant was born at 3:29 PM on June 14, 1967, following an unremarkable full-term pregnancy. Delivery was spontaneous with a vertex presentation, right occiput anterior. The child cried spontaneously and resuscitation was not necessary. At six hours, the child was noted to be dyspneic and placed in a cool mist and oxygen tent. The dyspnea increased and cyanosis was noted at 18 hours. A chest roentgenogram was obtained (Fig 1). This showed a pneumothorax on the right with shift of the mediastinum to the left.

Twenty hours after delivery surgical consultation was obtained and a tube was placed in the right pleural space by closed technique. Considerable viscous yellow fluid and air were obtained. The lung promptly reexpanded; dyspnea and cyanosis were relieved. Formula given by mouth 30 hours after birth was immediately noted in the chest tube. X-ray films (Fig 2) then demonstrated a fistula from the esophagus just above the diaphragm to the right pleural space. The child was treated with antibiotics and fluid given intravenously.

A laparotomy was done on June 19, at which time the distal portion of the esophagus was mobilized and a 4-mm perforation noted posteriorly. The posterior portion of the esophageal wall was avascular and friable and would not hold sutures. The esophagus was of normal caliber. There was no hiatus hernia. Closure of the opening in the esophagus was accomplished by mobilizing the fundus of the stomach and using this to patch the perforation. In this way gas-

Fig 1.—Chest roentgenogram 18 hours after birth.

Fig 2.—Chest roentgenogram 30 hours after birth shows fistula from the esophagus to the right pleural space.

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of the fistula was localized with radiopaque material. This is important because an alternate approach via the abdomen may simplify the repair. In this case the fistula was so near the diaphragm that mobilization of the lower portion of the esophagus and closure with a fold of the fundus of the stomach was easily accomplished via an abdominal incision. This technique has been described by Thal et al2 for the treatment of esophageal stricture and can be performed via either abdominal or thoracic approach. An esophageal hiatus hernia is created but gastric acid reflux is prevented by the fold of gastric fundus. Further advantages of this technique of repair are that the esophageal lumen is not narrowed by the closure and with the abdominal approach a temporary gastrosotomy tube can be easily inserted for decompression.

The cause of rupture of the esophagus in this case is unknown, but the presence of amniotic fluid in the pleural space suggests that it happened before or during birth. The theory of Weisman et al1 that extrathoracic pressure from uterine contractions acts on an esophagus filled with amniotic fluid to cause rupture seems appropriate here, especially in view of the avascularity noted in the posterior wall of the esophagus at the site of perforation. The use of well vascularized tissue to patch the perforation and reinforce the weakened avascular portion of the esophagus was successful here.

Summary

Spontaneous esophageal rupture with fistula to the pleura developed in a newborn. Progressive respiratory difficulty in the newborn due to tension pneumothorax suggests the diagnosis of eosophagopleural fistula. Surgical closure of the ruptured esophagus with the fundus of the stomach via an abdominal incision was successfully performed.

References