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Case Report

Use of pericardium to repair anastomotic leak after esophageal atresia surgery; experience with one case

Ying Liyang, Gao Zhan, Zhang Zewei, Qi Jianchuan, Wang Wei, Liu Xiwang

Zhejiang University School of Medicine, Children's Hospital, Cardiothoracic Surgery, Hangzhou, China

Abstract

Diverse therapies for the management of anastomotic leakage after esophageal atresia repair have been reported with various outcomes. The surgical management of anastomotic leakage after esophageal atresia repair can be challenging. We present a child with long-gap esophageal atresia and anastomotic leakage repair with pericardium. This article aimed to illustrate that pericardium may be a substitute for esophageal leakage repair. (Turk Pediatri Ars 2017; 52: 43-5)

Keywords: Anastomotic leakage, esophageal atresia, pericardium

Introduction

Anastomotic leakage after esophageal atresia repair is one of the most severe and common complications. Its development is multifactorial, but is due in part to tension on the anastomosis, gastroesophageal reflux disease (GER), and long-gap esophageal atresia. Diverse therapies for repairing anastomotic leakage with have been reported various outcomes. We report a case of long-gap esophageal atresia with primary anastomosis in which a major dehiscence occurred and was sucessfully repaired with pericardium.

Case

A male newborn was delivered by cesarean section at 34+ weeks of gestation. The birth weight was 2500 g. The 1- and 5-minute Apgar scores were 6 and 6, respectively. His condition had not been diagnosed until a tube could not enter the stomach and a trachea cannula immediately induced a respiration pause. On the second day in hospital, repair of the esophageal atresia was performed via a right posteriolateral thoracotomy through the fourth intercostal space.

The tracheo-esophageal fistula was resected and closed using interrupted Prolene 5/0 sutures. The small upper pouch was situated in the cervical pleura. There was a considerable gap of around 3.5 cm between the two cecums. After extensive dissociation of the upper pouch, we sutured the two cecums with Prolene 5/0. Consequently, a high-tension anastomosis was established over an 8-Fr trans-anastomotic tube. Two drainage tubes were inserted into the chest and stomach. The patient was transferred to the surgical intensive care unit (ICU) immediately after the operation and mechanically ventilated for 3 days. Unfortunately, the patient developed polypnea on the sixth postoperative day when large amounts of saliva were found in the anocelia drainage tube. Esophageal radiography confirmed an anastomotic leakage about 5 mm wide, situated to the right of the anastomosis (Figure 1). Reoperation was performed on the seventh postoperative day and the leak was found as 1.2 cm wide, which could not be repaired without a substitute. Therefore, autologous pericardium about 1.5 cm x 1.5 cm was obtained for suturing the anastomotic leakage with loose tension. After the repair operation, the right chest was washed with diluted PVP iodine through the chest drainage tube for 30 minutes once per day to prevent infection.

The patient was weaned from mechanical ventilation seven days after the redo operation. Nasal feeding started on the fifteenth day. The length of hospital stay was

Address for Correspondence: Gao Zhan E-mail: gaozhan666@zju.edu.cn
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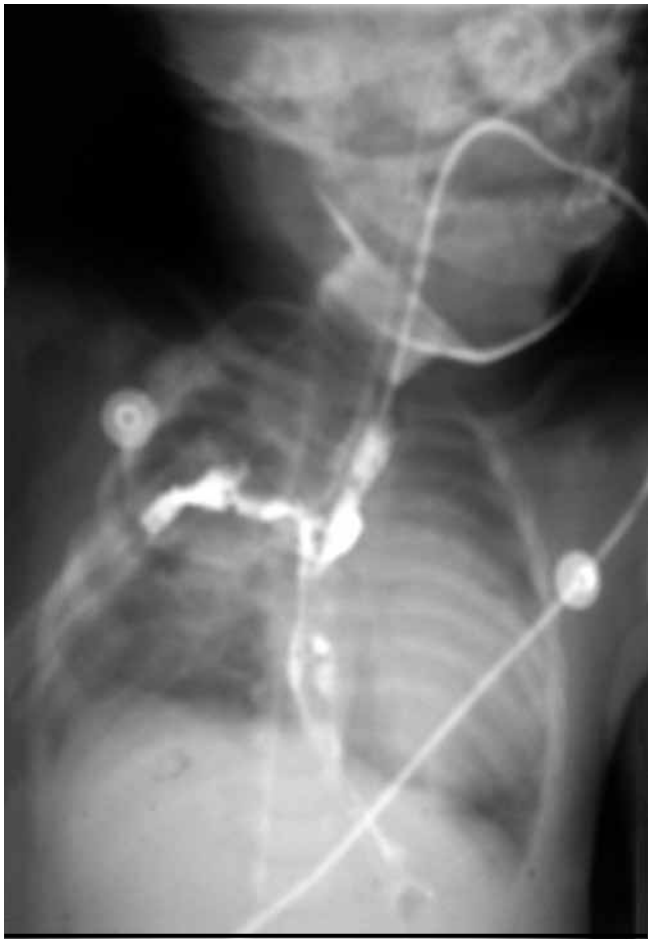

Figure 1. **Esophageal radiography showed the anastomotic leak on the sixth postoperative day**

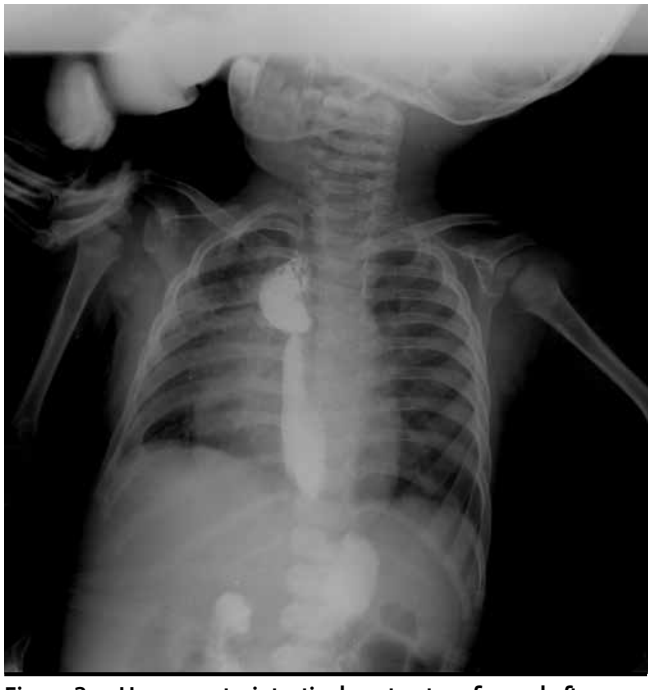

Figure 2. **Upper-gastrointestinal contrast performed after 5 months postoperative day showed the stenosis anastomosis**

56 days. Oral feeding was started before the baby was discharged. There were no problems with oral feeding for 5 months after the reoperation.

However, anastomosis with severe stenosis was subsequently confirmed using an esophagoscope and esophageal radiography (Figure 2). As a consequence, surgery was performed to excise the anastomotic stenosis and the anastomosis was reanastomozed using end-to-end sutures. Esophageal dilations were performed five times using balloon dilatation. No stenosis was observed on esophageal radiography; the narrowest diameter was 10 mm. At the 5-year follow-up, there was no distinct difference from normal children. The patient is now aged 6 years with 123 cm height and 20 kg weight. The informed consent was signed by supervisors of the patient.

Discussion

Survival of children with esophageal atresia has improved dramatically in the last decades. Anastomotic leakage after esophageal atresia surgery is a well-known complication, the incidence of which is about 17%-21%; major leakage occurs in only 3.5% (1-3). A number of factors have been proposed that include long-gap esophageal atresia (EA), high-tension anastomosis, GER, suture technique, and extensive dissection of the lower esophagus.

Many therapies, including lengthening of the esophagus, gastric transposition, and colonic interposition, have been widely used in EA surgery to prevent anastomotic leakage. In 2009, Foker et al. (4) reported the long-term outcomes of "growth induction" by traction for long-gap EA through their follow-up data and concluded that primary repair may merit a greater role. How to tackle anastomotic leakage after EA surgery depends largely on the dimensions of the leakage and the patient's condition. Conservative management such as consistent chest wash and parenteral nutrition and oral suction for saliva is prudent when anastomotic leaks are small and the conditions of the child are good. In 2005, C.D'Urzo et al. (5) reported that a leakage closed after 43 days with conservation management. If a leak is major, one that accounts for a quarter of the circumference of the anastomosis, surgical repair must be undertaken according to the criteria of Chittmittrapap et al. (1). There are many surgical repair methods for anastomotic leakage, which include primary direct suture, repair with pleura or intercostal muscle patches, gastric

transposition, and colonic interposition. The results of the first two methods are not good. In 1996, Chavin et al. (6) reported that 3 in 7 reoperation cases were found ineffective. Although, the results of interposition grafts of stomach and colon are good, poor motility and severe gastric reflux are major complications.

Repairing anastomotic leakage after esophageal atresia surgery using pericardium has been rarely reported. In the present case, we found that it could not be sutured directly because of the major dehiscence and severe inflammation. We chose pericardium for the repair because of a lack of experience with gastric transposition and colonic interposition. The recovery was good with no further leakage and the baby could take oral feeding when leaving hospital. Although severe anastomotic stenosis occurred after 5 months, we allowed time for the patient to control inflammation for esophageal growth so as to excise the anastomotic stenosis and reanstomoze using direct end-to-end suturing. This case described herein illustrates that pericardium may be used as a substitute for esophageal leak repair. It is easily acquired and has good extensibility, which is beneficial while suturing. In conclusion, we can take advantage of pericardium to repair esophageal leakage after EA.

Informed Consent: Written informed consent was obtained from patient's parents.

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