

# Esophageal Atresia: 13 years' Experience in Amirkola Children's Hospital, North of Iran

## Original Article

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## Abstract

**Background:** The most common congenital abnormality of esophagus is esophageal atresia (EA) that can occur with or without tracheoesophageal fistula. Other associated anomalies are the leading cause of death in these patients. The present study aimed to evaluate the main complication, outcomes and cause of death in neonate with EA repaired in Amirkola Children's Hospital (ACH), Iran within a 13 years period.

**Methods:** This cross sectional study was done on infants that underwent surgical repair for EA in Amirkola Children's Hospital during 1994-2007. All information such as demographic, birth weight, type of atresia, associated anomaly, complication of surgery, duration of hospital stay and cause of death were obtained from patient medical records.

**Results:** Of all 37 studies cases with the mean gestational age ( $\pm$ SD)  $37.2 \pm 1.7$  weeks and the mean birth weight  $2601 \pm 504$  gram, 3 cases were preterm. The most frequent type was EA with lower segment fistula to trachea. In 37.8% cases there was an associated anomaly that the cardiac anomalies were more common. Surgical complication was seen in 59.5% of cases and 11 of them died in hospital that 63% of them had associated anomaly.

**Conclusions:** Association of other congenital anomalies plays an important role in the survival of patients.

**Keywords:** Esophageal Atresia, Surgery Outcomes, Tracheoesophageal Fistula

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## Introduction

Esophageal atresia (EA) is one of the most common congenital anomalies that firstly described in 1697 by Thomas Gibson <sup>[1]</sup>. EA is a disconnection in the continuity of the esophagus that can associate with a connection to the trachea. Its incidence ranges from 1 in every 2500 to 4500 live births <sup>[1-3]</sup>. It has five more common types that in 86% of cases is associated with lower esophagus segment connection to trachea (Type C) <sup>[1]</sup>. The other types include EA without tracheoesophageal fistula (TEF) in 7.7% of cases, TEF without EA in 4.2% of cases (H-type), EA with upper segment TEF in 0.8% of cases and EA with proximal and distal part TEF in 0.7% of cases. Most cases diagnosed in the first days after birth except the H type that can be asymptomatic even for years. Without any treatment, EA is fatal and survival rate after surgery is multifactorial. There are associated anomalies in 25 to 70 percent of cases that are the major causes of death in these infants, Such as associations with "VACTERL" syndrome include the birth defects of vertebral anomalies, Anal Atresia, Cardiac defects, Tracheoesophageal fistula and/or Esophageal atresia, Renal anomalies and Limb defects.

The present study aimed to evaluate the main complication, outcomes and cause of death in esophageal atresia surgical repair in one hospital within a 13 years period.

## Methods

This cross sectional study was done on infants that underwent surgical repair for EA in Amirkola Children's Hospital during 1994-2007. All information such as demographic, birth weight, type of atresia, associated anomaly, complication of surgery, duration of hospital stay and cause of death etc, was obtained from patient medical records.

## Results

Of all 37 studies cases, 23 cases (62.1%) were male. The mean gestational age ( $\pm$ SD) of neonates were  $37.2 \pm 1.7$  weeks and 3 of them were preterm. The

mean birth weight of them was  $2601 \pm 504$  gram (range 1600-3750). The most frequent type was esophageal atresia with lower segment fistula to trachea (table1). In 14 cases (37.8%) there was an associated anomaly such as cardiac anomaly in 4 cases, renal anomaly in 2 cases, VACTERL in 5 cases and others anomaly in 3 cases. Except 2 cases of H-type EA that underwent repair with cervical approach in the 3 and 18 month of old the mean age of infants at the time of surgery was  $3 \pm 2.3$  day (range, 1-9 days). The type of surgery was right posterolateral thoracotomy and closure of tracheoesophageal fistula with primary anastomosis. Colonic trans position were done in one case. The mean hospital stay ( $\pm$ SD) was  $16.5 \pm 11.7$  days (range, 2-56 days). Post surgical complication was seen in 59.5% of cases and 11 of them died in hospital that there was an associated anomaly in seven of them. There was an EA without fistula in 3 of this 11 patient and in 8 cases, EA was associated with lower segment fistula to trachea.

**Table 1: The frequency of different type of EA respect to the outcome of repair**

		Death after repair N (%)	Alive repaired cases N (%)
Type of EA	EA without TEF	3 (50)	3 (50)
	EA with upper segment TEF	0 (0)	1(100)
	EA with lower segment TEF	8 (27.6)	20 (72.4)
	TEF without EA	0 (0)	2 (100)
Associate anomaly	Yes	7 (50)	7 (50)
	No	4 (17.3)	19 (82.6)

## Discussion

Esophageal atresia (EA) is a complex congenital condition that diagnosed early but its surgical repair is difficult and challenging. As indicated in many studies it seems that male predominance is characteristic for this anomaly [4-6]. The frequency of EA, type C was 75.5% in the present study like the Yang, CF et al.'s study, which the most common form was EA with lower segment tracheoesophageal fistula [7]. In our study associated anomalies were found in 37.8% of the children that the cardiac anomalies were more common than others like many other studies [7-9]. Due to the fact these patients should be evaluated carefully for other anomalies before any surgical intervention.

Mortality rate reported in different studies is varied In Yang CF et al.'s studies it was 40% and in Kumar P et al.'s study it was 47.9% [7, 10]. On the other hand Snajdauf reported 20.2%, Calisti reported 9.4% and Marinaccio reported 0% mortality rate [11-13]. In our

study the mortality rate was 29.7% that is in acceptable range compared with those mentioned above. We think that association of other congenital anomalies plays an important role in the survival of patients because the mortality rate between patients with congenital anomalies was significantly higher than patients without anomalies.

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