

## THERAPEUTICALLY ASPECTS IN ESOPHAGEAL ATRESIA

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### Abstract

*Introduction.* The esophageal atresia (E.A.) treatment still represents a challenge, concerning both the maintaining of the native esophagus and the neonatal intensive care efficiency.

*Purpose.* The aim of this paper is to present a single team experience in E.A. treatment in the last five years.

*Materials and Methods.* 28 consecutive cases, treated in the last five years (between 2005 and 2009) were retrospectively analyzed. We studied the type of the malformation, associated diseases, results regarding the saving of the native esophagus, and also the value of colon esophagoplasty.

*Results.* In our series 24 patients (85.6%) had E.A. with distal tracheo-esophageal fistula (TEF), one case (3.6%) – EA with both proximal and distal TEF, one case (3.6%) – isolated TEF, and in 2 cases (7.2%) – isolated EA. 6 patients were initially treated in other surgical units (gastrostomy, TEF ligation and cervical esophagostomy), one of them subsequently suffering multiple failed interventions, in which it was attempted the saving of the native esophagus, by the traction of the esophageal ends. We noted different associated anomalies in 9 patients (cardiac malformations, duodenal atresia, imperforate anus, tracheomalacia, skeletal deformities, paraesophageal hernia and pyloric stenosis). Among the 22 patients treated from the beginning in our unit, in 20 cases we performed primary repair of the EA, in one case - isolated TEF ligation and in one case we renounced at the native esophagus after a failed traction procedure. 2 patients developing esophageal anastomotic tight stricture and 2 patients with significant anastomotic leak required the revision of the anastomosis, which was performed successfully. In one case a recurrent fistula occurred. All the 6 patients, initially having gastrostomy, TEF ligation and cervical esophagostomy, suffered colon esophagoplasty.

We encountered 4 deaths (14.3%), 3 of them weighting less than 1.500 g. at birth.

*Conclusions.* The developing of the neonatal intensive care allows us to increase the percentage of cases with preserving the native esophagus. In long gap cases, the esophageal traction may represent a good instrument for primary anastomosis achievement. However, the reconversion of the EA patients initially having esophagostomy and cervical esophagostomy, in order to elongate and save the native esophagus leads to a serious

morbidity. Colon esophagoplasty in failed esophageal repair is a safe and functional alternative.

**Key words:** esophageal atresia

### Background/Purpose.

Since the first successfully primary repair of EA with a TEF (Cameron Haight, March 15, 1941) (1), a spectacular improvement in the knowledge and treatment of EA has been encountered. According to Spitz (1,2), the survival rate of the AE patients having a birth weight less than 1500 g and associated major congenital heart disease is now more than 20%, which means a huge progress. Nevertheless, in the developing countries consistent steps are needed in order to achieve similar results. The aim of the study was to evaluate a single team experience in E.A. treatment in the last five years.

### Materials and Methods.

From 2004 to 2009, 28 AE patients were treated by a single surgical team. The medical records of these patients were retrospectively analyzed, regarding the type of the malformation, associated diseases, surgical treatment, complications and survival rate.

### Results.

Among these 28 consecutive EA patients treated by our team, 24 patients (85.6%) had type C, one case (3.6%) – EA with both proximal and distal TEF (type D), one case (3.6%) – isolated TEF (type E), and 2 cases (7.2%) – isolated EA (type A). 6 patients were initially treated in other surgical units (gastrostomy, TEF ligation and cervical esophagostomy). 9 patients (32.15%) had different associated anomalies - cardiac malformations (atrial septal defect, 5), duodenal atresia (2), imperforate anus (1), tracheomalacia (1), skeletal deformities (radius agenesis, 1 case), para esophageal hernia (1) and hypertrophic pyloric stenosis (1).

- 22 patients were treated from the beginning in our unit. In this group, in 20 cases we performed primary repair of the EA. In 5 of them (25%) we used intraoperative esophageal elongation as it was described by Foker (6,7). The mean distance between the esophageal ends in these 5 cases was 2.5 cm. (between 1.5 and 3.5 cm). In 3 cases (15%) mild esophageal stenosis occurred, successfully treated by dilatations. 2 patients (10%) developed undilatable esophageal anastomotic tight stricture (fig. 1, 2). In both cases the esophageal gap was about 3.5 cm.

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Fig. 1 a, b: undilatable stricture, pre- and postop.

One month after the primary repair open gastrostomy together with a Nissen antireflux procedure was performed. After several failed attempted antegrade bougienage

procedures the stenotic segment was removed, followed by reanastomosis.

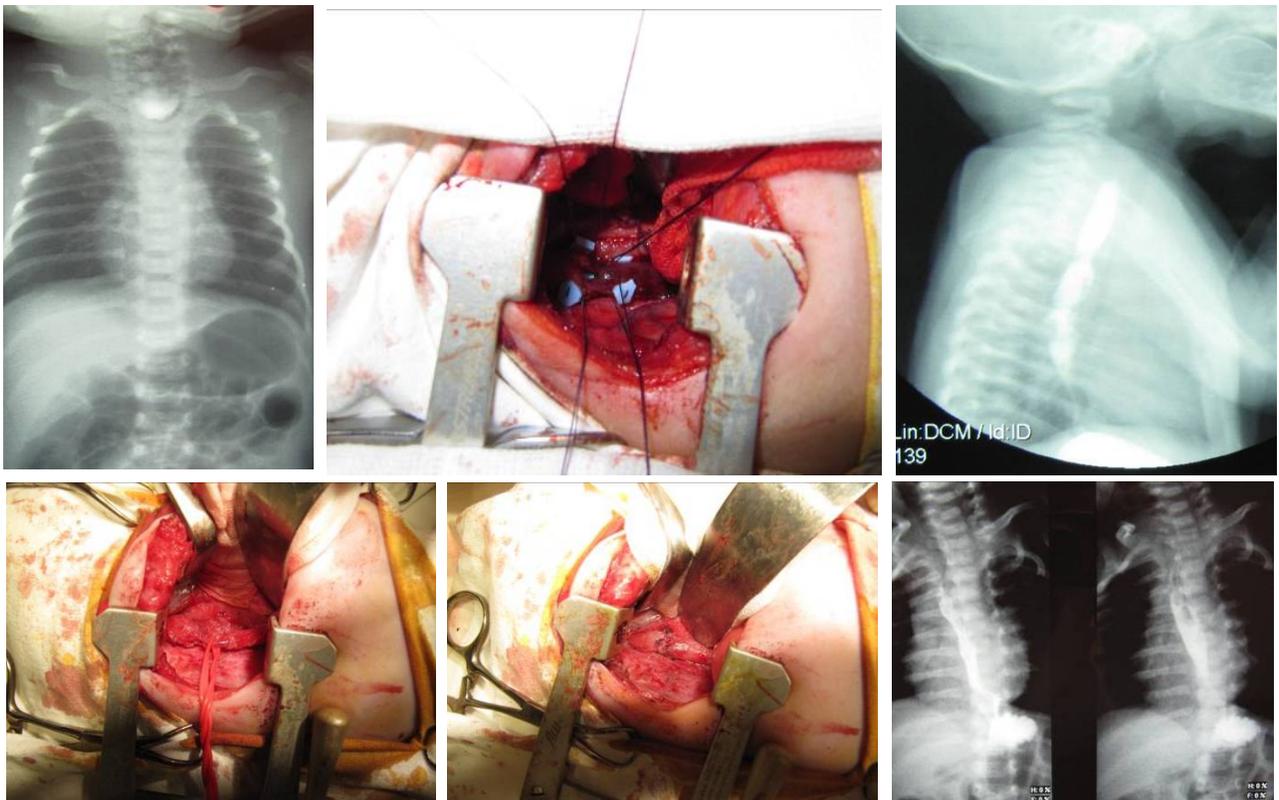


Fig.2, a-f: case 2: preop., primary repair using traction sutures, stricture, intraop aspects, postop esophagogram.

2 patients (10%) developed significant anastomotic leak, requiring the revision of the anastomosis, which was performed successfully. In one of them (fig.3), having associated cardiac dextroposition, we started with right thoracotomy. We found and dissect the proximal esophagus, but the distal esophagus was absent in the right

mediastinum. We performed a left thoracotomy, finding and ligating the TEF and performing the esophageal primary repair. 3 days postop a significant leak occurred, requiring prompt reintervention and anastomosis repair. The final result was satisfactory.

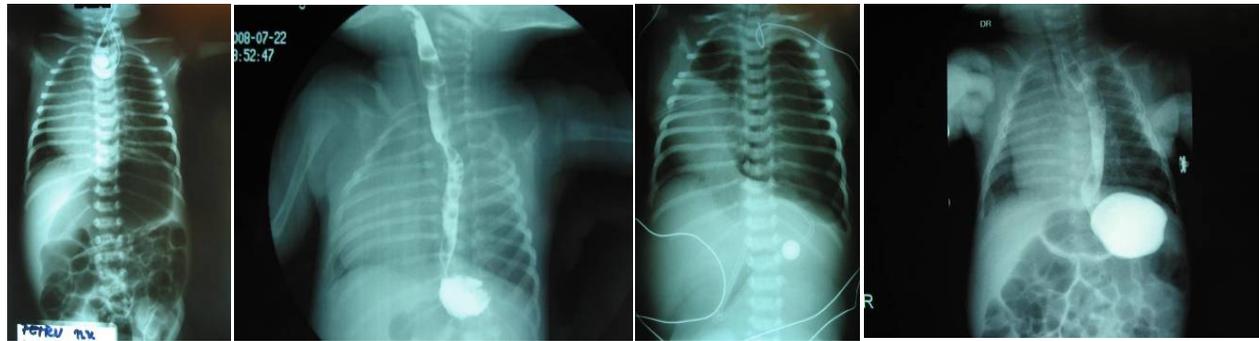


Fig.3 a-d.

The patient with EA and both proximal and distal TEF was operated on, ligating the fistulas and performing an esophageal end-to-end anastomosis. A major disruption of the esophageal anastomosis occurred 48 hours after the initial repair. We performed a gastrostomy, putting the distal esophageal end on internal traction and the proximal end on external traction through a cervical subcutaneous tunnel. 3 days postoperatory a perforation occurred at the proximal esophageal level, requiring the renouncing of the

lengthening procedure and cervical esophagostomy. One year later he was reoperated in another country, suffering a gastric pull-up procedure.

In one case, weighting 900 g, a recurrent undetected fistula occurred, finally leading to uncontrolled sepsis and subsequent death.

In one case we performed a successfully isolated TEF ligation, at the age of 3 years (fig.4).

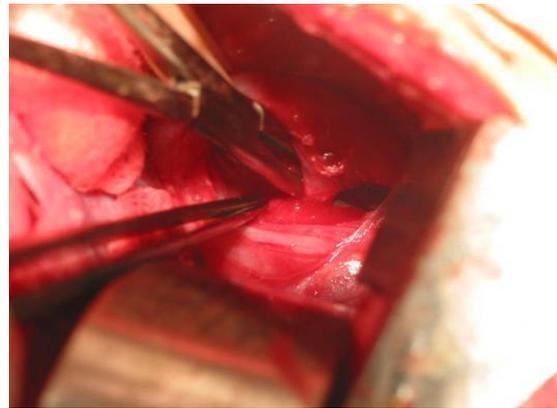
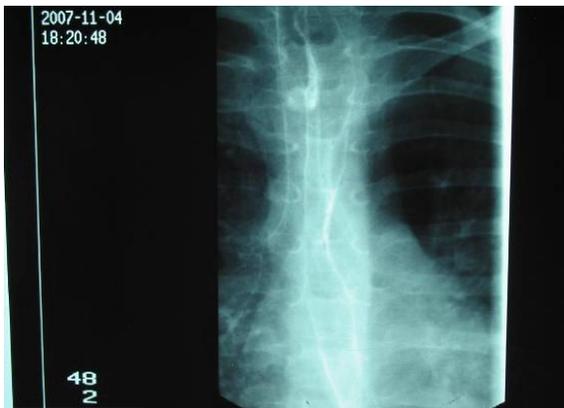


Fig.4, a-b.

One patient of our series, weighting 1580 g, had EA with distal TEF, duodenal atresia and perineal fistula. We

performed TEF ligation and primary esophageal repair, diamond-shaped duodenal anastomosis and “V” anoplasty.



Fig.5, a-c.

The patient was discharged one month postop., weighting 2000 g, with good functional results.

4 patients (14.3% from all our cases), 3 of them weighting less than 1.500 g. at birth, had an unfavorable evolution finally leading to death, due to septic complications.

6 patients were initially treated in other units having gastrostomy, TEF ligation and cervical esophagostomy. One of them was admitted in our department after he suffered

several failed lengthening procedures suffered in other country. In all these patients we performed colon esophagoplasty. We used transverse colon irrigated by the left colic a. We preferred to pull-up the graft through a retrosternal route in an isoperistaltic manner. The postoperative results were very good in all cases (fig 6), with no significant complication at all.

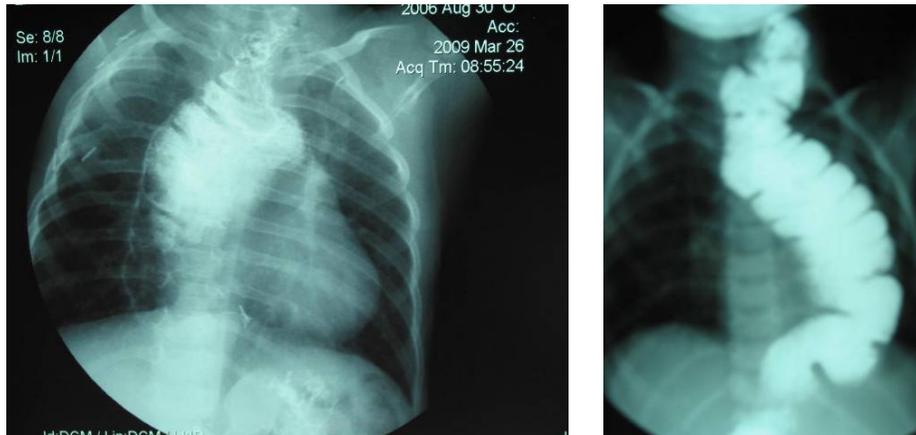


Fig. 6

### Discussion

The developing of the neonatal intensive care, a more surgical aggressive attitude in complicated cases, together with a higher accuracy in esophageal dissection allows us to increase the percentage of cases with preserving the native esophagus. In long gap cases the esophageal intraoperative traction as it was described by Focker (4,5,6) represent a

good instrument in order to achieve primary anastomosis. However, the reconversion of the EA patients initially having esophagostomy and cervical esophagostomy (6,7), in order to elongate and save the native esophagus leads to a serious morbidity. Colon esophagoplasty in failed esophageal repair is a safe and functional alternative.

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