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Original Research Article

Study on Relationship between Congenital Defects in Patients with Distal Tracheo-Esophageal Fistula and Esophageal Atresia

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Abstract:

Background: Esophageal atresia and tracheo-esophageal fistula (EA+TEF) are among the most frequent and dangerous congenital malformations. Even with advancements in early diagnosis, surgery, ventilatory support, and chest infection control, morbidity and mortality rates are still relatively high and vary greatly between centers, especially in developing nations where neonatal care facilities are scarce and of varying quality. The course of the intervention, when it should be implemented, and even the management strategy is all heavily influenced by associated anomalies.

Methods: From August 2021 to July 2022, this study was conducted in the pediatric surgical department at Lok Nayak Hospital in New Delhi. Every year, the hospital sees 10 to 30 neonates who have EA+TEF. Over 80% have a distal tracheesophageal fistula along with esophageal atresia (Vogt's type 3b; Gross type C).

Results: Fifty cases of distal tracheesophageal fistula associated with esophageal atresia were included in the current study. Every one of the fifty children has undergone primary esophageal anastomosis with success. The pediatric surgery department of Maulana Azad Medical College and its associated Lok Nayak Hospital in New Delhi is the treatment facility for all cases. Two individuals in this study had congenital diaphragmatic hernias of the Morgagni type on the right side. It is uncommon for OA and congenital diaphragmatic hernia to coexist together.

Conclusion: Congenital heart disease was the most common congenital abnormality related to esophageal atresia and trachea-esophageal fistula.

Keywords: Congenital Defects (Anomalies), Esophageal Atresia, Trachea-Esophageal Fistula.

Introduction

Between 40% and 55% of cases of trachea-esophageal fistula/esophageal atresia (TEF/EA) are associated with different abnormalities. [1-3] Anomalies might be identified at birth or later on, single or many, minor or significant. There may not be any treatment feasible for the life-threatening anomalies.

Serious concomitant deformities must be identified and treated promptly. Minor ones don't need medical attention right away because they pose no threat to life. The early disruption in organogenesis that causes EA and other related defects is the cause of the high incidence of association. Individuals with isolated EA have the highest frequency of these anomalies (55–60%), whereas individuals with H type TEF have the lowest frequency (25–30%). [1-5] In addition, compared to newborns weighing more than 2500 g, those under 2000 g had an almost threefold increased incidence of related abnormalities. [2]

Material and Methods

Between August 2021 and July 2022, this study was conducted in the pediatric surgery department of the Maulana Azad Medical College and associated Lok Nayak Hospital in New Delhi. Each year, the hospital sees 10 to 30 neonates with esophageal atresia on average. Esophageal atresia with a distal tracheo-esophageal fistula accounts for more than 80% of cases (Vogt's type 3b; Gross type C).

The study includes infants with this kind of esophageal atresia who made it through primary end-to-end esophageal anastomosis. Letters were

sent to all of the survivors, requesting that parents get in touch. Fifty of the 164 parents that were contacted gave their consent and are part of the study.

A thorough history, a clinical examination, and imaging examinations are performed during the follow-up. Patient information is kept on file, including name, birthdate, sex, address, registration date, and day of life at the primary esophageal anastomosis. Anomalies related to Waterstone's group, including cardiac (identified by echocardiogram), anorectal (and its kind), renal (sonography and, if necessary, MCU), vertebral and rib, radial and rib, and any other anomalies are noted.

Results

Table 1: Waterstone's Group

Group	No. of cases	Percentage
Group A	18	36.0%
Group B1	20	40.0%
Group B2	10	20.0%
Group C1	2	4.0%
Group C3	-	0.0%

The majority of the 25 cases, or 20, or 40.0%, were in Waterstone's group Bl. Not a single instance that was followed up on fell into the C2 category. The study group was subjected to clinical examination, radiography, ultrasonography, and echocardiography in order to identify any related anomalies.

Table 2: Congenital anomalies associated with EA with distal TEF

Anomaly	No. of cases	Percentage
Vertebral	2	4.0%
Rib	4	8.0%
Anorectal	4	8.0%
Congenital Heart Disease	20	40.0%
Radial	2	4.0%
Urinary	2	4.0%
Congenital Diaphragmatic hernia	2	4.0%
Coloboma	-	0.0%

Congenital heart disease was the most common congenital abnormality linked to esophageal atresia and tracheesophageal fistula.

Discussion

On the corresponding side of two patients' thoracic hemivertebra, there is a bird rib. Primary esophageal anastomosis was performed on two individuals who had 26 ribs. Two of the four instances with concurrent anorectal malformations had cut back anoplasty on the same day that their TOF was repaired because they had cutaneous fistulas.

The other case required a high-divided sigmoid colostomy, postero-saggital anorectal pull through, and colostomy closure due to high anorectal malformation, anorectal agenesis. According to the advice of plastic surgeons, two of the patients who had malrotated thumbs and are awaiting tendon transfer. A follow-up revealed that the dysplastic kidney with grade I vesicoureteric reflux in another patient had decreased. [6]

Fifty cases of distal trachea-esophageal fistula associated with esophageal atresia were included in the current study. Every one of the forty infants had their primary esophageal anastomosis successfully completed. From August 2021 to July 2022, all cases are treated in the pediatric surgical unit of the affiliated Lok Nayak Hospital in New Delhi and Maulana Azad Medical College. Two individuals in this study had congenital diaphragmatic hernias of the Morgagni type on the right side. In all cases, trisomy was absent. [7] It is uncommon for OA and congenital diaphragmatic hernia to coexist together. [8] Out of the 50 patients with distal trachea-esophageal fistula suffering from type III/b EA who survived after primary esophageal anastomosis, one patient experienced anastomotic leak. [9] Anastomotic tension was high in this particular case. Anastomotic stress is one of the key etiological elements in the development of anastomotic leak, according to Holder and Ashcrait. [1]

Conclusion

The most prevalent birth defect related to tracheesophageal fistula and esophageal atresia was congenital heart disease.

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