Tracheoesophageal Fistula and Esophageal Atresia Experience at Mayo Hospital, Lahore

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Forty six neonates of esophageal atresia and tracheoesophageal fistula were admitted in Mayo Hospital, Lahore in three and half years. Delayed referral of 24 hours or more was noted in 78.26%. Eighty percents of neonates admitted had moderate to severe chest infection. Seventy percent of the neonates weighed three or more than three kilograms. Associated congenital abnormalities were noted in 41.3%. Thirty two were operated, fistula ligation and primary anastomosis in majority and diversion in 4 cases. Survival of category A was 80%. Overall survival being 40.63%. Complications were seen in 58.68% infection were major (41.30%) problem.
Key words; Atresia, fistula, thoracotomy, congenital anomalies, sepsis

Surgery of esophageal atresia and tracheoesophageal fistula is still a challenge to the paediatric surgeon even after many advances to this field. Associated congenital anomalies are the main cause of death in developed countries, while in developing countries like Pakistan many other factors including sepsis are responsible for the higher mortality. We are presenting three and half year experience (June 1995 to December 1998), in management of 46 such neonates, at the Department of Paediatric Surgery, Mayo Hospital, Lahore. Factors responsible for poor prognosis are highlighted.

Patients and methods:
Record of patients of esophageal atresia and tracheoesophageal fistula, admitted in Paediatric Surgery, Mayo Hospital, Lahore was maintained and analyzed for age, weight, chest infections, congenital anomalies, postoperative complications, hospital stay and mortality. Patients of Waterston Classification "A" and "B" were operated after resuscitation with, suction, antibiotics and chest physiotherapy. Thoracotomy was performed through 4th intercostals space, fistula ligated and an end to end esophageal anastomosis was made. Four patients of Waterston type "C" were put on parenteral nutrition and ventilatory assistance after diversion esophagostomy and gastrostomy. Esophageal replacement was deferred for later life.

Results:
Forty six neonates were admitted with esophageal atresia and tracheoesophageal fistula. Ages at the time of admission are shown in Table 1.

Table 1. Age at presentation.

Age	n=	%age
Less than 24 hours	10	21.75
24-48 hours	10	21.74
48-72 hours	07	15.22
More than 72 hours (upto 15 days)	19	41.30

Associated anomalies were discovered in 19(41.30%) neonates. 11(23.92%) had high anorectal malformation, 4 neonates (8.7%) had high anorectal malformation, 4 neonates (8.7%) had skeletal and 3(6.52%) had cardiac anomalies.

Waterston Classification and mortality of non-operated (14 cases) is shown in Table 2. Waterston Classification and survival of 32 neonates (operated) is shown in table 3. The primary repair was performed in 28 patients. Esophagostomy and gastrostomy was performed in only four neonates. Feeding through nasogastric tube was started on the 2nd day after definite repair. Complications are shown in table 4. Thirteen neonates survived and nineteen died. 56.52% patients presented more than 48 hours after birth.

Table 2. Waterston Classification and mortality (non operated cases)..

Category	n=	Mortality
A	0	0
B	2	2(100%)
C	12	1(8.33%)
Total	32	13(40.63%)

Table 3. Waterston Classification and survivals (operated cases)

Category	n=	Survival
A	10	8(80%)
B	10	4(40%)
C	12	1(8.33%)
Total	32	13(40.63%)

Table 4. Complications

Complications	n=	%age
Pneumonia	12	26.08
Pneumothorax	03	6.52
DIC/Sepsis	07	15.22
Leakage of anatomosis	05	10.87

Infection is the commonest (41.03%) problem in these neonates.

Discussion:

In 1670 Thomas Gibbsonsin is credited for the first clinical and pathological description of tracheoesophageal fistula and esophageal atresia. First successful primary repair was performed by Haight 50 years ago. In past four decades survival of these neonates has improved due to four factors, early diagnosis, prompt intensive preoperative and postoperative care.

Table 1 shows that 41.30% patients reported to our surgical services after 72 hours of delivery. This delay changes category from "A" to "B" by pulmonary involvement and changes prognosis from good to poor. 84.77% neonate had chest infections. This is a major problem for which our patients need vigorous respiratory assistance.

Associated congenital anomalies in our patients were 41.30%, mainly anorectal malformation. A wide range of associated congenital anomalies is documented like ectopic, stenosed or absent right upper bronchus[1], tracheomalacia, atelactasis, upper esophageal duplication[2], vacteral association[3], microophthalmos, hypospadias[4] and cardiac defects[5,6]. Exomphalos major is also reported in one case[7], dextrocardia[9] and hiatal hernia[10].

Method of treatment in our patients has already been described. We performed a single layer anastomosis with 4/0 silk interrupted stitches like Sharma[11]. We retain transanastomotic tube and start early feeding. This causes no leak, no stricture, no regurgitation and reduces the cost[12].

Complications are shown in Table 4. Sepsis was our major problem, secondary to chest infections. Delay in proper management due to delayed referral causes low profusion at the cellular level and accompanied by suppressed immunity is responsible for poor prognosis. This fundamental observation that early preservation of pulmonary segments reduces complications in patients with tracheoesophageal fistula is described by many surgeons[5,11].

The overall mortality in our operated patients is 59.37%, mainly due to sepsis originating from chest infections. In an Italian study mortality was 95% in 1972-76. This dropped to 55% in 1991 due to early surgery and better antibiotics[11].

From this study we conclude that early diagnosis, prompt transportation to Paediatric Surgical Units and intensive preoperative and postoperative care is required to improve prognosis of tracheoesophageal fistula.

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