

Original article:

Study of etiological factors and pathophysiology of influencing anastomotic strictures

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Abstract:

Introduction: Vast advances in the management, both surgical and non-surgical, have greatly improved the survival of babies born with oesophageal atresia. The survival has steadily increased from 40% to 85% to 95%⁷⁶. In India, where not every neonate is seen by a child specialist after birth, the results are anywhere between 35 and 50%.

Methodology: An Ongoing study is being carried out in a paediatric surgery unit in a teaching hospital in Mumbai. On an average, 20 newborns with oesophageal atresia are referred to the hospital per year. More than 80% are oesophageal atresia with distal tracheoesophageal fistula

Results: All the 25 cases had undergone disconnection of tracheo oesophageal fistula with suturing the tracheal side with 3/0 silk in addition to transection. All underwent end-to- end primary oesophageal anastomosis in single layer. Polyglactin (Vicryl) was used in 24 cases while in one case silk was used - this child developed anastomotic stricture.

Conclusion: Anastomotic tension is one of the important etiological factors in development of anastomotic leak.

Introduction:

Vast advances in the management, both surgical and non-surgical, have greatly improved the survival of babies born with oesophageal atresia. The survival has steadily increased from 40% to 85% to 95%⁷⁶. In India, where not every neonate is seen by a child specialist after birth, the results are anywhere between 35 and 50%¹. However, with increasing number of survivors, the secondary problems come into the fore e.g. the feeding problem, the pulmonary morbidity, the anastomotic strictures, the recurrent TOF, the gastroesophageal reflux, etc. Reestablishing oesophageal continuity is too simplistic an approach to what is a multifaceted problem. Comprehensive evaluation of survivors and judicious application of medical and surgical treatment are required. This work is an earnest effort to study the problems in survivors following primary oesophageal anastomosis in case of oesophageal atresia with distal trachea oesophageal fistula.²

Methodology:

An Ongoing study is being carried out in a paediatric surgery unit in a teaching hospital in Mumbai. On an average, 20 newborns with oesophageal atresia are referred to the hospital per year. More than 80% are oesophageal atresia with distal tracheoesophageal fistula (Vogt's type 3b; Gross type C).

Babies with this type of oesophageal atresia who survived primary end-to-end oesophageal anastomosis are included in the study. All the survivors were contacted by mailing letters asking parents to follow up. Of the 82 parents contacted 25 responded and are included in the study. During follow-up, a detailed history, clinical examination and imaging studies are carried out. The study is done under following heads:

1. **Basic data:**

Data pertaining to patient viz. name, date of birth, sex, address, registration, date and day of life at primary oesophageal anastomosis are recorded.

2. **Waterstone's group and associated anomalies:**

Waterstone's group and associated anomalies such as cardiac, (detected by echocardiography), anorectal and its type, renal, (sonography and when required MCU) vertebral and rib anomalies, radial and rib anomalies and any other anomalies are noted.

Results:

All the 25 cases had undergone disconnection of tracheo oesophageal fistula with suturing the tracheal side with 3/0 silk in addition to transtixation. All underwent end-to- end primary oesophageal anastomosis in single layer. Polyglactin (Vicryl) was used in 24 cases while in one case silk was used - this child developed anastomotic stricture.

Table No. 1 Tension at anastomosis judged by operating surgeon and anastomotic leak.

Tension at oesophageal anastomosis	No. of cases	Anastomotic leak
Minimum	12	None
Moderate	11	None
Severe	2	1
Not mentioned	-	None

Weaning, Feeding and Nutrition

All the patients were advised weaning at 3 months of age. However, only in 10 patients weaning was started at 3 months of age.

Table No. 2 Age at weaning

Age in months	No. of cases n=24*
3	10
4-6	12
7-9	2
10-12	1
>12	-

One child died at 3 months of age due to unattended cyanotic spell who also had Tetralogy of Fallot.

Ten patients never experienced any feeding difficulties.

Table No- 3 Feeding difficulties

Feeding difficulties	At 3 mths of age n=25	At 6 mths of age n=21	At 1yr of age n=15
Regurgitation	7	5	3
Vomiting	7	4	2
Dysphagia	8	4	2
Slow feeding	4	-	-

Table No. 4 Dietary habits in children above 2 yrs of age (n =14)

Type of diet	No. of cases
Regular diet	8
Semi solid diet	6

8 out of 14 patients were on regular diet. One patient aged 5 years was avoiding chocolates and biscuits only.

Discussion:

Only one out of 25 patients developed minor anastomotic leak. The anastomosis was under severe tension. The anastomosis was carried out extrapleurally. Leak was detected on post operative day 3. The dye study showed leak of barium draining out of the well positioned intercostal drain. It also showed some barium entering lower oesophagus below the anastomosis into the stomach. This patient was treated conservatively. The nasogastric tube was maintained in place. Feeds were withheld. Patient received intravenous fluid, broad spectrum antibiotics, oral gentamicin and clotrimazole drops locally in the oral cavity. At the end of 2 weeks the nasogastric tube was pushed further in and slow drip- feeds were started through the tube. Serial dye studies were repeated and the ICD was removed only after the leak had stopped. ³The patient was started on oral feeds three weeks post operatively. This

patient during follow up barium study at 3 months and at 6 months does not show any anastomotic stricture. There is no gastro oesophageal reflux on barium study and on radionuclide scintigraphy.

Of the 25 patients of type III/b OA with distal tracheoesophageal fistula who survived following primary oesophageal anastomosis, one patient had developed anastomotic leak. This case had severe anastomotic tension.

Holder and Ashcraif⁴ noted that anastomotic tension is one of the important etiological factors in development of anastomotic leak.

Conclusion:

Anastomotic tension is one of the important etiological factors in development of anastomotic leak.

References:

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