OESOPHAGEAL ATRESIA: 10 YEARS STUDY

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ABSTRACT

Outcome of oesophageal atresia with tracheo-oesophageal fistula and oesophageal atresia without tracheo-oesophageal fistula in Guntur Medical College and Government General Hospital, Guntur, without ventilatory support over a period of ten years (2004 to 2014) was highlighted. Oesophageal atresia is considered to be a touch stone in paediatric surgery. Total 269 patients were treated; 223 patients underwent surgery out of 269; 136 patients survived (61%) with few long term complications.(1)

KEYWORDS

Oesophageal Atresia, Tracheo-oesophageal Fistula.

HOW TO CITE THIS ARTICLE: Chanda Bhaskar Rao, K. Jayapal, P. Subbarao, K. Narasimharao, Mohd Zakir Mohiddin Owois. "Oesophageal Atresia: 10 Years Study." Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 102, December 21; Page: 16743-16746, DOI: 10.14260/jemds/2015/2507

INTRODUCTION

Oesophageal atresia is a life-threatening neonatal surgical emergency and the outcome reflects the quality of work done in the department. It occurs about 1 in 3000 live births. Manifestations of tracheo-oesophageal fistula and oesophageal atresia may take few minutes to days to present itself to the treating surgeon.

Embryologically the defect is probably due to incorporation of part of oesophagus into the developing trachea between 4th and 5th week of intrauterine life.(2)

The management of a neonate with oesophageal atresia and tracheo-oesophageal fistula without ventilatory support is a challenging job; not only in terms of anesthetic management.(3) but also in the pre- and post-operative care in the presence of prematurity.(4)

Low birth weight, aspiration pneumonia and associated major congenital cardiac anomalies, the outcome is poor.(5)

Financial or Other, Competing Interest: None.
Submission 25-11-2015, Peer Review 26-11-2015,
Acceptance 05-12-2015, Published 19-12-2015.
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DOI:10.14260/jemds/2015/2507

PATIENTS AND METHODS

Retrospective study of neonates admitted with a diagnosis of oesophageal atresia with or without tracheo-oesophageal fistula between August 2004 and July 2014.

Pre-operative evaluation for associated anomalies and basic surgical workup was done. A total number of 269 patients were treated during the said period.

Males were 143(53.1%) and females 126(46.9%); 223(82.8%) patients were operated and 46(17%) patients could not be operated because of their poor general condition.

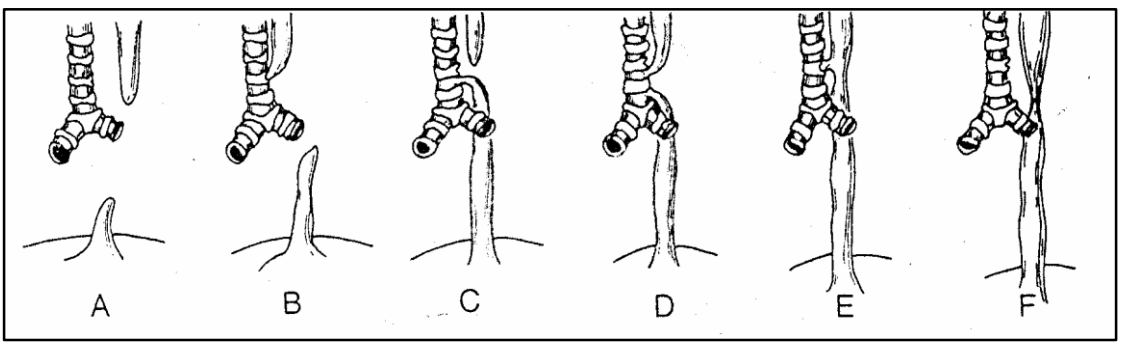
Clinical presentation mostly was in the form of drooling of saliva, respiratory distress, cyanosis and choking on attempted feeding. Diagnosis was established by inability to pass nasogastric tube into stomach and chest x-ray showing coiling of feeding tube in the proximal pouch.

Age at presentation was 0-2 days in 205(76.2%), 3-5 days in 51(18.9%), 6-10 days in 6(2.25%), and more than 10 days in 7(2.6%) cases.

TYPE OF ANOMALY

Tracheo-oesophageal fistula with proximal pouch atresia was in 252(93.6%), (Male 135 and female 117), oesophageal atresia without tracheo-oesophageal fistula in 15(5.5%) (Male 6 and female 9) and 'H' type fistula without oesophageal atresia was in 2(0.74%) (Both were male) patients.

GROSS CLASSIFICATION(6)



8% 1% 85% 1% 4% 1%[7]

Waterston Classification[8]

Group	Survival %	Waterston Classification
A	100	Birth weight >2500gm, with no chest infection
B	85	BW 1800-2500gm, with moderate chest infection
C	65	BW <1800gm, with major associated anomalies

Waterston's risk groups - type 'A' – 139(52%), 'type B' – 71(26%), 'type C' – 59(22%).

Associated Anomalies[9] were noted in 53 patients (19.7%). Gastrointestinal – 17(6.3%); Anorectal malformation – 12; Genitourinary - 2(0.74%); Cardiovascular - 30(11.15%); Skeletal - 2(1.48%), xipho-omphalopagus conjoined twin - 1(0.37%).

Two hundred and twenty three patients could be given operative management out of 269. Surgical procedures done were thoracotomy, ligation and division of fistula and primary oesophageal anastomosis in 202(90.5%), oesophagostomy and gastrostomy in 20(8.9%), colostomy in 12(5.3%), duodenoduodenostomy in 5 and separation of conjoined twin in 1(0.44%).

TREATMENT

After initial resuscitation for a period of 24 hrs in the form of repeated proximal pouch clearance, oxygenation by mask, correction of fluid deficit and initiation of broad-spectrum antibiotics and necessary emergency radiological workup, neonates were subjected to surgical procedures.

SURGICAL PROCEDURE

For tracheo-oesophageal fistula with atresia in 202 patients (90.5%) was in the form of right anterio-lateral thoracotomy through 4th intercostal space, extrapleural approach, division of azygos vein, ligation and division of tracheo-oesophageal fistula (Fistula closed by three interrupted proline sutures), adequate mobilization of proximal blind pouch and primary oesophageal anastomosis.[10] using interrupted 5-0 proline sutures over a trans-anastomotic no. 5 feeding tube.[11] In 9 patients because of long gap.[12] oesophagostomy and gastrostomy was done disowning the distal oesophagus after division of fistula. Left cervical oesophagostomy and feeding gastrostomy (using Fr 10G Foley's catheter) without thoracotomy was done for pure oesophageal atresia without tracheo-oesophageal fistula in 11 patients. [13]

Post-Operative Management

Includes oxygenation by facemask or 'T' piece, gentle throat clearance, saline nebulization and gentle chest physiotherapy. Expressed breast milk feeding was initiated through transanastomotic nasogastric tube from 2nd day onwards and gradually increased. Oral feeds were commenced on 6th postoperative day after ensuring the integrity of the anastomosis. Later nasogastric tube and intercostal tube drain were removed. Parents were instructed to nurse the baby in prone, head-end elevated position to take care of associated tracheomalacia and gastro-oesophageal reflux.

Oesophagostomy and gastrostomy (total-20) was done for cases of oesophageal atresia.[11] and in tracheo-oesophageal fistula with long gap.[9] where primary anastomosis was not feasible. Primary gastric pull up.[13] was done in one patient. Xipho-omphalopagus conjoined twin with oesophageal atresia and tracheo-oesophageal fistula in one baby was operated for the anomaly immediately after separation of the twin. Colostomy was done in 12 patients for associated high anorectal malformations and duodenoduodenostomy for 5 patients with associated duodenal atresia.

RESULTS

Two hundred and twenty three patients were operated. Out of 223, 136(61%) patients survived, males 58(42.6%), female 78(57.4%) and 87(39%) patients died {(Male 56(64.36%), Female 31(35.63%)}.

TYPE	WT	Total	M	F	Operated	M	F	Un-operated	M	F	Survived	M	F	% Survival
A	>2.5KG	32	18	14	29	15	14	3	2	1	19	7	12	65%
B	1800g-2500g	145	70	75	140	68	72	5	3	2	117	51	66	83%
C	<1800g	92	55	37	54	31	23	38	24	14	00	0	0	0

COMPLICATIONS

Most of the deaths occurred on 2nd post-operative day due to viscid tracheobronchial secretions blocking airway and subsequent were due to septicemia, cyanotic heart disease, gastro-oesophageal reflux and aspiration.[14] Minor anastomotic leaks 5(4.2%) (Resolved spontaneously).[15], anastomotic stricture (16.17) 11(8.5%) (managed by Savary-Gilliard dilators).[18]

CONCLUSION

Out of 223 operated patients 136(61%) survived. This could be achieved in the absence of specialized nursing and intensive care setup and ventilator support.[19] Optimum oxygenation with nebulization, effective physiotherapy and throat clearance.[20] (Especially during the initial 48hrs) and early initiation of expressed breast milk feeds could bring about this positive outcome.

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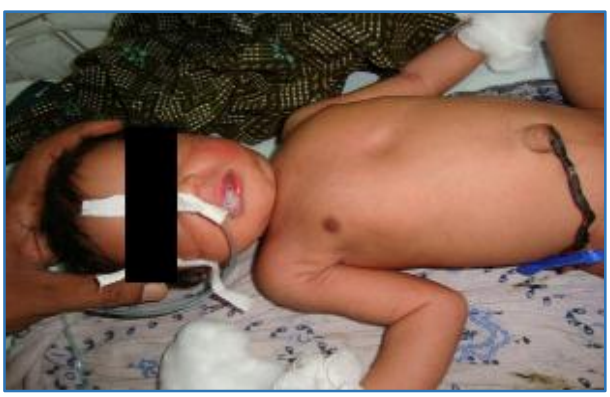
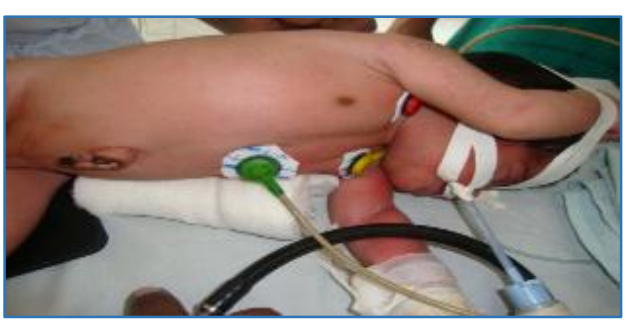
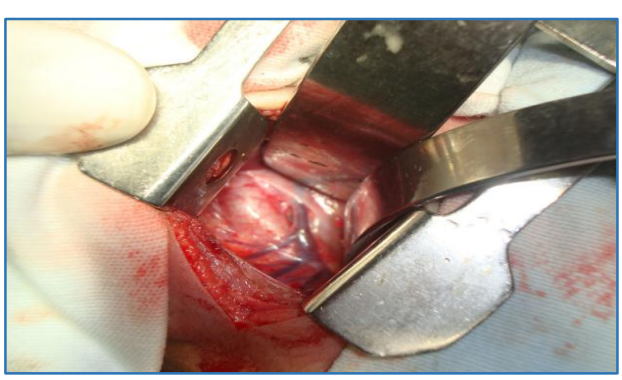


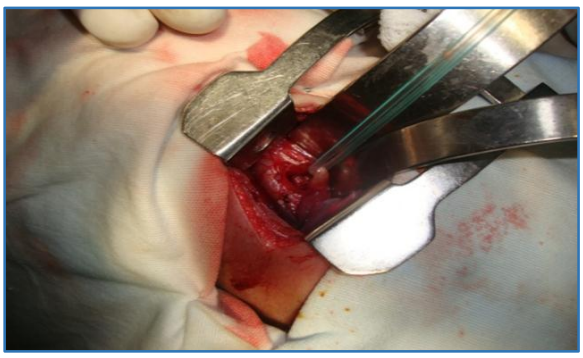
Drooling of Saliva



Operative Position

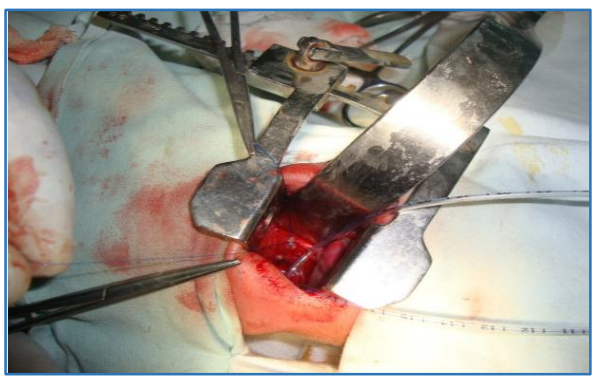


Right Thoracotomy with Azygos Vein



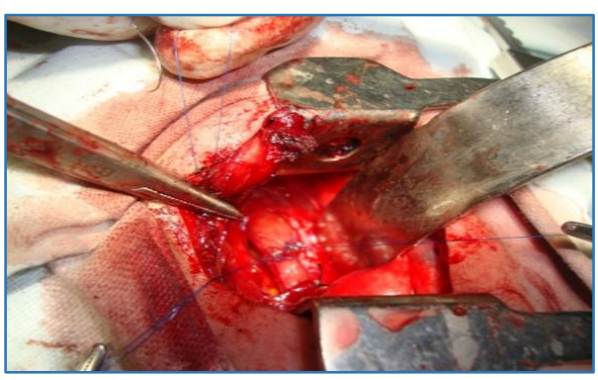
Lower Oesophagus Tef

Nursing in Prone Position



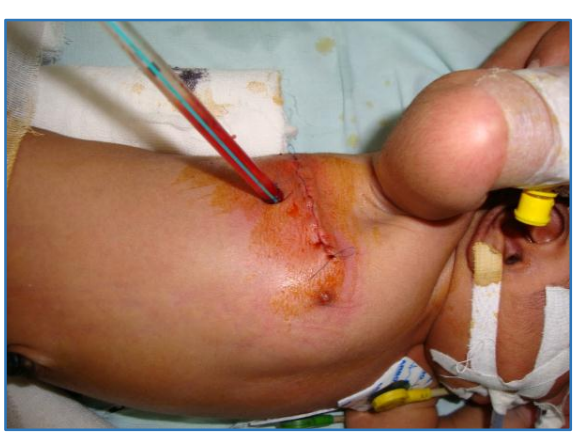
Tef Sutured

Long Gap OA with Tef

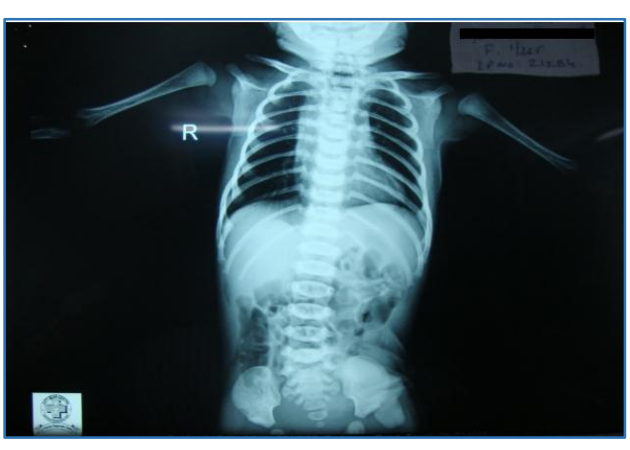


Primary Anastomosis Completed

Oesophagostomy and Gastrostomy



Thoracotomy Closed



Coiling of Feeding Tube