International Journal of Innovative Research and Review ISSN: 2347 – 4424 (Online)
An Online International Journal Available at http://www.cibtech.org/jirr.htm
2015 Vol. 3 (2) April-June, pp.62-70/Nagre
Research Article

OUR STUDY OF 25 CASES OF TRACHEOSOPHAGEAL FISTULA REPAIR

***Suraj Wasudeo Nagre**
Department of C.V.T.S., Grant Medical College, Mumbai
**Author for Correspondence*

ABSTRACT
The objective of this study was to find out the common type of tracheoesophageal fistula, associated anomalies, their impact on morbidity and mortality of patients, and difficulties during the operative procedure and in the postoperative period in our set-up. This is a case study of a total of 25 TOF repair cases, operated in GGH and M.P.Shah Medical College, Jamnagar during my MS general surgery senior residency from Jan. 2006 to Oct. 2007 including 15 males and 10 females and follow-up to Oct. 2007. The conclusion comes to be Common type: Oesophageal atresia with distal TOF, Commonly associated anomaly: Cardiac (patent ductusarteriosus) , Morbidity and mortality both increased if oesphageal atresia with TOF was associated with another abnormality.

Keywords: *Tracheoesophageal Fistula, Patent Ductusarteriosus*

INTRODUCTION
Oesophageal atresia and tracheooesophageal fistula (TOF) are common neonatal conditions that remain a significant challenge to paediatric surgery. This pathology should be considered in the differential diagnosis of a neonate who develops feeding difficulties and respiratory distress in the first few days of life. Incidence is 1 in 4500 live births.

Oesophageal atresia is often associated with other congenital anomalies. Prompt recognition, appropriate clinical management to prevent aspiration and swift referral to an appropriate tertiary care centre is very important.

Despite the improvement in survival, the morbidity associated with surgical repair remains high. In this study, we review our two-year experience with patients with EA/TOF. The results may be beneficial for further clinical management of these patients in future.

Aims of Study

This is a case study of a total of 25 TOF repair cases, operated in GGH and M.P. Shah Medical College, Jamnagar during my MS general surgery senior residency from Jan. 2006 to Oct. 2007 including 15 males and 10 females and follow-up to Oct. 2007 with the following aims: To find out

-The common type of oesophageal atresia,

-Abnormalities commonly associated with oesophageal atresia.

-The impact of an associated abnormality on morbidity and mortality of patients with oesophageal atresia.
-Technical difficulties during the operative procedure and hurdles in the immediate and late postoperative period in our setup.

MATERIALS AND METHODS
Method
This comparative study was conducted in 25 patients admitted during the period from January 2006 to October 2007 in the surgical department of GGH at Jamnagar, between operated TOF cases with and without associated anomalies and on difficulties in our setup while managing.

Research Article

Preoperative Investigations

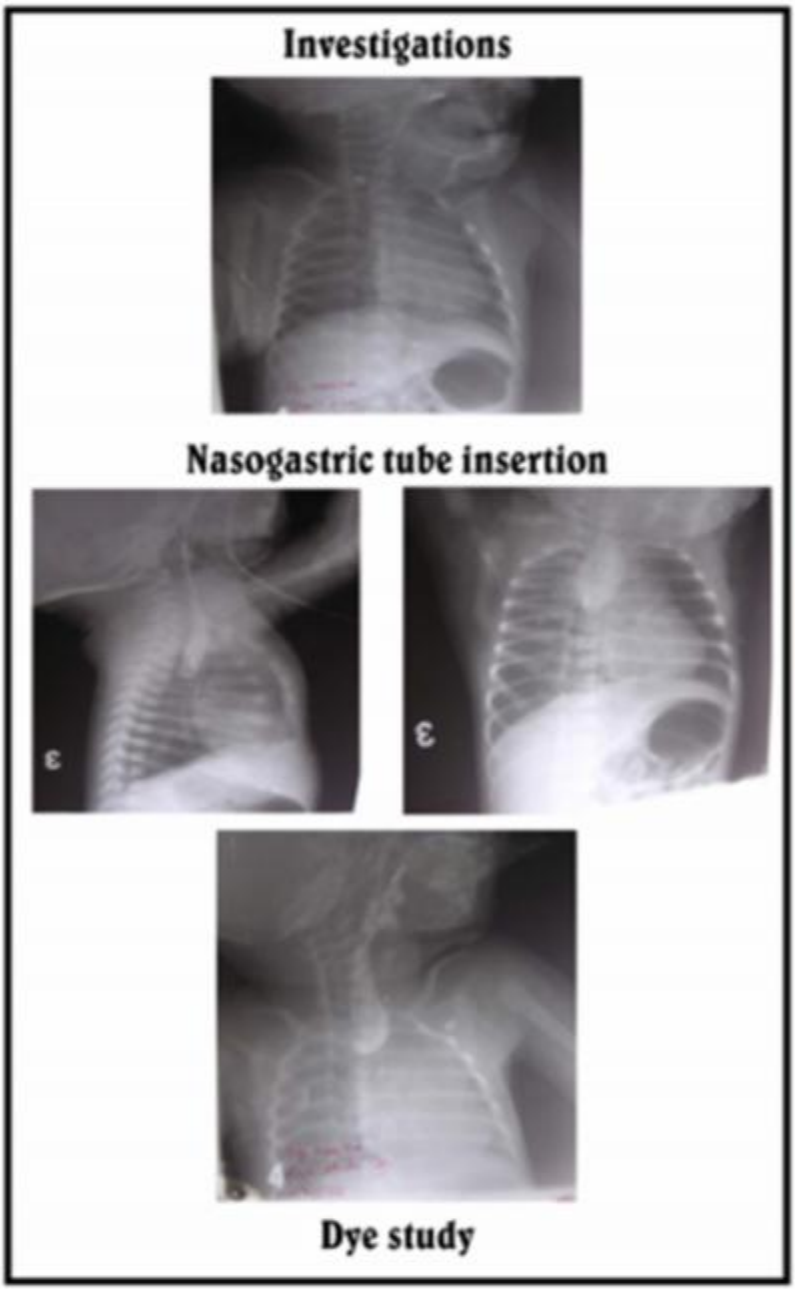

Figure 1: Chest x-ray and Dye study

Echocardiography

Blood grouping and keeping compatible blood ready

After giving antibiotics 10 minutes before surgery, a short right posteriolateral incision (right side thoracotomy incision) was made below the level of the tip of the scapula in the fourth intercostal space.

After inserting an infant rib spreader, extrapleural dissection was carried out using a moist cotton-tipped applicator, till the azygous vein was fully mobilised.

The azygous vein which is often a marker for the site of the TOF as it enters the trachea was divided between two 4-0 suture ties. The TOF was divided by fine tenotomy scissors [FIGURE 2] and the tracheal side was oversewn with running or interrupted 5-0 sutures.

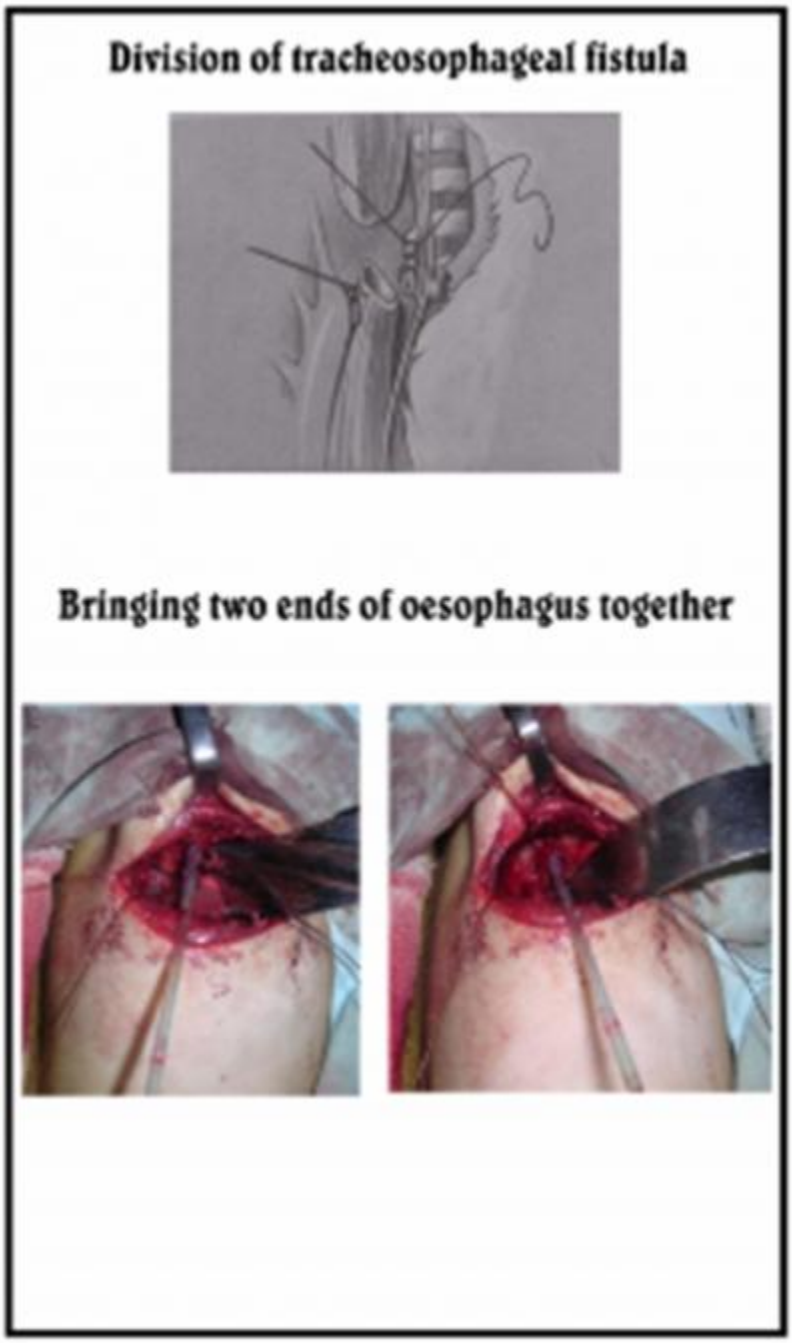

Figure 2: Tracheospphageal fistula division

The upper atretic oesophageal pouch was identified with the aid of the anaesthetist, who pushed down on the end of the pouch with a previously placed oral tube.

A traction suture was placed at the 3 & 9 o'clock position on the open distal oesophagus and by placing gentle traction in opposite directions, full-thickness suture bites were placed in the middle portion of the posterior wall of both ends of the oesophagus with knots tied on the outside.

A nasogastric tube No. 8 to 10 was passed from above by the anaesthetist through the anastomosis, into the stomach. The anterior wall of the oesophageal anastomosis [Figure 3] was completed with full-thickness, interrupted, 4-0 PDS suture, completing a single layer and the anastomosis suture line was

checked for a potential leak by instituting 5 to 10ml of saline. A 12-French chest tube was placed entering in the posterior mediastinal space below the incision. A 3-0 polypropylene suture affixed the tube to the skin at the exit site. The tube was then attached to an underwater sealed closed drainage system.

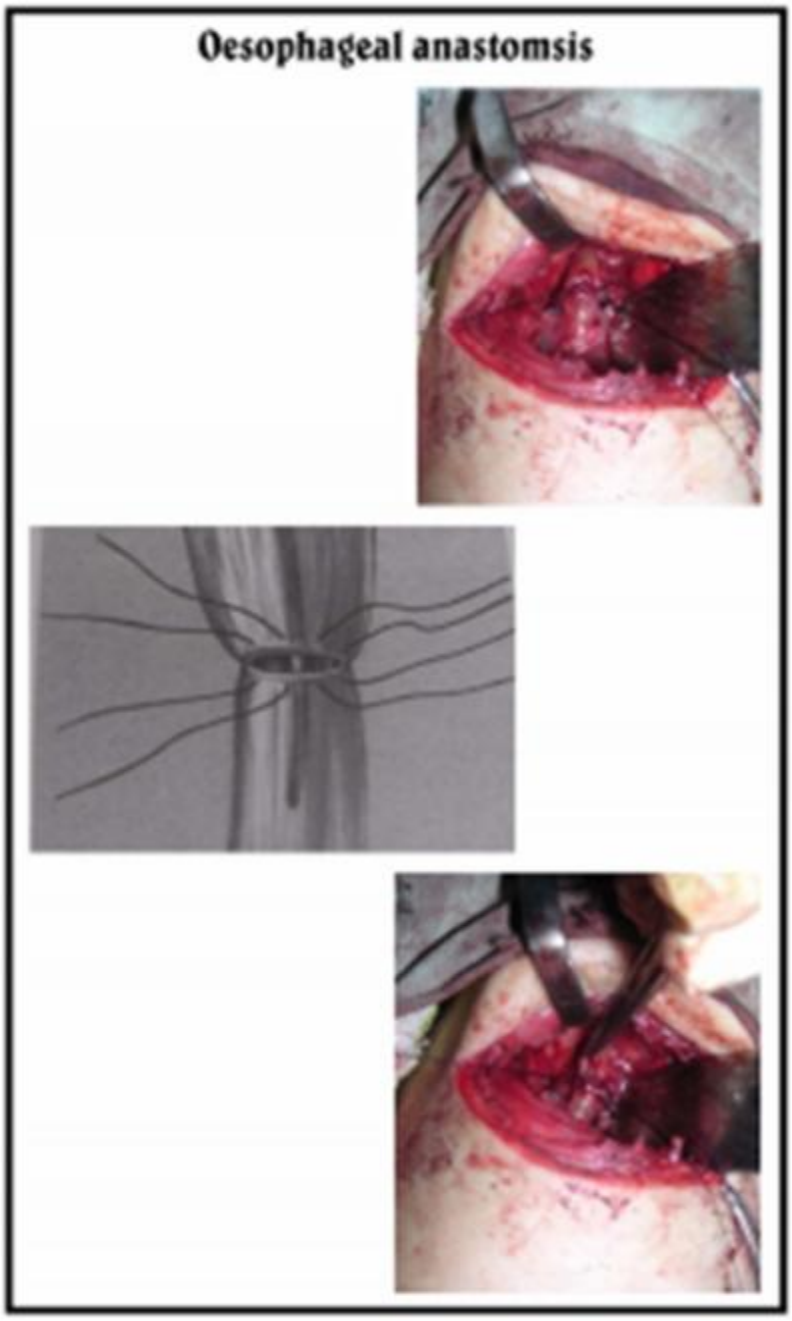

Figure 3: Oesophageal anastomsis

Closure

The lung was gently expanded and the chest wound was closed using a 2-0 vicrylpericostal suture to oppose the ribs and a running 3-0 vicryl suture to close the divided latissimusdorsi muscle.

The anesthesiologist can help at the closure by pushing down on the infant's right arm and shoulder, taking tension off from the wound. The subcutaneous fascia was approximated with a continuous running

4-0 vicryl suture and the skin edges were closed with 4.0 black silk verticaemattres suture and a dry occlusive dressing was applied [Figure 4].

Figure 4: After completion of tof repair

Postoprative Care
Neonatal intensive care
Higher antibiotics
Drain care and removal between 4th to 6th day
Ryle's tube aspiration followed by Ryle's tube feeding when bowel sounds came

Removal of Ryle's tube followed by dye study between 8th and 12th day [Figure 5].

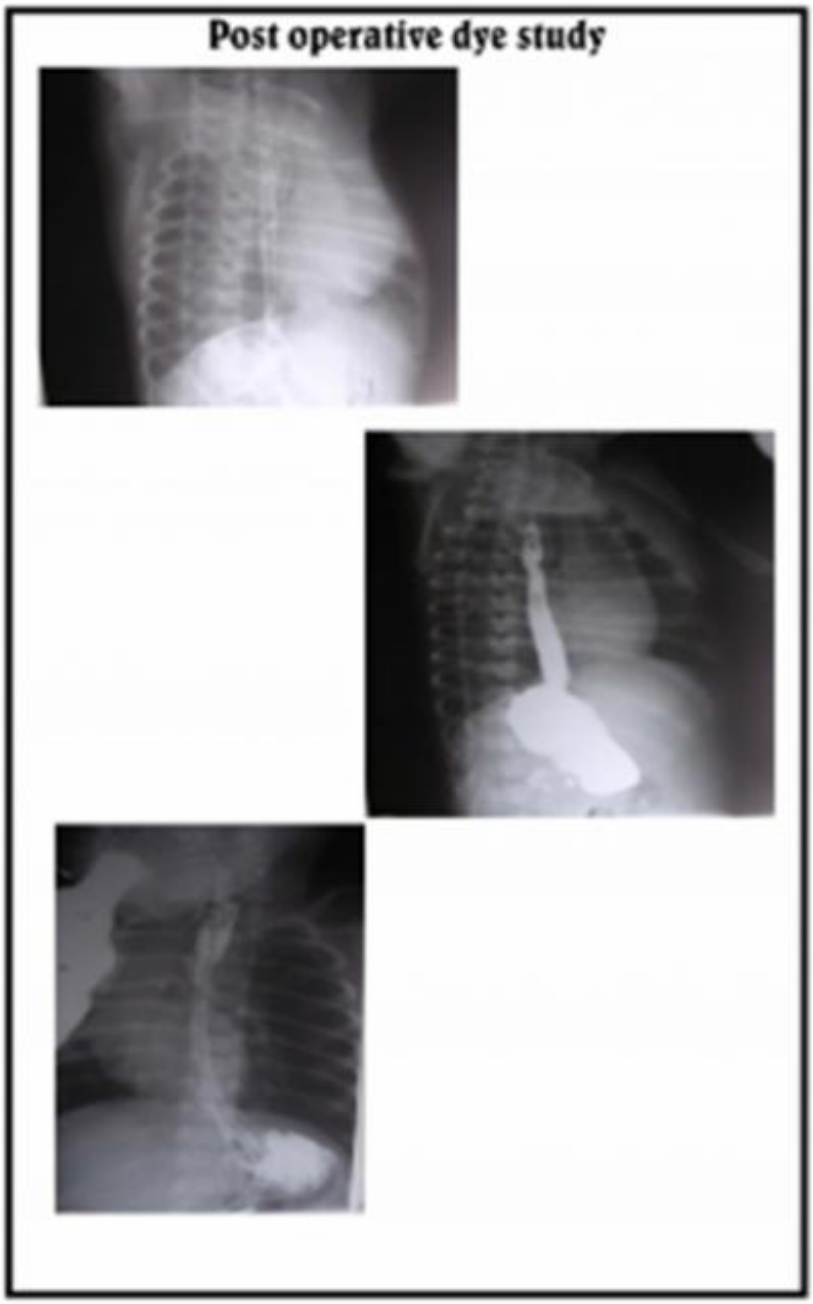

Figure 5: Postoperative dye study

Starting oral feeding after normal dye study between 8th and 12th day
Stitch removal in between 10th and 14th day.
Most patients require injectable perinorm and buscopan as most have associated gastroesophageal reflux.

RESULTS AND DISCUSSION

Results

This is a case study of a total of 25 cases of oesophageal atresia with and without TOF repair in GGH and M.P. Shah Medical College, Jamnagar, done from Jan. 2006 to Oct. 2007.

Table 1: Postoperative care of 9 surviving patients

Case	Sex	Type	Associated anomalies	Duration of operation in hours	ICD removal [day]	RT feeding [day]	Dye study and RT removal [day]	Oral feeding [day]	Stitch removal Alt/All [day]
1	F	C	-	1.30	6	2	10	10	11/13
2	M	C	-	1.40	5	2	8	8	11/13
3	M	C	-	1.30	4	2	8	8	11/13
4	F	C	-	1.40	5	2	10	10	11/13
5	M	C	-	1.30	4	3	9	9	9/11
6	F	C	-	1.30	4	3	8	8	9/11
7	M	C	-	1.40	5	3	10	10	9/11
8	M	C	-	1.30	4	2	8	8	9/11
9	M	C	-	1.30	5	2	8	8	9/11

Table 2: Patient Demographics and associated anomalies

Case	Sex	G.A.[wks]	BBW [gm]	Type	Duration of operation[hr/min]	Associated anomalies	Survival	Postoperative day of death
1	F	32	1800	C	3	-	No	12
2	F	38	2800	C	2	-	Yes	-
3	M	34	2000	C	2	Imperforate anus	No	12
4	F	34	1700	C	2.30	Dextrocardia	No	2
5	M	39	2600	C	1.30	-	Yes	-
6	M	38	2700	C	1.30	-	Yes	-
7	M	35	1800	A	2.30	Vactral syndrome	No	2
8	F	38	1800	C	1.30	-	Yes	-
9	M	34	2000	A	2.40	Double aortic arch	No	3
10	M	36	2400	C	2	Cataract	No	7
11	M	38	3000	C	1.30	-	Yes	-
12	M	32	1800	C	2.20	ASD,VSD, PDA	No	2
13	F	39	2600	C	1.40	-	Yes	-
14	F	34	2200	C	1.30	-	No	12
15	M	35	1600	C	2.10	Dextrocardia	No	2
16	F	34	2000	C	2	Bronchial stenosis	No	1
17	M	35	2500	C	1.50	PDA	No	4
18	F	34	2400	C	2	TOF	No	3
19	F	35	2300	A	1.30	-	No	12
20	M	38	2600	C	1.50	-	Yes	-
21	M	38	3200	C	1.30	-	Yes	-
22	F	35	2400	C	2.10	VSD,PDA	No	2
23	M	40	2900	C	1.30	-	Yes	-
24	M	34	2800	A	2.10	VSD,ASD	No	4
25	M	34	3000	C	2.10	PDA	No	4

Table 3: Survival and average duration of operation

	Cases	Survival	Percentage	Average duration of operation
Associated anomaly	13	0	0	2 hours 10 minutes
No associated anomaly	12	09	75 %	1 hr to 40 minutes

The most common type was found to be type C with around 80% of cases followed by type A with 16% and type E with around 4%. The most frequent associated anomalies found were cardiac ones, among which patent ductusarteriosus was most common.
Associated anomalies caused intraoperative difficulty as well required special postoperative care. Duration of surgery also increased in cases of TOF with associated anomaly. But survival was 0%.
The most common postoperative complications that occurred in our setup were recurrent pneumonia and, in a small percentage of cases, gastroesophageal reflux and anastomotic stricture.

Comments

The three priorities in treatment are:
To save life.
To achieve alimentary continuity.
To preserve the oesophagus.
But management of TOF is affected by:
Prematurity
Established pneumonia
Associated anomalies as shown in Table 3.
Such cases should be managed by 100% oxygen despite the risk of retinopathy of prematurity.

Conclusion

From our study of 25 cases of tracheoesophageal fistula repair, carried out at the Department of Surgery, M.P. Shah Medical College, Jamnagar, we conclude:
Common type: Oesophageal atresia with distal TOF.
Commonly associated anomaly: Cardiac (patent ductusarteriosus)
Morbidity and mortality both increased if oesphageal atresia with TOF was associated with another abnormality.
The survival rate of operated patients can be improved by
Early diagnosis and timely reference for surgery by a pediatrician
Good peroperativeanesthetic care
Perfect knowledge of anatomy and meticulous, skilled dissection within the adequate minimum time by the surgeon
Better postoperative neonatal intensive care.

REFERENCES

1. **Inderbir Singh** Human Embryology,
2. Surgical Anatomy, Lee McGregor's synopsis, page No.1
3. Diagnostic Radiology, Granger and Allison's, page No. 1201
4. American Academy and Federation of Pediatricians and Surgeons.Feb. 15th, 1999
5. Bailey and Love's Short Practice of Surgery, 24th edition, page No. 994
6. Concise Textbook of Surgery.Somen Das, second edition, page No. 790
7. Mastery of Surgery, fifth edition, vol. II, page No. 795-808
8. Rob and Smith, Operative Surgery – Paediatric
9. Farquharson's Textbook of Operative General Surgery, 9th edition, page No. 312.

10. History of oesophageal atresia. http:www.tefvates.org.