THAMES VALLEY & WESSEX NEONATAL OPERATIONAL DELIVERY NETWORK

THAMES VALLEY & WESSEX GUIDELINE FOR CARE OF INFANT WITH OESOPHAGEAL ATRESIA AND TRACHEO-OESOPHAGEAL FISTULA	
Approved by	Thames Valley & Wessex Neonatal ODN Governance Group June 2023
Date of publication	June 2023
Last reviewed	New
Review date (Max 3 years)	June 2026
Lead authors	Hannah Wells – Neonatal Surgical Nurse Specialist (Southampton) Contact 02381208564 - Office 0734109278 - Mobile
Distribution	Thames Valley and Wessex Neonatal Clinical Forums Thames Valley and Wessex Neonatal Network website Thames Valley and Wessex Neonatal Network e-bulletin
Related documents / References	References 1. BMJ Best Practice Oesophageal Atresia and Tracheo-oesophageal Fistula (2021) BMJ Publishing Group Ltd. 2. The TOF Book (2016) Editors V Martin & D Crabbe. 978-0-9536265-1-9 3. Replogle R (1963) Esophageal Atresia: plastic sump catheter for drainage of the proximal pouch. Surgery 54: 296-297. 4. British Association of Perinatal Medicine (August 2011) Categories of Care 2011.p.3-4. Available at: https://hubble-live-assets.s3.amazonaws.com/bapm/file_asset/file/38/CatsofcarereportAug11.pdf 5. The TOF Website TOFS | OA/TOF Support > Charity offering lifelong support for those born unable to swallow 6. Durkin, N & De Coppi, P. (2022) Management of neonates with oesophageal atresia and tracheoesophageal fistula, Early Human Development, 174. 7. Spitz, L. (2007) Oesophageal Atresia, Orphanet Journal of Rare Diseases. **2**:24 8. Dingermann, C., et al (2020) ERNICA Consensus Conference on the Management of Patients with Long-Gap Esophageal Atresia: Perioperative, surgical, and Long-term management, European Journal of Pediatric Surgery, 31(3) pp214-225 9. McGowan, N.A., & Grosel, J. (2022) An overview of esophageal atresia and tracheoesophgeal fistula, JAAPA, 35(6) pp34-37. 10. Lemoine, C., at al (2016) Feasibility and Safety of Sham Feeidng in Long Gap Esophageal Atresia. Available at: 18.pdf (we-are-eat.org) 11. Tucker, A., et al (2022) Pilot Study of Sham Feeding in Postoperative Neonates, Am J Perinatol, 39, pp726-731.

	12. St Johns Ambulance (2023) 'How to do cpr on a baby', Available at: https://www.sja.org.uk/get-advice/first-aid-advice/paediatric-first-aid/how-to-do-cpr-on-a-baby/ 13. Faulkner, J. Slater, G. (2021) Towards a holistic model for the treatment of those born with oesophageal atresia (OA) from diagnosis to transition to adult care, A TOFS Position Paper.
Implications of race, equality & other diversity duties for this document	This guideline must be implemented fairly and without prejudice whether on the grounds of race, gender, sexual orientation or religion.

Version Control:

Version	Date	Details	Author(s)	Comments
V1	June 2023	New guideline	Hannah Wells	Ratified June 2023
Review Date:	**June 2026**			

Thames Valley & Wessex Guideline for care of infant with oesophageal atresia and tracheo-oesophageal fistula

Contents

1.0 Introduction 4
2.0 Aim of Guideline 4
2.0 Scope of Guidelines 4
3.0 Definitions 5
4.0 Guideline Framework 5
Details of condition 5
4.1 Presentation 6
4.2 Initial management 6
4.3 Pre-Operative Management 6
4.4 Pre-Operative Respiratory Management 7
5. Replogle tube 7
5.1.1 Dependency 8
5.1.2 Preparation to pass a replogle tube 8
5.1.3 Algorithm for passing replogle tube 9
5.1.4 Action if no flash back 11
5.1.5 On-going Care 12
5.1.6 If the Replogle tube is not draining: 12
5.1.7 If the Replogle tube is still not draining: 12
5.1.8 Replogle care during SONeT Transfer 12
6. The Surgery 13
7. Post-Operative Care 13
8. Trans-Anastomotic Tube Care 14
9. Long gap OA 15
9.1 SHAM feeding 15
10. Screening for VACTERL 16
11. On-going management 16
12. Family centred care 17
12.1 Multi-Disciplinary Team (MDT) list 17
12.1.9 Speech and Language Therapy (SALT) 17
12.1.10 Dietician 17
12.2 BLS & choking 17
12.3 Outpatient Appointments (OPA) 18
12.4 Discharge Checklist 18
13. Appendices 19
13.1 Appendix 1 – VACTERL Screening Assessment 19
13.2 Appendix 2 - Replogle flush documentation 20

1.0 Introduction

Oesophageal Atresia (OA) is a congenital anomaly in which the oesophagus does not form completely, and the mouth is not connected to the stomach, the oesophagus ends in a blind upper pouch. This can happen as an isolated anomaly or, more commonly, in association with a Tracheo-Oesophageal Fistula (TOF).

Infants with OA are unable to swallow their saliva and are at risk of aspiration into the trachea. Aspiration can cause complications such as apnoea, bradycardia, cyanosis, and pneumonia. They require constant drainage of the pouch to prevent this. This is achieved by placement of a Replogle tube.

Diagnosis of oesophageal atresia is confirmed by passage of a naso-gastric tube (NGT) or oro-gastric tube (OGT), until resistance is met, and a chest X-ray showing the position of the gastric tube in the oesophageal pouch. There is a risk of perforation of the upper oesophageal pouch during insertion of either a conventional gastric tube or a Replogle tube.

2.0 Aim of Guideline

The purpose of this guideline is to promote consistent evidence-based practice across the network to minimise the risks to patients from complications.

2.0 Scope of Guidelines

This guideline applies to all staff caring for a baby with OA/TOF who are born in neonatal units and maternity units covered by Thames Valley & Wessex Neonatal Network. This includes the following hospitals:

Thames Valley		
TRUST	Hospital	Designation
Oxford University Hospitals NHS Foundation Trust	- John Radcliffe Hospital, Oxford	NICU
Buckinghamshire Healthcare NHS Trust	- Stoke Mandeville Hospital, Aylesbury	LNU
Frimley Health NHS Foundation Trust	- Wexham Park Hospital, Slough	LNU
Milton Keynes University Hospital NHS Foundation Trust	- Milton Keynes General Hospital	LNU
Royal Berkshire NHS Foundation Trust	- Reading	LNU

Wessex		
TRUST	Hospital	Designation
University Hospital Southampton NHS Foundation Trust	- Princess Anne Hospital	NICU
Portsmouth Hospitals University NHS Trust	- Queen Alexandra Hospital	NICU
Dorset County Hospital NHS Foundation Trust	- Dorset County Hospital, Dorchester	SCU
Hampshire Hospitals NHS Foundation Trust	- Basingstoke and North Hampshire Hospital	LNU
Hampshire Hospitals NHS Foundation Trust	- Royal Hampshire County Hospital, Winchester	LNU
Isle of Wight NHS Trust	- St Mary's Hospital	SCU
University Hospitals Dorset NHS Foundation Trust	- Poole Hospital	LNU
Salisbury NHS Foundation Trust	- Salisbury District Hospital	LNU
University Hospitals Sussex NHS Foundation Trust	- St Richard's Hospital, Chichester	SCU

3.0 Definitions

Tracheo-oesophageal fistula	TOF	A connection between the oesophagus and trachea
Oesophageal atresia	OA	Congenital anomaly whereby the oesophagus is not in continuity
Replogle Tube		Double lumen tube which permits saliva to be withdrawn from the oesophageal pouch

4.0 Guideline Framework

Details of condition

Oesophageal Atresia (OA) & Tracheo-Oesophageal Fistula (TOF) are rare congenital conditions of the oesophagus and/or trachea that affects 1 in every 2500-4500 infants born[1] (fig 1).

Fig. 1

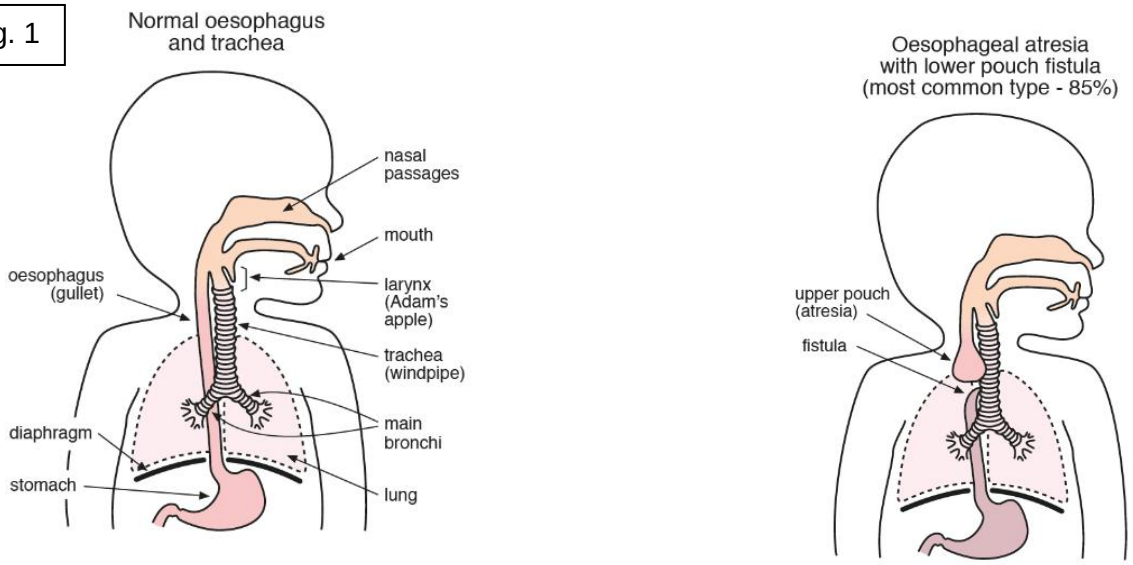
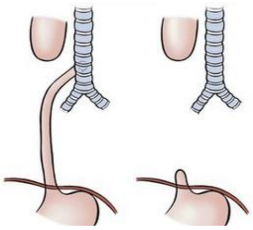


Fig. 2



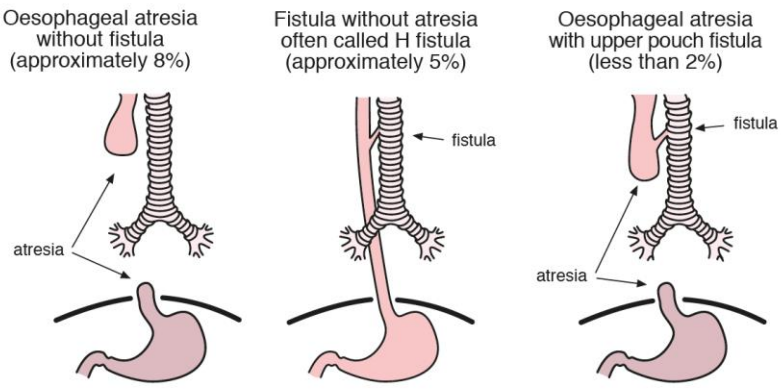
OA with distal TOF

Isolated OA

Fig1,2 & 3 - The TOF Book (2016)[2]

The oesophagus and the trachea form as a single structure. During normal development this structure divides into two, the front forming the trachea and the back forming the oesophagus. Most babies born with both OA and TOF have the distal part of the oesophagus joined to the windpipe (lower pouch fistula). Less commonly, other configurations occur (fig 3).

Fig. 3



4.1 Presentation

- Most cases are not diagnosed antenatally – only up to 37% are diagnosed before birth. The fetal ultrasound scan may raise suspicion of OA+/-TOF typically demonstrating either a small or absent stomach bubble, and the mother may have polyhydramnios[1].
- Postnatal – presents cyanotic with feeds, mucous from mouth, unable to tolerate own salvia

4.2 Initial management

- Admit to NNU
- Pass an NGT to confirm diagnosis, determining if the oesophagus is complete by how far the NGT goes (appropriate size NGT for baby)
- Obtain a chest X-RAY and an abdominal X-RAY
- Oral suction
- Pass replogle tube
- IVI & maintenance fluids
- Blood gas
- Full monitoring (Heart rate (HR), respiratory rate (RR), oxygen saturations (O2), temperature, blood pressure (BP)

- **Urgent SONeT Referral if not born in Southampton or Oxford**

4.3 Pre-Operative Management

- Replogle tube in situ with 15 minutely flushes on low-pressure continuous suction
- Nurse prone or head elevated 30-40 degrees
- Surgical review
- Chest and abdominal X-RAY
- ECHO
- Mouthcare

Aim for surgical exploration and repair if able typically within 24 hours following admission.

4.4 Pre-Operative Respiratory Management

Aim to keep infant self-ventilating where able. It is imperative to avoid ventilating/use of CPAP or high flow if possible. Inspired gases will take the path of least resistance, through the fistula triggering the stomach to fill with gas, causing abdominal distension and potentially a perforation. In addition, the infant will not be ventilating adequately, this scenario very quickly becomes an emergency where the TOF needs to be ligated as a matter of urgency to save the infants life. If respiratory support is essential an urgent consultation with the consultant paediatric surgeon is required to make emergency plans for this infant.

5. Replogle tube

A Replogle tube is a double lumen, radio-opaque tube allowing gentle continuous suction and irrigation of the blind pouch of the upper oesophagus thus always keeping it clear of secretions[3].
Regular irrigation is essential to prevent the tube becoming blocked with secretions. In most babies this will only be necessary until primary repair of the oesophagus in the first 24 to 48 hours, but occasionally when the gap is too large, a delayed primary anastomosis will be undertaken meaning the tube may be necessary for much longer.

Fig. 4

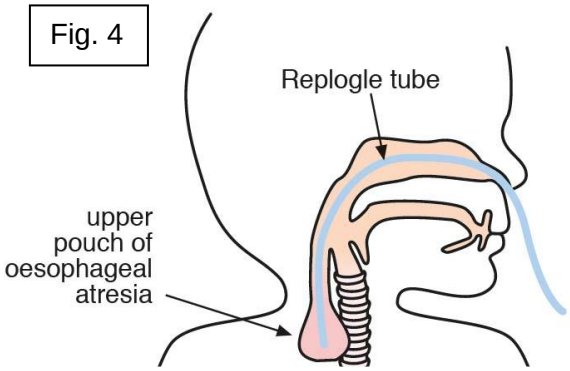


Fig 4 - The TOF Book (2016) [2]

A Replogle tube should ideally be passed by, or under the supervision of, a nurse or doctor who has demonstrated the necessary competence. If such a person does not exist, then the tube should be placed by someone competent in passing a naso-gastric tube and who understands the associated potential risks.

Replogle tubes can be passed orally or nasally. Nasal tubes are easier to secure and maintain in the correct position. However, if infant < 2.5 kg they should be passed orally.

The length the Replogle Tube is inserted should be documented in the electronic record/observation chart and if it needs replacing it should be to this same length. The Replogle tube may need to be passed further as the baby grows.

Appropriate PPE should be worn, and hands decontaminated as per policy. Before passing the Replogle tube, consider if suction to the nasal passages and the oro-pharynx is clinically necessary.
It is expected to see the flush and saliva returning up the main lumen of the tube after the flush has been instilled. This tells you that the tube is flushing well and is clear of secretions. If this does not happen it may mean that the tube has blocked.

5.1.1 Dependency

A baby with a Replogle tube in situ requires constant observation and vigilance and is classified as intensive care[4]. On admission the baby should be fully assessed, monitored and any necessary resuscitative measures taken.

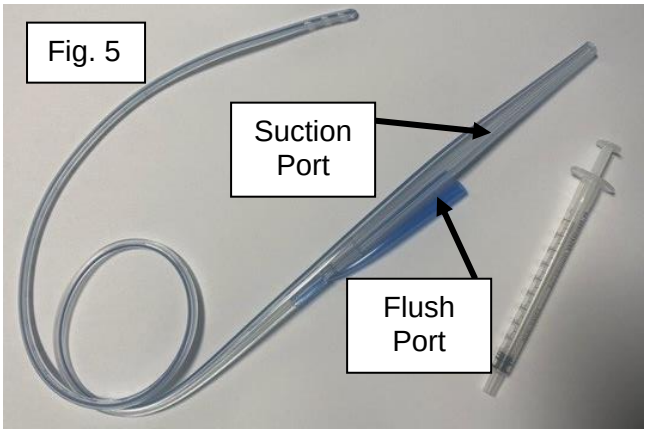
Nurses should demonstrate and maintain the necessary competence to care for an infant with a Replogle tube. Complications such as iatrogenic perforation of the pouch, aspiration pneumonia and damage to the oesophageal mucosa (through high level suction pressures) are all possible.

The optimal environment for an infant with a Replogle Tube to be cared for are the Neonatal Intensive Care Unit and Paediatric Intensive Care Unit. In extraordinary circumstances and if there is appropriate staffing levels and staff competence other locations may be considered.

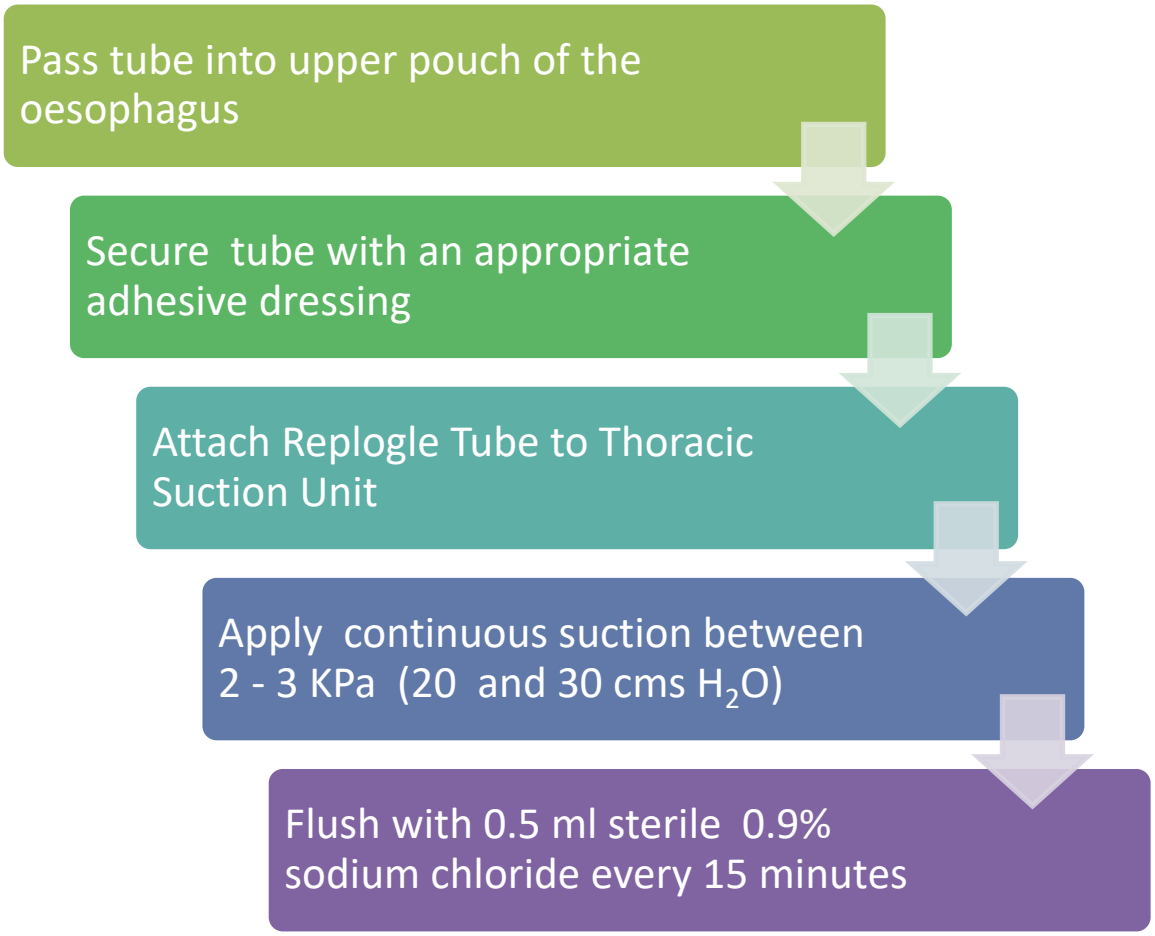
5.1.2 Preparation to pass a replogle tube

The following equipment should be assembled

- Replogle tube (Size 10 Fr gauge) (figure 5)
- Suction tubing
- Low pressure thoracic suction unit (green)
- 1 ml luer syringe (figure 5)
- 0.9 % sodium chloride (Miniversol).
- Duoderm® & appropriate adhesive tape



5.1.3 Algorithm for passing replogle tube



The Replogle tube should be changed every seven days, the insertion date will be documented on electronic record/infants' notes. It may need to be changed more frequently if the tube becomes blocked. The replogle tube should be reinserted to the measurement that was documented previously. Nostrils should be alternated wherever possible. Figure 6

Figure 6 – the picture demonstrates the circulation of fluid via the replogle tube keeping the upper pouch clear. The tube requires flushing to maintain its patency.

Fig. 6

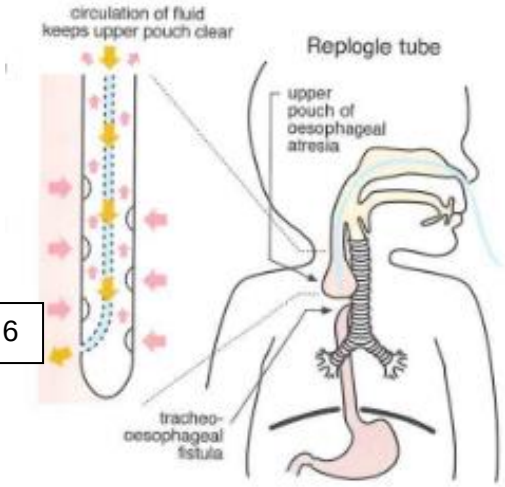


Fig 6 - The TOF Book (2016) [2]

Inserting the Replogle Tube	**Rationale**
Pass Replogle tube until resistance is felt against the blind ending pouch of the upper oesophagus	Approximately 9-11 cm in term infant
Pull the Replogle tube back very slightly	To prevent adherence to the oesophageal wall
Connect larger lumen of Replogle tube to the low flow suction unit using the suction tubing.	To allow constant suction of the upper pouch See Fig. 5
Set the suction pressure between 2 - 3 KPa (20 and 30 cm H_2O) aiming for the lowest pressure to achieve free flow of saliva	Saliva should be observed progressing along the Replogle tube and into the suction tubing
Secure the tube firmly once the position is satisfactory using appropriate adhesive dressing	To maintain secure position of tube
Instil 0.5ml 0.9 % sodium chloride into the flushing lumen of the Replogle tube every 15 minutes	The flush should be observed moving down the main lumen of the tube during installation
DO NOT leave the syringe attached to the flushing port	An open port is required for the suction to function
Document the procedure in the infant's medical notes including the length the tube was passed to.	For future reference
Change the suction tubing and liner every 24 hours	Document date/time
Assess the skin around the dressing each shift and document appropriately.	If there are concerns about skin integrity the dressing should be removed. The choice of dressing and Replogle tube location may need to be reviewed

5.1.4 Action if no flash back

Check suction is working & at correct pressure

Flush with x1 further 0.5ml NaCl

Instil 0.5ml air and repeat if necessary and effective

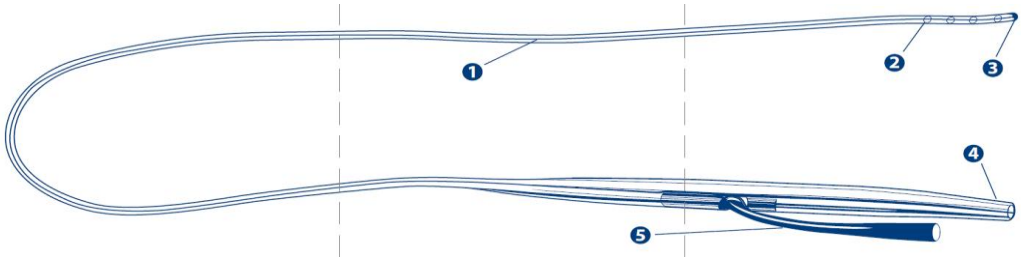
Increase thoracic suction to 30-40cms H_2O

If not successful connect to low vacuum suction 40-60cms H_2O briefly

****Once replogle tube is cleared flush once more and then reset bedside timer for 15 minutes to flush as per protocol****
OR
****If not resolved remove replogle tube. Flush the tube to assess patency of tube and replace as per insertion guide****

Replogle tube

1. Radiopaque stripe
2. Suction eyelets
3. Proximal end
4. Suction lumen
5. Vent lumen (blue)



5.1.5 On-going Care

If the baby shows signs of deterioration, conventional nasopharyngeal suction should be given, and assistance sought. If there is any doubt about the effectiveness of a Replogle tube appropriate help must be sought immediately. Escalate any clinical concerns to the nurse in charge and the medical team.

- The baby should be positioned with their head elevated 30-40 degrees and preferentially nursed prone. They may be nursed laterally or supine but always with head up to aid drainage of the upper pouch
- 0.5 ml of 0.9% sodium chloride flush should be instilled via the Replogle tube every 15 minutes
- Each flush must be documented
- The sodium chloride ampule and syringe must be labelled with the date and time opened and must be changed at least every shift
- The pressure of the suction unit should be monitored hourly and documented
- If the pressure on the suction dial starts to increase this may be a sign that the Replogle tube is blocked, or it is adherent to the oesophageal wall

5.1.6 If the Replogle tube is not draining:

- Instil an extra 0.5 ml 0.9% sodium chloride
- **DO NOT** be tempted to keep flushing with because this may cause the oesophageal pouch to fill with fluid which may spill over into the trachea

5.1.7 If the Replogle tube is still not draining:

- Check the tube is in the correct position at the nose / lips
- Ensure the suction unit is connected properly, turned on and at the correct pressure
- Try instilling 0.5 ml of air via flushing port
- If this does not resolve the problem, try increasing the suction to between 3 - 4 KPa (30 and 40 cm H_2O)
- If this is not successful attach the Replogle tube briefly to the low flow orange suction unit between 4 - 6 KPa (40 and 60 cm H_2O)
- Once drainage occurs re-attach to the green thoracic suction unit and flush again to ensure now working effectively
- If the problem is still not resolved take out the Replogle tube and replace it

5.1.8 Replogle care during SONeT Transfer

- During transfer SONeT will provide intermittent suction applied to the replogle tube, as unable to provide continuous thoracic suction due to equipment available in ambulance
- Suction should be provided intermittently at lowest level available
- Suction should be provided as required (at least every 15 minutes)

6. The Surgery

The operation will be undertaken in theatre under a general anaesthetic.

Some surgeons chose to perform a bronchoscopy first to exclude a proximal fistula.

The operation to repair OA/TOF can be performed via thoracotomy or thoracoscopic repair. Most surgeons perform a thoracotomy which is an open repair[6].

The infant is placed on their left side for a right posterior lateral thoracotomy (fig 7).

The TOF is divided, and the trachea end of the TOF closed with sutures (fig 8).

The proximal and distal oesophagus are brought together to assess the gap between them. If the ends can be brought together then the surgeon will join the proximal and distal oesophagus with an end-to-end anastomosis to regain oesophageal continuity. If the surgeons can perform a primary anastomosis, they will pass a trans-anastomotic tube into the stomach and secure at the nostril[7].

Fig. 7

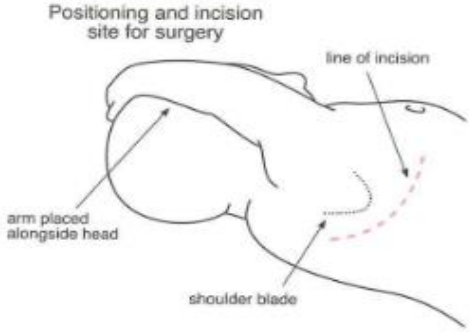


Fig. 8

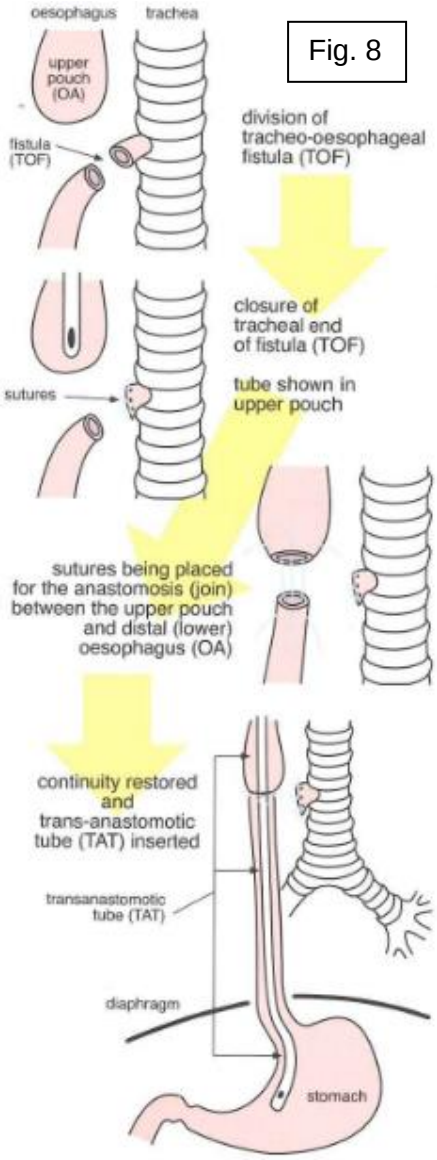


Fig 7 & 8 - The TOF Book (2016) [2]

7. Post-Operative Care

Infants will be nursed in NNU or PICU post-operatively, they may be extubated in recovery or transferred intubated with a plan to be extubated once stable. A prolonged intubation and use of paralytics will be reserved for infants where the anastomosis is under significant tension and would be advised by the surgeon on an individual basis[6].

Post operative care:

- Full Monitoring (HR, RR, O2 Saturations, BP) including toe/core temperature monitoring
- Strict fluid balance
- IV fluids
- Aspirate TAT 4 hourly and replace losses ml/ml with IV replacement fluid

- Blood gas within 1-hour post-op, then regularly as required clinically
- Pain assessment
- Appropriate pain management – analgesia and non-pharmacological approach
- Wound assessment
- IVAB – typically 48hours[8]
- Mittens on hands & maintain TAT tape securely
- Mouthcare

Feeding via the Trans-Anastomotic Tube (TAT) is typically commenced 24-48 hours post operatively, this is then transitioned to oral feeding when appropriate[9].

8. Trans-Anastomotic Tube Care

A trans-anastomotic tube (TAT) is a tube placed through an anastomosis. In OA the tube is placed in the stomach and used like a NGT. It can be aspirated, and feeds given as a bolus (fig. 9). There are strict guidelines for care of a TAT:

- **<u>DO NOT REPLACE/REINSERT IF TUBE COMES OUT</u>**
- Always nurse with mittens on
- Check TAT is fixed securely and labelled
  TAT - DO NOT REMOVE
- Re-stick as matter of urgency if not secure
- If TAT dislodged contact surgical team for advice

Fig. 9

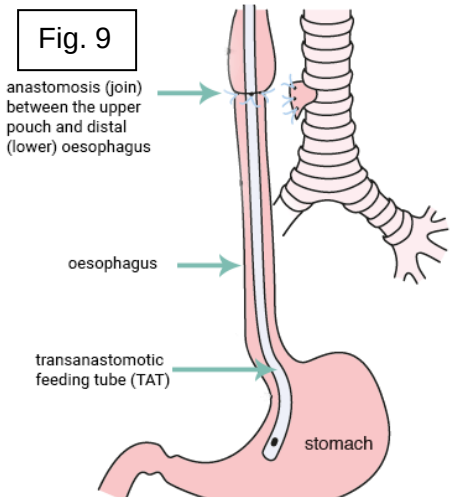


Fig 9 - The TOF Book (2016) [2]

9. Long gap OA

In around 10% of infants the gap is too big to be able to perform a primary closure in the first operation due to the 2 ends of oesophagus being too far apart[2].

There are varying options in this instance. During the first operation a gastrostomy will be inserted to allow feeding into the stomach which the surgeons consider how to proceed later in the management (fig 10). The infant will still require the replogle tube, this will continue to be flushed every 15 minutes.

Many of these infants may be able to have a delayed primary anastomosis. The surgeon will allow time between the initial operation and the second. The second operation with consist of a gap assessment to determine the space between the 2 ends of the oesophagus and decide if the ends can successfully be anastomosed.

In other infants the gap may remain too great, and they require oesophageal replacement surgery in the future. In this instance the baby may have an oesophagostomy formed (fig 11) this is a stoma in the infant's neck to allow safe drainage of saliva and negate the need for the replogle tube. Some centres opt for keeping the replogle tube longer term and avoid giving an oesophagostomy. There are many ways to manage these infants and each surgical centre will manage them slightly differently.

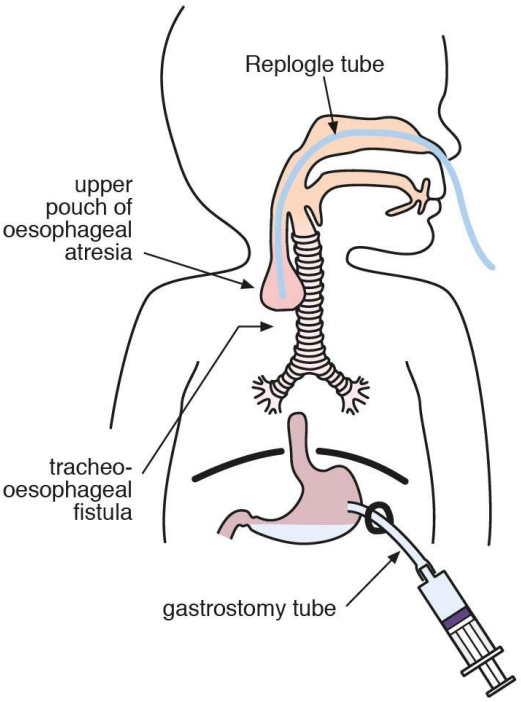


Fig. 11

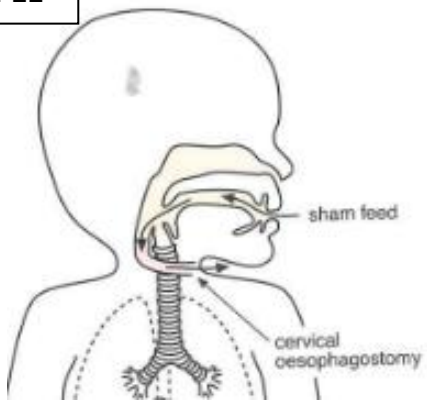


Fig10 & 11 - The TOF Book (2016) [2]

These infants are a group who due to having a replogle tube for an elongated period, may develop oral aversion. It is valuable to include speech and language therapists in the MDT in supporting these infants, to encourage and promote positive oral experience for them.

9.1 SHAM feeding

Sham feeding in infants with a long gap oesophageal atresia means giving them an oral feed whilst their feed is given via their gastrostomy. They feed via their mouth, and it is automatically suctioned from their upper pouch by the replogle tube, hence the 'sham' as they aren't swallowing due to their OA. The infant will suck the milk in their mouth and then have a full stomach associating the two. It also promotes a positive oral experience for the infant, helping to avoid oral aversion[10]. Sham feeding is known to enhance oral skills helping to reduce oral aversion, it also enhances the parent experience of caring for their infant[11].

Sham feeding is carefully planned and executed and will only be administered if the infant is awake and ready to take a feed orally and if the replogle tube is functioning well.

Sham feeding is also undertaken in babies with a long gap oesophageal atresia who have had an oesophagostomy formed (see fig 11). The operation is only done when the hope of joining the native oesophagus is abandoned due to the gap being too great. The management of long gap OA varies in the surgical centres across the UK. In Southampton when it is decided the gap is too great, they form an oesophagostomy and then perform a gastric transposition.

When a baby has an oesophagostomy, they will be offered a 'sham feed' at least once per day, the milk is offered orally via bottle or breast and can be collected in a stoma bag or drained onto a towel. This can be messy but it an important part of these infant's care.

10. Screening for VACTERL

There is a high association between having OA/TOF and other congenital anomalies, VACTERL being the most common[8]. If the infant has 3 or more of these anomalies, then they are classed as VACTERL. The infants will be screened for these anomalies, and they are managed accordingly. See Appendix 1 for screening tool.

V – Vertebral

A - Anorectal

C - Cardiac

T – Tracheo-Oesophageal Fistula

E – (O)esophageal atresia

R - Renal

L – Limb

11. On-going management

OA+/-TOF can be a challenging condition to manage, the mortality is more prevalent in very preterm and low birth weight infants.

There is still marked morbidity including but not an exhaustive list:

- anastomotic leak
- anastomotic stricture
- recurrent TOF
- chylothorax
- tracheomalacia
- gastro-oesophageal reflux disease
- laryngomalacia
- TOF cough

These infants will be closely followed up by the multi-disciplinary team (MDT) throughout infancy, childhood and into adulthood. There is a charity 'Tofs – lifelong support for those born unable to swallow' TOFS | OA/TOF Support > Charity offering lifelong support for those born unable to swallow [5].

12. Family centred care

When an infant is diagnosed with OA +/- TOF in a DGH, every effort will be made to keep the family together when the baby is transferred to the Tertiary surgical centre (Southampton or Oxford). If the mother is an inpatient

12.1 Multi-Disciplinary Team (MDT) list

12.1.9 Speech and Language Therapy (SALT)

Involvement of speech and language therapists in infants with OA +/- TOF is important especially for infants with long gap OA. They will offer support to the family about how to create positive oral experiences for the infant and they will be able to support assessments and help with sham feeding.

12.1.10 Dietician

A dietician may need to be involved from the neonatal stage for varying reasons but if specialised formula is required for growth, or the infant is fed via gastrostomy then they will support the family with this. They are an important part of the MDT when it comes to weaning and provide support and advice during this time for families.

Space to add additional MDT members as required.

Team members involved in care	Contact name/number	Contacted/Referral complete
Surgeon		
Neonatologist/Paediatrician		
Speech and Language		
Dietician		
GP		
Health visitor		

12.2 BLS & choking

All families receive basic life support and choking training prior to discharge. The Neonatal Surgical Nurse Specialist (NSNS) team will provide this prior to a family being discharged to home or their DGH. The session involves practical and theory elements and the family have opportunity for follow up sessions and time to practice with the manikin if they wish. They are given St John Ambulance leaflets and advised to visit the website. We also discuss BLS for children and adults[12].
How to do CPR on a baby (under one year old) - Baby First Aid | St John Ambulance (sja.org.uk)

12.3 Outpatient Appointments (OPA)

This may differ depending on the tertiary centre.

Southampton	Oxford
The infant will be closely followed up initially in nurse led clinic. Prior to discharge the family are given the NSNS contact details and explained when to use this and when to use emergency services and their local A&E.	Follow up with children's community team as required.
Nurse led clinic – within one week of discharge (from Tertiary centre or DGH)	
Reviewed weekly in clinic or by telephone/video link	
OPA with surgeon 2-3/12 post discharge	OPA with surgeon 3/12
OPA with relevant MDT as appropriate	OPA with relevant MDT as appropriate

12.4 Discharge Checklist

OA-Specific Training[13]	Completed
BLS Training & leaflets given	
Choke/food bolus obstruction training & leaflets given	
Weaning discussion	
Information re. potential problems: Stricture Reflux Feeding difficulties Tracheomalacia	
Contact details of who to contact and when re. OA problems, e.g., wound problems, feeding issues, or in an emergency	
Single point of contact e.g., NSNS for consistent communication at discharge	

13. Appendices

13.1 Appendix 1 – VACTERL Screening Assessment

REFERRAL DETAILS			
Lead Consultant:		Local Hospital:	

OA and TOF				
Investigation	Requested/Or Not Indicated	Date of Exam	Result: Normal / abnormal	Action
Vertebral Anomaly X-ray				
Echocardiogram				
If either above abnormal for the following investigations:				
Spinal USS				
Renal USS				

Anorectal Malformation				
Investigation	Requested/Or Not Indicated	Date of Exam	Result: Normal / abnormal	Action
Vertebral Anomaly X-ray				
Renal USS				
Spinal USS				
If either above abnormal for the following investigations:				
Echocardiogram				

List of defects often identified in VACTERL patients[1]

Vertebral • Tethered cord • Butterfly vertebra • Vertebral fusion • Hemivertebra • Additional lumbar vertebra • Additional or absent ribs	Cardiac • Ventricular septal defect • Atrial septal defect • ASD and VSD • Tetralogy of Fallot • Dextrocardia • Coarctation • Double arch	Urinary tract Anomaly • Reflux • Horseshoe kidney • Hypospadias • Solitary kidney (agenesis) • PUJ obstruction • Cryptorchidism • Dysplastic kidney
GI Atresia • Imperforate anus • Duodenal atresia Other • Cleft palate / lip • Abnormal chromosomes	Oesophageal atresia • With distal fistula • H type • Pure atresia • Double fistulas • Proximal fistula	Limb anomalies • Absent radius • Digital anomalies • Hip dysplasia

13.2 Appendix 2 - Replogle flush documentation

Document length of tube at lips/nostril and thoracic suction setting. Tick to say flushed/non-thoracic used.

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	02:15	02:30	02:45
Replogle tube length	10cm											
Replogle tube flushed	√											
Thoracic suction setting	3kpa											
Non-Thoracic suction used												
	03:00	03:15	03:30	03:45	04:00	04:15	04:30	04:45	05:00	05:15	05:30	05:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												
	06:00	06:15	06:30	06:45	07:00	07:15	07:30	07:45	08:00	08:15	08:30	08:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												
	09:00	09:15	09:30	09:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												
	12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												

	15:00	15:15	15:30	15:45	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												
	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45	20:00	20:15	20:30	20:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												
	21:00	21:15	21:30	21:45	22:00	22:15	22:30	22:45	23:00	23:15	23:30	23:45
Replogle tube length												
Replogle tube flushed												
Thoracic suction setting												
Non-Thoracic suction used												