

- High positive airway pressure from mask or ET ventilation puts stress on the fistula stump. ET tip distal to fistula (if possible) and use of ET without Murphy eye reduces such stress.
- Consider sedating and paralyzing the infant for several days as laryngoscopy puts stress on the esophageal anastomosis; intubation risks inadvertent intubation of the fistula stump.
- Surgeons may request placement of a trans-anastomotic tube via the mouth.
- Discuss with surgeon, including the degree of anastomotic tension.

Adjuvants

- Fiberoptic bronchoscopy to position the ET and fistula blocker (if deployed) and to ascertain the location of the fistula. Rarely, more than one fistula may be present.
- Have dopamine drawn and hooked up.
- May consider having NO and standby drugs for reducing pulm Htn.
- Emergency gastrostomy rarely indicated but could be lifesaving.
- High-frequency ventilator.

Postoperative Period

- Sedate and paralyze for several days unless all favorable conditions are present for early extubation and chance of requiring re-intubation is very low.
- Postop elective ventilation may protect against the development of leak in primary repair.
- Keep neck flexed to reduce tension on the esophagus.
- Respiratory distress after extubation poses a dilemma. Consider the possibility of inadequate pain control, tracheomalacia, pneumonia, and prematurity as causes. Pain may be a concern even after several days, especially with a chest drain in situ, and during handling, a neuraxial block (e.g., caudal entry thoracic epidural) may help avoid respiratory distress and the need for reintubation. Be wary of dynamic airway closure caused by tracheomalacia during rigorous crying. Caudal morphine may provide both analgesia and sedation. Fentanyl/adjunct analgesia infusion is an alternative but finding that sweet spot can be challenging.
- Antibiotics for 48–72 h or longer as required.
- Avoid tracheal and esophageal suctioning (transanastomosis cath is in place).
- A contrast study prior to oral feeding may be performed at 7–10 d postop.

- Minor leaks may heal spontaneously.
- Major leak requires surgical repair.

Anticipated Problems/Concerns

- ET not in ideal location, especially with pt movement and surgical manipulation. Correction by sliding the ET proximally and distally has associated risks (noted previously).
- Stomach insufflation.
- Respiratory distress.
- Cardiovascular anomalies which may affect hemodynamics and respiratory parameters.
- Low birth weight.
- Risk of prematurity.
- TEF recurrence (3–14%).
- A history of EA/TEF repair is associated with gastroesophageal reflux (50%).
- Tracheomalacia (an obstruction that exceeds 50% of the anteroposterior diameter of the trachea during inhalation) is found in 60% of children between 2–3 y.
- Respiratory symptoms during the first 5 y of life (>66% of cases), during adolescence (40%), and during adulthood (10%).

Transfusion-Related Acute Lung Injury

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Risk

- Can occur in any pt receiving blood or blood products, including platelets, plasma, cryoprecipitate, and rarely, IVIG.
- Overall incidence probably <1%; increasing awareness of the syndrome has resulted in improved recognition.
- Use of leukodepleted blood has decreased the incidence of packed red cell-related lung injury.

Perioperative Risks

- Noncardiogenic pulm edema, usually within 6 h of transfusion.
- Mortality reported as 5–10%.

Worry About

- O₂ toxicity
- Barotrauma or volutrauma secondary to PPV
- May be confused with transfusion-associated circulatory overload (TACO)

Overview

- Classic presentation is acute development of resp compromise indistinguishable from ARDS.
- Symptoms usually begin within 1–2 h after transfusion and may be manifested by 2–6 h.
- Severe hypoxemia and bilateral infiltrates are always present, while hypotension, fever, and pink frothy sputum may be present in some.
- Dx is clinical and one of exclusion.

Etiology

- Classically, has been attributed to the presence of leukocyte antibodies in the plasma of multiparous donors directed against recipient WBCs.
- Alternatively, may be effect of biologically active lipids in stored cellular blood components.
- Pulm edema arises from capillary injury rather than volume overload.

Usual Treatment

- Supportive care: Ventilation, if required, or supplemental O₂. There are no clear indications for steroids. Generally resolves within 1–4 d with appropriate care and no supervening complications.

Assessment Points

System	Effect	Assessment by Hx	PE	Test
CV	Pulm edema		S ₃ , S ₄	PA cath, ECHO
RESP	Pulm edema	Recent transfusion	Rales, hypoxemia	CXR: Bilateral infiltrates, SpO ₂
HEME	Leukoagglutination			Agglutination of recipient leukocytes by donor plasma; contact blood collection agency

Key References: Triulzi DJ: Transfusion-related acute lung injury: current concepts for the clinician. *Anesth Analg* 108(3):770–776, 2009; Silliman CC, Ambruso DR, Boshkov LK: Transfusion-related acute lung injury. *Blood* 105(6):2266–2273, 2005.

Perioperative Implications

Preoperative Preparation

- Acute respiratory compromise may occur within 6 h of a transfusion, usually with FFP. Unlike RBCs, FFP is not leukodepleted; the presence of WBC in FFP is associated with an inflammatory response similar to that for large volumes of plt transfusion.

- Usually related to massive transfusion, although on occasion may happen after a single unit transfusion.

Monitoring

- PA cath may aid in the exclusion of cardiac etiology (i.e., normal wedge pressure).
- Beta-natriuretic peptide level may be checked to differentiate TRALI from TACO.

Postoperative Period

- Most pts require ventilatory support for several d.
- Ventilator management may be appropriate for ARDS.

Anticipated Problems/Concerns

- O₂ toxicity and barotraumas
- Hemodynamic instability