PROCEDURE

Tracheoesophageal fistula and esophageal atresia repair

Surgery that connects the esophagus and closes an abnormal opening between the esophagus and windpipe.

PURPOSE
Connect the esophagus and close an abnormal airway connection

PROCEDURE TYPE
Therapeutic surgery, performed open or minimally invasively

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General anaesthesia

HOW LONG IT TAKES
About 2 to 4 hours for straightforward repair

PREPARATION
No feeding, pouch suction, IV fluids, and medical stabilization

RECOVERY
Several weeks in hospital; no infant driving restriction

MAIN RISKS
Leak, narrowing, recurrent fistula, and airway problems

RESULTS
Repair known immediately; healing assessed over following days

Overview

Tracheoesophageal fistula and esophageal atresia repair is an operation usually performed soon after birth.

Esophageal atresia means that the esophagus-the tube carrying food from the mouth to the stomach-has not formed as one continuous tube. It ends in a closed pouch instead of reaching the stomach.

A tracheoesophageal fistula is an abnormal connection between the esophagus and the trachea, or windpipe. Air can pass into the stomach, while saliva or stomach contents can enter the lungs.

Most babies with esophageal atresia also have a fistula. Less commonly, a baby may have esophageal atresia without a fistula, or a fistula without esophageal atresia. The exact operation is based on this anatomy, the distance between the esophageal ends, and the baby's overall health.

Why the procedure is performed

The operation creates a working passage from the mouth to the stomach and closes any abnormal connection to the airway. Without treatment, a baby with esophageal atresia cannot swallow milk safely into the stomach.

Closing a fistula also helps prevent saliva, milk, and stomach contents from entering the lungs. This can reduce breathing problems and lung injury.

The repair may be performed soon after the baby has been stabilized. Some babies need a delayed or staged repair because the esophageal ends are far apart, they were born very early, or they have another serious medical problem.

Who should and should not have it

Repair is generally offered to babies with confirmed esophageal atresia or a tracheoesophageal fistula that needs treatment. Tests may include X-rays, heart imaging, ultrasound examinations, and bronchoscopy, in which a small camera is used to inspect the airway.

Immediate primary repair may not be the right approach when:

A delay does not always mean that repair has been abandoned. Temporary treatments can protect the lungs and provide nutrition until surgery is safer.

In rare situations involving severe, life-limiting conditions, the family and care team may discuss comfort-focused care instead of major surgery. This is an individual decision supported by the neonatal, surgical, and palliative care teams.

- The baby is not stable enough for a major operation
- Severe lung, heart, or other medical problems need treatment first
- The gap between the esophageal ends is too long for a safe connection
- The anatomy is uncertain and more testing is needed
- The expected burdens of surgery outweigh its likely benefits

How to prepare

Your baby will usually be cared for in a neonatal intensive care unit before surgery. The treating facility's own instructions take priority because preparation is tailored to your baby.

Milk and other feeds are withheld. A tube placed in the upper esophageal pouch may use gentle, continuous suction to remove saliva and lower the chance of it entering the lungs. Your baby receives fluids, and sometimes nutrition, through a vein.

The team may provide breathing support and treat an existing lung infection if needed. They will also look for related conditions involving the heart, kidneys, spine, limbs, digestive tract, or anus. A heart ultrasound is especially important because heart anatomy can affect the surgical approach.

Tell the team about any medicines your baby has received and any known family reactions to anaesthesia. The surgeon should explain the planned approach, possible need for staged treatment, expected feeding plan, and important risks before you consent.

What happens during the procedure

Your baby receives general anaesthesia and is fully unconscious. An anaesthetist monitors breathing, heart rate, blood pressure, temperature, and oxygen levels throughout the operation.

The surgeon may first examine the airway with bronchoscopy to locate the fistula and check for other airway differences.

The repair is performed through either a chest incision or several small incisions using a camera and narrow instruments. Minimally invasive surgery is called thoracoscopic repair. It is not suitable for every baby, and an operation may need to change to an open approach for safety.

For the most common anatomy, the surgeon separates the fistula from the trachea and closes the opening in the airway. The two ends of the esophagus are then joined with stitches. This connection is called an anastomosis.

If there is a fistula without esophageal atresia, the surgeon closes the abnormal connection but does not need to join two esophageal ends.

A feeding tube may be passed through the repaired esophagus into the stomach. Some babies also need a chest drain to remove air or fluid. If the esophageal gap is too long, the surgeon may perform only part of the treatment and plan reconstruction later.

Recovery and what to expect afterward

Pain: Your baby will receive regular pain relief. Temporary breathing support may be needed while swelling settles and the anaesthetic wears off. The team watches for discomfort through changes in movement, facial expression, heart rate, and breathing.

Eating: Nutrition is initially given through a vein or feeding tube. Milk feeds begin when the surgical team considers the repair ready. A contrast swallow X-ray may be used first to check for a leak, although practices differ between centres. Feeds usually start slowly.

Activity: Newborn movement generally does not need to be restricted. Staff will show you how to hold, comfort, and provide skin-to-skin care safely around tubes and monitoring equipment.

Driving: Driving restrictions do not apply to your baby. You should not drive if tired, unwell, or affected by medicines. Your baby will not usually go home on the day of surgery.

Going back to work: Hospital care often lasts several weeks, but timing is influenced by breathing, feeding, growth, prematurity, and other conditions. Ask early about family leave, accommodation, travel support, and help after discharge.

Risks and possible complications

The team balances the need for repair against the risks of operating on a newborn. Possible early complications include:

Later, scar tissue may narrow the repaired area. This is called a stricture and can make swallowing difficult. It can often be widened during an endoscopy, but more than one treatment may be needed.

The fistula can occasionally return. The esophagus may also move food less effectively, and acid reflux from the stomach is common after repair. Some children have a soft or weak windpipe, called tracheomalacia, which can cause a harsh cough or noisy breathing.

Feeding, swallowing, breathing, and growth problems can continue even after a technically successful operation. Long-term follow-up is therefore part of treatment rather than a sign that the operation failed.

- Leakage from the new esophageal connection
- Air leaking from the repaired trachea
- Bleeding, infection, or lung problems
- A collapsed lung or fluid collecting in the chest

- Injury to nearby nerves or structures

Results and follow up

The surgeon usually knows during the operation whether the fistula was closed and whether the esophageal ends could be joined. The strength and healing of the connection become clearer over the following days.

Before discharge, the team assesses breathing, wound healing, feeding, and weight gain. Some babies go home with tube feeding or special feeding instructions.

Follow-up may involve pediatric surgery, gastroenterology, respiratory care, dietetics, feeding or speech therapy, and primary care. The team will monitor swallowing, reflux, growth, chest infections, airway symptoms, and narrowing of the esophagus.

Routine appointments remain important throughout childhood. Tell the team about food sticking, slow meals, repeated coughing with feeds, frequent vomiting, ongoing reflux, or poor growth rather than waiting for the next scheduled visit.

Alternatives

There is no medicine that can connect an esophagus ending in two separate segments or permanently close a congenital fistula.

When immediate primary repair is not possible, alternatives include:

Open and thoracoscopic repairs are different surgical approaches rather than alternatives to repair itself. Thoracoscopy uses smaller incisions, while open surgery may provide safer access in complex anatomy or an unstable baby.

- Delayed repair: Suction, intravenous nutrition, and sometimes a feeding opening into the stomach allow time for growth or medical stabilization, but require longer treatment and another operation
- Long-gap techniques: Surgeons may wait for the esophagus to grow or use methods that gradually bring its ends closer; this preserves the natural esophagus but can take time and may require several procedures
- Esophageal replacement: Part of the stomach or intestine can replace the missing section when the native esophagus cannot be joined; this provides continuity but is a larger reconstruction with lifelong follow-up

- Comfort-focused care: Symptoms are treated without corrective surgery when major intervention is unlikely to meet the family's goals; it does not create a route for normal swallowing

When to call your healthcare team

After discharge, contact the surgical or pediatric team promptly for fever, increasing wound redness or drainage, repeated vomiting, worsening feeding, fewer wet diapers, new noisy breathing, or repeated coughing and choking during feeds.

Seek urgent same-day advice if food or liquid seems stuck, your baby cannot manage saliva, breathing is harder than usual, or a feeding tube moves or comes out. Do not push a displaced tube back through the repaired esophagus unless the treating team has specifically taught you to do so.

Call emergency services for severe breathing difficulty, blue or grey lips or skin, collapse, unresponsiveness, or choking that does not clear.

Questions about reflux, feeding pace, weight gain, medications, and planned tests can usually be handled through routine follow-up unless symptoms suddenly worsen.

Common questions

Will my baby be asleep?

Yes. The operation is performed under general anaesthesia, so your baby is unconscious and receives continuous monitoring.

Can I drive my baby home afterward?

Not immediately. Babies normally remain in hospital for monitoring, breathing support, and feeding. At discharge, another rested adult should drive if you are too tired or affected by medicine.

How painful is the repair?

The incisions and chest drain can cause pain, but the team gives regular pain relief and adjusts it using newborn pain assessments. Comfort usually improves as tubes are removed and healing progresses.

When will we know if it worked?

The surgeon can confirm the anatomical repair immediately. Healing and any leakage are assessed over the next several days through examination and, in some centres, contrast

imaging.

When can my baby start feeding?

Feeding begins when the surgical team believes the esophagus has healed enough. Milk may first be given through a tube, followed by gradual oral feeding with swallowing support if needed.

Will my child need more procedures?

Possibly. Some children need endoscopic widening for a narrowed esophagus, treatment for severe reflux, or further airway or fistula surgery. Others need no additional operation but still benefit from long-term monitoring.

Sources

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