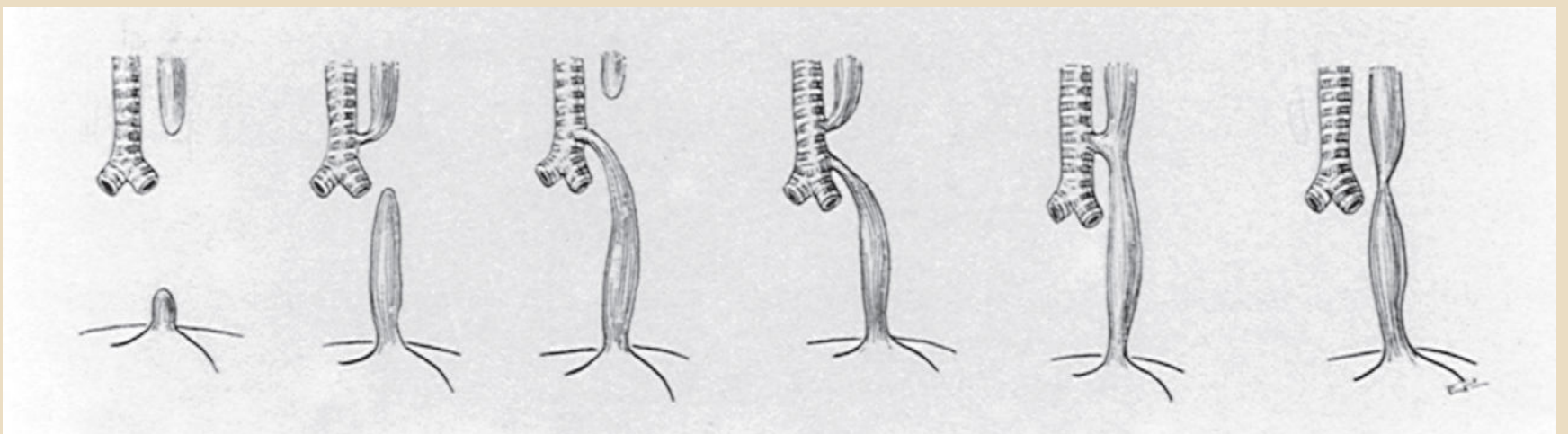


ESOPHAGEAL ATRESIA TRACHEO-ESOPHAGEAL FISTULA

GROSS CLASSIFICATION



Gross classification of anatomic patterns of esophageal atresia.

A, Esophageal atresia without a tracheoesophageal fistula. This malformation is almost invariably associated with a “long gap.”

B, Atresia with a proximal tracheoesophageal fistula. It is an uncommon anomaly; the abdomen is airless, and the diagnosis may be missed unless contrast studies or endoscopy is performed.

C, Esophageal atresia with a distal tracheoesophageal fistula, the most frequently encountered form of esophageal anomaly.

D, Atresia with a double (proximal and distal) fistula. Though rare, this form is found more often than originally thought.

E, Tracheoesophageal fistula without atresia (H-type fistula). This anomaly may be missed in the newborn period because swallowing is possible. It is associated with recurrent cough, pneumonia, and abdominal distention.

F, Esophageal stenosis.

Incidence of Various Esophageal Atresia— Tracheoesophageal Fistula Anomalies

- | | |
|---|------|
| 1. Esophageal atresia with a distal tracheoesophageal fistula | 84%C |
| 2. Esophageal atresia without tracheoesophageal fistula | 6%A |
| 3. Tracheoesophageal fistula without esophageal atresia | 4%E |
| 4. Esophageal atresia with a fistula to both pouches | 1%D |
| 5. Esophageal atresia with a proximal tracheoesophageal fistula | 5%B |

Waterston Risk Groups and Current Survival Figures

Group	Survival (%)	Waterston Classification
A	100	Birth weight > 2500 g and otherwise healthy
B	85	Birth weight 2000-2500 g and well or higher weight with moderate associated anomalies (noncardiac anomalies plus patent ductus arteriosus, ventricular septal defect, and atrial septal defect)
C	65	Birth weight < 2000 g or higher with severe associated cardiac anomalies

Okamoto modification of the Spitz Classification: Predictors of Survival in Cases of Esophageal Atresia

Class	Description	Risk	Survival
Class I	No major cardiac anomaly, BW >2000 g	Low	100%
Class II	No major cardiac anomaly, BW < 2000 g	Moderate	81%
Class III	Major cardiac anomaly, BW >2000 g	Relatively high	72%
Class IV	Major cardiac anomaly, BW < 2000 g	High	27%

ASSOCIATED ANOMALIES

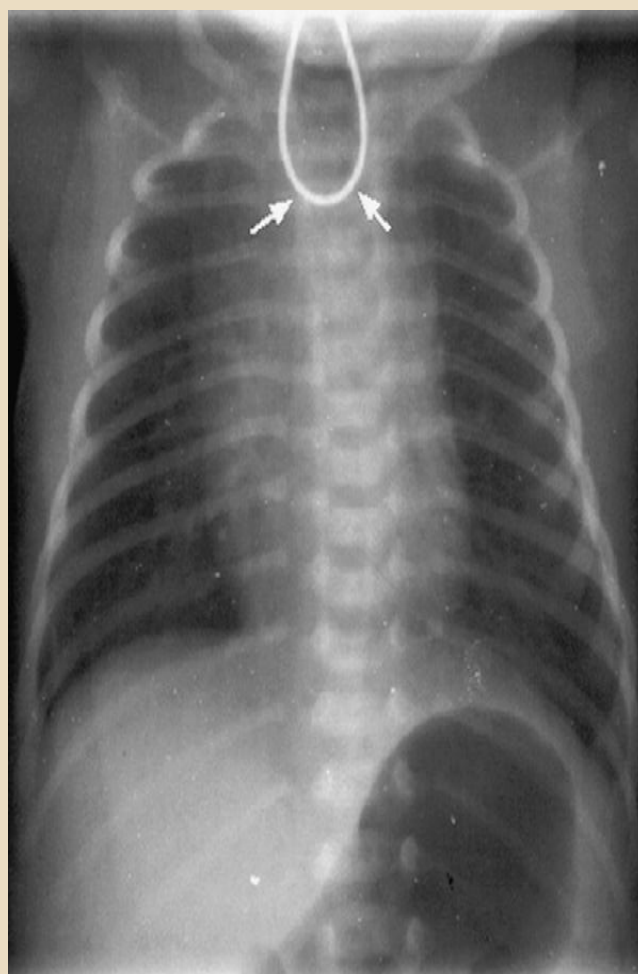
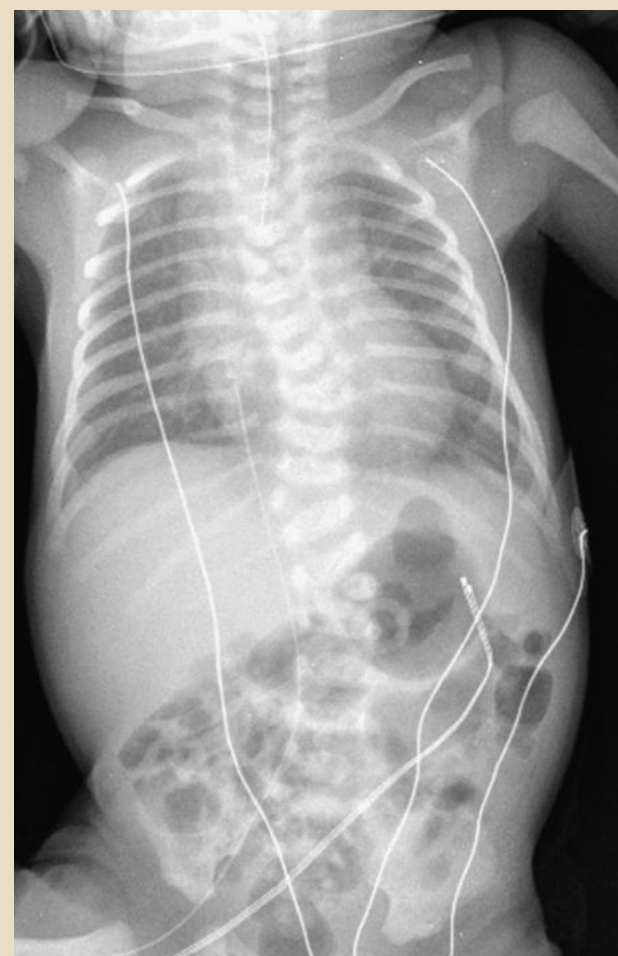
Incidence of Associated Anomalies

• Cardiovascular	24%
• Genitourinary	21%
• Gastrointestinal	21%
• Musculoskeletal	14%
• Central nervous system	7%
• VACTERL association	20%
• Overall incidence	50%-70%

ANTENATAL suspected/ possibility

- Maternal polyhydramnios
- Absent stomach bubble (Pure EA)
- Maternal Ultrasound/ Fetal MRI

DIAGNOSIS



PRE-OP MANAGEMENT

- Oxygen by hood
- Mechanical ventilation support
- Mucus Suction by Replogle tube/ mucus sucker/ low pressure suction
- Vitals monitoring (T/P/R)
- Temperature maintenance (incubators)
- Rule out associated anomalies (VACTERL)
- I V Fluids, Antibiotics and Inotropic support
- Routine blood investigations
(CBC/KFT/CRP/blood culture if sepsis +)

SURGERY

- Position: Right Posterolateral thoracotomy
- Approach: Extrapleural (preferred)/ Transpleural
- Surgery:
 - ❖ Type B,C,D : Trache-oesophageal fistula ligation and end to end anastomosis
 - ❖ Type A: Cervical esophagostomy + Feeding gastrostomy; later esophageal replacement surgery
 - ❖ Type E: Fistula ligation through cervical approach

Long Gap EA

- Occasionally in infants with EA-TEF, the upper pouch is high and the distance between the upper and lower esophageal segments limits the ability to easily complete end-to-end esophago-esophagostomy with acceptable tension.
- Surgical Maneuvers in Long-Gap Esophageal Atresia

During the Initial Procedure:

- Anastomosis under tension
- Tension-relieving procedures
- Flap technique
- Suture fistula

Delayed Primary Anastomosis:

- With bougienage: proximal, proximal and distal, magnetic
- Without bougienage

Long Gap EA

Esophageal lengthening techniques:

- Flaps,
- Spiral / Circular myotomy
- Gastric division
- Traction sutures- Foker's/ Kimura extrathoracic
- Transmediastinal "Thread"
- With and without "olives"
- Kato technique

Esophageal Replacement:

Colonic interposition

Gastric tube esophagoplasty

Jejunal interposition

Gastric transposition

PREDICTORS OF OUTCOME

- twin birth,
- preoperative intubation,
- birth weight less than 2500 g,
- long-gap atresia,
- Anastomotic leak,
- postoperative intubation longer than 4 days,
- and inability to feed at the end of 1 month

COMPLICATIONS

Early

- Anastomotic leak (13-16%)
- Anastomotic stricture (upto 80%)
- Recurrent tracheoesophageal Fistula (3-14%)

Late

- GERD (30-70%)
- Tracheomalacia (10-25%)
- Respiratory disease,
- Disordered esophageal peristalsis.