17 Esophageal Atresia Repair

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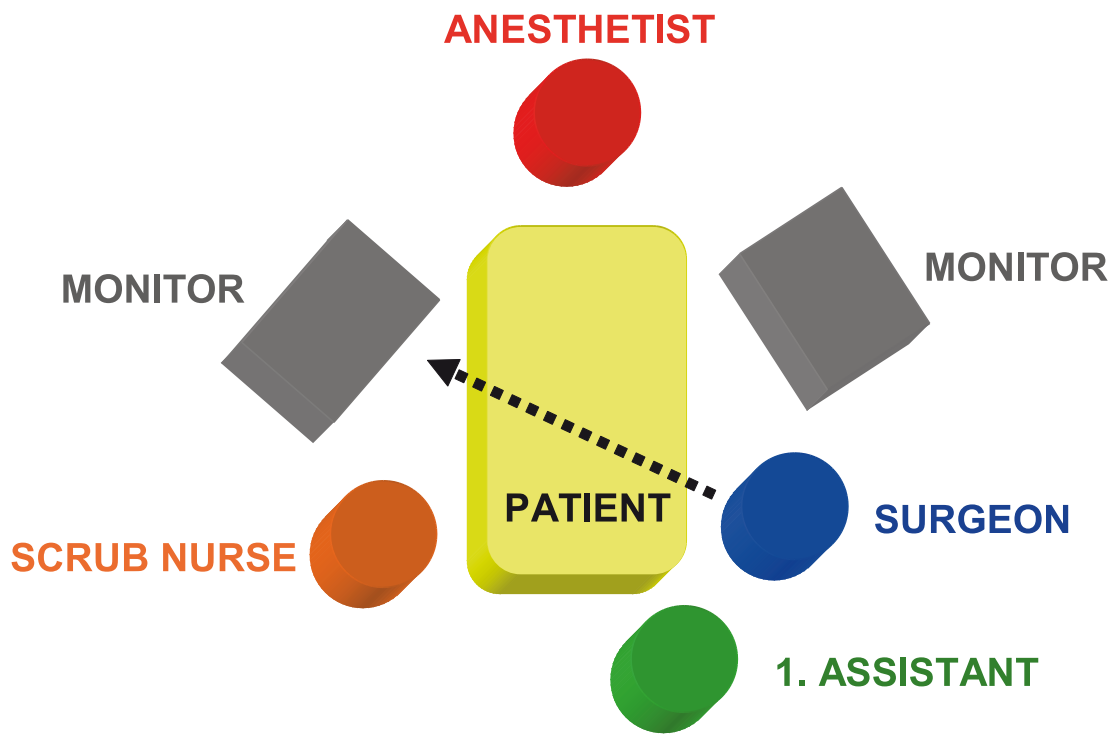
17.1 Operation Room Setup

Surgical Team Position



17.2 Patient Positioning

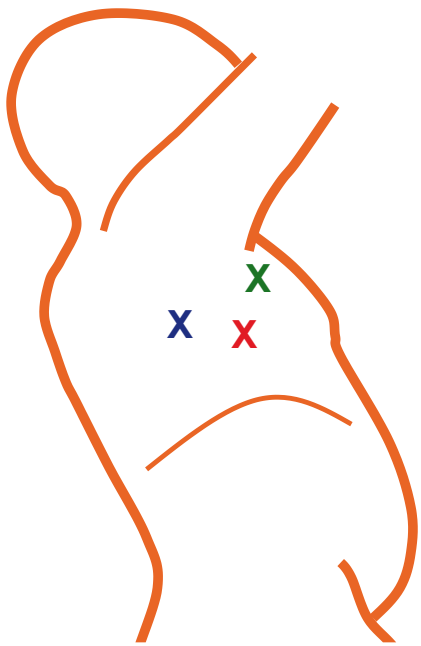
Left lateral decubitus at the left edge of the table, small pad below the chest, pelvis fixed to the table, right arm fixed over the head. A shortened operating table is preferred with a reversed Trendelenburg and a patient tilt to the left.

17.3 Special Instruments

See section on instrumentation.

17.4 Location of Access Points

Port Placement Sites



Optic port (3.5 / 5 mm)

Work port (3 / 3.5 mm)

Work port (3.5 / 3.8 mm)

17.5 Indications

1. Esophageal atresia with distal fistula.
2. H-type fistula without atresia.
3. Esophageal atresia without fistula.

17.6 Contraindications

- There are no absolute contraindications.
- In esophageal atresia without fistula, one can opt for replacement instead for delayed primary repair. Even then, thoracoscopy may be useful for confirming the diagnosis of a long gap.

17.7 Preoperative Considerations

1. If the aorta descends on the right, the child is placed in a right lateral decubitus position and the esophagus is approached from the left.
2. A 10-Fr Replogle tube is placed in the upper esophageal pouch for identification.
3. The tip of the endotracheal tube should not be at the level of the carina in order to avoid accidental advancement into the right main bronchus or into the fistula if it originates from the carina.
4. Carbon dioxide is insufflated at a pressure of 5 mmHg and a flow of 0.1 l/min.

17.8 Technical Notes

1. Initial desaturation is the rule. Decreasing ventilatory pressure and increasing the frequency of respiration is desired. The anesthetist should be comfortable with the ventilatory parameters.
2. Transection of the azygos vein is only required when the fistula enters the trachea distally.
3. Commence the opening of the posterior mediastinal pleura above the azygos vein.

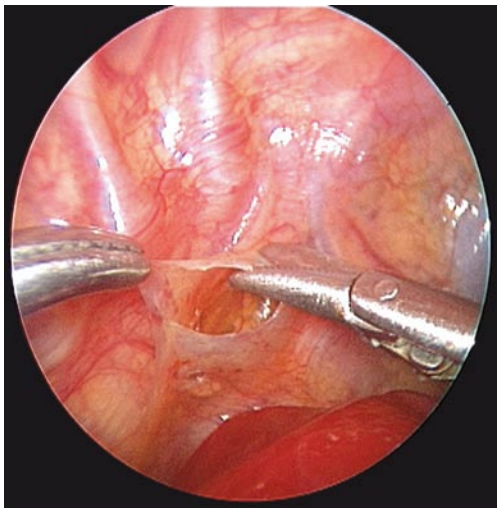
17.9 Instrumentation

1. In premature infants, a short, 3.3-mm, 30° telescope is used; otherwise a classic but short 5-mm 30° telescope is used.
2. Instruments utilized should have a 3-mm diameter and 24-cm length.
3. The working ports have a 3.5 or 3.8 mm diameter. Such ports allow introduction of 5-0 Vicryl™ sutures on a V-18 needle (Ethicon, Somerville, NJ, USA) with a 3-mm needle holder.

17.10 Thoracoscopic Esophageal Atresia Repair

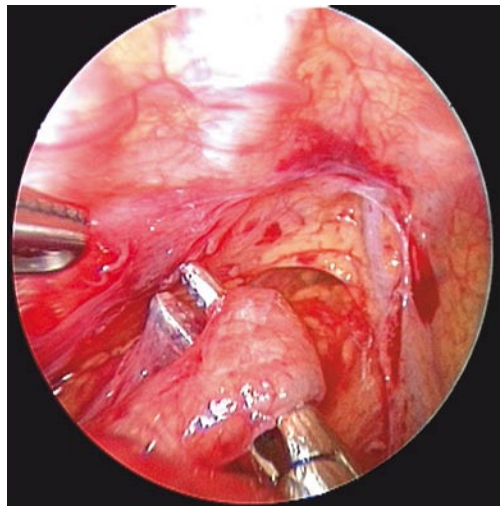
Please see Figs. 1–6.

Figure 17.1



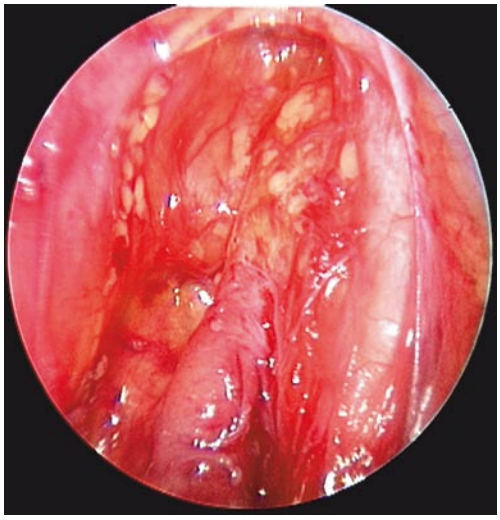
The mediastinal pleura is opened just anterior to the vertebral column

Figure 17.2



The distal fistula is freed close to the trachea and is suture ligated at this point. It is transected distally and its end is spatulated

Figure 17.3

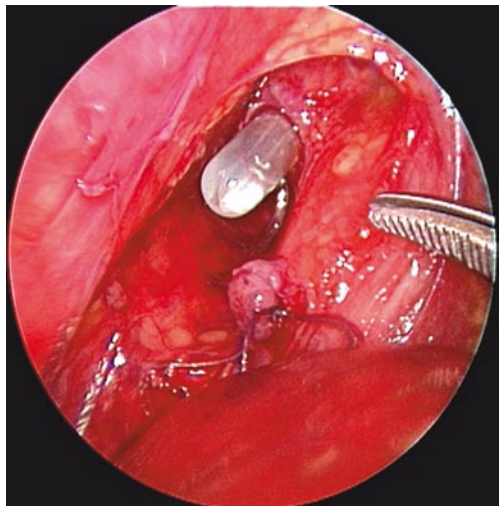


The proximal pouch as well as the distal fistula are visualized

Figure 17.4

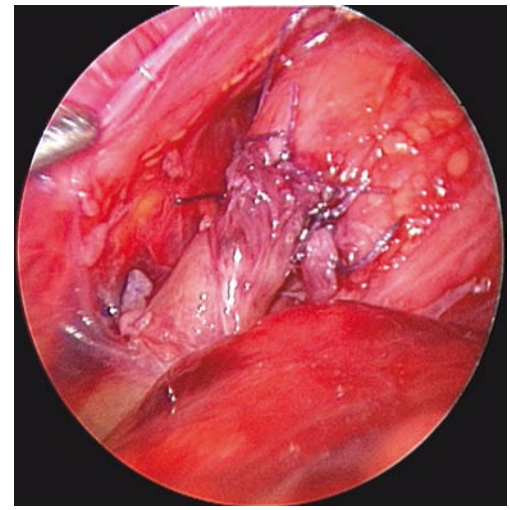
The distal end of the proximal pouch is freed and a wide opening is made right in the center

Figure 17.5



View of the suture-ligated tracheal side of the divided distal fistula and the emergence of the Replogle from the opened proximal pouch

Figure 17.6



The anastomosis is started in the middle of the left side of the esophagus and completed using 5-0 absorbable suture (Vicryl™; Ethicon, Somerville, NJ, USA). A transanastomotic 6-Fr or 8-Fr nasogastric tube is left in situ

Recommended Literature

1. Aziz GA, Schier F (2005) Thoracoscopic ligation of a tracheoesophageal H-type fistula in a newborn. J Pediatr Surg 40:e35–36
2. Bax KM, van der Zee DC (2002) Feasibility of thoracoscopic repair of esophageal atresia with distal fistula. J Pediatr Surg 37:192–196
3. Holcomb GW 3rd, Rothenberg SS, Bax KM, Martinez-Ferro M, Albanese CT, Ostlie DJ, van der Zee DC, Yeung CK (2005) Thoracoscopic repair of esophageal atresia and tracheoesophageal fistula: a multi-institutional analysis. Ann Surg 242:422–428