CVC was clearly visualized in the lumen of this vessel. All the infusions through the CVC were stopped. The 5-mm Gore-Tex graft (W.L. Gore & Associates, Inc, Flagstaff, AZ) was interposed between the left subclavian artery and the left pulmonary artery. Immediately after the procedure, the oxygen saturation improved from a preoperative level of 56% to 83%. The chest x-ray in the intensive care unit shows the tip of the catheter clearly outside the cardiac silhouette (Fig 1). The simultaneous measurement of blood gases on an oxygen mask with an F_IO_2 of 0.6 from the right femoral artery and the CVC revealed a PaO_2 of 63.1 mmHg with a saturation of 89.7% and a PaO_2 of 555.6 mmHg with a saturation of 99.9%, respectively, which confirmed the presence of the catheter in a pulmonary vein. The bedside postoperative transthoracic echocardiogram revealed left upper-lobe anomalous pulmonary venous connection forming a vertical vein and draining into the left innominate vein, which was missed preoperatively. Partial anomalous pulmonary venous drainage is a congenital defect and an incidental finding in 0.7% of cadavers. In the present case, the CVC introduced via the LIJV entered the left innominate vein and the vertical vein and lodged in the left pulmonary vein.

The aberrant malpositioning of catheters frequently occurs, especially on the left side, because of anatomic variations.[1] Twenty-three percent to 38% of catheters may be unsatisfactorily positioned in central veins.[2-4] Gentili et al[5] described 3 cases in which the catheter tip was lodged in the internal thoracic (mammary) vein, the epicardial vein, or the left superior intercostal vein, which are small central vein tributaries. This may result in inaccurate readings of CVP. The cases reported involve a CVC placed from the left side of the body via the cephalic or basilic veins. The selection of other sites like the LIJV can lead to inaccurate placement, may cross to the contralateral innominate vein (necklace sign), or may go cephaladly into the LIJV. In the case described here, the CVC from the LIJV has entered into the left innominate vein, the vertical vein, and the left pulmonary vein. In previous reports, none of the inaccurately placed catheters was suspected clinically.[2-4] A similar case report of a CVC malposition in an anomalous pulmonary vein was described by Townley[6] in an acyanotic patient. Clinically, by observing the color of aspirated blood from the CVC, one may suspect the malposition of the CVC in the pulmonary vein, but the case described here was a cyanotic child and the color of the blood would not have helped to suspect the position of the catheter in the pulmonary vein. Without fluoroscopy, a chest x-ray, or an echocardiogram, it is difficult to diagnose incorrectly positioned catheters. It is necessary to have radiographic confirmation of the course of the CVC to know its exact final location.

In summary, we describe a case in which a CVC inserted from the LIJV traveled through the innominate vein and entered into the left pulmonary vein. No complications were encountered because of the positioning of the CVC.

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Reverse Sellick's Maneuver for Transesophageal Echocardiographic Probe Placement

To the Editor:

Transesophageal echocardiographic (TEE) monitoring is increasingly used during cardiac surgery and has been shown to have a significant clinical impact.[1] However, the TEE probe and machine are expensive and are likely to get damaged if not used properly. There are several risk factors that can cause damage to the TEE probe; one is improper use of the TEE probe during difficult insertion. It has been found that on some occasions the insertion of the TEE probe may require some form of instrumentation (like laryngoscopy) for its correct placement, which can potentially cause damage to the probe. To avoid this, the TEE probe has to be placed into the patient's esophagus (either orally or nasally) without much maneuvering or instrumentation. The difficulty occurs because of impaction of the TEE probe on the adjacent structures, ipsilateral piriform sinus, and arytenoid cartilages (Fig 1), which is also true for oro- (OGT) or nasogastric tube (NGT) insertion.[2]

We have found that during difficult insertion lifting the cricoid cartilage forward using the so-called "reverse Sellick's maneuver" while the head is kept in a neutral position helps facilitate the easy insertion of the TEE probe, avoiding the need for instrumentation.

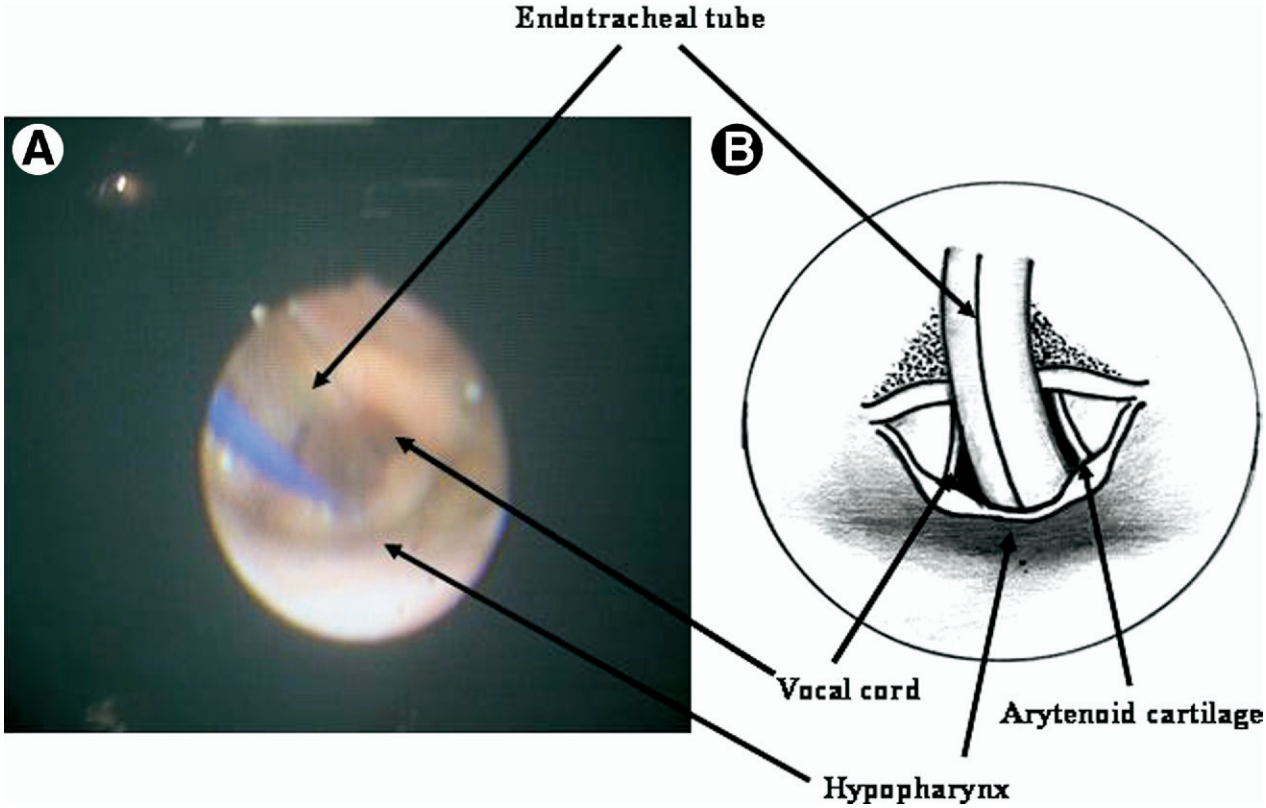

Fig 1. Structures of the laryngeal inlet shown without reverse Sellick's maneuver. Photograph showing the orotracheal tube in situ and laryngeal structures (A) and its corresponding sketch diagram (B). (Color version of figure is available online.)

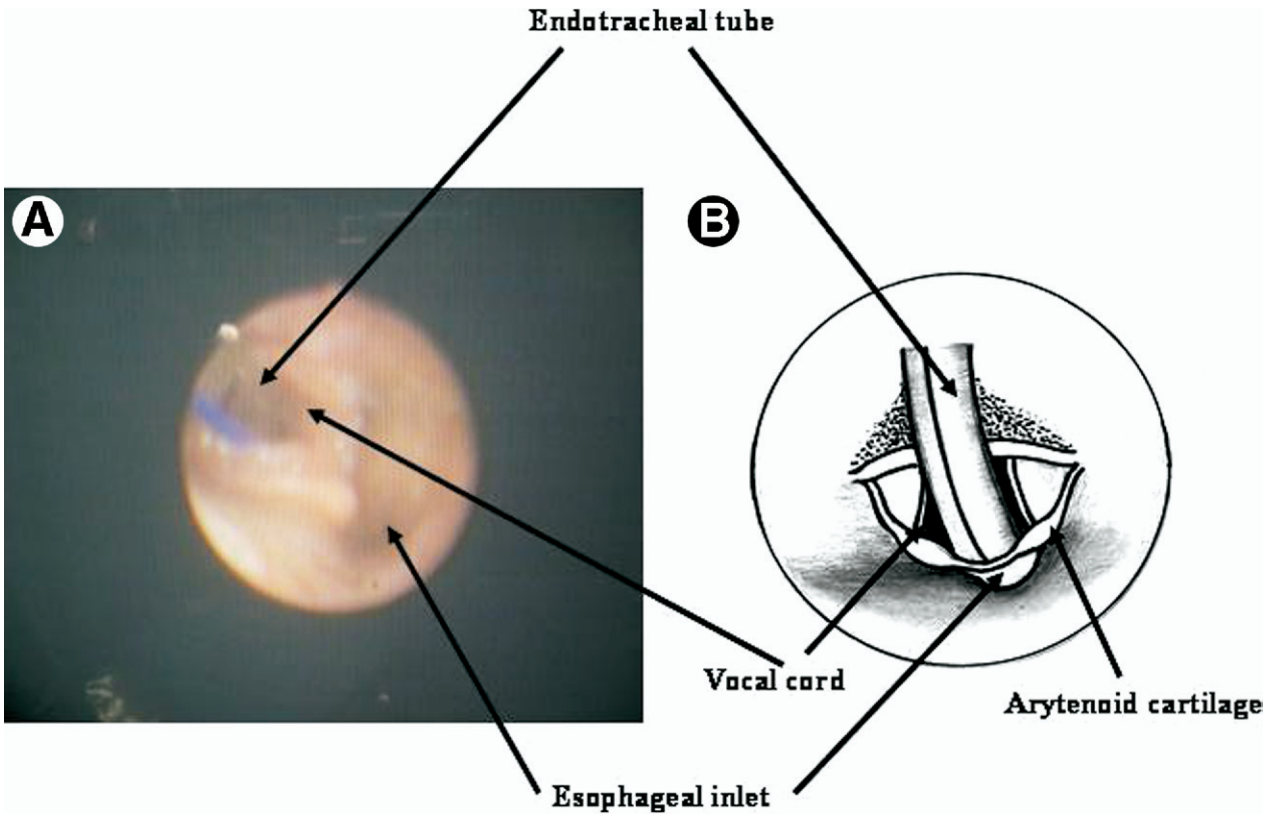

Fig 2. Structures of the laryngeal inlet shown with reverse Sellick's maneuver. Photograph showing the orotracheal tube in situ and laryngeal structures (A) and its corresponding sketch diagram (B). (Color version of figure is available online.)

Alternatively, external medially directed pressure can be applied to the ipsilateral lateral neck by multiple fingers at the level of the lateral border of the thyrohyoid membrane, the so-called "lateral neck pressure" as described by Ozer and Benumof[2] for OGT or NGT insertion. This method is also useful for TEE probe insertion. We have used these techniques in both adults and children and found them to be very useful during difficult TEE probe placement.

The probable mechanism by which the reverse Sellick's maneuver facilitates the insertion of the TEE probe can be explained as follows: The inferior constrictor muscle forms the anatomic start of the esophagus, which is immediately posterior to the cricoid cartilage. Thus, anterior displacement of the cricoid cartilage may open the esophagus more widely (Fig 2), making passage of a TEE probe easier in patients in whom initial TEE probe placement is difficult. The mechanism by which lateral neck pressure facilitates insertion of a TEE probe might be similar to that described for NGT insertion by Ozer et al[2] in which lateral neck pressure causes compression of the piriform sinus and moves the arytenoid cartilage medially. The collapse of the piriform sinus eliminates this recess as a potential site of impaction and probably funnels a laterally oriented TEE probe toward the usual entry point into the hypopharynx, which is just lateral to the arytenoid cartilage,[2] thus facilitating its easy entry into the esophagus.

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GlideScope-Assisted Insertion of a Transesophageal Echocardiography Probe

To the Editor:

Transesophageal echocardiography (TEE) is an invaluable intraoperative diagnostic monitor that is considered relatively safe and noninvasive. The TEE probe is usually inserted into the esophagus in a blind manner. A blind manipulation, however, occasionally results in difficult insertion of the probe into the esophagus. GlideScope videolaryngoscopy (Diagnostic Ultrasound Corporation, Bothell, WA) provides a fine view of the hypopharynx,[1] including not only the glottic opening but also the orifice of the esophagus. We present a GlideScope-assisted insertion of a TEE probe.

The patient, a 68-year-old man, presented for mitral valvuloplasty. General anesthesia was induced, and endotracheal intubation was performed. As a routine practice, an anesthesiologist tried to insert a TEE probe into the esophagus in a blind manner, but several attempts, including changes in the head position, laryngeal manipulation, and Macintosh direct laryngoscopy, failed to deliver the TEE probe into the esophagus. Another experienced anesthesiologist also failed to insert the TEE probe into the esophagus. The GlideScope, which was immediately available in our operating suite, provided a view of the orifice of the esophagus, which was relatively thin. Under direct visualization using the video monitor, the TEE probe was delivered to the esophageal orifice and aligned with the esophageal axis. The TEE probe was then passed through the orifice of the esophagus without resistance on the first attempt.

The TEE probe is relatively thick, and violent insertion of the probe may cause hypopharyngeal or esophageal trauma.[2] GlideScope-aided insertion may be a safe and useful method when blind insertion of a TEE probe fails.

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