TEF is a rare but serious complication of tracheostomy (incidence ≤ 1%) caused by mucosal ischemia/abrasion secondary to prolonged intubation, use of high cuff pressures (≥ 30 cm H$_2$O) and movement of the tube tip during frequent dressing changes and suctioning; concomitant use of a rigid, wide-bore nasogastric tube aggravates injury of the sandwiched mucosa. Poor nutrition, airway infection, hypotension, hypoxemia, anemia, diabetes, and steroid therapy are the predisposing factors. TEFs secondary to tracheal cuff related injuries usually become symptomatic within 4 weeks. Usual manifestations in non-ventilated patients include uncontrolled coughing after swallowing (Ono’s sign), breathing difficulty, repeated pneumonia, and unexplained weight loss. A barium swallow demonstrates the defect in 70% of lesions. Endoscopy is the best diagnostic method, though small TEFs may be missed in the esophageal folds; bronchoscopy with methylene blue instillation identifies the defect better. Computed tomography (CT) and MRI chest are preferred in ventilator-dependent patients; chest X-ray demonstrates the effects of repeated soiling.

Management of a TEF includes supportive therapy to improve the patient’s condition followed by definitive intervention. While smaller fistulae may heal spontaneously, large TEFs are treated surgically with a single-staged fistula repair, or with tracheal reconstruction. Patients incapable of tolerating surgery are managed with esophageal or double (tracheal and esophageal) stenting using self-expanding metallic stents. Close monitoring of the cuff pressure and volume (avoid pressure ≥ 20 cmH$_2$O and volume ≥ 6–8 ml) can help reduce the risk of tracheal injury. Deflating the cuff every few hours does not decrease injury but may increase the risk of aspiration.

Our patient unfortunately suffered from recurring respiratory complications that were attributed to her underlying neurological condition, and despite obvious predisposing factors, TEF was thought of much later. This case reinforces the need for a high index of clinical suspicion for an early diagnosis and treatment of a TEF.

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Videoendoscope-guided nasotracheal intubation in ankylozing spondylitis

Sir,
Loss of airway control is always a possibility in patients with difficult airway. Formulation of a definite strategy is difficult as clinical situations vary considerably. In a difficult airway, such as advanced ankylozing spondylitis (AS), conventional laryngoscopy may become difficult but a good view of laryngeal inlet can be achieved by videolaryngoscope. We recently managed a 42-year-old male AS patient,
with cervical/thoraco-lumbar vertebrae involvement and fixed flexion deformity, for open reduction and internal fixation for fracture of shaft left femur [Figure 1]. His neck movements were grossly restricted and painful. He had restricted mouth opening (2 cm), thyromental distance of only 3 cm, and limited mobility of temporomandibular joints with a grade-IV Mallampati score. X-rays of cervical and dorsolumbar spines showed fusion of posterior elements [Figure 2]. An awake tracheal intubation was planned. In the absence of videolaryngoscope and fibreoptic bronchoscope, we introduced an 8-mm forward-view upper gastrointestinal videendoscope orally to obtain a clear view of laryngeal inlet without much manipulation of the neck [Figure 3]. A15Fr malleable bougie was introduced via the left nostril and passed through the glottis under vision. A 7.5-mm cuffed endotracheal tube was then railroaded past the glottis over the bougie [Figure 4]. The endoscopic procedure is displayed as Video.

Anesthesia options were either central neuraxial block or general anesthesia. Patient positioning and needle placement were anticipated to be difficult due to ossification of interspinous ligaments, syndesmophytes between vertebrae, bridging ankylosis, and bilateral involvement of hip joints. Abnormal spinal curvature could lead to unpredictable level of block. Central neuraxial block is frequently unsuccessful in AS patients with severe spinal involvement. Airway could be secured with direct laryngoscopic intubation, blind nasal intubation, laryngeal mask airway, fibreoptic bronchoscope (FOB) guided intubation, retrograde intubation, tracheostomy, and videolaryngoscope-guided intubation. High failure rate was reported during blind nasal technique and repeated attempts could injure the already distorted structures resulting in loss of vision making subsequent FOB difficult. The stiff cervical spine does not allow the required movement of a tracheal tube for its entry into larynx. The supraglottic airway devices, such as laryngeal mask airway (LMA), intubating LMA,\(^1,\) and proseal LMA were not considered as they mandate a

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**Figure 1:** Patient profile

**Figure 2:** X-ray of cervical spine (lateral view)

**Figure 3:** Videendoscope showing both esophageal and laryngeal inlets

**Figure 4:** Photograph showing tracheal tube being railroaded over the bougie
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mouth opening more than 20 mm and an angle of greater than 90° between oral and pharyngeal axes. Awake FOB-guided tracheal intubation is still the safest choice in such cases. However, mucosal injury may result in increased secretion or bleeding, obscuring its view. Videolaryngoscopy provides better view of laryngeal inlet and vocal cords in difficult airway situations even in neutral neck position with a success rate of 96%. Retrograde intubation needs definite identification of anterior anatomical structures of neck. During the blind passage of the guide wire, obstruction may occur at epiglottis, arytenoids, and vocal cords resulting in injuries. Tracheostomy is also another option, but even an experienced ENT surgeon prefers to secure the airway before tracheostomy in an elective surgery. We tried to approach the airway with a technique, which is safe and easy to conduct using the best-available resources.

The videoendoscope is well tolerated by an awake patient and gives a clear view of the laryngeal inlet. The intubation was possible under vision without much manipulation of the neck. A bougie can be manipulated by a forceps using the biopsy channel, but it has certain drawbacks. As the process is time consuming, emergency settings and pediatric patients may not be the right choice for this procedure. A videoendoscope can be an alternate and valuable instrument in the anesthesia armamentarium.

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Journal of Anaesthesiology Clinical Pharmacology | January-March 2012 | Vol 28 | Issue 1 143