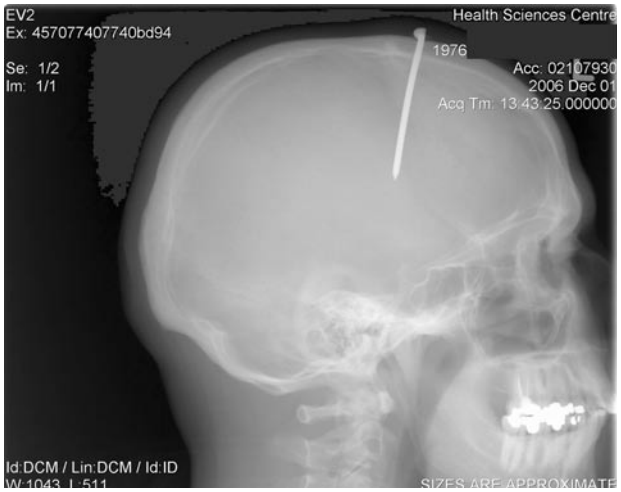

FIGURE Lateral skull radiograph showing the location of the intracranial nail.

patient made a complete recovery and was discharged from hospital on the third postoperative day.

Pneumatic nail guns are used commonly in the construction industry. An increasing number of penetrating cranial injuries have been reported.[1–5] Although there are case reports describing the neurosurgical management of these patients,[2–4] reports of anesthetic management of such cases are scant.

In this case, the anesthetic options included local anesthesia with intravenous sedation *vs* general anesthesia. The major benefit of performing this surgery with the patient awake was the ability to monitor for neurological deterioration acutely, which could signal vessel rupture.[4] Concerns with this approach include lack of patient cooperation, potential intraoperative agitation, limited access to the airway, the risk of a seizure and hemodynamic instability, including hypertension, which might have contributed to rupture of a false aneurysm, if present. In this case, patient preference for a general anesthetic dictated the approach.

In addition to standard anesthetic monitors, placement of an arterial cannula is important to permit close monitoring of the blood pressure. As seen in this case, a sudden drop in arterial pressure necessitated immediate intervention. Given the location of the nail, monitoring by echocardiography and placement of a central venous cannula to facilitate de-airing in the event of a VAE could have been considered.

Traumatic brain injury secondary to pneumatic nail gun discharge is becoming more common. Highlighting the anesthetic approach and potential intraoperative complications that may occur in these cases may aid in patient management.

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The Airtraq® laryngoscope for placement of double-lumen endobronchial tube

To the Editor:

Placement of a double-lumen endobronchial tube (DLT) is sometimes difficult due to the size and configuration of the tube compared with standard endotracheal tubes. For patients with difficult airways, DLT placement can be extremely challenging. The Airtraq® (Prodol, Meditec S.A., Vizcaya, Spain) laryngoscope is a new intubation device that provides a non-line-of sight view of the glottis. This anatomically shaped rigid laryngoscope has been reported to have several advantages, compared with the conventional Macintosh laryngoscope, in the management of normal and difficult airways.[1–5] However, one limitation is that the regular-size Airtraq® laryngoscope accepts a standard endotracheal tube with an internal diameter between 7.0–8.5 mm only. We report here

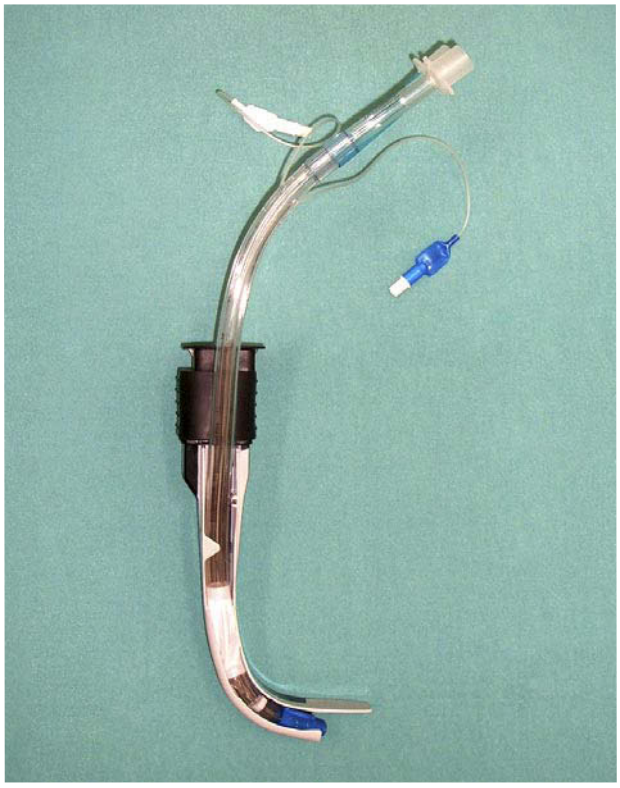

FIGURE The Airtraq® laryngoscope equipped with a 37-French left double-lumen endobronchial tube in the conduit of the scope.

the successful placement of DLTs with the aid of the Airtraq® laryngoscope in surgical patients.

After obtaining Institutional Ethics Board approval and patient consent, we performed endobronchial intubation with a DLT in ten patients who were scheduled for general anesthesia requiring one-lung ventilation for surgical convenience. The patients included nine males and one female, aged 64 ± 18 (mean ± SD, range, 21–84) yr, with body weight of 64 ± 11 (49–85) kg, height 167 ± 7 (155–177) cm and body mass index 23 ± 5 (18–35) $kg \cdot m^{-2}$. After induction of general anesthesia and neuromuscular blockade, each patient received scout laryngoscopy using the Macintosh #3 blade to provide the Cormack-Lehane (C-L) view score, and then a 35-French DLT with an outer diameter of 11.7 mm (Sheridan SHER-I-BRONCH® Endobronchial Tube - Left-Sided, Teleflex Medical, Stirrup Creek, NC, USA) or a 37-French DLT with an outer diameter of 12.3 mm, was intubated using the Airtraq® laryngoscope (Figure). The lungs were ventilated via bag-mask between the scout and intubation laryngoscopies to avoid hypoxemia. The time to complete intubation with the Airtraq® laryngoscope was measured using a stopwatch. Scout laryngoscopy using the Macintosh laryngoscope revealed a C-L grade 1 view in eight patients and grade 2 in one patient. In the remaining one patient with a body mass index of 35 $kg \cdot m^{-2}$, the scout laryngoscopy revealed a C-L grade 3 view. In the nine patients with a C-L grade 1 or 2 view, the Airtraq® laryngoscope easily provided a full view of the vocal cords and a 37-French DLT was placed into the trachea at first attempt. In the last patient with a C-L grade 3 view, the Airtraq® laryngoscope provided the view of the corniculate tubercle only when the tip of the scope was in the vallecula. Placing the tip of the scope under the epiglottis and lifting up the Airtraq® laryngoscope provided a C-L grade 2 view, and thus a 35-French DLT was successfully introduced into the tracheal inlet. The time to intubation was 49 ± 22 sec (range 25–96 sec). The bronchial lumen of the DLT was found to be correctly positioned in the left main bronchus in seven of the ten patients. In the remaining three patients, flexible fibreoptic bronchoscopy revealed that the bronchial lumen was positioned in the right main bronchus in two patients and at the carina in one patient. In these three patients, the bronchial lumen of the DLT was introduced into the left main bronchus with the aid of flexible fibreoptic bronchoscopy.

The Airtraq® laryngoscope allowed placement of 35- and 37-French DLTs in ten patients without complications. Based on our experience, the Airtraq® laryngoscope accepts 35- and 37-French DLTs, although the latter was somewhat thick against the channel of the scope. It is probably impossible to insert a 39-French DLT (outer diameter = 13 mm). Despite this limitation, the Airtraq® laryngoscope appears to be an alternative approach for DLT placement when the physician encounters cases in which the conventional Macintosh laryngoscopy results in unsuccessful DLT placement.

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Another use of Magill forceps to assist nasotracheal intubation

To the Editor:

For nasal intubation, once the endotracheal tube (ETT) has been negotiated through the nostril and comes to lie in the oropharynx, several techniques are available to advance the ETT into the larynx.[1]The use of Magill forceps to advance the ETT into the larynx under direct laryngoscopy was first described by I.W. Magill in 1920.[2] Magill forceps and its various modifications are still commonly used to advance the tube.[3] However, if the tip of ETT passes through the vocal cords but then encounters resistance, it is likely that the curve of the tube is directing the tip to abut the anterior laryngeal wall. Withdrawing the tube slightly and flexing the neck usually facilitates ETT advancement. Other techniques include rotating the ETT counterclockwise before applying pressure to facilitate its advancement.[3] However, proximal rotation does not always result in an equal degree of rotation at the distal tip,[4] and the tip of the tracheal tube may repeatedly abut the laryngeal wall despite these above measures, and fail to pass into the trachea.

We describe a variation in the use of Magill forceps for this purpose. If the ETT abuts against the anterior larynx, it is withdrawn into the laryngeal vestibule; i.e., just above the vocal folds. The Magill forceps are then advanced onto the distal end of the ETT from the right side (Figure). The laryngeal vestibule provides ample space for accommodating the tips of both the Magill forceps and the ETT. Pressing the distal end of the tube downwards and medially with the rounded tip of the Magill forceps, while applying a concomitant gentle push at the nasal end of the tube by an assistant, prevents the ETT from catching at the anterior larynx and facilitates smooth advancement into the larynx and the trachea. The Magill forceps act similarly to a copper wire hook described by Bearman to assist passage of nasotracheal tube into trachea.[5]

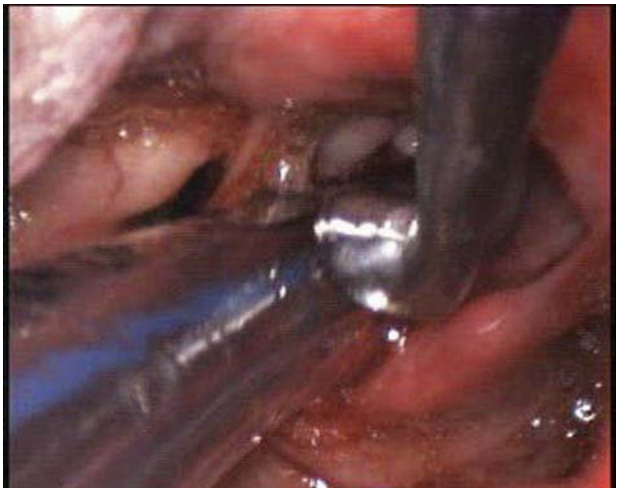

FIGURE Optimal position (arrow) to place the distal tip of the Magill forceps in the laryngeal vestibule to facilitate placement of the nasotracheal tube.

The described technique is also practical when using smaller-sized pediatric forceps (pediatric length 17.2 cm, adult length 21.5 cm). Potential trauma related to the use of Magill forceps may be due to capturing the mucosa between the jaws of Magill forceps. In this maneuver, the forceps remain closed and rounded; the tip offers a smooth surface with negligible chance of tissue and tracheal tube cuff damage. The design of Magill forceps is such that when the larynx is exposed and pressure is applied at the distal tip, most of the forceps remain out of the line of sight on the right side, thereby minimizing hindrance of the glottic view. We have used this method in approximately 45 patients over the last three years and have not encountered any clinically significant complications. In all patients except three, this maneuver was successful on the first attempt. In two of the failed cases, success was achieved by rotating the ETT counterclockwise a further 90° while maintaining pressure on the distal end of the tube with the Magill forceps. In a third