Management of the airway during anaesthesia

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Loss of muscle tone as a result of general anaesthesia means that the patient can no longer keep their airway open. There fore, patients need their airway to be maintained for them. The use of muscle relaxants will mean that they will also be unable to breathe for themselves and so will require artificial ventilation. Head tilt, chin lift and jaw thrust manoeuvr es along with adjuncts such as oropharyngeal airways (Figure 23.2 used to facilitate bag–mask ventilation while induction agents exert their full e ff ect. A laryngeal mask airway or endotracheal tube is then inserted, and the patient is allowed to breathe spontaneously or is ventilated during the procedure. The addition of a cu ff to the endo-tracheal tube facilitates positive pressure ventilation and protects the lungs from aspi ration of regurgitated gastric contents. Supraglottic airways /uni25CF Laryngeal mask airway (LMA) . Developed by Dr Archie Brain in the UK, the original LMA first-generation supraglottic airway . The mask with an inflatable cu ff is inserted via the mouth and produces a seal around the glottic opening, providing a very reliable means of maintaining the airway . Its placement is less irritating and less traumatic to a patient’s airway than endotracheal intubation. The technique can be easily taught to non anaesthetists and paramedics and can be used as an emergency airway management tool. Several varieties of first-generation LMAs are available, including the classic LMA and the flexible LMA. Further advancements ha led to the development of second-generation supraglottic ® devices, such as the ProSeal LMA and the i-gel (Figure 23.3). These devices usually have an in-built ‘bite block’ and oesophageal drain tube. They can be used for ventilation of the lungs at higher inflation pressures and are more suitable for patients with a higher body mass index. There are also modified versions of the LMA, including the ILMA (intubating LMA), that allow a blind technique, aiding insertion of a tracheal tube in di ffi cult conditions. Archie Brain , b. 1942, formally an anaesthetist, whose patent application for the laryngeal mask airway was granted in 1982. devices have a good safety and e ffi cacy profile and should be replacing all first-generation devices. /uni25CF Di ffi cult intubation . Endotracheal intubation is feasible in most patients, but in a certain proportion of patients it may be di ffi cult or impossible. However, if it is compounded by an inability to ventilate and therefore maintain oxygenation of the patient by bag–mask, the consequence can be catastrophic hypoxia. Many devices - have been developed to aid intubation if di ffi culty is ® ® ® anticipated (e.g. McGrath blade, Airtraq , C-MAC video laryngoscope) (Figures 23.4 and 23.5); similarly , protocols have been created by specialised societies to deal) are - ® is a - ve ®

Figure 23.2 Oropharyngeal airways. ® Figure 23.3 i-gel supraglottic airway. Figure 23.4 Single-use laryngoscope.

with such situations. One specialised method for intubation in di ffi cult situations is the use of the fibreoptic intubating bronchoscope (Figure 23.6), facilitated by topical local anaesthetic in awake patients or using general anaesthesia. The anaesthetist places the endotracheal tube in the trachea by threading the tube over the bronchoscope, and so places the tube in the trachea under direct bronchoscopic vision. An awake intubation requires careful patient selection, as it may not be a suitable technique for all patient groups. Double-lumen tubes and endobronchial tubes are used in procedures such as thoracoscopic, pulmonary and oesophageal surgery to allow collapse of one lung (while ventilating the other) for ease of surgery . Their use is also essential to isola healthy lung in empyema and in the case of a bronchopleural fistula. V entilating bronchoscopes and endobronchial catheters can be used to maintain oxygenation during laryngotracheal surgery or bronchoscopy by using intermittent jets of oxygen. Arthur Ernest Guedel , 1883–1956, Clinical Professor of Anesthesiology , University of Southern California, Los Angeles, CA, USA. Techniques for maintaining an airway /uni25CF /uni25CF /uni25CF /uni25CF Summary box 23.6 Complications of intubation /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF

® Figure 23.5 Airtraq intubating device. Figure 23.6 Fibreoptic intubating bronchoscope. Chin lift and jaw thrust: suitable for the short term when no aid is available Guedel airway: holds the tongue forward but does not prevent aspiration Supraglottic device: easy insertion, reliable airway, allows ventilation Endotracheal intubation: secure and protected airway Failed intubation Accidental bronchial intubation Trauma to teeth, pharynx or larynx Aspiration of gastric contents during intubation Disconnection, blockage or kinking of tube Delayed tracheal stenosis

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