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AS WE WERE...

Tracheal-tube etiquette

Senior House Officers trained in 1975 were meant to straighten re-used red-rubber curved tracheal tubes to peer through the lumen so blockages with dried KY jelly, fluff and, if overseas, cockroaches or grubs were revealed and removed. With a good laryngoscope view, the upper area of the tube-cuff was placed just below the vocal cords.

If the view was poor, the tube was inserted anyway, and if the lungs didn't inflate on reservoir bag squeezing or automatic ventilation, Dr Mike Lindop at Addenbrookes' had the solution. He recommended that the inserter took a deep breath, disconnected and blew down the tube. If the lungs inflated, it was not bronchospasm, a blocked or oesophageal tube; it had to be a breathing circuit problem and the patient would survive with expired air ventilation while you twiddled with the knobs. To be polite (germ-lessening), he suggested blowing through a surgical facemask. Lungs take hardly any puff to inflate and 'Lindop lips' may be demonstrated to trainees using three or more humidification filters, afterwards discarding the furthest away from the patient so nobody catches anything.

Michael Wee^{1,2} and then John F Nunn³ spotted that if the tube was oesophageal, then negative pressure – sucking on it with a bladder syringe (Wee) or an Ellick bladder evacuator (or

sucking by mouth!) – would collapse the oesophageal wall into the tracheal-tube tip, whereas if in the trachea, air came out. A 'Positube' was developed, similar to Wee's device, and I think I may have the only extant one.

Oxygen saturation and end-tidal carbon dioxide were not routinely measured, and, even today, lack of an EtCO₂ trace does not necessarily demonstrate oesophageal intubation. Profound hypotension, a failed analyser or one not plugged in will do it; you have to infer a tube is oesophageal, especially if you haven't watched the tube pass the vocal cords. A review of detection techniques from Seattle had the first description of the UK's gum-elastic bougie with coude tip used as an oesophageal detector.⁴ The whole 60cm goes down into the stomach. Professor Fred Cheney in 1981 noticed a 30–40cm bronchial 'hold-up' of the bougie in the 2ml syringe-sized-generation bronchus; we attributed the idea to him and his resident in 1986.⁵ Peter Latto in Cardiff then researched

100 bougie insertions in 1988,⁶ confirming Cheney's observation.

When 1975 tubes were in, bilateral auscultation of the chest was *de rigueur*, listening over the ribs in the axillae. This demonstrated the tube was somewhere within the trachea and there were no funny noises at that time. If noises (wheeze, rhonchi, crepitations) arrived later, with hand on heart one could say they were not there at the start. We were exhorted to write 'equal breath sounds' or similar on the chart. Movement of the tube tip is known to occur during flexion and extension of the neck,^{7,8} and the steep Trendelenburg tilt position raises the carina, even more so during laparoscopy. Therefore with a tube secured at the mouth, the tip slides down into the right main bronchus.⁹ Eighteen years after this paper, RL Owen and Professor Fred (again) in Seattle calculated that 21cm female, 23cm male at the incisors in adults is (usually) mid tracheal.¹⁰



This photograph was taken before the COVID-19 pandemic

Detection of right (or left) bronchial intubation with the patient drape-covered is impossible by eyeballing chest movements, plus our anaesthetic monitors don't help. EtCO₂ does not change. If using high inspired-oxygen concentration (FiO₂), SpO₂ is on the flat part of the saturation curve; airway pressure may rise two or three centimetres of water but be accepted as normal. Chest X-ray, bronchoscopy, ultra-sound scanning and auscultation are the only ways of revealing bronchial intubation.

Ask operating department practitioners what percentage of anaesthetists auscultate after intubation: 'About 10%, and always trainees; less than 10% measure tracheal cuff pressure'. I would like my asthmatic lungs auscultated regularly and cuff-pressure measured;¹¹ the latter is six-hourly in intensive care.

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