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Rehearsing for a rare event – one small step in the right direction?

In the current release film 'First Man' (1), mention is made of Neil Armstrong's famous quote as he stepped onto the moon: "That's one small step for man, one giant leap for mankind." Did he actually say or mean to say 'a man', which gives the quote its intended meaning? Did he decide what to say moments before stepping out, or had he rehearsed the moment for months, as the team had done with every other aspect of the lunar landing? Should he have practiced more for that one moment, or was whatever time he had better spent on other things - such as understanding the lunar module so well that he and fellow astronaut Buzz Aldrin could repair its ignition switch with a felt-tipped pen, as actually occurred?

As I watched the movie, I found myself wondering whether I would get the line right if I were called upon to make a statement to the world as I set foot upon the moon. I confess that I have also spent similar amounts of time rehearsing how I would strike the penalty kick to decide the World Cup, which items I would save from a burning house, how I would react if the pilot was unconscious and no-one

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else could fly the aeroplane and how many people I should thank in my Academy Award acceptance speech. I suspect I am not alone in spending a touch more time rehearsing for unlikely events than is warranted. But does rehearsing emergency front-of-neck access in a small infant fall into the same category?

In this edition of the Journal, Lim and colleagues have used a well-selected animal model to examine this topic in depth (2). They have commented on methods of access and their inherent hazards, examined various ventilation strategies and flow rate algorithms and tempered it all with a wonderfully sensible and succinct summary: if in doubt, start gently and be guided by the chest's rise and fall. Like all good studies, it not only answers questions but generates more: who is the ideal target audience for this article, and where does tracheal cannulation and ventilation of an infant sit in the pediatric anesthetist's armamentarium?

At first glance, one might consider it to fall within the domain of all anesthetists who treat children. A large part of anesthesia practice is being ready for uncommon situations, and emergency airway management is perhaps the single most important aspect of pediatric practice. It is clear, however, that emergency front-of-neck access in small infants is a far more perilous undertaking than in older children and adults. As Lim and colleagues point out, the cricothyroid membrane in an infant is difficult to find; furthermore, the thyroid cartilage overlaps the cricoid, so that even if one were to find it, a wire inserted through it is likely to pass upwards through the cords and into the oropharynx, rather than downwards as required.

Direct cannulation of the trachea seems a sensible alternative, but this too is fraught with difficulty. Experienced proceduralists require multiple attempts to access the trachea in animal models of the infant airway, whatever the chosen technique (3,4). Even if one were successful in cannulating the trachea in an anaesthetic crisis, the risk of crushing it in doing so or irretrievably damaging the

posterior tracheal wall is significant. And even if one did manage to pass an appropriate device into the right place in a timely manner without harming the patient either through delay or trauma, Lim and colleagues have demonstrated that the chance of lethal over-ventilation is high, particularly with devices that impair exhalation.

What then is the situation we are preparing ourselves for? Is it the infant with an obvious anatomical difficulty? If so, one might hope that the issue has been recognized and the patient transferred to a centre where experienced anesthetists and an Ear Nose and Throat (ENT) surgeon are available. In an informal snowball sample of fellow consultants in a tertiary pediatric centre, not a single colleague has performed emergency front of neck access in an infant, met someone who has performed it or even met someone who has met someone who has performed it. In contrast, many of us have supported a small infant in whatever way we can until an ENT surgeon has performed a tracheostomy. It is quite possible that for many of us, it is easier to find an ENT surgeon than to find the equipment for an emergency airway, especially if the clinical features of the patient have warned us in advance.

Are we instead preparing ourselves for a location or time of day when an ENT surgeon is not available? If so, it is likely that it is an unexpected emergency, whether at birth, in a sick child on a ward or during induction of anesthesia. Training for such emergencies should include many steps before front of neck access is considered, including calling for help early, managing functional airway obstruction with muscle relaxants and supraglottic devices and using a video laryngoscope or fiberoptic bronchoscope to improve the view of the larynx (5). Emergency algorithms for airway management in infants should and do include front of neck access, but given its technical difficulty and potential morbidity, it is reasonable that all other options should be attempted first and trained for longest.

So well done to the authors for examining this topic in detail and helping us to decide what to do. For me, it will be to revel in the luxury that I can call an ENT surgeon early whenever I am presented with an anatomically difficult airway. And I'll kick straight at the keeper, grab the pets, keep the communication with the Academy short and with the control tower long.

And for both my next tracheal cannulation and moon landing: I'll do my best on the day, but not spend too much time rehearsing either.

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