

I can intubate a cat... why would I need a v-gel®

Executive summary

Over the years veterinary anaesthesia techniques have improved with updated drugs, protocols and monitoring. But airway management techniques, typically endotracheal intubation, have not changed in decades. A lot of it is now outdated considering manufacturers' instructions, scientific literature and new technology. In this updated article we review the history of airway management in human and veterinary medicine and the potential issues of using (human) endotracheal tubes in veterinary patients. Finally, we look at how we can overcome some of these issues with the v-gel® advanced species-specific supraglottic airway management devices.

Human devices

Endotracheal tubes were invented over 150 years ago as a human product⁽¹⁾ and have, in all that time changed only twice in respect of veterinary use: the swap from high pressure to low pressure cuffs (due to known trauma) and the manufacture materials, from rubber to PVC single use devices in the mid 1960's. Curved for the anatomy of humans and the round diameter, not in keeping with the anatomical shape of the laryngeal opening, makes the intubation of cats more challenging causing difficulty in placement or trauma to the vocal cords on entry.

Trauma comes in various guises

Silent, tolerated trauma concerns are buried in the back of minds by veterinary staff as most of the symptoms are seen by pet owners once the patient has gone home. However, clients readily voice concerns regarding coughing, loss of voice and problems eating on social media, such as www.caster.com and www.vetinfo.com blogs and forums.

These symptoms are seen due to the stripping away of the tracheal cilia⁽²⁾ as the hard tube is placed down through the trachea and cannot be mitigated by improved techniques. These cilia play a vital role in the "muco-ciliary escalator" which collects and passes bacteria, fungal spores, antigens, dust etc. up the



Fig 1. showing the placement of an ETT and the stripping of the tracheal cilia

respiratory airway away from the lungs to be expelled (swallowed) by the patient.

This trauma not only causes the tracheitis and stridor (wheezing) but, together with the possible transfer of bacteria from the mouth, can lead to bacterial pneumonia and respiratory infections.

To cuff or not to cuff?

The inflation of the cuff is probably the most dangerous part of the intubation process, Tufts University claim 70% of tracheal tear in one study were due to over inflation of the cuff during dental procedures⁽³⁾

There are several techniques used to determine the cuff inflation including:

- Feeling of the pilot balloon
- Listening for leaks whilst inflating cuff and giving the patient a breath
- Inflate cuff and check for movement



Fig 2. a cuffed ETT inside a trachea

But the use of a manometer is the only absolute way of knowing there is not over-inflation of the cuff, beyond the haemodynamic pressure of cutting the blood supply to the area⁽⁴⁾. This low pressure of 20mmHg is easily overachieved on cuff inflation: No measurement means guessing and guessing means accidents.

anaesthesia, safer with v-gel®
supraglottic airway devices

The future

Airway management is the gaining of a sealed airway: by using the v-gel® supraglottic airway devices, you achieve a safe secure airway in the cat quicker and safer than an endotracheal tube ⁽⁵⁾ by sealing in the pharynx rather than the trachea. This improved seal decreases environmental pollution, protecting staff, and means there are cost savings on anaesthetic gas.

By not entering the laryngeal or tracheal areas, the device does not directly cause laryngospasms, narrow the airway or traumatise the delicate tissues.

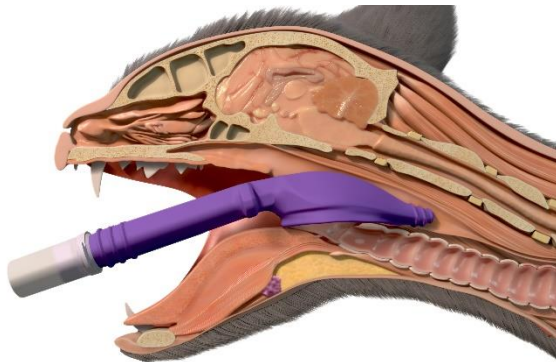


Fig 3. v-gel® advanced in situ

The original v-gel®, launched in 2012, was quickly adopted in over 60 veterinary teaching universities around the world and was considered, by many, the future of airway management. In 2016 we were awarded a prestigious Easy to Give award from the International Society of Feline Medicine. They said that the device “enables a clear airway to be obtained quickly, efficiently and effectively for general anaesthesia and emergency resuscitation purposes without the need for traditional endotracheal intubation”.

v-gel® Advanced

8 years on, the v-gel® has now been improved and the v-gel® advanced has now taken airway management one step further.



Fig 4. v-gel® advanced

- The new shape has improved seal pressures allowing for better mechanical ventilation
- The buccal section has been slimmed giving better oral access for dental procedures but keeping the wide airway channel avoiding airway resistance.
- A wider range of sizes means more patients can be accommodated.
- A low dead-space connector – ideal for the smaller patients
- Gold standard patient care with single-use devices.
- Recyclable - kinder for the environment. No time wasted on cleaning.

Yes, you can intubate a cat...

but consider whether you should

1. The History of Endotracheal Anesthesia, With Special Regard to the Development of the Endotracheal Tube <https://www.ncbi.nlm.nih.gov/pubmed/3535566>
2. Klainer AS, Turndorf H, Wu WS, Maewal H, Allender P Surface Alterations due to Endotracheal Intubation The American Journal of Medicine, 1975, Vol. 58: (674-683)
3. Tracheal rupture associated with intubation in cats: 20 cases (1996–1998). Mitchell et al. <http://intranet.vef.hr/org/kirurgija/wp-content/uploads/2010/04/Tracheal-rupture-associated-with-intubation-in-cats.pdf>
4. Cuffed endotracheal tubes in cats David Yates, Albert Holgate <https://doi.org/10.12968/coan.2019.0070>
5. Assessment of v-gel supraglottic airway device placement in cats performed by inexperienced veterinary students. Barletta et al <http://www.ncbi.nlm.nih.gov/pubmed/?term=barletta+v-gel>

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Summary of features and benefits of v-gel® advanced

- **Species-specific – anatomically accurate**
- **Range of sizes suitable for small kittens to adult large domestic breeds**
- **Easy to place – particularly useful in emergencies**
- **No airway narrowing – no increase in airway resistance**
- **Low dead-space connector**
- **Excellent seal pressure allowing assisted ventilation but no environmental pollution of anaesthetic gases**
- **No laryngeal damage/spasms**
- **No tracheal trauma**
- **Protects airway from reflux/regurg material**
- **Ideal for safer dental procedures**
- **Safer, smoother recoveries**
- **No post-operative gagging or coughing**
- **Single-use device - human medicine standards of cleanliness**

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