

# I can intubate a cat, why would I need 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 A lot of it is now outdated taking into account manufacturers' instructions, scientific literature and new technology. In this 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 v-gel® species-specific supraglottic airway management devices.



## Human devices

Endotracheal tubes, invented in 1871 as a human product, have, in all that time changed only twice: 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 1971. 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](http://www.caster.com) and [www.vetinfo.com](http://www.vetinfo.com) blogs and forums.



Fig 1 & 2 showing the placement of an ETT stripping off the tracheal cilia

These symptoms are seen due to the stripping away of the tracheal cilia 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 respiratory airway away from the lungs to be expelled (swallowed) by the patient. (2)

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.

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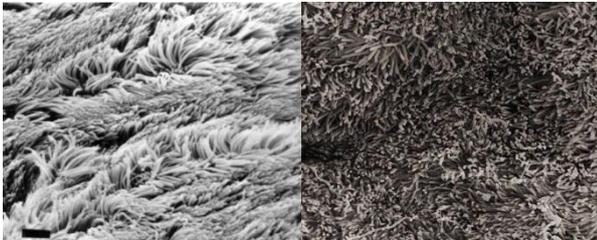


Fig 3 Microscopic images of normal tracheal cilia (1)

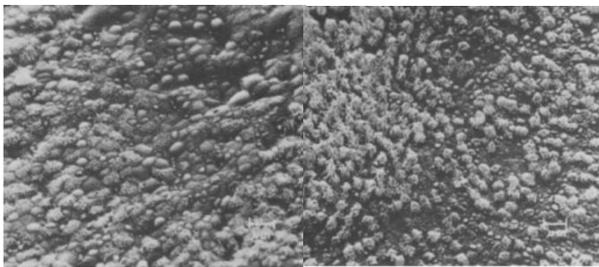


Fig 4 Microscopic images of tracheal cilia day 2 and day 7 post intubation showing the stripping away of the tracheal cilia (1)



Fig 5 Tracheitis with bleeding associated with endotracheal intubation

## 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 their tracheal tear patients seen are due to the over-inflation of the cuff in cat dental procedures).



Fig 6 inflated cuff

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

But 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 (3). This low pressure of 20mmHg is easily overachieved on cuff inflation: No measurement means guessing and guessing means accidents.

## 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 in under 4 secs 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.

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Fig 7 Cat v-gel®

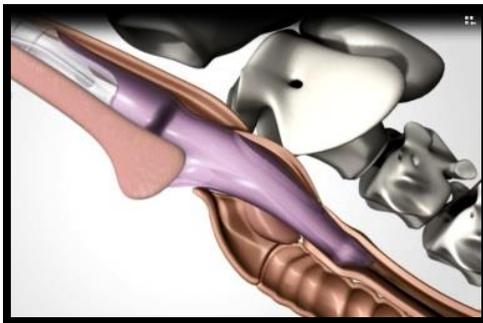


Fig 8 location of v-gel® into the cat pharynx



Fig 9. v-gel® can be safely used in cat dental procedures

By not entering the laryngeal or tracheal area, the device does not directly cause laryngospasms, narrow the airway or traumatise the delicate tissues. Because it is low stimulus it can be left in to maintain an airway much longer in the dangerous recovery period. Made from medical grade silicon it is fully autoclavable allowing legitimate re-use of the product.

The v-gel®, launched in 2012, is already used in over 60 veterinary teaching Universities around the world and is 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”.

## Yes, you can intubate a cat... but should you?

### References

1. 'Mechanisms of laryngotracheal injury following prolonged tracheal intubation' Michael J Bishop, M.D. July 1989
2. 'Evaluation of the endotracheal tube cuff pressure resulting from four different methods of inflation in dogs.' Briganti A, Portela DA, Barsotti G, Romano M, Breggi G. Vet Anaesth Analg. 2012 Sep;39(5):488-94. doi: 10.1111/j.1467-2995.2012.00719.x. Epub 2012 May 30.

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## Summary of features and benefits of v-gel®

- “ Species-specific – anatomically accurate
- “ No airway narrowing – no increase in airway resistance
- “ No environmental pollution of anaesthetic gases
  - “ Less anaesthetic gas used
  - “ No laryngeal damage/spasms
- “ No tracheal damage such as tracheal rupture
  - “ No damage to cilia in tracheal mucosa
  - “ Patients more comfortable in recovery
- “ Easy to place – particularly useful in emergencies
  - “ Can be left in longer during recovery

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