

CORRESPONDENCE

Initial feasibility investigation of the v-gel airway: an anatomically designed supraglottic airway device for use in companion animal veterinary anaesthesia

I would like to report a feasibility study into the use, in small animal anaesthesia, of a supraglottic airway device, designed for veterinary use.

Rabbit anaesthesia carries a higher anaesthetic risk compared with anaesthesia in dogs and cats (Brodgelt et al. 2008). One reason may be that endotracheal intubation can be difficult to perform in rabbits, because they have a narrow pharyngeal inlet, a small larynx and minimal pharyngeal and laryngeal visibility during oral examination. As a result, some general practitioners use face masks in preference, which may not preserve the airway, and makes controlled ventilation difficult. Repeated intubation attempts in rabbits might cause laryngeal trauma, which could then result in airway obstruction following extubation.

The use of a well designed supraglottic airway device (or 'laryngeal mask') should make airway management easier for practitioners (Smith et al. 2004). A number of studies have been carried out using laryngeal masks for rabbit anaesthesia, (Smith et al. 2004; Yuri et al. 2007) including one that employed human paediatric devices (Kazakos et al. 2007). Other species might also benefit from changes to airway management, in particular the cat, as endotracheal intubation has been associated with increased risk of anaesthetic death (Brodgelt et al. 2008).

The i-gel (Intersurgical, UK) is a novel human supraglottic airway device developed by Dr. M.A. Nasir (Levitan & Kinkle 2005). The author has carried out a cadaver study in collaboration with Dr. Nasir. The purpose of this study was to investigate the feasibility of using a noninflatable supraglottic airway device, (v-gel) that would consistently self position over the laryngeal inlet in small companion animal patients such as rabbits

and cats and small dogs. Post-mortem work was carried out on various companion animal cadavers. All owners gave informed consent. Neck dissections of seven cats and five rabbits and four dogs (below 10 kg body weight) were performed.

Using the size 1 i-gel device as a starting point, each device was placed through the mouth into the pharyngeal area. Once each device had been inserted, a dissection was performed from the ventral skin surface into the laryngeal and pharyngeal areas. The position of each device was observed

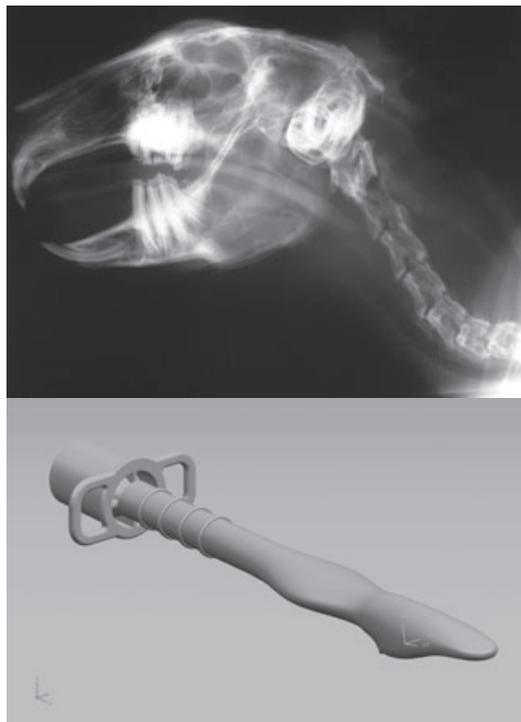


Figure 1 Top: Lateral rabbit head radiograph with v-gel inserted. Below: Dorsolateral view of rabbit v-gel device.

and photographed. Figure 1 shows a radiographic view of a rabbit device following insertion. Material was then manually removed from the i-gel devices in order to fine-tune the shape. Using these adapted devices as guides, standard moulding techniques were then used to produce prototypes of the v-gel device (Fig. 1). Once sufficient alterations were made to the design, it was found that the v-gel device conformed well to the anatomy of the pharyngeal and laryngeal framework, and was simple and rapid to insert.

This study showed that it is possible to make a supraglottic airway device for veterinary use, which will consistently self-position over the laryngeal inlet. The project has identified the shapes necessary for insertion of rabbit and cat and dog supraglottic airway devices. Prototypes were constructed in soft medical grade plastics following these designs, resulting in a rabbit version, a cat version and a small dog version. These prototypes could be scaled up or down to suit different species and different patient sizes. This project provides a foundation for further research, using the veterinary prototypes in a controlled clinical setting. With sufficient clinical validation, it should then become possible to use a v-gel supraglottic airway device in place of an endotracheal tube or face mask during companion animal procedures, and improve the options for airway management in these species.

Statement of professional/commercial interest

I am a veterinary surgeon in UK private practice, and also act as a contract veterinary consultant to Docsinnovent, (18, Hand Court, London WC1V 6JF) the developers of the v-gel device.

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