

## The Leech airway: precursor to the modern supraglottic airway

Emma C. Avery, MSc<sup>Ⓛ</sup>

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The Leech airway or “Pharyngeal Bulb Gasway”, was patented<sup>A</sup> in 1937 by Dr. Beverley C. Leech (1898–1960). Born in Brandon, Manitoba, Dr. Leech served in World War I as a Lieutenant in the Canadian Infantry. He obtained his medical degree from McGill University in 1925<sup>1</sup> and later became the director of anesthesia at the Regina General Hospital. He is currently recognized as one of the pioneers of Canadian anesthesia.

The main driving force for inventing what came to be called the Leech airway was the increasing popularity of cyclopropane-based anesthesia, which required a semi-closed system for administration due to its volatility and relative expense.<sup>2</sup> Leech’s objective was to design a one-size-fits-all device that could create a tight seal within the airway without the need for intubation (which was a relatively tedious and time-consuming procedure compared with today’s intubations).<sup>B</sup> To achieve this goal, Leech created pharyngeal wax casts from cadavers to assess the general size and shape of the human adult pharynx and determine its “average size”.<sup>1</sup> The Leech airway was used in patients undergoing ear, nose, head and neck, and ophthalmic procedures.<sup>2</sup> It was especially noted for its superiority over other means of administering nitrous oxide during minor dental procedures and tooth extractions.<sup>3</sup>

The Leech airway is often regarded as the inspiration for, and precursor to, the original Laryngeal Mask Airway (LMA<sup>TM</sup>; Teleflex Inc.), which was developed during the early 1980s by the British anesthesiologist Archie Brain,



**Figure** Photograph of the Leech airway (from the archives of the Canadian Anesthesiologists' Society)

who cited Leech’s airway in his own patent application.<sup>C</sup> The main difference between the two devices is that the

<sup>A</sup> *Leech BC*. Pharyngeal bulb gasway. Patent for the Leech airway filed on December 30<sup>th</sup>, 1936. Patent was granted on November 16<sup>th</sup>, 1937 (US patent number 2099127 A). Available from URL: <https://www.google.com/patents/US2099127> (accessed December 2017).

<sup>B</sup> *Maltby JR*. Leech pharyngeal bulb gasway. The History of Anaesthesia Society Proceedings. Proceedings of the Summer Scientific Meeting - 25<sup>th</sup> and 26<sup>th</sup> June 2010 - volume 42: 95-101. Available from URL: <http://www.histansoc.org.uk/uploads/9/5/5/2/9552670/9865-1.pdf> (accessed December 2017).

<sup>C</sup> *Brain AI*. Artificial airway device. Patent for supraglottic airway device filed on December 16<sup>th</sup>, 1981. Patent was granted on December 14<sup>th</sup>, 1982 (US patent number 4509514 A). Available from URL: <https://www.google.com/patents/US4509514> (accessed December 2017).

E. C. Avery, MSc (✉)  
Faculty of Medicine, St. Boniface Hospital, University of  
Manitoba, CR3008-369 Tache Avenue, Winnipeg, MB R2H  
2A6, Canada  
e-mail: [averye@myumanitoba.ca](mailto:averye@myumanitoba.ca)

Leech airway was positioned higher in the pharynx than the LMA. The Leech airway was widely used well into the late 1950s, after which its use declined. The primary reason for its waning use was the introduction of suxamethonium. In a letter<sup>D</sup> written by Leech in 1957, he said “I rarely use it myself anymore, since rapid acting relaxants have made intubation so simple”.<sup>4</sup>

**Conflicts of interest** None declared.

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<sup>D</sup> *Leech BC*. Letter to Dr. Intress 13 March 1957. Wood Library - Museum of Anesthesiology, Park Ridge, Illinois.