

Modification of the bougie Boussignac as a 3-in-1 airway device

Dear Editor,

The incidence of difficult intubation is 4.7% in infants and

0.07%–0.7% in older children.^[1] The pediatric difficult airways are associated with significant morbidity, and warrants limited attempts at direct laryngoscopy and transitioning to video laryngoscopy while maintaining oxygenation.^[2]

Video laryngoscopes have become the mainstay in the management of pediatric difficult airway. Hyper-angulated blades, such as the CMAC-D blade provide a better glottic view

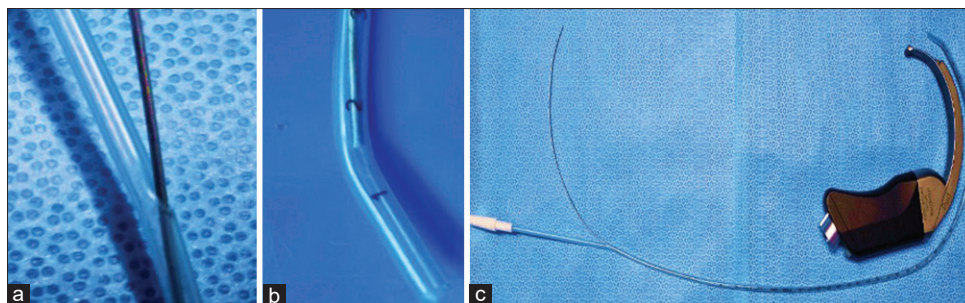


Figure 1: Introduction of the malleable stylet into the bO₂ugie Boussignac (a) up to the coudé tip (b) and pre-shaping it to match the curve of the D blade (c)

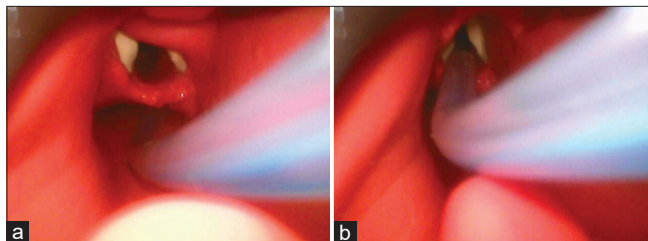


Figure 2: bO₂ugie Boussignac on introduction into the glottis tending to uncurl without the stylet (a) and directed anteriorly into the glottis with the stylet (b)

in simulated pediatric difficult airway.^[3] The hyper-angulation improves the laryngeal view, but negotiating the endotracheal tube may be difficult or impossible due to the steep angle of the CMAC-D blade. An ETT without a stylet cannot align with the acute radius of curvature of the D blade (non-channelled) and results in longer intubation time; a pre-shaped stylet will overcome this problem.^[4] A pre-shaped stylet is not provided with the pediatric CMAC-D blade. The disposable bougie does not conform to the curvature of the D blade and tends to straighten while introducing into the glottis.^[5]

The bO₂ugie Boussignac (Vygon – 5, rue Adeline, 95440 Ecouen, France) is an orotracheal flexible guide for difficult endotracheal intubation. It is available for both the pediatric and the neonatal age groups, and is often used in pediatric difficult airways. It has an advantage of a coudé tip with an angle of 40 degrees and a double duct. The working principle is such that the first duct (transparent) is closed at the proximal end and open at the distal end and has decompression openings to allow egress of gases. The second duct (colored) is open at the proximal end and closed at the distal end. An opening in the second colored duct at the coudé tip allows passive oxygenation during intubation. However, as with other bougies, its tip is soft, floppy and tends to uncurl while attempting to introduce it into the glottis when used with D blade in a mannequin.

We describe a modification to the bO₂ugie Boussignac where introduction of a malleable stainless steel guide wire of 1 mm thickness (18G) (the diameter of the opening at the distal tip is 1.5 mm) through an opening 10 cm from the proximal end [Figure 1a] into the transparent first duct till

the bend of coudé tip [Figure 1b] enables stiffening of the bougie. This makes it possible to angulate it according to the curvature of the D blade, thereby functioning as a stylet while retaining the 40-degree angulation of the bougie while preventing injury to the anterior tracheal wall [Figure 1c] and preventing the uncurling which happens due to the lack of plasticity (memory) of disposable bougies [Figure 2a]. Once the bougie is in place, the stylet can be removed and the endotracheal tube can be railroaded over the bougie into the glottis. This enables oxygenation through the connector and egress through the decompression openings [Figure 2b].

Thus, the bO₂ugie Boussignac can potentially function as a bougie, a flexible stylet and as an oxygenation device enabling the anaesthesiologist to handle the potentially difficult airway in the pediatric age group with confidence.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Heinrich S, Birkholz T, Ihmsen H, Irouschek A, Ackermann A, Schmidt J. Incidence and predictors of difficult laryngoscopy in 11,219 pediatric anaesthesia procedures: Erlangen paediatric laryngoscopy. *Pediatr Anesth* 2012;22:729-36.
2. Jagannathan N, Sohn L, Fiadjoe JE. Paediatric difficult airway management: What every anaesthetist should know! *Br J Anaesth* 2016;117:i3-5.
3. Sinha R, Ray BR, Sharma A, Pandey RK, Punj J, Darlong V, *et al.* Comparison of the C-MAC video laryngoscope size 2

Macintosh blade with size 2 C-MAC D-Blade for laryngoscopy and endotracheal intubation in children with simulated cervical spine injury: A prospective randomized crossover study. *J Anaesthesiol Clin Pharmacol* 2019;35:509-14.

4. Piepho T, Fortmueller K, Heid FM, Schmidtmann I, Werner C, Noppens RR. Performance of the C-MAC video laryngoscope in patients after a limited glottic view using Macintosh laryngoscopy: C-MAC in limited glottic view. *Anaesthesia* 2011;66:1101-5
5. Kelly FE, Cook TM. Seeing is believing: Getting the best out of video laryngoscopy. *Br J Anaesth* 2016;117:i9-13.

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