

## Awake videolaryngoscope – guided intubation – well worth adding to your skill-mix

Until now, awake fiberoptic intubation (FOI) was the most widely recommended technique for the management of the anticipated difficult airway. However, awake FOI is becoming more and more obsolete and used only by a few airway enthusiasts [1]. Recent evaluations of the awake videolaryngoscope guided intubation (VLI) [2-16] strongly suggest that this technique is not only a suitable alternative to awake FOI but should now be the 1<sup>st</sup> choice technique for managing anticipated difficult airway.

Many anaesthetists *avoid* awake FOI as it is challenging technique to learn and perhaps more importantly, once learned, this skill is difficult to maintain [17, 18]. The Fourth National Audit Project [19] cited 18 cases where the reviewers thought an awake method of securing the airway was appropriate, but the anaesthetist avoided it and chose a more familiar but riskier general anaesthesia with serious consequences. Furthermore, of the 15 awake fiberoptic intubation cases cited in the report, 60% failed suggesting a lack of skill with the procedure even amongst experienced clinicians [19]. In addition, the ASA closed claims database [20] revealed a number of complications, including brain damage and death, when awake fiberoptic intubation was chosen to manage the airway, further suggesting difficulty in maintaining this skill.

Awake videolaryngoscope guided intubation, on the other hand, may be the solution to most of the problems associated with awake FOI technique. Videolaryngoscopes have become freely available allowing the use

in a greater number and wider variety of patients gaining the advantage of *familiarity and experience*. This is especially relevant when managing difficult airways out of hours and in an emergency.

Videolaryngoscopy appears to be *easier to learn*. In order to reach competence with fiberoptic scope-guided intubations (> 90% success rate within three minutes), the anaesthetist needs some 25 intubations [21]. To reach the same level of competence with videolaryngoscope guided intubations, the anaesthetist needs between one and six intubations [22-24]. There is a suggestion that to become an *expert user* of a videolaryngoscope requires 76 attempts and sustained deliberate practice [25]. This is typically acquired over a period of 10 years [26]. It can be argued that the expertise in awake intubation would be easier achieved with videolaryngoscope (freely available and widely used) than with fiberoptic scope (used infrequently in comparison).

There are also number of *advantages of awake videolaryngoscope guided technique* inherent with the device design and intubation technique [27]. First, videolaryngoscopes create space within the airway allowing for effective suctioning of secretions and blood from the airway under direct vision. Second, the created space within the airway aids administration of *atomized* local anaesthetic to the glottis and trachea under direct view from the videolaryngoscope. Third, there is no blind tube railroading associated with fibroscope guided intubations. When using a videolaryngoscope, the tube placement is observed throughout the intubation process, reducing the potential for airway trauma. Fourth, there is no ‘diminution of view’ [27] associated with fibroscope advance towards the glottis. Videolaryngoscopes provide a fixed wide view of the glottis that aids recognition of the airway landmarks, particularly relevant in patients with distorted airway

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anatomy. Listed advantages of this technique over awake FOI are likely to make this technique more user friendly and easier to learn. Although, there is a suggestion that a videolaryngoscope with the tube guide may offer an advantage over videolaryngoscopes with an anatomically shaped blade [28], further research is required in finding the most appropriate type of videolaryngoscope for awake intubation.

Perhaps most relevantly, awake VLI is an *effective awake intubation technique* for managing an anticipated difficult airway. There has been a number of case reports [2-7], case series [8-11] and five comparative studies looking at the awake videolaryngoscopy [12-16]. The use of a videolaryngoscope to facilitate an awake oral or nasal intubation has been shown to be of benefit in patients with a predicted difficult airway [2-16], in the obese population [9], and in patients with peri-glottic tumours [7, 11].

Five studies have directly compared videolaryngoscopes and fibrescopes for awake intubation [12-16]. Two found the two techniques to be comparable in time to securing the airway and operator experience [13, 14]. Three other studies [12, 15, 16] found that the intubation time was significantly shorter with the videolaryngoscope than the fibrescope, which is also our experience. Recently published comparison of the awake flexible fibrescope and the Pentax Airway Scope for awake oral intubation [12] found that the overall time (the sum of sedation time, topical anaesthesia time and intubation time) was significantly shorter with the Airway Scope videolaryngoscope. September's issue of *Anaesthesia* has published a systematic review and meta analyses of all the studies comparing the awake videolaryngoscope guided intubation with the awake flexible scope guided intubation [28] and concluded that awake videolaryngoscopy is significantly faster. This review found no difference in the success rate, complication rate or patient satisfaction.

What about *patients' comfort*? Many anaesthetists cite this as a potential disadvantage of awake videolaryngoscopy. All five of the comparative studies [12-16], however, reported no difference in patients' satisfaction between the awake videolaryngoscope and awake fibrescope guided intubation. There is uncertainty about the level of sedation required to make awake intubation acceptable to patients. The safety of the awake video laryngoscope guided intubation and the level of patients' acceptance are likely to be more influenced by the adequacy of topical anaesthesia than the levels of sedation.

The difficult airway is a sign for a wide range of conditions. No single airway device will satisfy all clinical situations or operator preferences. Awake fibreoptic intubation still has a role but should not be

considered the 1<sup>st</sup> choice technique any more. Awake videolaryngoscopy is a skill that is simple to learn and easy to maintain and is a more effective technique for managing an anticipated difficult airway than awake FOI. In addition, videolaryngoscopes have a number of design features making them potentially safer devices for managing an anticipated difficult airway. The time has come for awake videolaryngoscopy to be considered not only a suitable alternative to awake FOI, but should now be the 1<sup>st</sup> choice technique for managing the anticipated difficult airway.

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#### Conflict of interest

Nothing to declare

#### References

- Ahmad I, Bailey CR. Time to abandon awake fibreoptic intubation? *Anaesthesia* 2016; 71: 12-16. doi: 10.1111/anae.13333
- Uslu B, Damgaard Nielsen R, Kristensen BB. McGrath videolaryngoscope for awake tracheal intubation in a patient with severe ankylosing spondylitis. *Br J Anaesth* 2010; 104: 118-119. doi: 10.1093/bja/aep352
- Xue FS, Xiong J, Yuan YJ, Wang Q, Asai T. Pentax-AWS videolaryngoscope for awake nasotracheal intubation in patients with a difficult airway. *Br J Anaesth* 2010; 104: 505-508. doi: 10.1093/bja/aeq042
- Asai T. Pentax-AWS videolaryngoscope for awake nasal intubation in patients with unstable necks. *Br J Anaesth* 2010; 104: 108-111. doi: 10.1093/bja/aep316
- Jarvi K, Hillermann C, Danha R, Mendonca C. Awake intubation with the Pentax Airway Scope. *Anaesthesia* 2011; 66: 314. doi: 10.1111/j.1365-2044.2011.06668.x
- Jeyadoss J, Nanjappa N, Németh D. Awake intubation using Pentax AWS videolaryngoscope after failed fibreoptic intubation in a morbidly obese patient with a massive thyroid tumour and tracheal compression. *Anaesth Intensive Care* 2011; 39: 311-312
- Lambert C, Passant C, Hodzovic I. Awake videolaryngoscope-assisted intubation in a patient with stridor. *Eur J Anaesthesiol* 2013; 30: 258. doi: 10.1097/00003643-201306001-00809
- Xue FS, Li CW, Zhang GH, Li XY, Sun HT, Liu KP, et al. Glide-Scope-assisted awake fibreoptic intubation: initial experience in 13 patients. *Anaesthesia* 2008; 61:1014-1015. doi: 10.1111/j.1365-2044.2006.04809.x

9. Dimitriou VK, Zogogiannis ID, Liotiri DG. Awake tracheal intubation using the Airtraq laryngoscope: a case series. *Acta Anaesthesiol Scand* 2009; 53: 964-967. doi: 10.1111/j.1399-6576.2009.02012.x
10. Moore AR, Schrickler T, Court O. Awake videolaryngoscopy-assisted tracheal intubation of the morbidly obese. *Anaesthesia* 2012; 67: 232-235. doi: 10.1111/j.1365-2044.2011.06979.x
11. Markova L, Stopar-Pintaric T, Luzar T, Benedik J, Hodzovic I. A feasibility study of awake videolaryngoscope-assisted intubation in patients with periglottic tumour using the channelled King Vision® videolaryngoscope. *Anaesthesia* 2017; 72: 512-518. doi: 10.1111/anae.13734
12. Mendonca C, Mesbah A, Velayudhan A, Danha R. A randomised clinical trial comparing the flexible fibrescope and the Pentax Airway Scope (AWS)® for awake oral tracheal intubation. *Anaesthesia* 2016; 71: 908-914. doi: 10.1111/anae.13516
13. Kramer A, Müller D, Pfortner R, Mohr C, Groeben H. Fiberoptic vs videolaryngoscopic (C-MAC® D-BLADE) nasal awake intubation under local anaesthesia. *Anaesthesia* 2015; 70: 400-406. doi: 10.1111/anae.13016
14. Rosenstock CV, Thøgersen B, Afshari A, Christensen AL, Eriksen C, Gätke M. [Awake Fiberoptic or Awake Video Laryngoscopic Tracheal Intubation in Patients with Anticipated Difficult Airway Management: A Randomized Controlled Trial](#). *Anesthesiology* 2012; 116: 1210-1216. doi: 10.1097/ALN.0b013e318254d085
15. Abdellatif AA, Ali MA. GlideScope videolaryngoscope versus flexible fiberoptic bronchoscope for awake intubation of morbidly obese patient with predicted difficult intubation. *Middle East J Anaesthesiol* 2014; 22: 385-392
16. Wahba SS, Tammam TF, Saeed AM. Comparative study of awake endotracheal intubation with Glidescope video laryngoscope versus flexible fiber optic bronchoscope in patients with traumatic cervical spine injury. *Egypt J Anaesth* 2012; 28: 257-260. doi: 10.1016/j.egja.2012.05.002
17. Fiadjoe JE, Litman RS. [Difficult Tracheal intubation: looking to the past to determine the future](#). *Anesthesiology* 2012; 116: 1181-1182. doi: 10.1097/ALN.0b013e318254d0a0
18. Rose DK, Cohen MM. The airway: problems and predictions in 18,500 patients. *Can J Anaesth* 1994; 41: 372-383. doi: 10.1007/BF03009858
19. Cook TM, Woodall N, Frerk C, editors. 4<sup>th</sup> National Audit Project: of The Royal College of Anaesthetists and The Difficult Airway Society: Major complications of airway management in the UK. London: Royal College of Anaesthetists; 2011: 114-120
20. Peterson GN, Domino KB, Caplan RA, Posner KL, Lee LA, Cheney FW. Management of difficult airway: a closed claims analysis. *Anesthesiology* 2005; 103: 33-39. doi: 10.1097/0000542-200507000-00009
21. Heidegger T, Gerig HJ, Ulrich B, Schnider TW. Structure and process quality illustrated by fiberoptic intubation: analysis of 1612 cases. *Anaesthesia* 2003; 58: 734-739. doi: 10.1046/j.1365-2044.2003.03200.x
22. Mihai R, Blair E, Kay H, Cook TM. A quantitative review and meta-analysis of performance of non-standard laryngoscopes and rigid fiberoptic intubation aids. *Anaesthesia* 2008; 63: 745-760. doi: 10.1111/j.1365-2044.2008.05489.x
23. Ray DC, Billington C, Kearns PK, Kirkbride R, Mackintosh K, Reeve CS, et al. [A comparison of McGrath and Macintosh laryngoscopes in novice users: a manikin study](#). *Anaesthesia* 2009; 64: 1207-1210. doi: 10.1111/j.1365-2044.2009.06061.x
24. Cortellazzi P, Caldiroli D, Byrne A, Sommariva A, Orena EF, Tramacere I. [Defining and developoing expertise in tracheal intubation using a GlideScope for anaesthetists with expertise in Macintosh direct laryngoscopy: an in-vivo longitudinal study](#). *Anaesthesia* 2015; 70: 290-295. doi: 10.1111/anae.12878
25. Dreyfus SE. The five-stage model of adult skill acquisition. *Bull Sci Tech Soc* 2004; 24: 177-181. doi: 10.1177/0270467604264992
26. Fitzgerald E, Hodzovic I, Smith AF. 'From darkness into light': time to make awake intubation with videolaryngoscopy the primary technique for an anticipated difficult airway? *Anaesthesia* 2015; 70: 387-392. doi: 10.1111/anae.13042
27. Richardson PB, Hodzovic I. [Awake tracheal intubation using videolaryngoscopy: importance of blade design](#). *Anaesthesia* 2012; 67: 798-799. doi: 10.1111/j.1365-2044.2012.07224.x
28. Alhomary M, Ramadan E, Curran E, Walsh SR. Videolaryngoscopy vs. fiberoptic bronchoscopy for awake tracheal intubation: a systematic review and meta analysis. *Anaesthesia* 2018; 73: 1151-1161. doi: 10.1111/anae.14299