Air Q evidence summary

The Air Q is a type of supraglottic airway device very similar to a laryngeal mask airway. As this is a new device, little research exists on use of the Air Q in the out of hospital environment or during cardiac arrest. There are multiple studies of other supraglottic airways that show an improved time to ventilation and improved rate of successful ventilation. As ventilation has been de-emphasized in the most recent cardiac resuscitation guidelines it is not clear whether these improvements in intermediate outcomes will translate to any improvement in patient oriented outcomes.

The only study measuring the effect of a supraglottic airway device on mortality was a study of the esophageal gastric airway (EGA) which is substantially different from the AirQ. This study [Goldenberg IF, Campion BC, Siebold CM, McBride JW, Long LA. Esophageal gastric tube airway vs endotracheal tube in prehospital cardiopulmonary arrest. Chest1986 Jul;90(1):90-6.] found no difference in survival between patients receiving the EGA vs. endotracheal intubation. A Cochrane review of SGA use in cardiac arrest found only the Goldenberg study. [Lecky F, Bryden D, Little R, Tong N, Moulton C. Emergency intubation for acutely ill and injured patients. Cochrane Database Syst Rev2008(2):CD001429.]

Research specifically studying the AirQ is limited.

Bakker EJ, Valkenburg M, Galvin EM. Pilot study of the air-Q intubating laryngeal airway in clinical use. Anaesth Intensive Care. 2010 Mar;38(2):346-8

Study of the AirQ in 59 ASA I and II patients undergoing elective surgery. Air-Q successfully placed by anesthetist in 100%. Endotracheal intubation attempted through the Air-Q in 19 patients and successful in 58%.

Joffe AM, Lieu EC, Galgon RE, Viernes D, Treggiari MM. The second-generation air-Q intubating laryngeal mask for airway maintenance during anaesthesia in adults: a report of the first 70 uses. Anaesth Intensive Care. 2011 Jan;39(1):40-5.

Air-Q placed successfully by anesthetists in 70/70 elective surgery cases. Fiberoptic intubation performed successfully in 12/13.

Galgon RE, Schroeder K, Joffe AM. The self-pressurising air-Q® Intubating Laryngeal Airway for airway maintenance during anaesthesia in adults: a report of the first 100 uses. Anaesth Intensive Care. 2012 Nov;40(6):1023-7.

Air-QSP placed successfully by anesthetists in 100/100 elective surgery cases. Fiberoptic intubation performed successfully in 28/29.

Karim YM, Swanson DE. Comparison of blind tracheal intubation through the intubating laryngeal mask airway (LMA Fastrach) and the Air-Q. Anaesthesia. 2011 Mar;66(3):185-90.

Compared intubation through LMA Fastrach vs Air-Q in 154 healthy adults undergoing elective surgery. Blind intubation successful after two attempts in 75/76 (99%) with Fastrach vs 60/78 (77%) with Air-Q. Fiberoptic intubation used on third attempts to achieve intubation success in 100% with Fastrach vs 95% with Air-Q.

The following literature review includes studies of laryngeal mask type airways (NOT airq) in emergency situations or simulation.

Ben-Abraham R, Weinbroum AA. Laryngeal mask airway control versus endotracheal intubation by medical personnel wearing protective gear. Am J Emerg Med2004 Jan;22(1):24-6.

This study showed that physicians could place an LMA faster than an endotracheal tube in a mannequin model.

Bryden DC, Gwinnutt CL. Tracheal intubation via the laryngeal mask airway: a viable alternative to direct laryngoscopy for nursing staff during cardiopulmonary resuscitation. Resuscitation1998 Jan;36(1):19-22.

This study randomized nursing staff to training in endotracheal intubation vs LMA placement then tested their performance on anesthetized patients in the operating room. Success rate was higher when LMA was used (97% vs 39%).

Calkins MD, Robinson TD. Combat trauma airway management: endotracheal intubation versus laryngeal mask airway versus combitube use by Navy SEAL and Reconnaissance combat corpsmen. J Trauma1999 May;46(5):927-32.

Showed that Navy SEAL corpsman could place an LMA in a mannequin faster than a combitube or ETT.

Deakin CD, Peters R, Tomlinson P, Cassidy M. Securing the prehospital airway: a comparison of laryngeal mask insertion and endotracheal intubation by UK paramedics. Emerg Med J2005 Jan;22(1):64-7.

UK paramedics were tested in placement of LMA vs ETT in anesthetized patients. ETT success rate was 71.2% vs. 88.8% with LMA. LMA success rate was 80% in cases where ETT was unsuccessful.

Gatward JJ, Thomas MJ, Nolan JP, Cook TM. Effect of chest compressions on the time taken to insert airway devices in a manikin. Br J Anaesth2008 Mar;100(3):351-6.

Showed that SGA devices (i-gel, LMA Classic, LMA Proseal) could be placed faster during chest compressions than ETT.

Martin SE, Ochsner MG, Jarman RH, Agudelo WE, Davis FE. Use of the laryngeal mask airway in air transport when intubation fails. J Trauma1999 Aug;47(2):352-7.

LMA was placed successfully by air medical providers in 16/17 patients who had failed endotracheal intubation.

Pennant JH, Walker MB. Comparison of the endotracheal tube and laryngeal mask in airway management by paramedical personnel. Anesth Analg1992 Apr;74(4):531-4.

Study of LMA vs ETT placement by paramedics in anesthetized patents. Higher success with LMA vs ETT (94% vs 69%). LMA placement was faster than ETT (38sec vs 88sec)

Reinhart DJ, Simmons G. Comparison of placement of the laryngeal mask airway with endotracheal tube by paramedics and respiratory therapists. Ann Emerg Med1994 Aug;24(2):260-3.

Study of LMA vs ETT placement by paramedics in anesthetized patents. Higher success with LMA vs ETT (100% vs 52.6%). LMA placement was faster than ETT (39sec vs 209sec)

Samarkandi AH, Seraj MA, el Dawlatly A, Mastan M, Bakhamees HB. The role of laryngeal mask airway in cardiopulmonary resuscitation. Resuscitation1994 Oct;28(2):103-6.

Cardiac arrest patients randomized to LMA vs ETT. No difference in O2 saturations. No regurgitation in any patient.

Tentillier E, Heydenreich C, Cros AM, Schmitt V, Dindart JM, Thicoipe M. Use of the intubating laryngeal mask airway in emergency pre-hospital difficult intubation. Resuscitation2008 Apr;77(1):30-4.

Intubating LMA used by physicians out of the hospital. 50% of patients in cardiac arrest prior to airway management. I-LMA successfully placed in 45 patients, 41 of who had previously failed ETT attempts. LMA successfully placed in 96%. Successfully intubated through LMA in 91%

Timmermann A, Russo SG, Crozier TA, Eich C, Mundt B, Albrecht B, et al. Novices ventilate and intubate quicker and safer via intubating laryngeal mask than by conventional bag-mask ventilation and laryngoscopy. Anesthesiology2007 Oct;107(4):570-6.

Medical students were more successful in ventilating a mannequin with iLMA vs BVM. Higher rate of successful intubation through ILMA vs conventional DL.

Timmermann A, Russo SG, Rosenblatt WH, Eich C, Barwing J, Roessler M, et al. Intubating laryngeal mask airway for difficult out-of-hospital airway management: a prospective evaluation. Br J Anaesth2007 Aug;99(2):286-91.

Eleven patients with "difficult airway" were successfully intubated using ILMA. 37% were in cardiac arrest.

Winterhalter M, Brummerloh C, Luttje K, Panning B, Hecker H, Adams HA. [Emergency intubation with magill tube, laryngeal mask and esophageal tracheal combitube in a training-course for emergency care physicians]. Anasthesiol Intensivmed Notfallmed Schmerzther2002 Sep;37(9):532-6.

Emergency-care physicians with no experience (???) were faster to place LMA compared to combitube or ETT in a mannequin. The physicians liked the combitube the best.