

A Systematic Review of Evidence on the Effectiveness of Video Laryngoscopes in Acute Care Facilities

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Thesis Declaration

I certify that this thesis entitled:

A Systematic Review of Evidence on the Effectiveness of Video Laryngoscopes in Acute Care Facilities

Submitted for the degree of Master of Clinical Science (Evidence Based Healthcare), is the result of my own research. This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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Scott Mitchell

Date:

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Executive Summary

Aim

The objective of this systematic review was to synthesise the evidence on the effectiveness of the video laryngoscope in the acute care setting compared to the traditional method of direct laryngoscopy.

Methods

The search strategy implemented aimed to find both published and unpublished studies in English language only from 2001 to 2010 that compared the effectiveness of the video laryngoscope to direct laryngoscopy in the acute care setting. The search was conducted using data bases such as Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Database of Abstracts of Reviews of Effects, Cochrane Central Register of Controlled Trials (CENTRAL), Health Technology Assessment Data Base, BioMed Central, Bioscience & Health Technology Database, Embase, JBI Library of Systematic Reviews and Scopus. A manual search of references and unpublished studies held by manufactures was also conducted. The following key words and terms were used Laryngoscopes, Laryngoscopy, Videolaryngoscope, Video laryngoscope, Video assisted laryngoscope, Effectiveness, Experience, Theatre, operating theatre, Critical Care, Intensive Care, ICU and Emergency Department.

Findings

Thirty-nine studies were identified as suitable for critical appraisal. Utilising the MASTARI critical appraisal tool 22 studies were selected for review. The review identified that the available evidence of the effectiveness of the video laryngoscope in the acute care setting in comparison to direct laryngoscopy was weak related to poor study design and a lack of statistical power. The strength of this evidence does not allow for a statement supporting the use of video laryngoscopy over direct laryngoscopy. This finding is consistent with the ANZCA background paper on equipment for the management of difficult airways.⁶ Regardless of this, using the primary outcomes of time to intubate and number of intubation attempts, there is evidence to suggest that the use of a video laryngoscope may be effective in four of the identified subgroups. The four subgroups are patients with predicted or known difficult airways, those with restricted neck movement, and those who are obese and in situations where a novice is performing intubation.

Conclusion

The available evidence is inconclusive in identifying if the video laryngoscope is effective in the acute care setting when compared to direct laryngoscopy in the acute care setting.

Implications for Research

The review further emphasises the need for a multi-centre randomised controlled trial to validate the effectiveness of the video laryngoscope compared to direct laryngoscopy in the acute care setting. It is recommended that both adult and paediatric patients be included as participants. In order to further validate the clinical use of the video laryngoscope participants with Cormack Lehane Grades I – IV and ASA scores I – IV should be included.

Implications for Practice

Four recommendations are made by the review that impact on practice however the weakness of the available evidence limits the meaningfulness of the recommendations. The recommendations are:

A video laryngoscope should be immediately available to use for patients with predicted or known difficult airways, those with restricted neck movement and those who are obese when time to intubate is not considered to be a critical factor.

A video laryngoscope should be available for use by novice intubators at all times.

A video laryngoscope should be available on resuscitation trolleys.

A video laryngoscope should be located permanently in the Post Anaesthetic Care Unit (PACU). Alternatively a post intubation process that ensures used video laryngoscope equipment remains with the patient until discharged from PACU.