Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Article

A comparative study of GlideScope (GVL) `and CMAC-D in tracheal intubation

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ABSTRACT:

Background: Airway management in patients with cervical spine pathology is of utmost importance. The present study was conducted to compare GlideScope (GVL) and CMAC-D in tracheal intubation. **Materials & Methods:** The present study was conducted on 82 patients of American Society of Anesthesiologists' status I and II patients scheduled for elective cervical spine surgery. They were divided into 2 groups. Group I patients were grouped into GVL group and group II into CMAC-D group. Parameters were recorded. **Results:** The mean age in group I was 45.2 years in group II was 43.6 years, number of cervical axial surgery in group I was 6 and in group II was 7, number of cervical subaxial surgery in group I was 35 and I group II was 34. The difference was non- significant (P> 0.05). (IDS) intubation difficulty score in group I was 0.21 and in group II was 0.05, (ADS) airway difficulty score in group I was 8.67 and in group II was 8.13, time of intubation in group I was 31.5 and inn group II was 29.3, Cormack-Lehane Grading in group I was 5 and in group II was 1. The difference was significant (P< 0.05).

Conclusion: Authors found that Both GVL and CMAC-D with MIAS are equally effective in tracheal intubation in cervical spine injury patients.

Key words: Airway, laryngeal mask airway, intubation.

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This article may be cited as: Singh B. A comparative study of GlideScope (GVL) and CMAC-D in tracheal intubation. J Adv Med Dent Scie Res 2018;6(1):142-145.

INTRODUCTION

Airway management in patients with cervical spine pathology is of utmost importance to the anaesthesiologists because of the possibility of further aggravating any injury to the neural structures. To prevent this, cervical collar or manual inline axial stabilization (MIAS) is routinely applied.[1]

The available airway devices/techniques to secure airway in such a situation include awake fibreoptic intubation, intubating laryngeal mask airway (ILMA), conventional oral intubation with direct laryngoscopy with MIAS and recently the video laryngoscopes. Awake fibreoptic intubation is gold standard but in urgent or emergent situations when a patient is too anxious or if there are blood/ secretions in the airway, use of fibreoptic intubation may be technically challenging and even may not be possible.[2]

Various alternatives to standard direct laryngoscopy are often deployed when a potential "difficult airway" is identified or when conventional laryngoscopy fails. Over the past several years, video laryngoscopic devices like the GlideScope have come to the forefront of direct laryngoscopy alternatives.[3] These devices do not require line of sight visualization of the larynx; instead videochip/camera technology projects a view of the patient's larynx onto a video screen. The latest report from the American Society of Anesthesiologists Task Force on the management of the difficult airway even includes the consideration of video laryngoscope devices as an initial approach to intubation.[4]

GlideScope (GVL) and CMAC-D are used for laryngoscopy and intubation during general anaesthesia in patients with suspected difficult airway in otorhinolaryngology patients.[5] The present study was

conducted to compare GlideScope (GVL) and CMAC-D in tracheal intubation.

MATERIALS & METHODS

The present study was conducted in the department of Anesthesiology. It comprised of 82 patients of American Society of Anesthesiologists' status I and II patients scheduled for elective cervical spine surgery under general anaesthesia of both genders. They were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. General information such as name, age, gender etc. was recorded. They were divided into 2 groups. Group I patients were grouped into GVL group and group II into CMAC-D group.

Preoperative airway difficulty score (ADS) was calculated. The primary outcome of the study was intubation difficulty score (IDS) and the secondary outcomes included total time taken to secure airway, failure to intubate, haemodynamic parameters and adverse events were recorded.

Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 82		
Groups	**Group I (GVL)**	**Group II (CMAC-D)**
Number	41	41

Table I shows that group I patients were grouped into GVL group and group II into CMAC-D group. Each group had 41 patients.

Table II Comparison of parameters

Parameters	Group I	Group II	P value
Age (Mean)	45.2	43.6	0.81
Cervical axial surgery	6	7	0.72
Cervical subaxial surgery	35	34	0.83

Table II, graph II shows that mean age in group I was 45.2 years in group II was 43.6 years, number of cervical axial surgery in group I was 6 and in group II was 7, number of cervical subaxial surgery in group I was 35 and I group II was 34. The difference was non- significant (P> 0.05).

Graph II Comparison of parameters

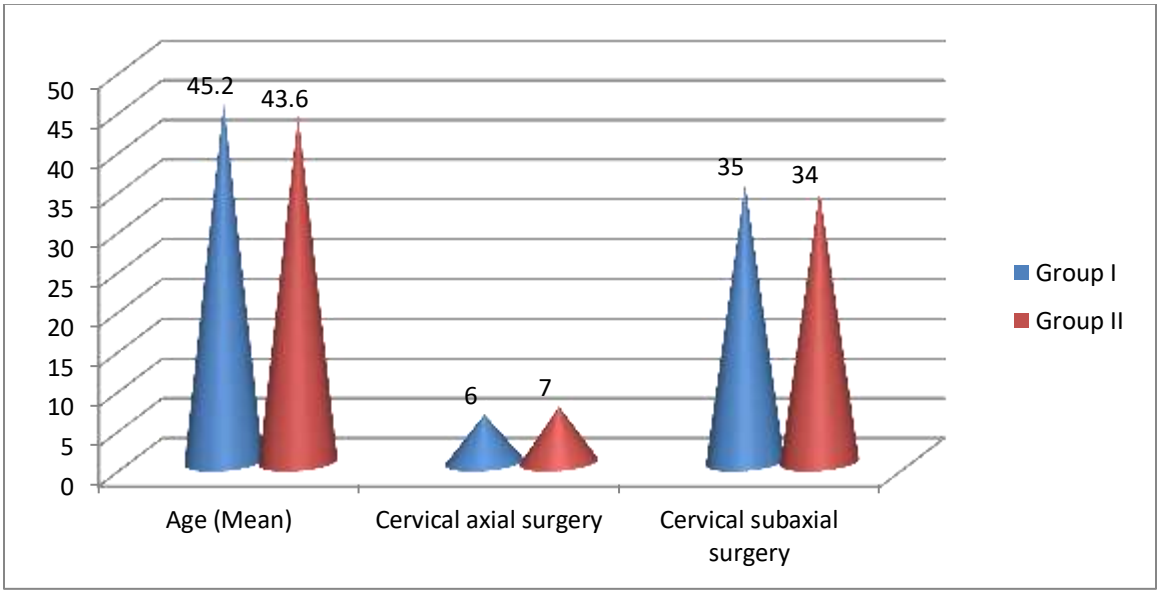
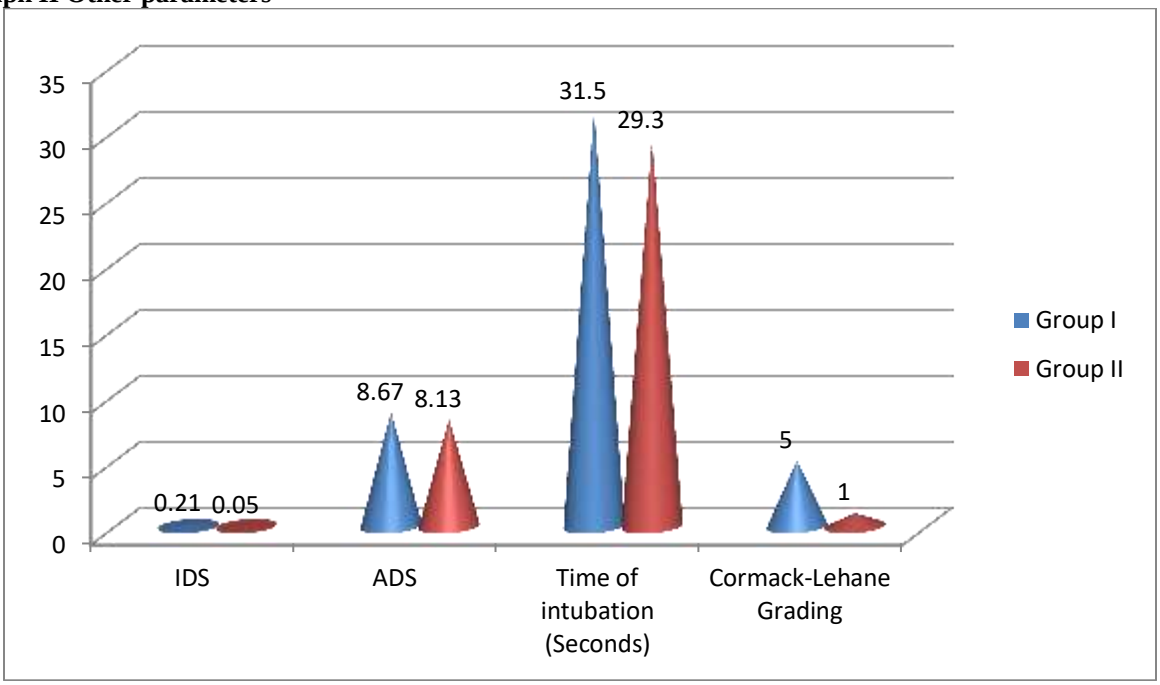


Table III Other parameters

Parameters	Group I	Group II	P value
IDS	0.21	0.05	0.001
ADS	8.67	8.13	0.12
Time of intubation (Seconds)	31.5	29.3	0.8
Cormack-Lehane Grading	5	1	0.01

Table III, graph II shows that (IDS) intubation difficulty score in group I was 0.21 and in group II was 0.05, (ADS) airway difficulty score in group I was 8.67 and in group II was 8.13, time of intubation in group I was 31.5 and inn group II was 29.3, Cormack-Lehane Grading in group I was 5 and in group II was 1. The difference was significant (P< 0.05).

Graph II Other parameters



DISCUSSION

The GVL was designed with the advantage of being able to look around the corner allowing a view of the glottis via the high-resolution complementary metal oxide semiconductor (CMOS) cameras. GVL does not require alignment of oral, pharyngeal and tracheal axis in patient. The camera is placed 3 cm from the tip of blade and at the point of angulation of blade.[6] The camera is recessed to protect it from blood secretion and has a wide viewing angle of 50.° It is similar in design to a conventional laryngoscope but GVL blade has an angulation of 60° and the location of camera is midway along the bottom of the blade which provides a wider field of view than the fibreoptic laryngoscope.[7]

Aziz et al[8] reported retrospective data of a very large number of intubations demonstrating the GlideScope's high success rates as a primary device and a rescue device (98% and 94%, respectively), and providing insight into the incidence of major complications with the device (0.3%). Simulation-based studies describe greater intubation success rates using video laryngoscopy when compared to direct laryngoscopy, although the applicability of these to real-world practice could be questioned. Prospective studies that describe video laryngoscope use in patients have shown a better Cormack-Lehane view than direct laryngoscopy in certain scenarios, however video laryngoscope intubations appear to take longer to perform.[8] The present study was conducted to compare GlideScope (GVL) and CMAC-D in tracheal intubation.

In this study, group I patients were grouped into GVL group and group II into CMAC-D group. Each group had 41 patients. The mean age in group I was 45.2 years in group II was 43.6 years, number of cervical axial surgery in group I was 6 and in group II was 7, number of cervical subaxial surgery in group I was 35 and I group II was 34. Adnet et al[9] compared conventional C-MAC, CMAC-D and Kings Vision video

laryngoscopes and found comparable IDS scores in C-MAC group and Kings Vision group (P = 0.340). However, the median score of IDS was "0" in all the three groups.

We found that (IDS) intubation difficulty score in group I was 0.21 and in group II was 0.05, (ADS) airway difficulty score in group I was 8.67 and in group II was 8.13, time of intubation in group I was 31.5 and inn group II was 29.3, Cormack-Lehane Grading in group I was 5 and in group II was 1.

Maharaj et al[10] found that 3831 total intubation attempts were tracked in an observational study comparing first-pass success rate using a Macintosh or Miller-style laryngoscope with the GlideScope. Propensity scoring was then used to select 626 subjects matched between the two groups based on their morphologic traits. Comparing the GlideScope and direct laryngoscopy groups suggested that intubation would be more difficult in the GlideScope group based on the Mallampati class, cervical range of motion, mouth opening, dentition, weight, and past intubation history. Thus, a propensity score based on these factors was used to balance the groups into two 313 patient cohorts. Direct laryngoscopy was successful in 80.8% on the first-pass intubation attempt, while the GlideScope was successful in 93.6%.

CONCLUSION

Authors found that Both GVL and CMAC-D with MIAS are equally effective in tracheal intubation in cervical spine injury patients.

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