

***Is the Airway Scope valuable tool for
emergency airway management?
-in the military setting-***

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Medical School

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Background



Urgent Airway Management

- Severe Multiple Trauma
- Cerebral Disease
- Acute Respiratory Problem
- Cardiac Arrest
- Chemical Contamination

Trauma Patient

A: Airway

B: Breathing

C: Circulation

D: Dysfunction of CNS

E: Exposure & Environment Control



Primary Survey

MOPP4



- Restricted visual field
- Dull finger sense
- Obtuse body motion
- Hearing difficulty
- Eye sight can be weak

etc.



Limit capabilities

Airway Scope®

(AWS; Pentax Corporation, Tokyo, Japan)



Previous Evidence on Airway Scope

- First Application of Airway Scope was 2006.
(**Koyama et al.** 2006 J Neurosurg Anesthesiol)
- More useful for beginners as quicker and easier : manikin study.
(**Miki et al.** 2007 Acta Anaesthesiol Scand)
- Reduce intubation time and failure by non-anesthesiologists.
(**Hirabayashi et al.** 2007 Emerg Medicine J)

Previous Evidence on Airway Scope

- Cervical Spine Movement Research

less by Airway Scope compare with Laryngoscope

(Hirabayashi et al. 2007 Anaesthesia)

- No dental damage in 405 patients

(Hirabayashi et al. 2008 J Anesth)

- Bright sunlight degrades the image of LCD.

(Nao et al. 2007 Masui)

Research Question & Hypothesis

Can performance (promptness & accuracy) with the Airway Scope for tracheal intubation be better than that with Macintosh laryngoscope in combat uniform and in MOPP4?

(Promptness)

Null H_0 : time to complete intubation with airway scope = with laryngoscope

Alt. H_1 : time to complete intubation with airway scope \neq with laryngoscope

(Accuracy)

Null H_0 : Numbers to success intubation with airway scope = with laryngoscope

Alt. H_1 : Numbers to success intubation with airway scope \neq with laryngoscope

Methods

- **Participants: 61 physicians & dentists**
- **Non-randomized Repeated Measurements**
(two variables: quickness and accuracy)
- **Intubation under 4 situations to mannequin**



Combat Uniform



- ① **Laryngoscope**
- ② **Airway Scope**



MOPP4



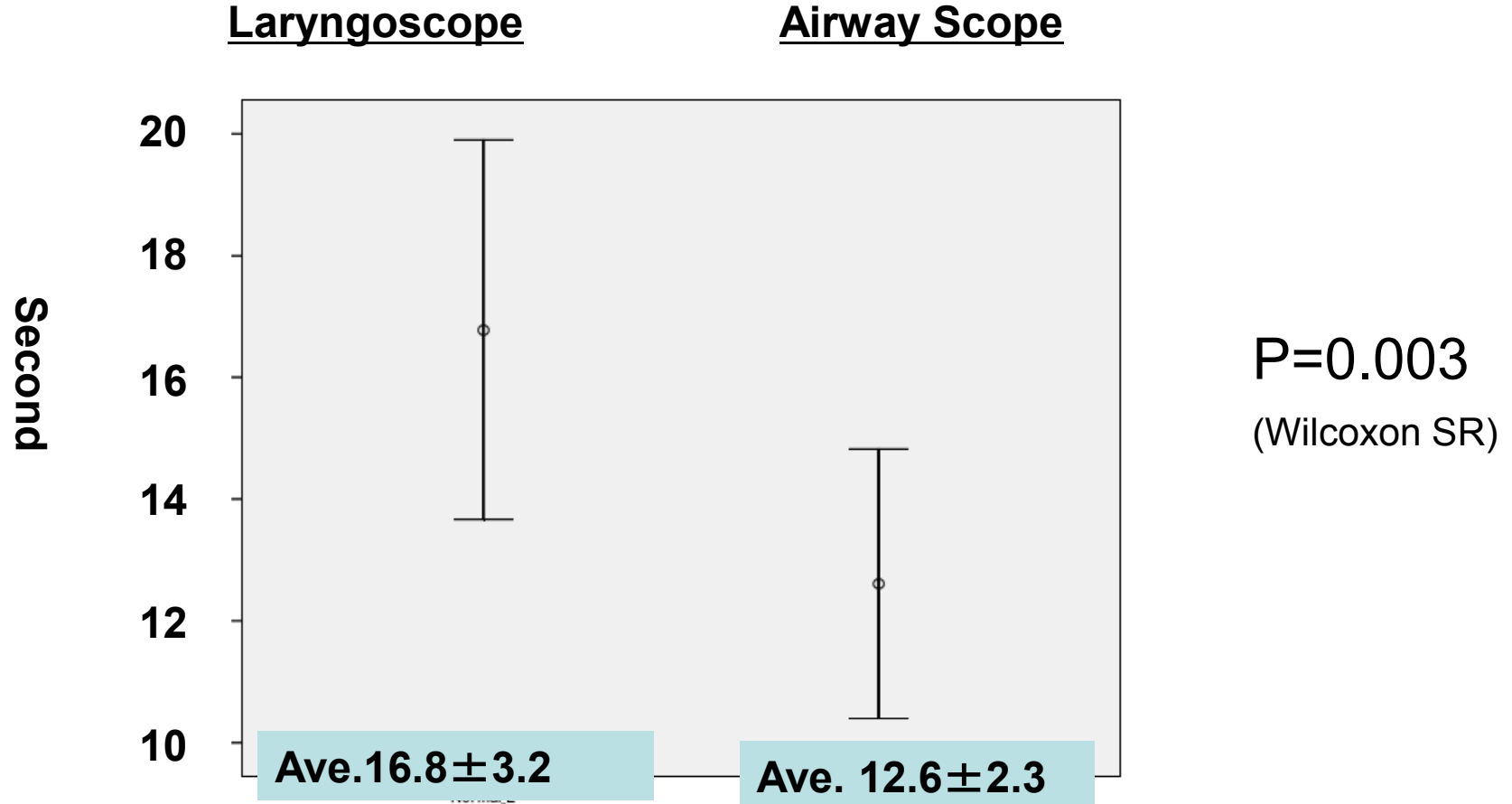
- ③ **Laryngoscope**
- ④ **Airway Scope**





Results 1

Combat Uniform

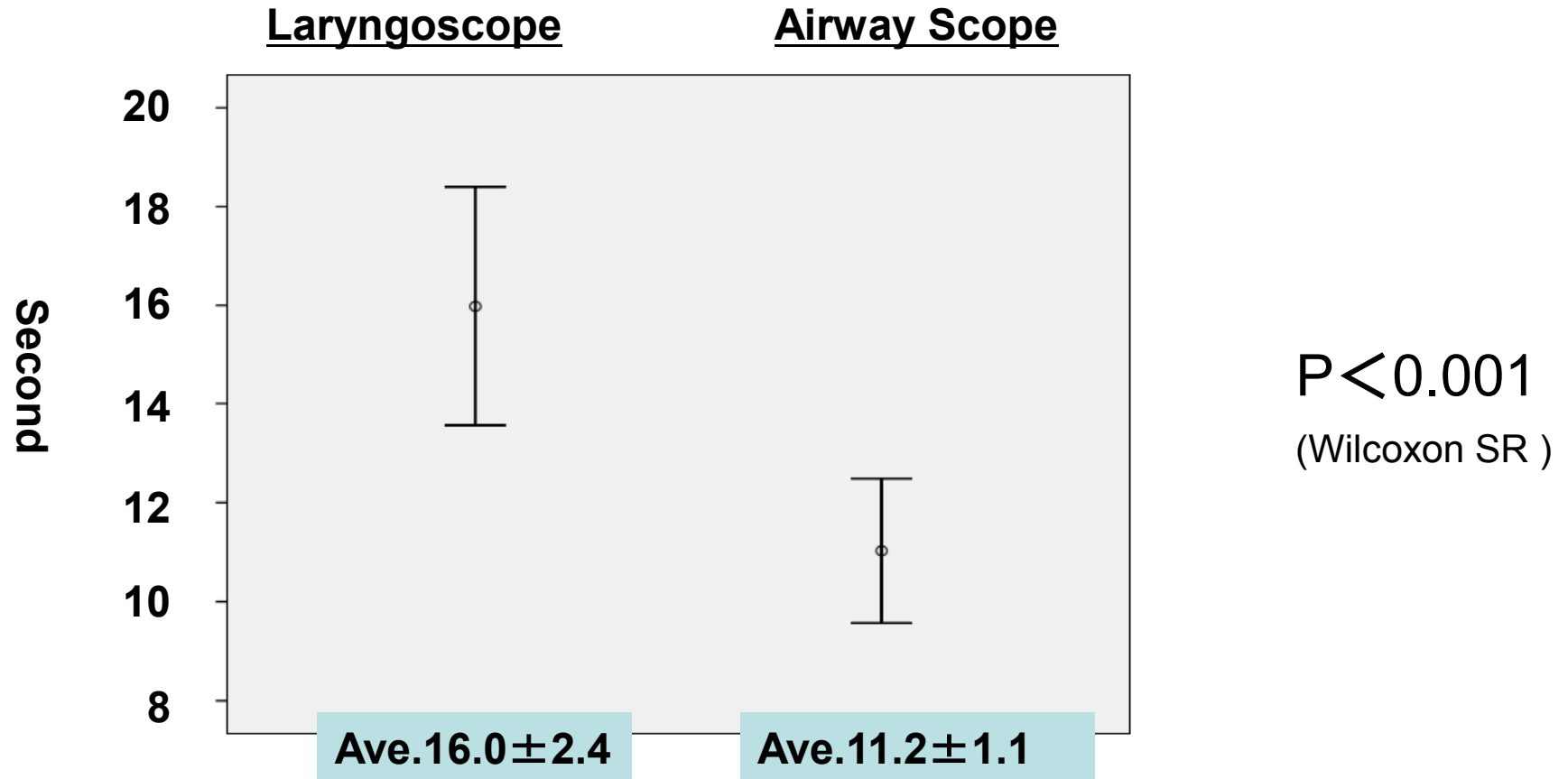


1 failure was found with laryngoscope
0 failure with Airway Scope.

P=N.S.
(McNemar test)

Results 2

MOPP 4



2 failures was found with laryngoscope

0 failure with Airway Scope

P=N.S.
(McNemar test)

Advantages & Disadvantages

- No head tilt & chin lift → Protect cervical spine
- Confirm vocal code → Accurate intubation
(Directly & Double)
- Environment friendly → Confined space
Pre-hospital Use
- Telemedicine → Send the picture &
supervise technique
- Cost → Expensive

Conclusions

- Intubation with airway scope might be reducing the time to complete the procedure in the combat uniform and MOPP4.
- Several values while performing the procedures with the Airway Scope were suggested.
- Thus, Airway Scope might be a useful tool in the military setting.
- Accuracy has not been determined from our study.

Thank you for your attention!

Questions & Comments?

Back Up

Demographics

Medical Corps	54
Dental Corps	7

Male	46
Female	15

OAC(after fellowship)	27
OBC(before fellowship)	34

OAC; Internal Medicine specialty	10
Surgical Specialty	11
Anesthesiology	1
Pediatrics	1
Dental	4

Sub-group Analysis

(laryngoscope vs AWS in OAC & OBC)

OAC group

15.1 vs 14.1 in CU ; $p=0.27$ non-significant

19.0 vs 14.0 in MOPP4 ; $p= 0.14$ non-significant

OBC group

18.0 vs 11.5 in CU ; $p<0.001$ Significant

14.4 vs 9.0 in MOPP4 ; $p<0.001$ Significant

unit : second

Beginners may benefit over skilled professionals from AWS