CRITICAL REVIEW FORM:
THERAPY ARTICLES

Resident: **Becky Johnson** **Date: 2/24/2023**

Citation: **Johnson:** Driver BE et al., **The Bougie and First-Pass Success in the Emergency Department.** Ann Emerg Med. 2017 Oct;70(4):473-478

Study Objective: Seek to determine whether the bougie use is associated with ED first-pass intubation success.

Study Methodology: Studied consecutive adult ED intubations at an urban, academic medical center during 2013 with intubation events identified by motion-activated video recording. Determined the association between bougie use and first-pass intubation success, adjusting for neuromuscular blockade, video laryngoscopy, abnormal airway anatomy, and whether the patient was placed in the sniffing position or the head was lifted off the bed during intubation.

GUIDE	COMMENTS
I. Are the results valid?	
A. Did experimental and control groups begin the study with a similar prognosis	
1. Were patients randomized?	No. This was a retrospective observational study. Decisions to use bougie were based on clinicians judgement.
2. Was randomization concealed (blinded)? In other words, was it possible to subvert the randomization process to ensure that a patient would be "randomized" to a particular group?	No, patients were not randomized in this study
3. Were patients analyzed in the groups to which they were randomized?	No, patients were analyzed based upon use of a bougie during intubation or not.
4. Were patients in the treatment and control groups similar with respect to known prognostic factors?	No. Although baseline characteristics (Table 1) were similar between the two groups. Use of the video screen was recorded in 19% of cases that did not use bougie and 46% of cases when bougie was used.

5. Were patients aware of group allocation?	No. Patients were unconscious
6. Were clinicians aware of group allocation?	No. Not relevant to a retrospective study.
7. Were outcome assessors aware of group allocation?	Video reviewers were aware of the general nature of the study, but were blinded to the specific study aims.
8. Was follow-up complete?	No. almost 20% were missing videos and data on hypoxemia was not available in 181 videos (Table 2)
What are the results ?	
1. How large was the treatment effect?	First-pass success was higher with bougie use (414/435; 95% CI 93-97%) than without it (93/108; 86% CI 79-93%), overall 9% difference (CI 2-16%) or Absolute Risk Reduction (ARR) NNT = 1/ARR= 11 Duration of first attempt with a bougie was modestly higher – 40s compared to 27s(median difference 14 sec) Multivariable analysis also showed bougie use remained associated with increased first-pass intubation success (adjusted odds ratio 2.83)
2. How precise was the estimate of the treatment effect? (CI's?)	First pass success 9%: 95% CI 2-16% Duration of first attempt 14s: 95% CI 11-16s Multivariable analysis OR 2.83: CI 1.35-5.92
III **How can I apply the results to patient care?**	
1. Were the study patients similar to my patient?	Uncertain. No report on race distribution or BMI. Over 20% were trauma patients which may be over representative.
2. Were all clinically important outcomes considered?	No. Primary otcome was clearly most important and satisfied. No information on laryngeal view obtained before procedure Did not address possible complications of bougie use like hypoxemia. Hypoxemia data was not available in 181 encounters.
3. Are the likely treatment benefits worth the potential harm and costs?	Based on this study, not necessarily. However there are no significant complications that have been reported in medical literature where bougie use is

	more common in other countries. This study looks at one center with 80% bougie use, which is not necessarily characteristic. Bougie use was associated with longer duration of attempt, which could lead to complications such as hypoxemia which was not able to be assessed in this study. Also, this center has providers that are extensively trained and familiar with bougie, whereas some other ED providers may not be as familiar.

Limitations:
This study looked at a single institution retrospective study where bougie was used 80% of the time, so less generalizable to most ED settings.
Over 95% of intubations were performed by senior residents. Not the case in mose ED training settings.
Retrospective design open to bias, though did have multiple video assessors to try to address
No data collection on pre-intubation assessments that may have influenced first-pass success.
Does not look at hypoxemia as possible complication of prolonged attempt time with bougie

Clinical Bottom Line: Bougie use was associated with higher first-pass success than conventional intubation, however, a prospective clinical trial would be needed to prove its effectiveness as a routine part of intubation.