

Improving the safety and success of obstetric intubation with videolaryngoscopy: A quality improvement project in a tertiary obstetric unit

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Introduction

Increased difficulty of laryngoscopy and intubation in the obstetric population is well described [1]. Videolaryngoscopy (VL) has been shown to improve laryngeal visualisation in obstetrics [2]. The Obstetric Association of Anaesthetists and Difficult Airway Society state videolaryngoscopes should be immediately available for all obstetric general anaesthetics (GAs) [1]. McGrath MAC VL (MMVL) is available throughout NHS Lothian, and is the recommended first line intubation device in obstetrics since November 2020.

Methods

Prospective data were captured from obstetric intubations over 36 months in three audit cycles between November 2018 and November 2022. The latter two were following introduction of a checklist that explicitly recommends first line use of MMVL. Planned awake intubations were excluded. Data were recorded by the intubating anaesthetist and included elective or emergency surgery, in or out of hours, seniority of intubator, predicted airway difficulty, BMI, laryngoscope used, number of attempts and success of intubation.

Results

Data were captured from 649/823 (78.8%) intubations. The majority (90.5%) were for emergency procedures. Over half (55.1%) were out of hours (18:01 to 07:59), and 82.65% by trainees. Difficult airway was predicted in 5.3%. There were no failed intubations. There was a non-significant increase in first pass success rate from 94% in the first audit cycle to 96.2% in the third (p=0.2468).

	2018/2019 (%) Nov-Nov	2020/2021 (%) Dec-Dec	2022 (%) Jan - Nov
Total obstetric general anaesthetics	306	287	230
Total captured (%)	217/306 (70.9)	217/287 (75.61)	215/230 (93.5)
Out of hours (1801-0759)	111/217 (51.2)	113/215 (52.5)	131/212 (62)
Grade of intubator			
Consultant	19/215 (8.8)	21/216 (10)	29/203 (14)
SAS	1/215 (0.5)	10/216 (5)	30/203 (15)
Year 3-7 trainee	156/215 (72.6)	154/216 (71)	131/203 (65)
Year 2 trainee	39/215 (18.1)	31/216 (14)	13/203 (6)
BMI (median (IQR))	26.4 (7)	26.4 (7)	26.2 (7)
Emergency case	194/215 (89.8)	192/214 (90)	196/214 (93)
Intubation attempts			
1 attempt	204/217 (94.01)	204/214 (95.3)	203/211 (96.2)
2 attempts	10/217 (4.6)	9/214 (4.2)	6/211 (2.8)
3 attempts	3/217 (1.4)	1/214 (0.5)	2/211 (0.9)
Laryngoscope			
DL	87/217 (40.1)	28/215 (13)	14/209 (7)
MMVL	130/217 (59.9)	187/215 (87)	195/209 (93)
Due to incomplete completion of CRF the variable denominator is indicated as a fraction. Significant increase in MMVL use between audit periods 1 & 3 p<0.0001			

Table 1. Patient demographics and outcome measures across the study periods

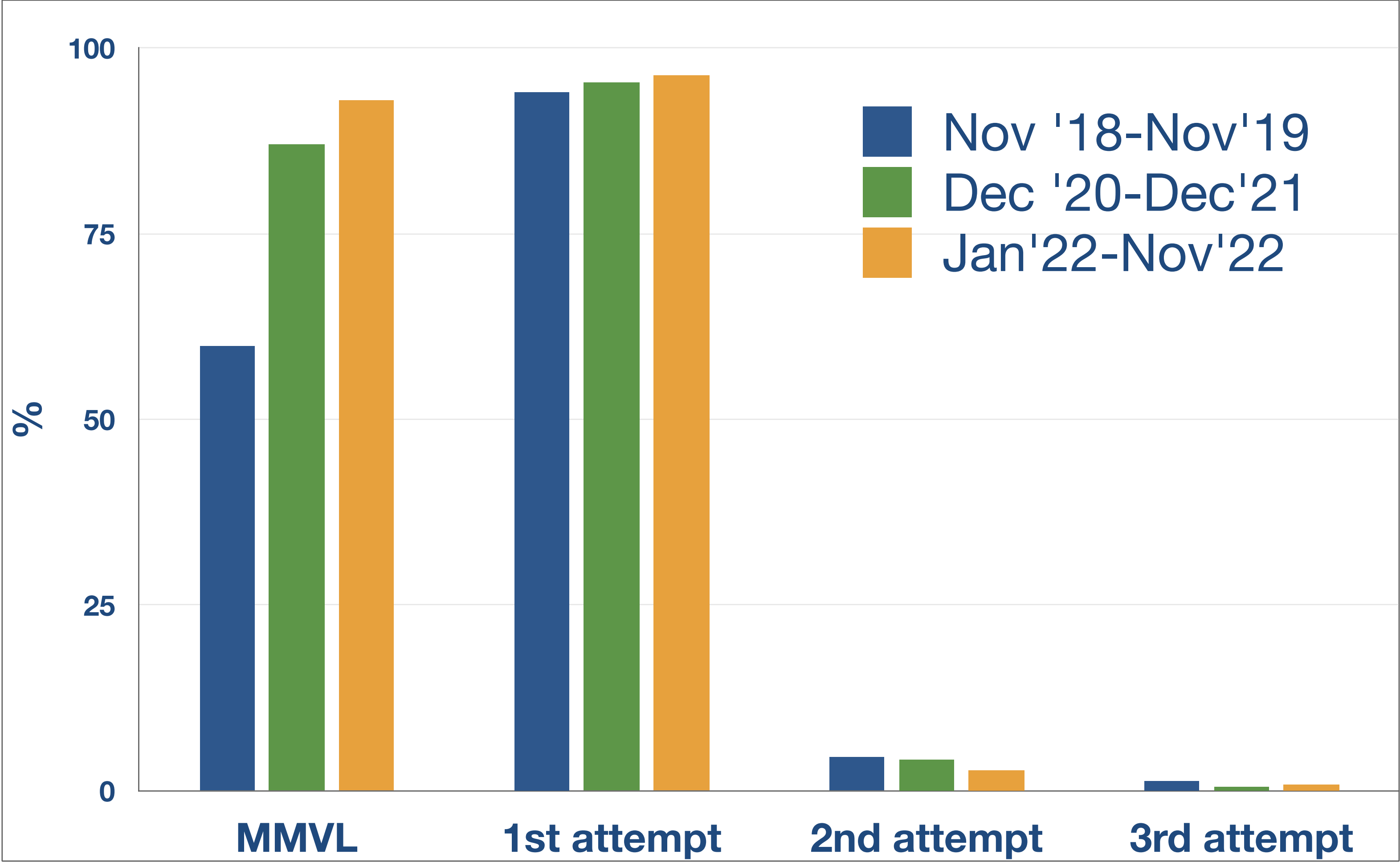


Figure 1: Rate of MMVL use and number of attempts to intubate over 3 audit cycles

Discussion

The incidence of difficult intubation is described as 1.6-16.3% and failed intubation occurs in 1 in 390 obstetric GAs [1]. Our unit compares favourably to these figures with a high first pass success rate, an incidence of difficult intubation of only 0.94% and no failed intubations during the audit period. This period coincides with overall high first line use of MMVL and we recorded a rise in first pass success rate between the first and third audit cycles that correlated with increased use of MMVL. Our data support the view that VL should be recommended as the first-line approach to the obstetric GA.

1. Kinsella S, Winton A, Mushambi M, et al. Failed Tracheal Intubation During Obstetric General Anaesthesia: A Literature Review. *International Journal of Obstetric Anaesthesia*. 2015; 24(4): 356-374.
2. Howle R, Onywochei D, Harrison S, et al. Comparison of videolaryngoscopy and direct laryngoscopy for tracheal intubation in obstetrics: a mixed-methods systematic review and meta-analysis. *Canadian Journal of Anesthesia*. 2021; 68: 546-565.