Seet E et al. *Anesthesiology.* 2010;112(3):652-657.

Use of manometry for laryngeal mask airway reduces postoperative pharyngolaryngeal adverse events: a prospective, randomized trial

Use of a manometer to limit cuff pressure in patients receiving airway management with the LMA® Classic™ Airway reduced post-operative pharyngolaryngeal complications by 70%

The routine use of manometry to limit intracuff pressure represents a clear opportunity to improve patient safety

Objective

- To compare the rate of pharyngolaryngeal complications in patients who received the LMA® Classic™ Airway for airway management with and without manometry to limit intracuff pressure

Methods

- This was a prospective, randomized study that included patients scheduled to undergo short-duration, elective ambulatory surgery that involved general anesthesia (without the use of nitrous oxide)
  - The study included patients aged 18–80 years and American Society of Anesthesiologists physical status 1–3
- Airway management was administered to all patients using the LMA® Classic™ Airway
  - The LMA® Classic™ Airway was inserted by experienced anesthesiologists according to their preferred technique and guided by the manufacturer's instructions
  - Following correct placement of the device, the cuff was inflated using a syringe until an audible seal was achieved
- Once spontaneous breathing was established, intracuff pressure was measured using a hand held manometer
  - In the pressure-limiting group, intracuff pressure was reduced to between 54 and 60 cm H_2O if it was found to exceed 60 cm H_2O
  - In the routine care group, intracuff pressure was left unchanged
- The primary outcome of interest was the incidence of a composite of pharyngolaryngeal adverse events (i.e., any combination of sore throat, dysphonia or dysphagia at 1, 2 or 24 hours post-surgery)

Results

- Of the 203 patients recruited, 200 were included in the analyses (pressure-limiting group, n=97; routine care group, n=103)
- The baseline and demographic characteristics of patients in the two groups were comparable
  - The mean age and body weight of patients was 45–47 years and 80–84 kg, respectively
- Cuff pressure immediately after insertion and after adjustment (in the pressure-limiting group) is shown in Table 1

Table 1. Cuff pressure following insertion of the LMA® Classic™ Airway and following adjustment (if undertaken) (data shown as mean ± standard deviation)

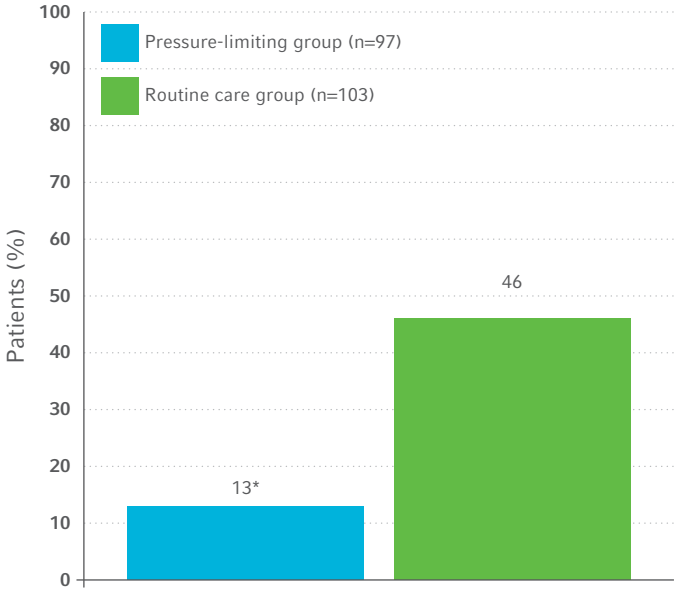
CUFF PRESSURE (CM H_2O)	PRESSURE-LIMITING GROUP (N=97)	ROUTINE CARE GROUP (N=103)
Following insertion	152 ± 80	155 ± 78
Following adjustment†	54 ± 8*	155 ± 78

* p<0.001 vs. routine care

† In the pressure-limiting group, intracuff pressure was reduced to 54–60 cm H_2O if it was found to be >60 cm H_2O; in the routine care group, intracuff pressure was left unchanged

- The rate of post-operative pharyngolaryngeal adverse events was significantly (p<0.001) lower in the pressure-limiting group than in the routine care group (Figure 1)
  - Use of a manometer to reduce cuff pressure in the pressure-limiting group reduced pharyngolaryngeal complications by 70%

Figure 1. Rate of all pharyngolaryngeal adverse events† with the LMA® Classic™ Airway according to whether high intracuff pressures were reduced (pressure-limiting group) or left unchanged (routine care group)



* p<0.001 vs. routine care

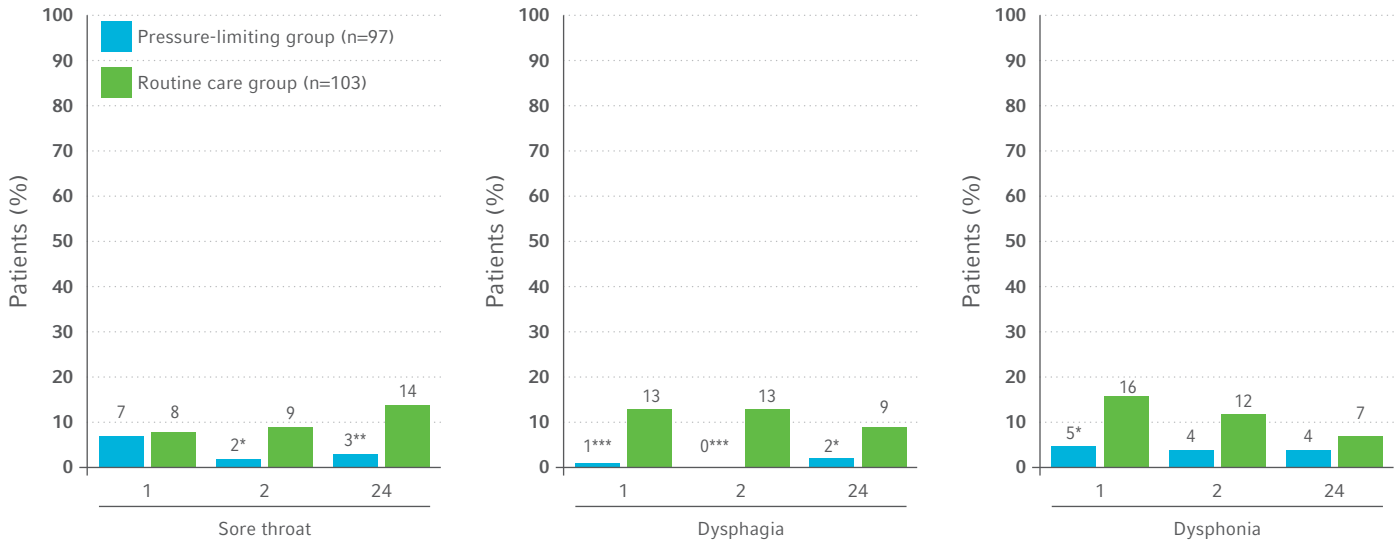
† Includes any combination of sore throat, dysphonia or dysphagia at 1, 2 or 24 hours post-surgery

- The rate of individual pharyngolaryngeal complications at 1, 2 and 24 hours post-surgery is shown in Figures 2
- The were no reports of nerve injuries during the course of the study
- There was no between-group difference in patient satisfaction

Conclusion

- Use of a manometer to limit cuff pressure in patients receiving airway management with the LMA® Classic™ Airway led to a 70% reduction in the rate of post-operative pharyngolaryngeal adverse events
- The authors strongly recommended that *"the routine use of manometry after LMA insertions be established as a best practice"* and that cuff pressures be deflated to less than 60 cm H_2O
- Routinely using manometry to limit intracuff pressure *"represents a clear opportunity for significant [improvements] in patient safety and reducing pharyngolaryngeal adverse events"*

Figure 2. Rate of individual pharyngolaryngeal adverse events over time with the LMA® Classic™ Airway according to whether high intracuff pressures were reduced (pressure-limiting group) or left unchanged (routine care group)



* p<0.05; ** p<0.01; *** p≤0.001 vs. routine care