Correlation and Variation of Cuff Inflating Volumes and Pressures in the Adult laryngeal Mask Airways

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Background: Hyperinflation of laryngeal mask airway (LMA) cuffs may carry the risk of airway complications by exerting high pressure on laryngeal and pharyngeal structures. The manufacturer recommends to inflate LMA cuff until the intracuff pressures reaches 60 cmH₂O or inflate with volume not exceed the maximum recommended volume (20 - 25 ml for size 3 and 30 - 35 ml for size 4). Most performers practically inflate LMA cuff with the volume without using manometer. This may generate the high intracuff pressure. Objective: To study the correlation of cuff inflating volumes and pressures, and the appropriated cuff inflating volumes to generate intracuff pressure 60 cmH₂O in adult LMA (size 3 and 4) from different manufacturers [Soft seal LMA (Portex®), Aura Once LMA (Ambu®), LMA Classic (Teleflex®) and LMA Proseal (Teleflex®)].

Methods: Two groups of eighty patients requiring LMA size 3 and 4 during general anesthesia for elective surgery were randomized...
into 4 subgroups for each size of LMA: Soft seal, Aura Once, LMA Classic and LMA Proseal. After insertion of LMA, the cuff was inflated with 5-ml increments of air up to the maximum recommended volume. After each 5-ml intracuff pressure was measured and the volume of air that generated intracuff pressure 60 cmH$_2$O was recorded. At the end all intracuff pressures were adjusted to 60 cmH$_2$O. **Result:** The volume required to achieve the intracuff pressure 60 cmH$_2$O in Softseal, Aura Once, Classic, Proseal LMA size 3 were 11.80 ± 1.88, 9.20 ± 1.88, 8.95 ± 1.50 and 13.50 ± 2.48 ml, respectively. The volume required to achieve the intracuff pressure 60 cmH$_2$O in Softseal, Aura Once, Classic, Proseal LMA size 4 were 14.45 ± 4.12, 12.55 ± 1.85, 11.30 ± 1.95 and 18.20 ± 3.47 ml, respectively. The maximum recommended volume resulted in high intracuff pressures (> 60 cmH$_2$O) in all LMA types and sizes studied. **Conclusions:** Approximately half of the maximum recommended volume is required to achieve intracuff pressure 60 cmH$_2$O except Proseal LMA which required two-third of the maximum recommended volume. The manometer should be used to guide inflation in adult LMA.

**References**


