


PRO: Never Use a Supraglottic Airway for More than 2 Hours

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Overview

- A brief history of supraglottic airways (SGA)
- Some sobering information about SGA
- Recommendations


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Supraglottic Airways


- 1937 – Leech invents the “pharyngeal bulb gasway”
- 1982 – Brain patents the LMA
- Categorized into generations:
 - 1st Generation (no gastric drain): LMA, LM Aura, Cobra PLA, King-LT, etc.
 - 2nd Generation (gastric drain): LMA ProSeal/Supreme, i-Gel, LT-SD, SLIPA, etc.
- Differences in seal location:
 - Base-of-Tongue: King LT, LT-SD, COPA
 - Pharyngeal: LMA, i-Gel, SLIPA, etc.



Michalek P et al. BioMed Res Int 2015; 746560


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SGAs Are Awesome, Right?

- Generally easy to insert
- Less stimulating than ETT
- Allow controlled or spontaneous ventilation
- Less hassle on emergence
- Lower incidence of sore throat than ETT?
- No formal recommendations about duration



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What We Will Discuss

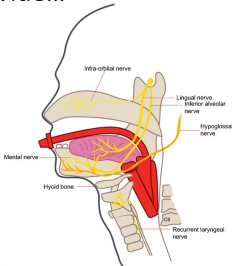
- Evidence for multiple types of injuries associated with SGA use
- Risk factors for injury
- SGAs can be awesome *when used properly*

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Open Wide...



Thiruvankatarajan, R, et al. Anaesthesia 2015;70:344-59

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Injuries from SGA Use*

Site of Injury	Type of Injury
Pharyngeal mucosa	Laceration, bruising, breakdown
Laryngeal apparatus	Arytenoid dislocation, RLN injury
Uvula	Trauma / necrosis
Epiglottis	Bruising / laceration
Tongue	Frenular injury, lingual nerve injury
Teeth	Fracture / displacement
Lips	Laceration / nerve injury

*Excluding aspiration, etc.

Michalek P et al. BioMed Res Int 2015; 746560
 Brimacombe, et al. BJA 2005; 95(3):420-23
 Stewart A and Lindsay WA. Anaesthesia 2002; 57:264-5

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Nerve Injury Reports

Age	Sex	ASA	Duration	Nerve	Recovery?
61	M	2	150 min	Lingual	15 days
73	M	3	140 min	Lingual	>6 months
62	F	3	180 min	Hypoglossal	1 week
15	M	1	180 min	Hypoglossal	4 weeks
28	M	?	210 min	Hypoglossal	4 months
71	F	3	120 min	RLN	>2 months
63	F	3	425 min	Bilateral RLN	Trach 1 month

Brimacombe, et al. BJA 2005;95:420-423

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Decreased Cerebral Perfusion?!

The laryngeal mask airway reduces blood flow in the common carotid artery bulb

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TABLE 1 Changes in area, velocity and flow following cuff inflation.

	Inflated	Deflated	P
Area (cm ²)	0.58 ± 0.05	0.64 ± 0.04	< 0.005
Flow (cm ³ sec ⁻¹)	65.0 ± 5.6	73.9 ± 5.6	< 0.05
Velocity (cm sec ⁻¹)	114.6 ± 5.4	118.4 ± 5.9	NS

Mean ± SEM.

CJA 1998;45(1):23-27

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What Contributes to SGA Injuries?

Patient Factors	Extrinsic Factors
Diabetes	Cuff pressure
Arthritis (RA, AS)	Duration
Anatomic abnormalities	Cuff over-inflation
	Undersized SGA
	Difficult insertion
	N ₂ O use?
	Hypoperfusion?

Martins et al. Laryngoscope 2009; 110(4):645-50

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Cuff Pressure – LMA

LMA Type	10 ml Cuff (mmHg)	20-30 ml Cuff (mmHg)
LMA 3	~18	~38
LMA 4	~15	~38

O'Kelly et al. Anaesthesia 1993; 48:1075

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Cuff Pressure

- RCT of manometry guidance vs none reduces adverse events by 70%
 - ~1 hour case duration
 - Limit cuff pressure to <44 mmHg (60 cmH₂O)

Table 2. Incidence of Pharyngolaryngeal Complications with the Use of Laryngeal Mask Airway at 1, 2, and 24 h

	1 h		2 h		24 h	
	Pressure Limiting (n = 97)	Routine Care (n = 103)	Pressure Limiting (n = 97)	Routine Care (n = 103)	Pressure Limiting (n = 97)	Routine Care (n = 103)
Sore throat (%)	7.2	7.8	2.1*	6.7	3.1*	13.6
P value	0.883		0.038		0.008	
Dysphagia (%)	1*	12.6	0*	12.6	2.1*	8.7
P value	0.001		<0.001		0.038	
Dysphonia (%)	5.2*	15.5	4.1	11.7	4.1	6.8
P value	0.017		0.050		0.497	

*P < 0.05.

Sweet, et al. Anesthesiology 2010; 112:652

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Duration

- Incidence of sore throat increases after 60 minutes
- Histologic mucosal injury at 2 hours in animal studies
- Many injury case reports include longer duration

Michalek P et al. BioMed Res Int 2015; 746560

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1st versus 2nd Generation?

- No solid evidence and unlikely to be studied
- Expert opinion
 - Easier insertion
 - Lower cuff pressures?

BJA 2015; 115:497-9

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Patients Are Not Diamonds

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Putting It All Together


- SGA Cuff pressure predisposes to complications – **do we measure it?**
- SGA size is important – **are we always right?**
- Long SGA duration predisposes to some complications
- Excess risk from ETT for longer cases is not prohibitive

Don't use an SGA for more than 2 hours, especially if you're not measuring pressure

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Thank You



YES, THAT JUST HAPPENED
DROPS MIC

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