



# SNORING & OSAHS SURGERY

*International Workshop*



**COMPLICATIONS AVOIDANCE  
STRATEGY**

<15'



**IN PILLS ...**

*Just for stimulating a discussion !*

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&  
ENT-MaxilloFacial  
Joint Commission



# MAIN STRATEGIC ISSUES

## TIME

- ✦ Preoperative
- ✦ Peroperative
- ✦ Postoperative

## ACTION

- ✦ Patient Selection
- ✦ Proper Surgical Technique
- ✦ Proper Anaesthesiological assistance
- ✦ Correct Monitoring and Assistance

# SIDE EFFECTS & COMPLICATION

# SDB S Complications (after K.Li)

TABLE 1. OBSTRUCTIVE SLEEP APNEA SURGICAL COMPLICATIONS

Procedure	Complications
Nasal surgeries (turbinectomy, septoplasty, alar reconstruction)	Bleeding and infection (uncommon)
UPPP, UPF, LAUP	Velopharyngeal insufficiency (2%), postoperative bleeding (1%), nasopharyngeal stenosis (0.8%), voice change (0.6%), foreign body sensation (0.1%), death (0.2%) (4, 11, 19, 23)
GA	Pathologic mandibular fracture, infection (<1%), permanent anesthesia (<6%), seroma (<2%) (63)
HMS	Airway edema, dysphagia, superior laryngeal nerve injury (uncommon) (28)
Glossectomy	Bleeding, odynophagia, change in taste (30)
MMA	Temporary numbness of cheek and chin (80%), malocclusion (4%), bleeding, edema with airway compromise
RF	Ulcer and infection (uncommon) (39)
TNA	Pain and bleeding (1%), subcutaneous emphysema, pneumomediastinum, taste disturbance due to glossopharyngeal nerve injury (rare)
Tracheotomy	Stoma infection (36%), hemorrhage (5%), tracheal stenosis (2%), psychosocial difficulties
Distraction osteogenesis	None reported

*Definition of abbreviations:* GA = genioglossus advancement; HMS = hyoid myotomy suspension; LAUP = laser-assisted uvulopalatoplasty; MMA = maxillomandibular advancement; RF = radiofrequency ablation; TNA = tonsillectomy and adenoidectomy; UPF = uvulopalatal flap; UPPP = uvulopalatopharyngoplasty.

## POTENTIAL SIDE EFFECTS TYPES, % AND SEVERITY ACCORDING TO THE DIFFERENT PROCEDURES

Oropharyngeal procedure	%	severity	Description of side effects
UPPP	50%	slight	Retropalatal foreign body sensation, dysphagia, dryness
	100%	variable	Lateral (tonsillar fossa) suture dehiscence
UPF	90%	variable	Palatal foreign body sensation, dysphagia, dryness
LAUP	50%	variable	Retropalatal foreign body sensation, dysphagia, dryness
RFVR	100%	slight	Transient worsening of symptoms ( oedema, swelling)
Hypopharyngeal procedure			
Hyoid Suspens.	100%	slight	External scar, anterior neck prominence, dysphagia
Genioglossus A.	100%	variable	Chin & floor of the mouth swelling & ecchymosis
Lingual S.	100%	variable	Transient tongue hypomobility, dysphagia
tracheostomy	100%	variable	Blood tinged mucous discharge from fenestration
	100%		Requires transient trach closure for fonation
TBRHE	100%	variable	NF feeding & tracheostomy

POTENTIAL **COMPLICATIONS** TYPES, % AND SEVERITY ACCORDING TO THE DIFFERENT PROCEDURES

<i>Oropharyngeal procedure</i>	%	<i>severity</i>	<i>Description of complications</i>
UPPP	8%	variable	<b>Tonsillar fossa late bleeding (&gt; 7 days)</b>
	15%	variable	Superior (palatal free edge) suture dehiscence
UPF	10%	variable	Flap dehiscence requiring flap resection
LAUP	15%	variable	Severe scarring, stenosis
RFVR	5%	slight	Blistering, mucosa ulceration
<i>Hypopharyngeal procedure</i>			
Hyoid Suspens.	0.8%	slight	Seroma, hematoma, suture foreign body granuloma
Genioglossus A.	30%	High	<b>Emergency tracheostomy for tongue swelling</b>
Lingual S.	20%	variable	Infection, suture removal
tracheostomy	10%	variable	Blood tinged mucous discharge from fenestration
	100%		Requires transient trach closure for fonation
TBRHE	100%	variable	NF feeding & tracheostomy

## POST OP SURVEILLANCE: TIMELINE IERARCHY (**APSPB**)

1. Airway
2. Pain
3. Swallowing
4. Phonation
5. Bleeding

# AIRWAY

## RISK FACTORS FOR POSTOPERATIVE AIRWAY OBSTRUCTION

- Aged patients
- BMI – Obese
- AHI – Severe OSAHS
- ↑ ASA
- Maxillary hypoplasia, mandibular retrusion, bulbar muscle weakness and specific obstructive lesions such as nasal obstruction or adenotonsillar hypertrophy



⇒ Such abnormalities increases vulnerability to upper airway obstruction during sleep or anaesthesia (but also make intubation difficult)

# Early Post Operative Period

- The muscles of upper airway (UA) are very sensitive to the residual effects of anesthetic agent in the recovery room. *Dhoneur 2004*
- Most of O<sub>2</sub> desaturation in the post-operative period are due to pharyngeal obstruction (collapse of the velopharynx). *Loadsmen JA Br J anesth 2001; Morikawa S et al Anesthesiology 1961*



**Acta Otorhinolaryngol Ital. 2003 Dec;23(6):474-8.**

**Temporary tracheotomy in the surgical treatment of obstructive sleep apnea syndrome: personal experience.**

**Campanini A, De Vito A, Frassinetti S, Vicini C.**

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Aim of the study is a retrospective analysis on the use of temporary tracheotomy in our snoring surgery experience. From September 1996 to April 2002, **1103 snoring surgery procedures** have been carried out on various sites of the upper airways in **530 patients** (mean age 50 years, 81% males) prevalently related to severe Obstructive Sleep Apnea Syndromes (33%). Of these patients, 472 (89%) were operated upon under general anaesthesia, whereas 58 (11%) received local anaesthesia. Of the 472 patients operated upon under general anaesthesia, **17 (3.6%) underwent temporary tracheotomy**, which in 10 (2.1%) were programmed and only in 7 (1.5%) were non-programmed, having been performed in 2 cases in an emergency setting, in 3 cases in an urgency setting due to respiratory obstruction immediately after removal of intubation and in 2 cases in conditions of urgency, due to respiratory obstruction occurring during post-operative hospitalisation (both performed within 6 hours of regaining consciousness). The only complication observed was a brief laryngeal diplegia, a complication, moreover, not reported in the literature. No criteria exist concerning indications for temporary tracheotomy programmed according to the type of surgery on the hypopharynx; personal experience reveals that: a) temporary tracheotomy is frequently necessary after genioglossus advancement (3/10 operated upon for genioglossus advancement not associated with a programmed temporary tracheotomy); b) temporary tracheotomy is rarely necessary after hyoid suspension (1/98 patients being submitted to hyoid suspension not associated with programmed temporary tracheotomy). **Temporary tracheotomy should, in our opinion, be taken into consideration in snoring surgery techniques, particularly in the presence of the not infrequent urgency or emergency situations occurring in patients with Obstructive Sleep Apnea Syndromes. With the use of temporary tracheotomy, no deaths occurred in the present study population.**

# PLANNED TEMPORARY TRCH

## NO

- ✦ Isolated Nose Surgery
- ✦ UPPP/UPF/LAUP
- ✦ Multilevel ( up 3 sites)
- ✦ RFVR ( up 3 sites)
- ✦ Laser Eipiglottoplasty\*

## YES

- ✦ GGA
- ✦ Multilevel + GGA
- ✦ TBRHE
- ✦ TBRTHP
- ✦ BIMAX
- ✦ TORS
- ✦ Laser Eipiglottoplasty\*

## If tracheostomy is not carried out

- ✦ Extubate the patient after a full reversal of neuromuscular blockade and only if fully conscious and upper airway obstruction is unlikely (Cuff leak test)
- ✦ Avoid supine position for extubation and post operative recovery (use semi upright position)
- ✦ Consider CCS use to reduce edema
- ✦ Continuous monitor saturation only in ICU and recovery
- ✦ Multimodal analgesia (avoid high morphine doses)



# AIRWAY: OTHER TRICKS

- ✦ Minimal Surgical Trauma (Soft Technology, Edema)
- ✦ Bleeding Prevention ( Hemostasis, Aspiration)
- ✦ ICU Prolonged Intubation
- ✦ Oropharyngeal Trumpet
- ✦ CPAP

## ...CPAP ?

relieve upper airway obstruction. It is probable that CPAP is underused in the recovery room, where the potential for upper airway obstruction is high, and further into the postoperative period, where many patients with the tendency to upper airway obstruction remain at increased risk

Loadsman JA, Hillman DR. Anaesthesia and sleep apnoea. *Br J Anaesth* 2001; **86**: 254–66

There is no consensus agreement on whether CPAP should be used if there is evidence of apneas and desaturation or if hypoxia persists with supplemental oxygen. This is especially controversial for patients who not previously treated with CPAP

Anesthesiology 2006; 104:1081-93

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### ***Practice Guidelines for the Perioperative Management of Patients with Obstructive Sleep Apnea***

*A Report by the American Society of Anesthesiologists Task Force on Perioperative Management of Patients with Obstructive Sleep Apnea*

# AIRWAYS - MONITORING

- ✦ Short stay in Recovery Room
- ✦ In Ward quick admission
- ✦ Nurse close observation
- ✦ Medical supervision
- ✦ pO<sub>2</sub>, BP, ECG monitoring
- ✦ Bedside Endoscopy

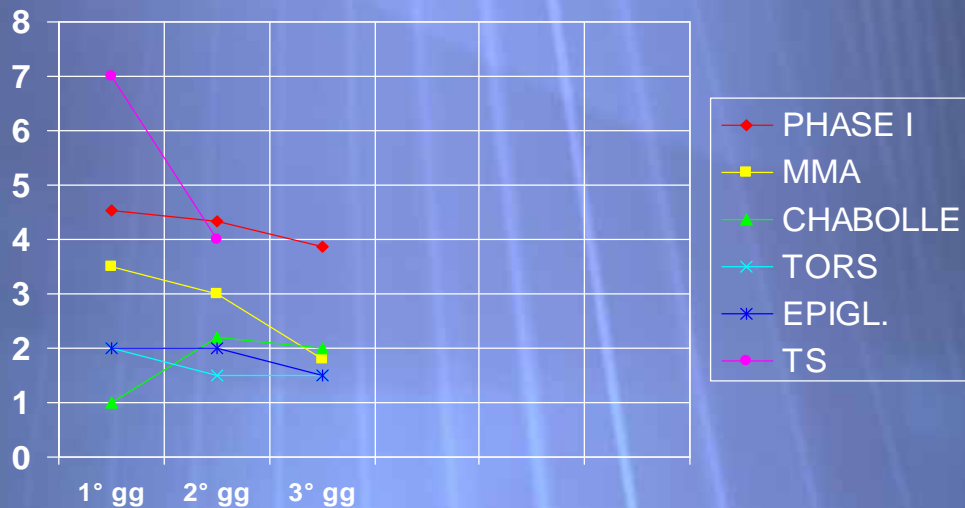


**PAIN**

# PAIN

- ✦ Peroperative Local Anaesthesia
- ✦ Minimal Surgical Trauma
- ✦ Elastomeric Morphine/Tramadol Release
- ✦ Addictional FANS/Paracetamol
- ✦ Early Water and Soft Food Intake
- ✦ Chewing Gum

Visual Analogue Scale (0-10)  
for post op pain.



## OSAS Surgery OD ENT Therapy Approach:

### A. Pain control

- # less invasive procedures  
( < tissue interaction, injury, oedema)
- # intraoperative local anaesthesia  
( surface/injection rapid+long acting)
- # more aggressive postop analgesia  
( elastomeric iv Tramadol/Morphine release)

## OSAS Surgery OD ENT Therapy Approach:

### B. Early guided swallowing program (under nurse supervision)

- # early fluid intake
- # chewing gum
- # special “jelly water”
- # early “pasta” eating
- # avoiding hard, acid, hot food

## Effects of Intensive Post Op therapy upon OD (UP3 “classic” vs UP3 “2000”):

	classic	2000	p
cases	29	34	
pain (VA%)	<b>61.2</b>	<b>46.2</b>	<b>&lt;0.05</b>
duration (wks)	1.3	1.0	
swall.rec. (days)	<b>17.9</b>	<b>10.3</b>	<b>&lt;0.05</b>
persistent OD	3	0	

**BLEEDING**

# BLEEDING

- ✦ Significant prevalence only in Oropharyngeal Area
- ✦ In our series 8% of all the Oropharyngeal Surgical Procedures
- ✦ 7 out of 10 stops spontaneously or require simple conservative procedures
- ✦ 3 out of 10 require surgical re-exploration
- ✦ Mean time delay is 2 weeks

# BLEEDING PREVENTION

- ✦ Bipolar vs Monopolar(?)
- ✦ Early food intake
- ✦ Frequent food intake
- ✦ Chewing Gum
- ✦ Other?



**THANK YOU FOR  
YOUR ATTENTION ... and**

