

# ENT cancer surgery

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**18<sup>th</sup> French Lebanese Symposium**



# Predictors of impossible mask ventilation

Kheterpal, S Anesthesiology. 110(4):891-897, April 2009.

53041 patients

Table 4. Independent Predictors of Impossible Mask Ventilation

Predictor	$\beta$ Coefficient	Standard Error	P Value	Weighted Points*	Adjusted Hazard Ratio (95% Confidence Interval)
Neck radiation changes	1.964	0.628	0.002	6	7.1 (2.1–24.4)
Male sex	1.206	0.322	< 0.001	4	3.3 (1.8–6.3)
Sleep apnea	0.859	0.302	0.005	3	2.4 (1.3–4.3)
Mallampati III or IV	0.678	0.276	0.014	2	2.0 (1.1–3.4)
Presence of beard	0.639	0.284	0.024	2	1.9 (1.1–3.3)

All patients treated by neck radiation should be considered as at risk of upper airway obstruction

Difficult Mask Ventilation Combined with Difficult Laryngoscopy  
: Neck radiation changes or neck mass Kheterpal S Anesthesiology  
2013; 119:1360-9

# Intubation failure

- **Glidescope failure :**

- The strongest predictor was altered neck anatomy with presence of a surgical scar, radiation changes, or mass Aziz MF Anesthesiology 2011; 114: 34–41

- **Intubation laryngeal mask airway :**

- Difficulties in 10 / 50 patients with distorted airway anatomies : previous surgery, radiation therapy or tumor Ferzon DZ Anesthesiology 2001; 95:1175–81

- **Awake fiberoptic intubation :**

- Change in the plan in 8.8%. Iseli TA Ear Nose Throat J. 2012 Mar;91(3):E1-5.

## **Call for help (before, after induction ?):**

- surgeon ?
- anesthesiologist specializing in head and neck procedures ?

Criteria for extubation present and minimization of the risk of inhalation: patient awake, sitting position (30°), without residual paralysis +++,

### Local factors

ENT surgery  
cervico-facial edema  
cervical anatomical changes of airway  
risk of reoperation  
OSA  
Trendelenburg Position  
Traumatic Intubation

### Medical factors

COPD  
Cardiac insufficiency  
High risk surgery  
Age (?)  
Obesity (?)

### Actions

Synthesis of all risk factors

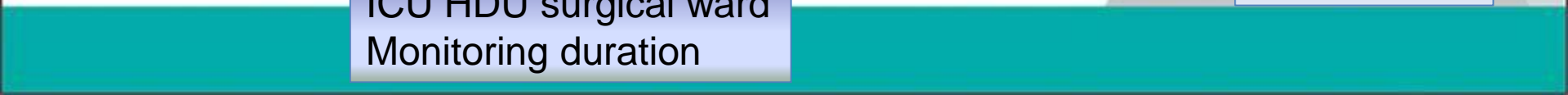
Exchange guide  
Tracheotomy ou MLA  
Extubation delay  
Corticoïdes (?)  
CPAP if OSA

Oxygenotherapy  
CPAP  
Medical optimisation

Decision (leadership +++)  
Optimise risk factors

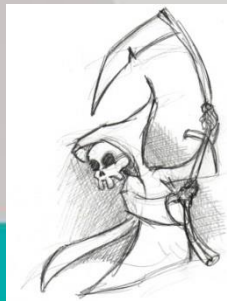
ICU HDU surgical ward  
Monitoring duration

Safe transfer  
Handover



# Postoperative complications

	De Melo, 2001	Ribeiro, 2003	Clark, 2007	Patel, 2010	Lodders, 2015
Nb patients	110	530	185	796	184
Type of surgery	Chir ORL	Chir ORL +/- lambeau	Chir ORL + LL	Chir ORL + LL	Chir ORL + LL
Mortality	3,6%	2,6%	1,6%	1,4%	1,6%
Major Complications	<b>50%</b>	<b>59%</b>	<b>40%</b>	<b>30%</b>	<b>40%</b>



# Risk factors

- 3050 patients ENT surgery
- Predictors of prolonged length of stay

## Preoperative characteristics

- Poorer fct status 1,387
- COPD 1,288
- Alcool > 2U/day 1,260
- Diabetes mellitus 1,258
- Older Age 1,166

## Intraoperative

- Transfusion 1,2
- Duration 1,147

## Postoperative variables

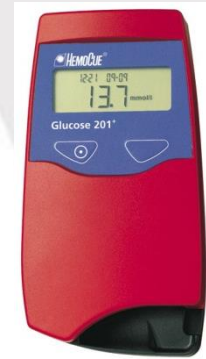
- Complications  $\geq 2$  2,339
- Return to the OR 30 days 2,695

# Transfusion

- **Free-flap primary surgery for oral and oropharyngeal squamous cell carcinoma**
  - The hazard ratio for patients having 3 or more transfused units relative to those not transfused was **1.52 for disease-specific** and **1.52 for overall mortality**. *Szakmany T, Br J Cancer. 2006;94(5):647-653*
- **Prolonged length of stay** after major elective head and neck surgery *BuSaba NY, The Laryngoscope. 2007;117(10):1756-1763*
- **Recurrence and survival** in HN cancer surgery
  - recurrence (odds ratio 1.6) and survival (hazard ratio 1.5). *Chau JK, J Otolaryngol - Head Neck Surg. 2010;39(5):516-522*

# Intra & postoperative anemia

## Hemoglobin monitoring



- Cardiac complications
- **Postoperative anemia** = independent factors associated with early postoperative complications. Yoo SHJ **Cancer Res Clin Oncol** 2016 Jun;142(6):1343-51



# Anemia in squamous cell head and neck cancer

*van de Pol SMG, Oral Oncol. 2006;42(2):131-138*

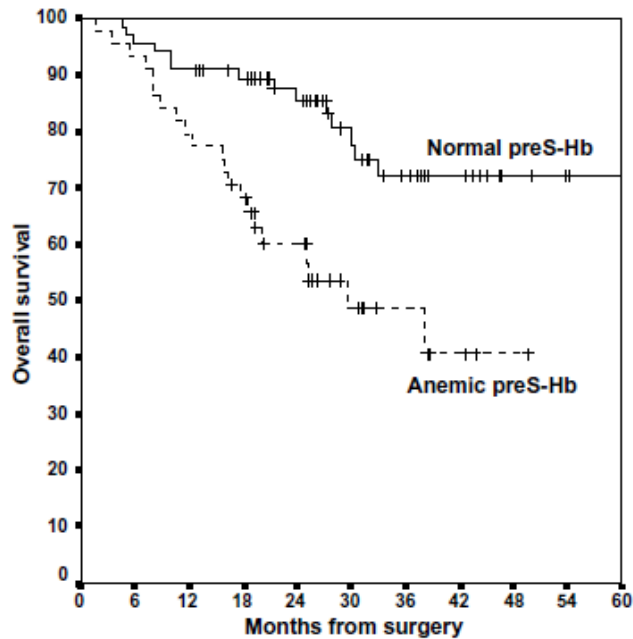


Figure 3 Overall survival according to presurgery Hb.

Before surgery

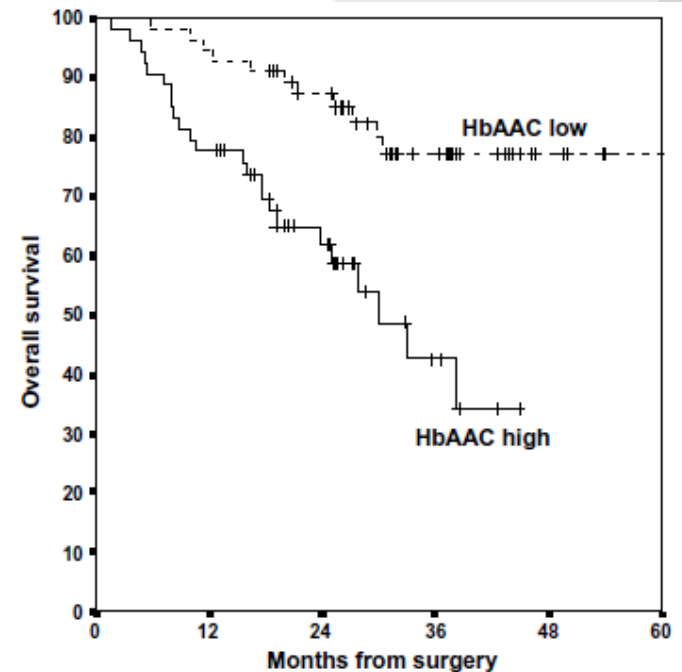


Figure 2 Overall survival according to Hb between surgery and radiotherapy (HbAAC). High HbAAC indicate low Hb-values during the interval between surgery and radiotherapy.

After surgery

# **Balance between risk of transfusion and risk of anemia**

**Transfusion threshold : 10 g/dl ?**

# Hypothermia

**Table 3. The Number of Patients With the Characteristics Shown Who Developed Complications**

Characteristic	Patients With Complications, No. (%)	P Value <sup>a</sup>
Preoperative chemotherapy		
No (n=120)	37 (31)	.84
Yes (n=15)	5 (33)	
Hypothermia present		
No (n=119)	33 (28)	.002
Yes (n=15)	10 (67)	
Stage IV disease present		
No (n=32)	7 (22)	.16
Yes (n=91)	32 (35)	
Sex		
Female (n=41)	11 (27)	.43
Male (n=95)	32 (34)	
Tobacco user		
No (n=55)	19 (35)	.58
Yes (n=80)	24 (30)	
Preoperative radiotherapy		
No (n=37)	14 (38)	.30
Yes (n=98)	28 (29)	

<sup>a</sup> $\chi^2$  Tests were conducted to investigate if the rates of developing complications are significantly different between 2 groups of patients.

**Table 4. The Odds Ratio of Developing Complications When Patients Were Hypothermic<sup>a</sup>**

	Odds Ratio (95% Confidence Interval) for Patients With Hypothermia	P Value
All complications	5.122 (1.317-19.917)	.02
Infectious and local wound complications	5.075 (1.363-18.896)	.02

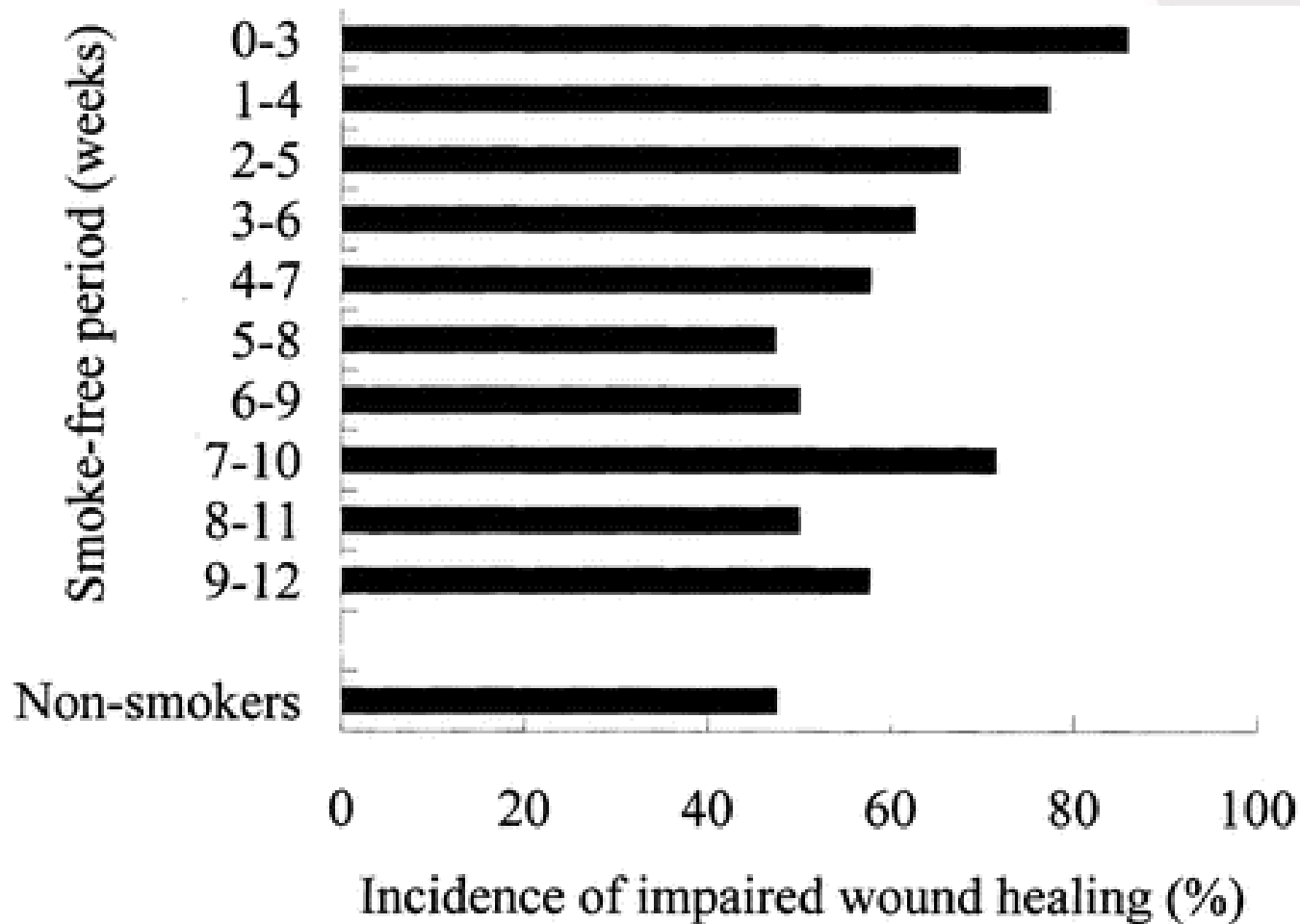
<sup>a</sup>Stepwise logistic regression analysis was conducted to identify independent significant predictors of all complications and infectious and local wound complications. The other variables studied (age, length of surgery, time hypothermic, sex, tobacco use, presence of stage IV disease, previous radiotherapy, and previous chemotherapy) were not significant predictors of complications.



# How can we prevent postoperative complications?

- **Stop tobacco and alcohol**
- **Improve nutrition**
  - Naso-gastric feeding
- **Immuno-nutrition** C Bianchini 2012 Jan;269(1):5-8.
- **Take into account the social problems**

# Major head & neck cancer surgery



# Utility of a perioperative nutritional intervention on postoperative outcomes in high-risk head & neck cancer patients

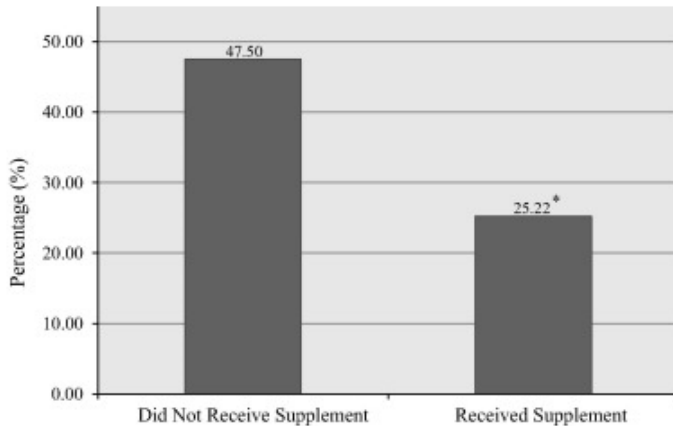


Fig. 1

Comparison of percentage of patients who experienced post-operative complications of all types between those that received nutritional supplementation to those that did not. \* indicates statistical significance, *p*-value: 0.0021.

	Did Not receive supplement	Received supplement	<i>p</i> -value
Length of Stay (days ± SD)	12.48 ± 10.0	9.68 ± 6.90	0.02 ±
Readmission rate (%)	16.25	15.65	0.91

# The Effect of Alcohol Abuse and Alcohol Withdrawal on Short-Term Outcomes and Cost of Care After Head and Neck Cancer Surgery

Dane J. Genther, MD; Christine G. Gourin, MD, MPH

- 92,312 patients  $\geq 18$  years : ablative procedure for a malignant oral cavity, laryngeal, hypopharyngeal, or oropharyngeal neoplasm (2003 – 2008)
- **Alcohol withdrawal symptoms :**
  - ↗ incidence of acute medical complications ( OR: 5.6)
  - ↗ incidence of Surgical complications (OR: 2.3).
- **Alcohol abuse**
  - ↗ length of stay
  - ↗ hospital-related costs

Laryngoscope. 2012 Aug;122(8):1739-47.

# Study Institut Gustave Roussy

## Characteristics of the 2 populations of the habitus alcohol study

	<b>Group 2011 (n=191)</b>	<b>Group 2013 (n=191)</b>	<b>p</b>
<b>Alcohol consumption [n (%)]</b>			
- <b>Drinkers</b>	143 (75%)	141 (74%)	0,26
- <b>Abstainers</b>	18 (9%)	26 (14%)	
<b>Quantity (g/j) [méd ± interquartile]</b>	40 ± 60	40 ± 30	0,88
<b>Consumption &gt; 60 g/j [n (%)]</b>	33 (17%)	34 (18%)	0,76
<b>Weaned patients[n (%)]</b>	48 (25%)	51 (27%)	0,26



# Study Institut Gustave Roussy

Patient follow up after new alcohol weaning strategy

	<b>Group 2011 (n=176)</b>	<b>Group 2013 (n=175)</b>	<b>p</b>
<b>Prescription [n (%)]</b>	23 (12%)	28 (15%)	0,45
<b>Protocol application [n (%)]</b>	8/23 (35%)	17/28 (61%)	0,06
<b>Delirium Tremens [n (%)]</b>	16 (8%)	11 (6%)	0,43

# Preoperative diagnosis of alcoholism

- Difficult to establish
- Increase the rate of detection
  - Three preoperative visits,
  - Alcohol-related questionnaire (CAGE)
  - Carbohydrate-deficient transferrin (CDT)
  - Glutamyltransferase (GGT)
- Performance
  - By clinical routine alone (one visit) :16%
  - after 3 visits : 34%.
  - CAGE questionnaire : 64%.
  - Addition of GGT or CDT 80 and 85%
  - A combination of all tests 91%.

# Postoperative pain

- **Highly variable from no pain to unacceptable pain**

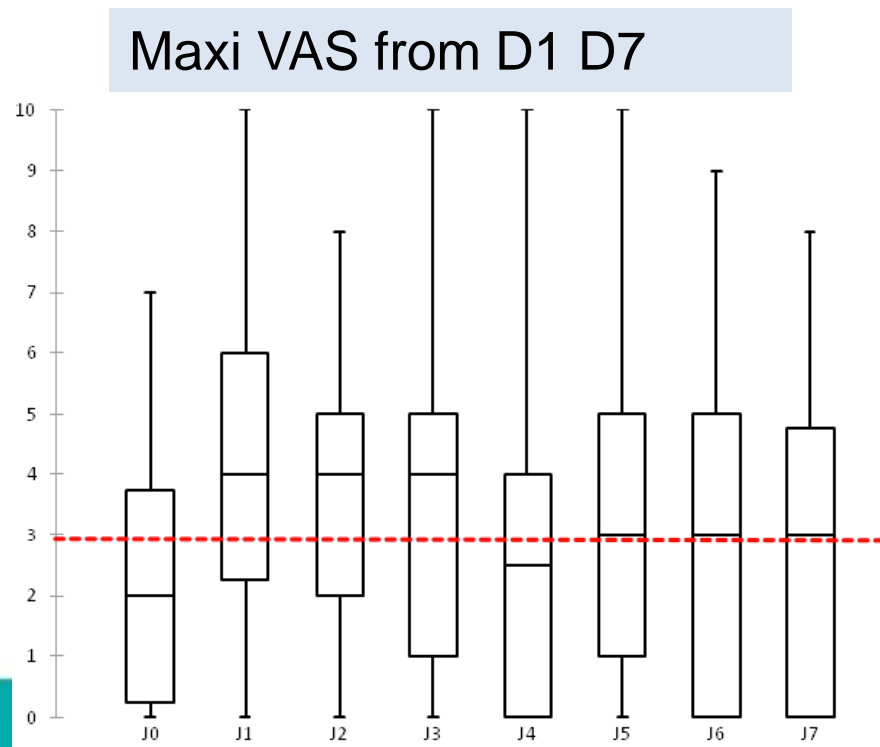
50% of the patients : VAS >4 D1 → D4

*Sommer M, Arch Otolaryngol Head Neck Surg. 2009;135(2):124-130*

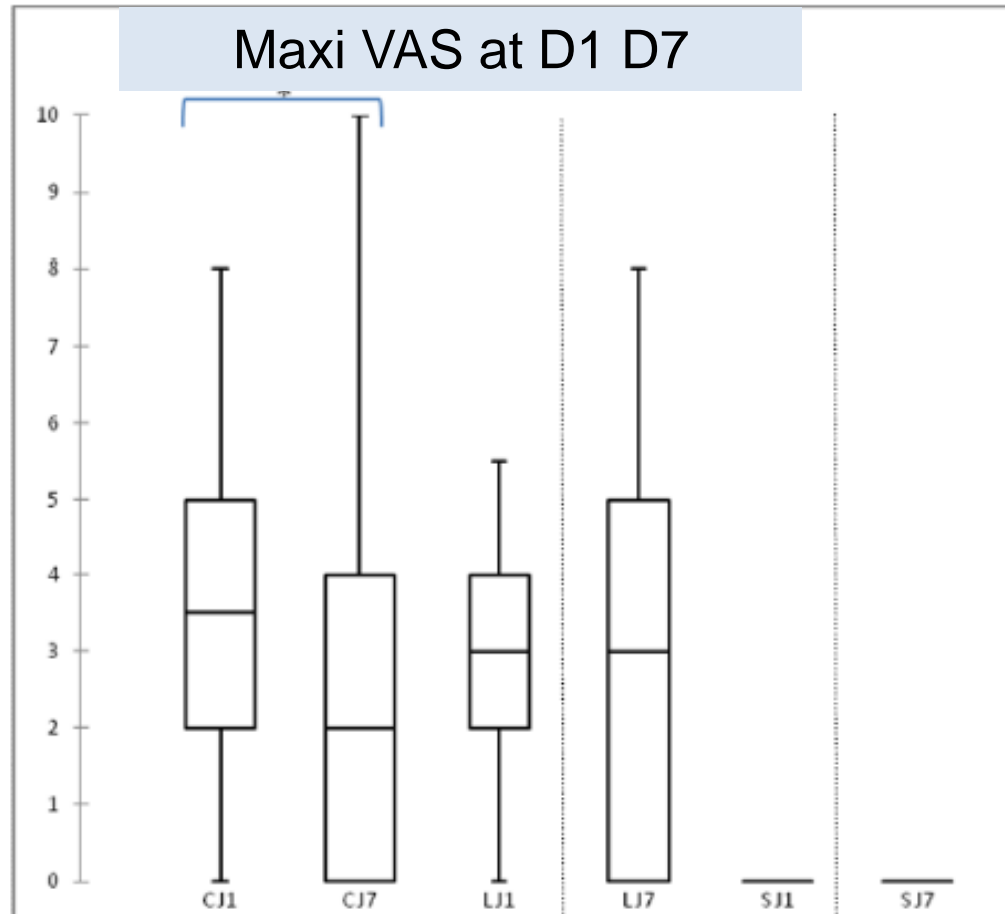
53% of the patients VAS >3 à D1

*Inhestern J, Eur Arch Oto-Rhino-Laryngol September 2014*

- **Prolonged**



# Anatomical sites



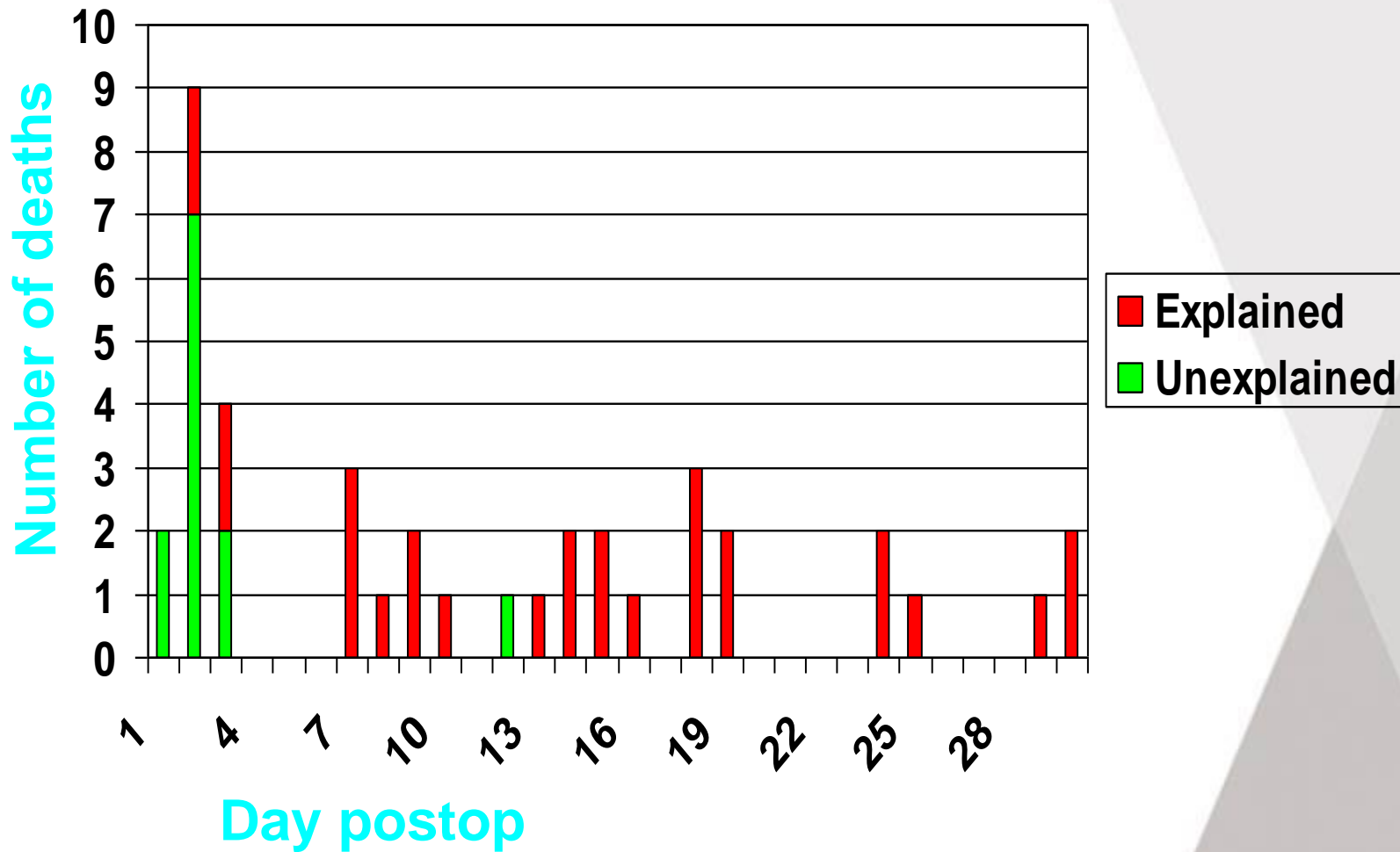
Cervical

Flap donor site

Scapula

# Conclusion

- **Head & Neck cancer surgery has specificities**
  - Pre and postoperative airway management
  - Preoperative management of co-morbidities
    - Nutrition, alcohol, tobacco, social difficulties ...
  - High rate of postoperative complications ( < 40 %)
  - Severe and prolonged postoperative pain
- **The literature on these topics includes with very few randomized controlled studies**



Sudden death after neck dissection (*Guéret Arch Oto Rhino Laryng 2002;111(2):115-9*)