

# Controversies in the management of laryngeal and hypopharyngeal advanced tumors

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# Advanced laryngeal / hypopharyngeal tumors

## Introduction

## Advanced laryngeal / hypopharyngeal tumors

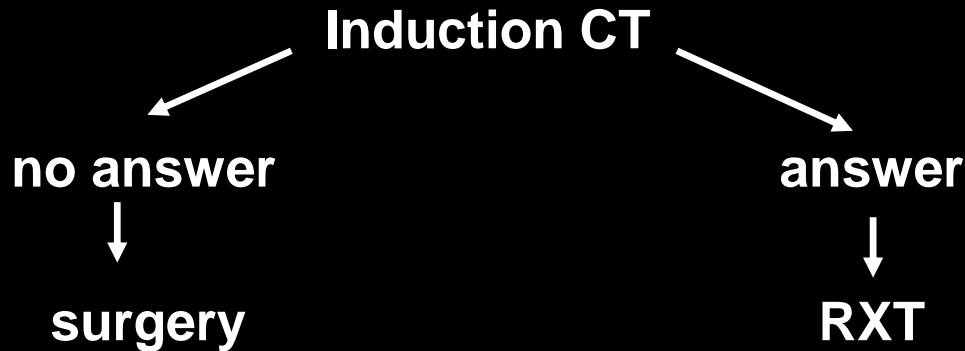
### Introduction

- ✓ laryngeal cancer: the 2<sup>nd</sup> more common in H&N
- ✓ CS I / II: 63.6%
- ✓ CS III / IV: 37.5%
- ✓ supraglottis: 55.8% in CS III / IV
- ✓ glottis: 16.3% in CS III / IV
- ✓ standard treatment: surgery + adjuvant RXT
- ✓ TL: required for all advanced glottic tumors and > 70% of supraglottic tu
- ✓ consequence: definitive stoma



## Advanced laryngeal / hypopharyngeal tumors

### Veterans Affairs



- ✓ **n = 332**
- ✓ **2-year survival = 68% for both groups (p = 0.9846)**
- ✓ **CRT group: > local recurrence and < distant metastasis**
- ✓ **laryngeal preservation: 66%**
- ✓ **criticism: the lack of exclusive RXT branch**

*Wolf et al., 1991*

# Advanced laryngeal / hypopharyngeal tumors

V.A. Laryngeal Cancer Study Group, 1991

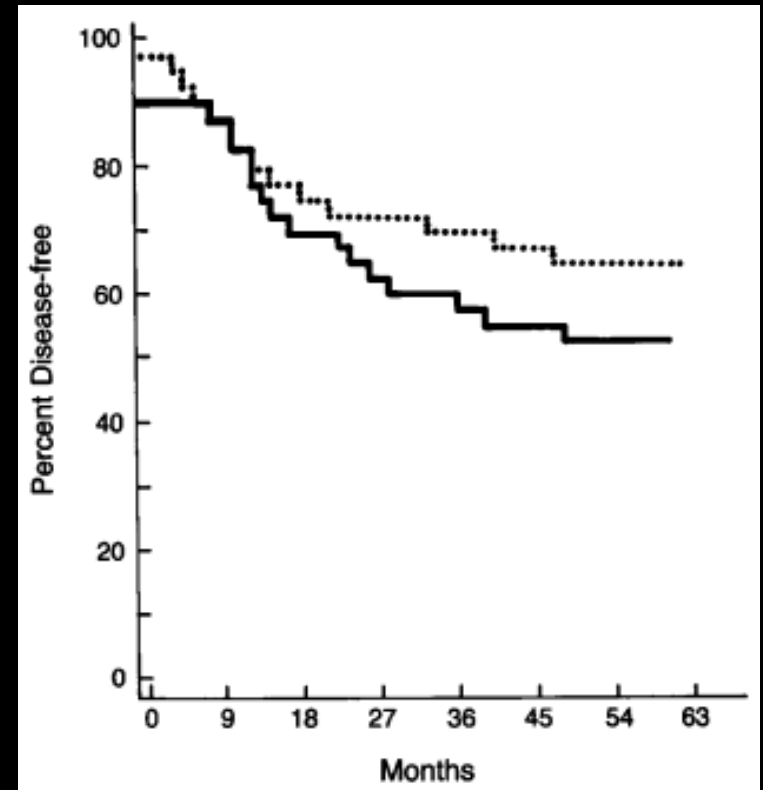
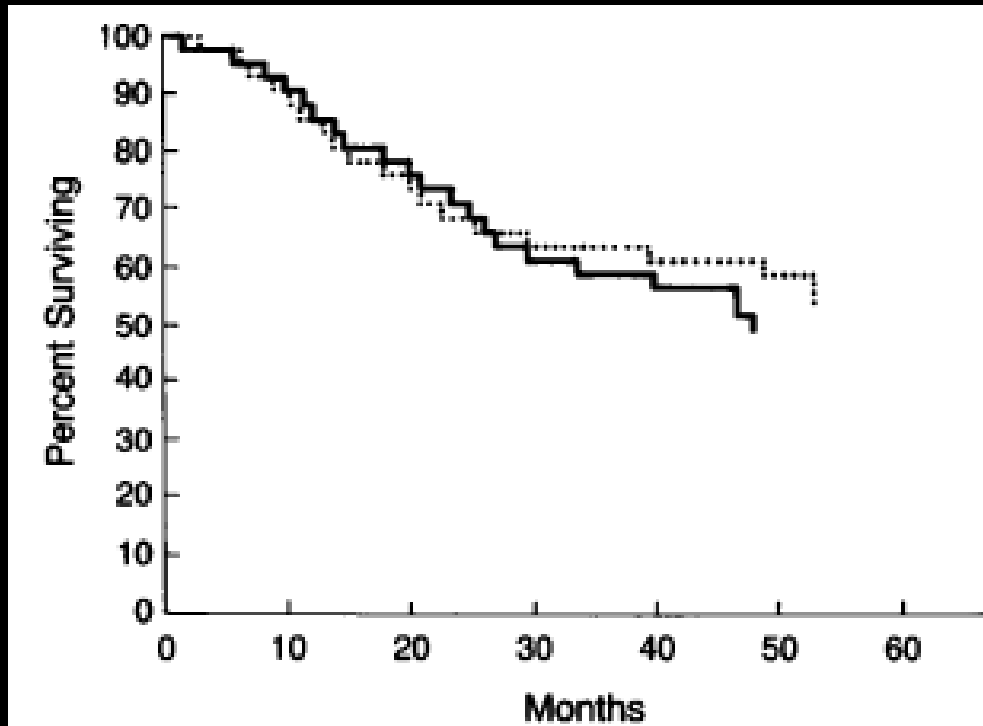


Figure 1. Overall Survival of 332 Patients Randomly Assigned

## Advanced laryngeal / hypopharyngeal tumors

### Sequential X concomitant CRT

- ✓ 3 weekly cycles, cis 100mg/m<sup>2</sup> + 5-FU + RXT 70Gy X cis 60mg/m<sup>2</sup> + 5-FU concomitant to RXT, 7-8 weeks
- ✓ 107 pts. in each group, resectable, randomized
- ✓ severe toxicity similar in both groups
- ✓ mucositis and nephropathy: worse in concomitant approach

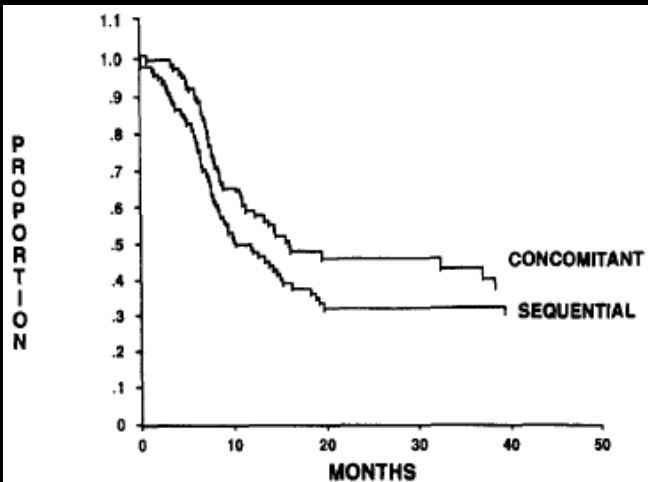


Fig 1. Kaplan-Meier progression-free survival curves for time to progression or recurrence based on assigned treatment arm.

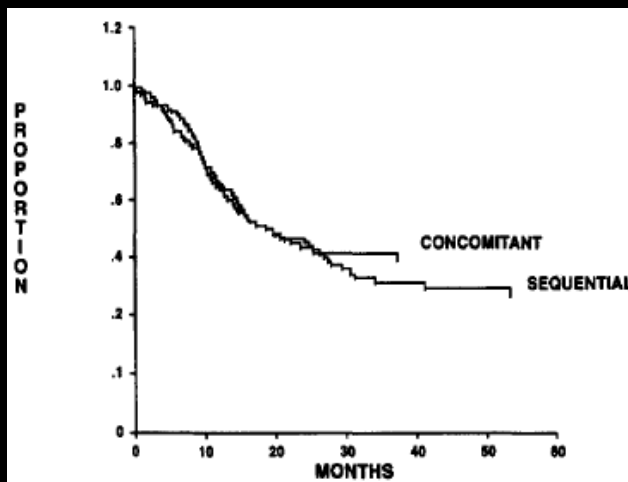


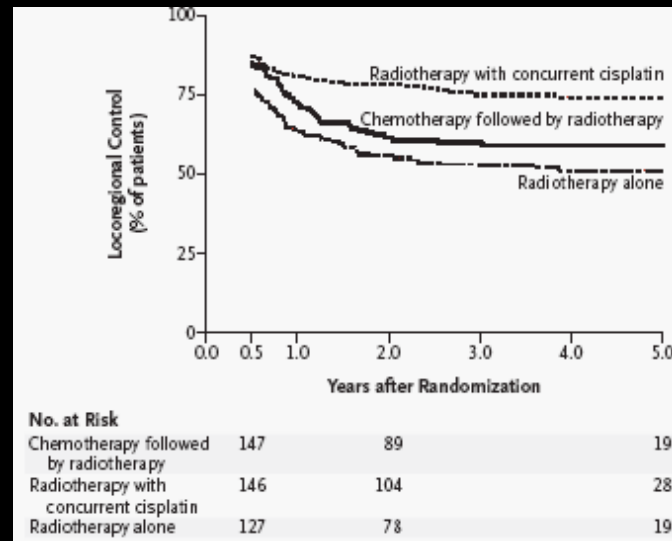
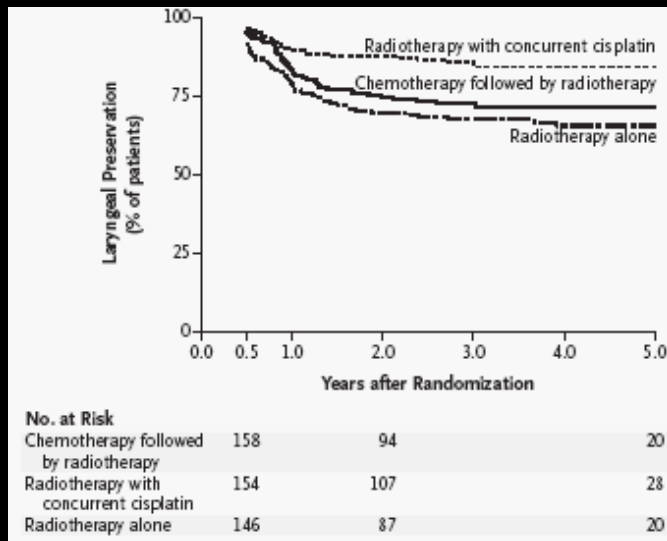
Fig 2. Kaplan-Meier survival curves for deaths due to all causes based on assigned treatment arm.

Taylor *et al.*, 1994

# Advanced laryngeal / hypopharyngeal tumors

## RTOG 91-11

- ✓ advanced laryngeal tumor, randomized
- ✓ RXT **X** cis and 5-FU sequential to RXT **X** cis and 5-FU concomitant to RXT
- ✓ intact larynx after 2 years: 70% **X** 77% **X** 88%
- ✓ CRT: < distant metastasis, similar survival rates

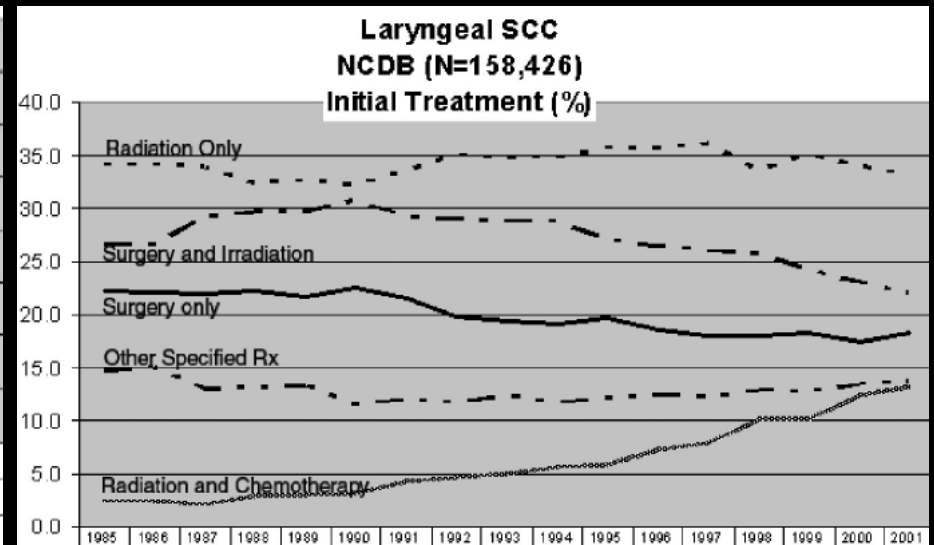
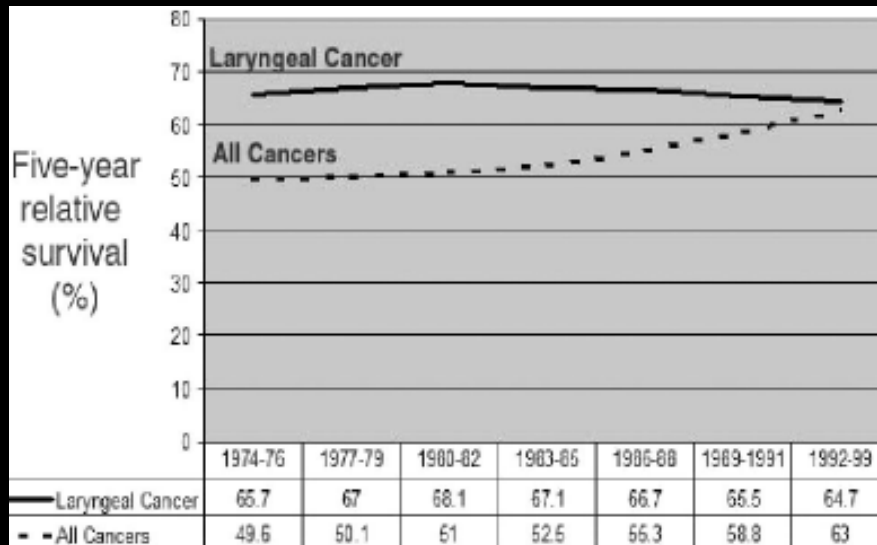


# Advanced laryngeal / hypopharyngeal tumors

## Mortality increase

- ✓ 128,426 cases of laryngeal cancer, 1985 – 2001, NCDB
- ✓ related to changes of the therapeutic approach
- ✓ 80/90 decades: < survival, > CRT, < surgery

Hoffman *et al.*, 2006

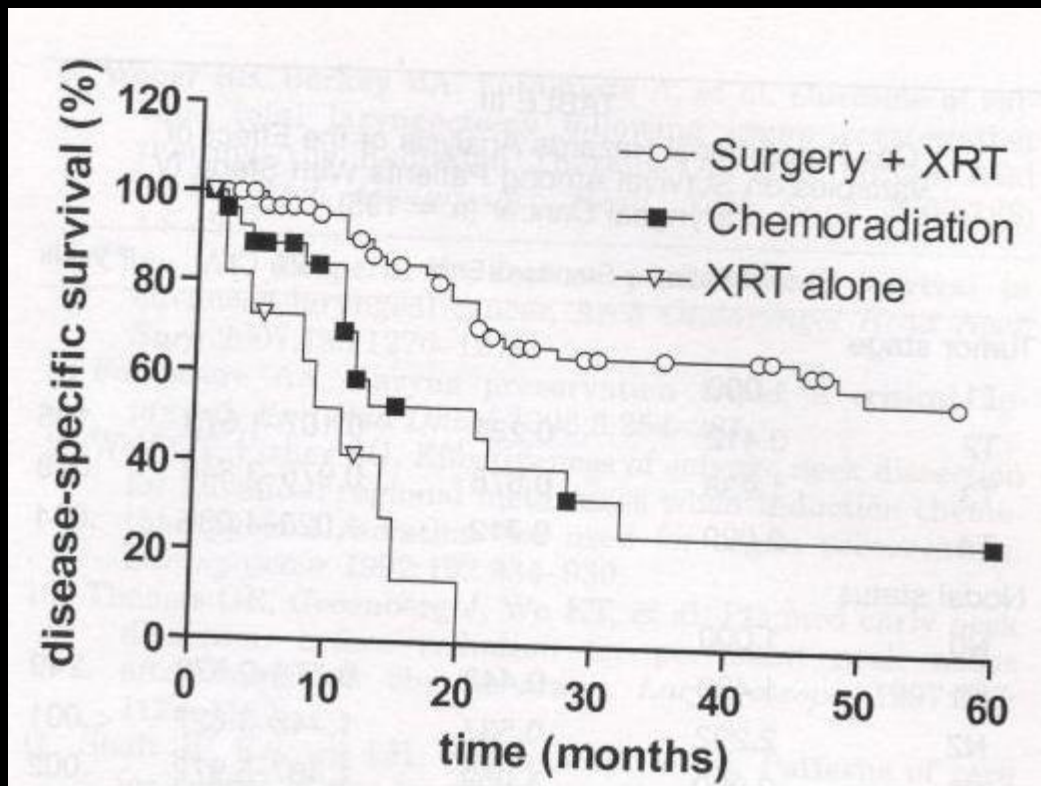




## Advanced laryngeal / hypopharyngeal tumors

### Treatment X survival for T4 laryngeal cancer

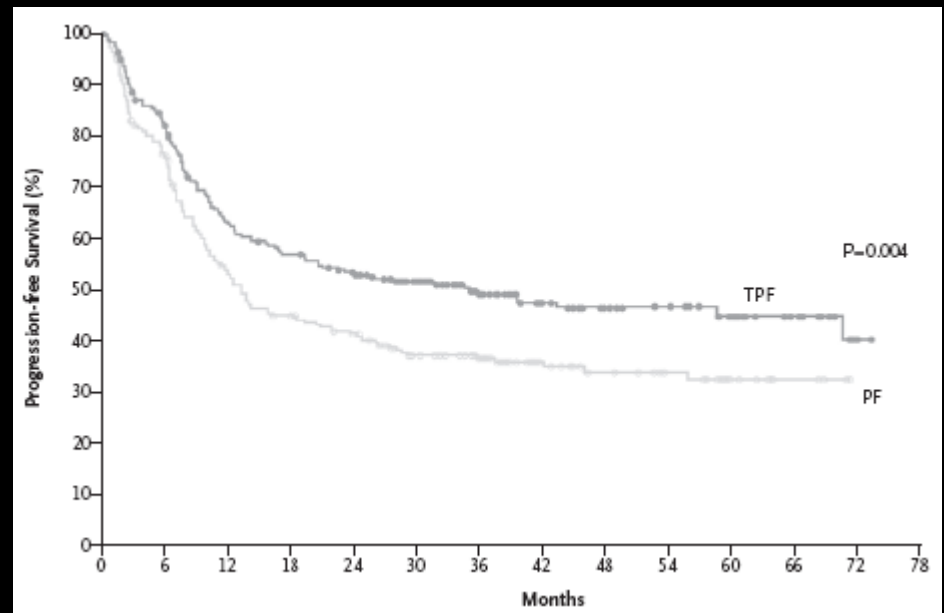
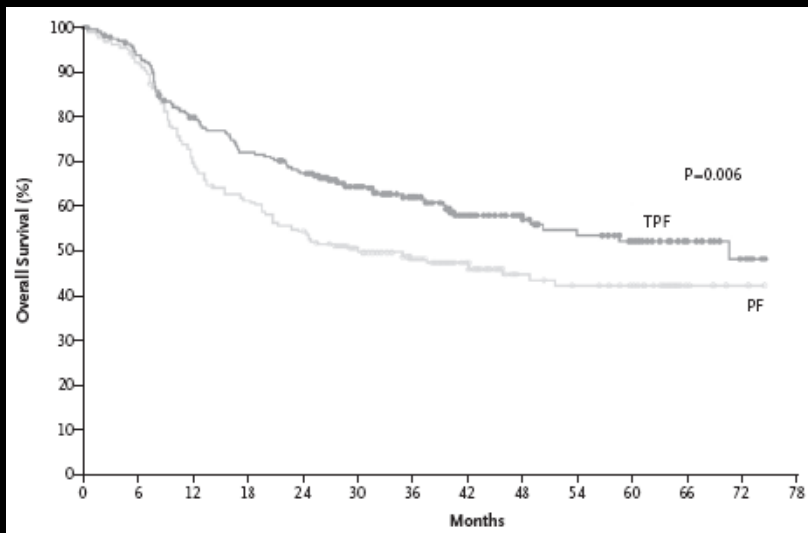
- ✓ n = 451
- ✓ Gourin *et al.*, 2009



# Advanced laryngeal / hypopharyngeal tumors

## TAX 324

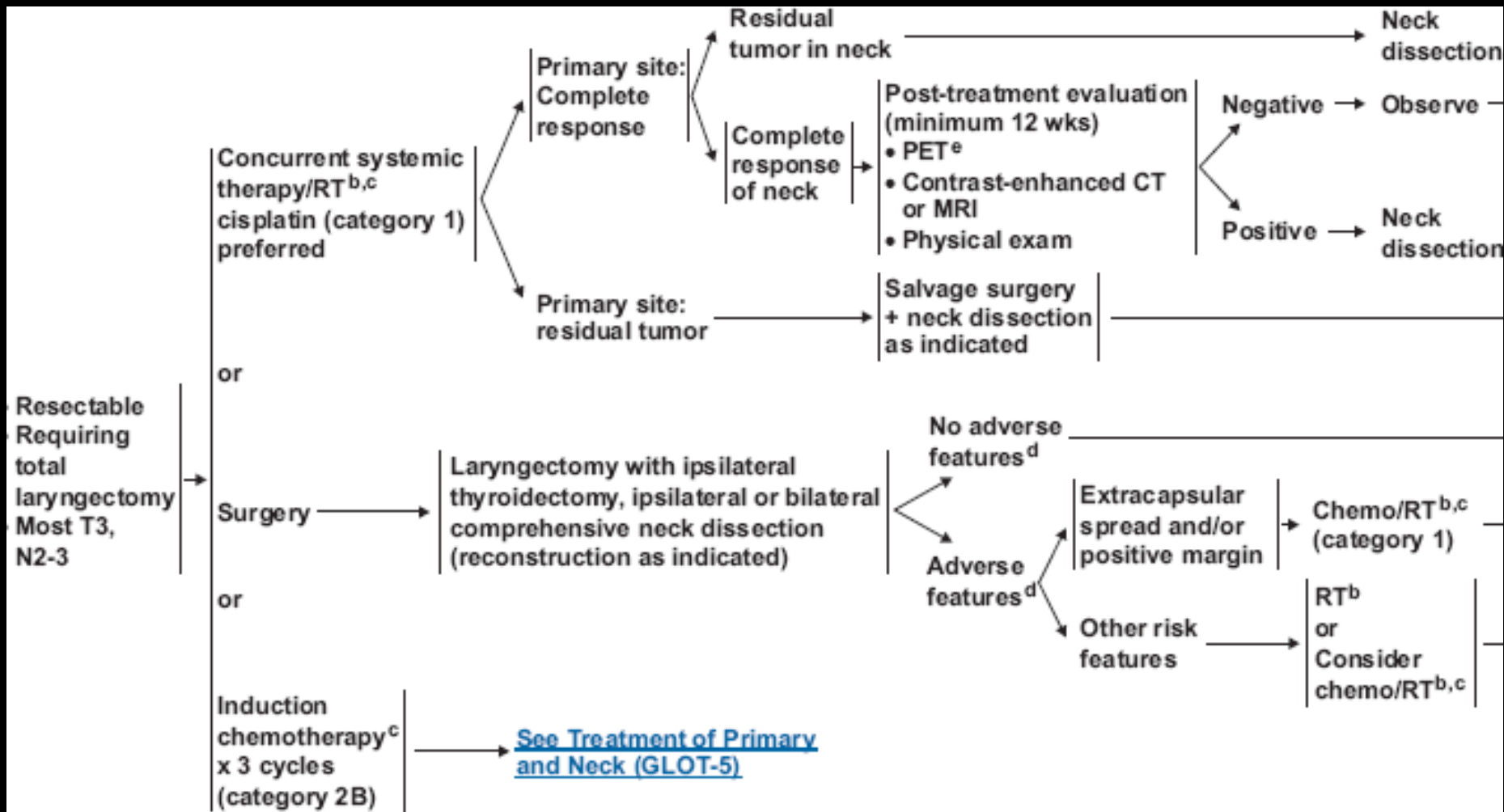
- ✓ TPF induction CRT **X** PF, randomized, n = 501 CS III / IV
- ✓ RXT + Carboplatin
- ✓ toxicity: neutropenia



# Advanced laryngeal / hypopharyngeal tumors

NCCN

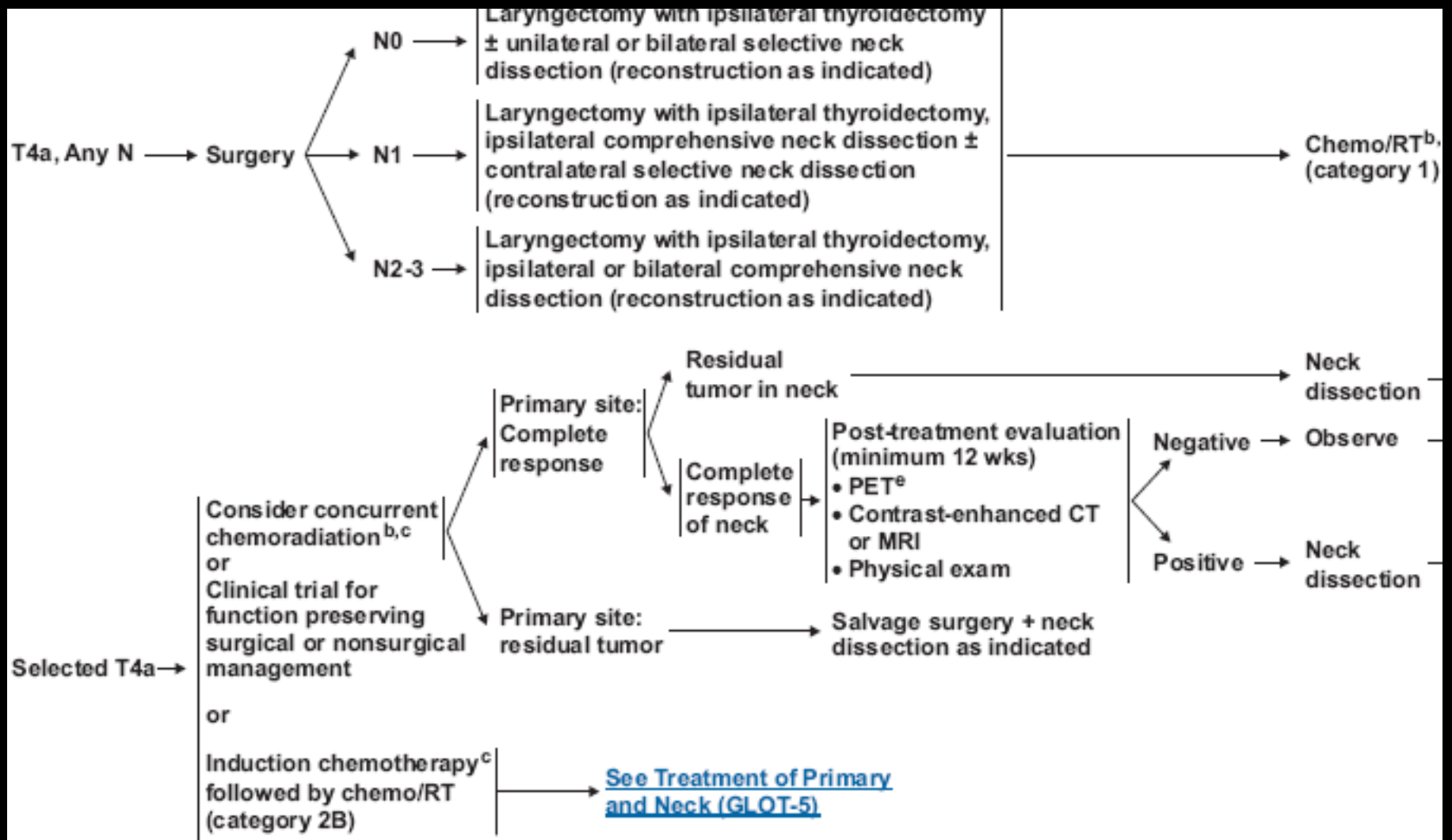
## ✓ glottic tumors



# Advanced laryngeal / hypopharyngeal tumors

NCCN

## ✓ glottic tumors



**Advanced laryngeal / hypopharyngeal tumors**

**Partial laryngectomy feasible?**

## Advanced laryngeal / hypopharyngeal tumors SCL

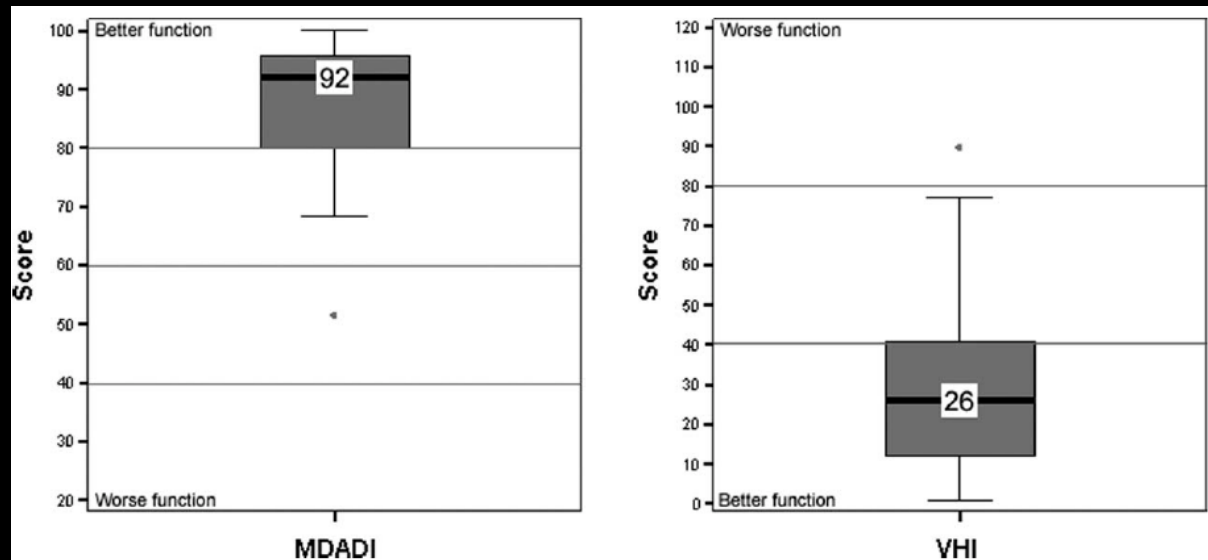
- ✓ n = 19; aspirative pneumonia = 3; laryngeal sinechia = 2; local recurrence = 4

Schröder *et al.*, 2003

- ✓ n = 46; 44 decanulization (average = 20/41 dias); NET removal: 21/40 dias; 2 local recurrences salvaged; 3-year global survival rate = 95.7%

Akbas & Demireller, 2005

- ✓ n = 41



Castro *et al.*, 2010

## Advanced laryngeal / hypopharyngeal tumors

# Subtotal laryngectomy

✓ 399 SCL; 70 STL

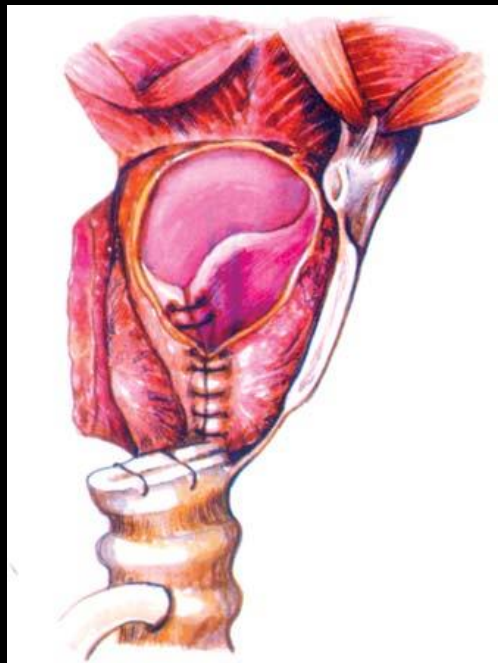
SCL		
CHEP	98/103	95.1
CHEP + A	165/169	97.6
CHP	33/36	91.7
CHP + A	86/91	94.5
STL		
THEP	10/11	90.9
THEP + A	41/51	80.4
THP	–	–
THP + A	5/8	62.5



Rizzotto *et al.*, 2012

**Advanced laryngeal / hypopharyngeal tumors**

✓ **partial, not conservative!**



**D' Cruz et al., 2012**

Study	Pts with sat SO (of total pts)	
	n	%
Singh & Hardcastle <sup>1,2</sup>	4/4	100
Hoasjoe <i>et al.</i> <sup>24</sup>	11/11	100
Desanto <i>et al.</i> <sup>25</sup>	29/39	74
Pearson <i>et al.</i> <sup>4</sup>	7/7	100
Levine <i>et al.</i> <sup>26</sup>	9/11	82
Han <i>et al.</i> <sup>21</sup>	27/28	96.4
Chandrachud <i>et al.</i> <sup>27</sup>	11/11	100
Su & Hwang <sup>28</sup>	18/21	86
Shan <sup>29</sup>	10/10	100
Tang <i>et al.</i> <sup>20</sup>	12/14	85.7
Suits <i>et al.</i> <sup>30</sup>	30/39	76
Shenoy <i>et al.</i> <sup>31</sup>	23/29	79.3
Thakar <i>et al.</i> <sup>11</sup>	23/28	82
Shenoy <i>et al.</i> <sup>15</sup>	44/54	81
Cakli <i>et al.</i> <sup>32</sup>	19/23	82.6
Andrade <i>et al.</i> <sup>14</sup>	35/42	83.3
Maamoun <i>et al.</i> <sup>16</sup>	31/38	81.6
Qi <i>et al.</i> <sup>18</sup>	10/12	83.3
Aslan <i>et al.</i> <sup>9</sup>	90/127	70.8
Pearson <i>et al.</i> <sup>8</sup>	191/225	85
Kavabata <i>et al.</i> <sup>17</sup>	12/15	80
Bernáldez <i>et al.</i> <sup>23</sup>	61/79	77.2
Su <sup>33</sup>	50/66	76
Pradhan <i>et al.</i> <sup>34</sup>	135/150	90



## Advanced laryngeal / hypopharyngeal tumors



## **Advanced laryngeal / hypopharyngeal tumors**

### **T4a / T4b tumors**

## Advanced laryngeal / hypopharyngeal tumors

TABLE I.

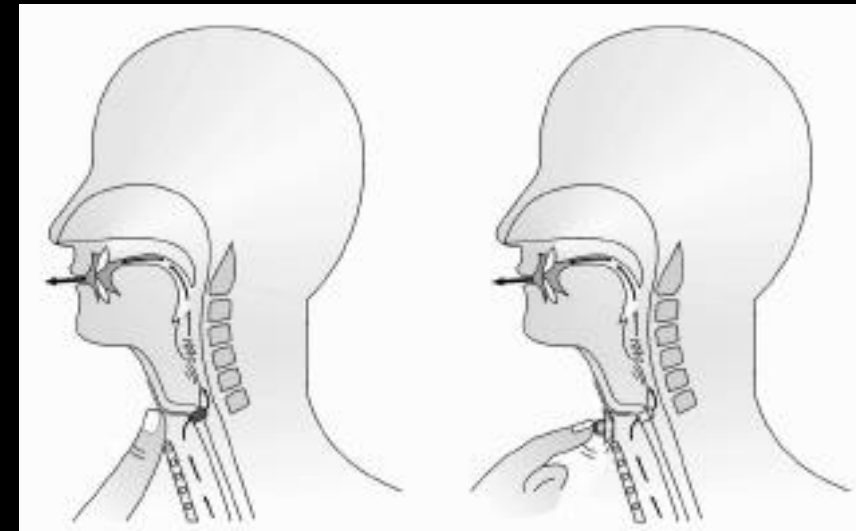
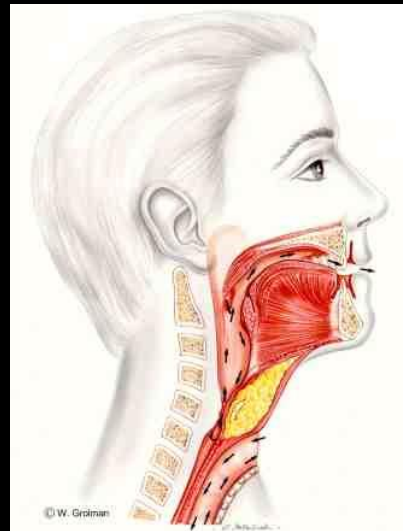
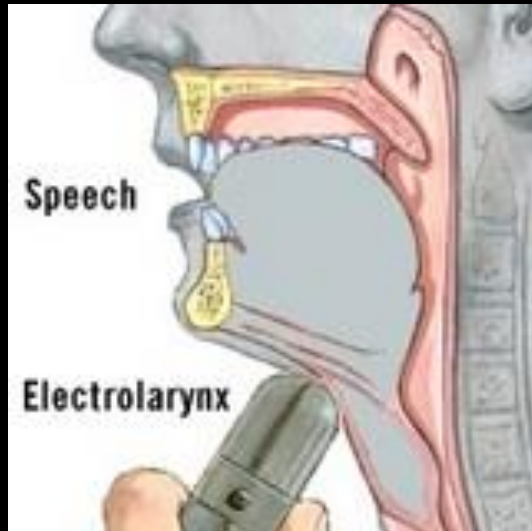
Strategies for Vocal Rehabilitation of Laryngectomized Patients.

- A. Esophageal voice
- B. Surgical methods
  - a. Mucosal or skin fistula directing air from lungs to upper esophagus and pharynx
  - b. Pharyngo-cutaneous fistula, connected to tracheostome via external prosthetic valve
  - c. Implantation of unidirectional prosthetic valve into fistula between trachea and upper esophagus or pharynx
  - d. "Near-total" resection of larynx, with creation of vocal shunt
- C. Mechanical generators of acoustic vibrations
  - a. External electric generators
  - b. Internal electric generators
  - c. Pneumatic generators

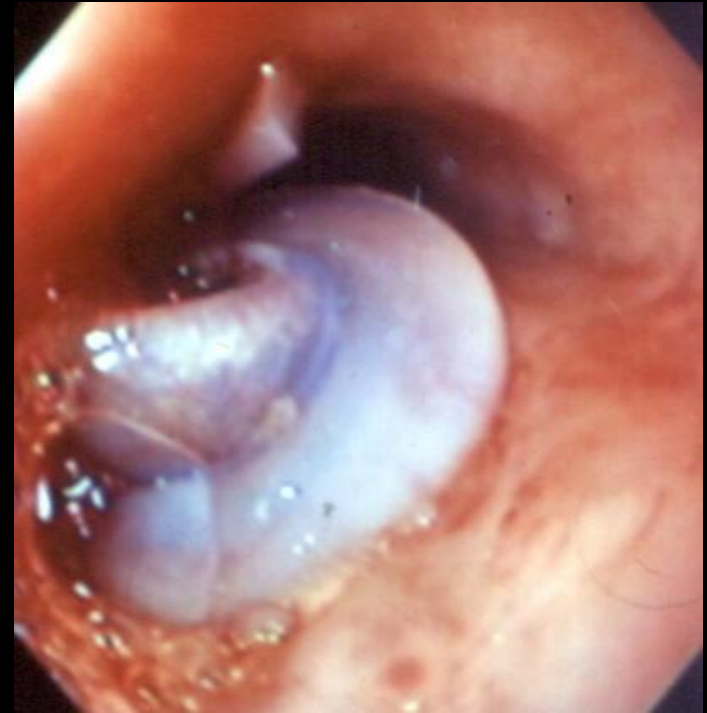
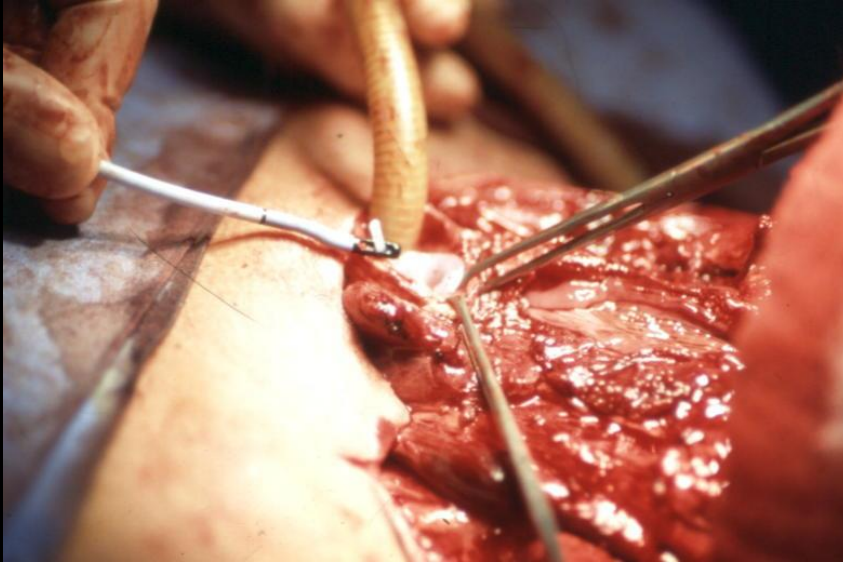
# Advanced laryngeal / hypopharyngeal tumors

## TEP

✓ Singer & Blom, 1980



## Advanced laryngeal / hypopharyngeal tumors

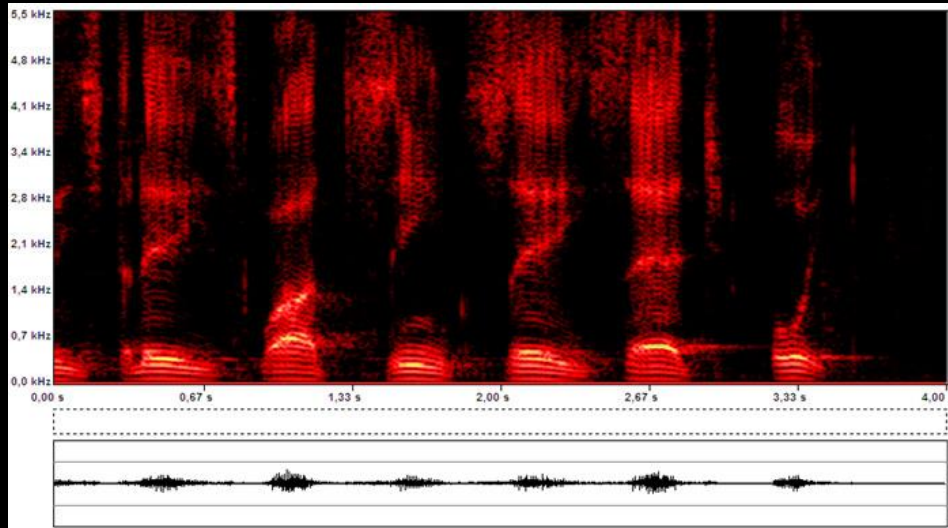
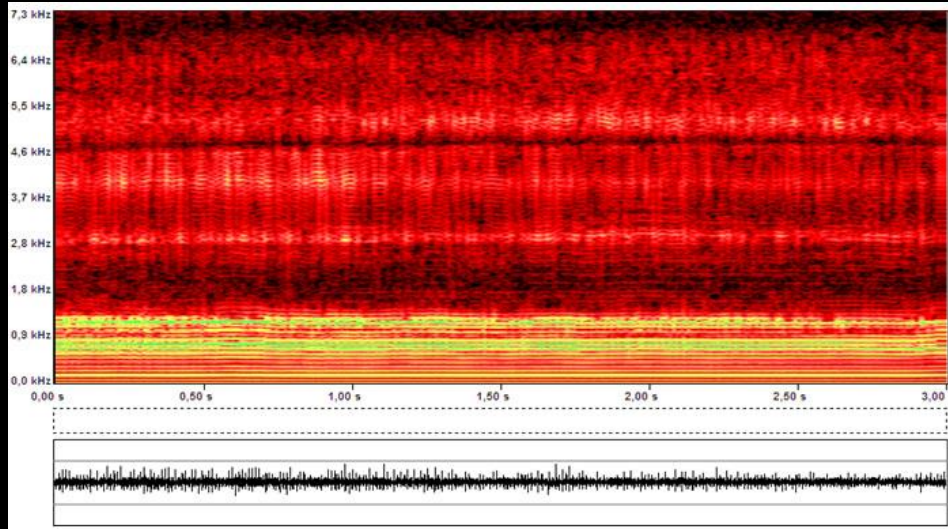


## Advanced laryngeal / hypopharyngeal tumors



# Advanced laryngeal / hypopharyngeal tumors TEP

## Voices spectrography



# Advanced laryngeal / hypopharyngeal tumors

## Voice failure factors

✓ **patient's factors**

✓ **prosthesis factors**

✓ **tumor and treatment factors**

Bozec *et al.*, 2010

Potential explicatory factors	Number of patients (n = 15)
Neurological and/or psychological impairment	3
Bad compliance and lack of motivation for speech reeducation	3
Poor respiratory function with incoercible cough and expectoration when using speech valve	2
Local tumor recurrence in the 3 postoperative months	2
Death not associated with tumor recurrence in the 3 postoperative months	2
Repeated granulation and obstruction of the tracheoesophageal fistula posterior aspect	2
Extensive mandibular radionecrosis with complete trismus	1



## Advanced laryngeal / hypopharyngeal tumors

# Dysphagia

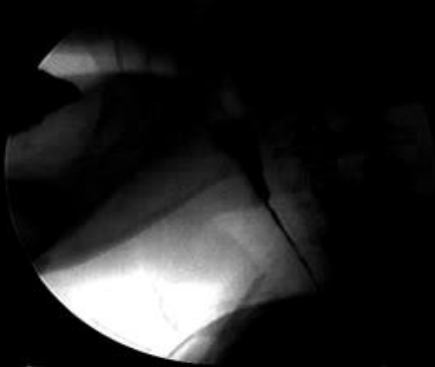
- ✓ videofluoroscopic assessment
  - ✓ 26 pts. (12 TL and 14 TPL)
  - ✓ 61.5% no complaints
  - ✓ 84% dysphagia
    - ✓ 42% increase oral transit time
    - ✓ 54% base of tongue stasis
    - ✓ 73% increase pharynx transit time
    - ✓ 58% suggestive of decreasing of pharynx motility

Salgado *et al.*, 2006

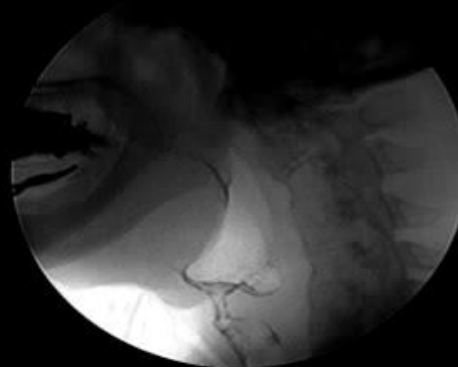
## Advanced laryngeal / hypopharyngeal tumors

### Swallowing videofluoroscopy

- ✓ total laryngectomees



stenosis

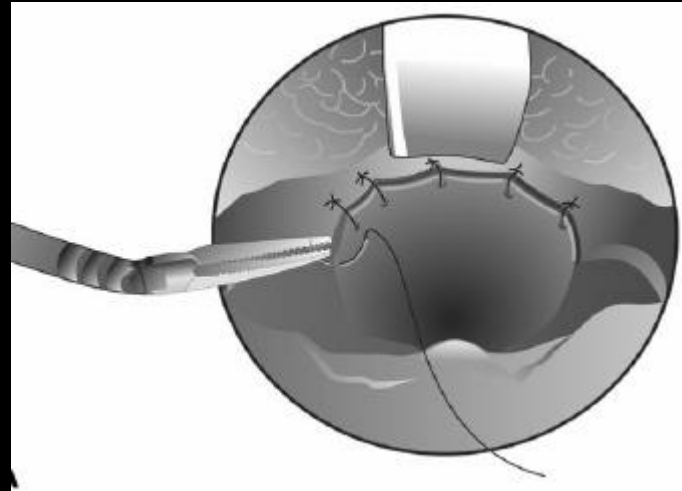
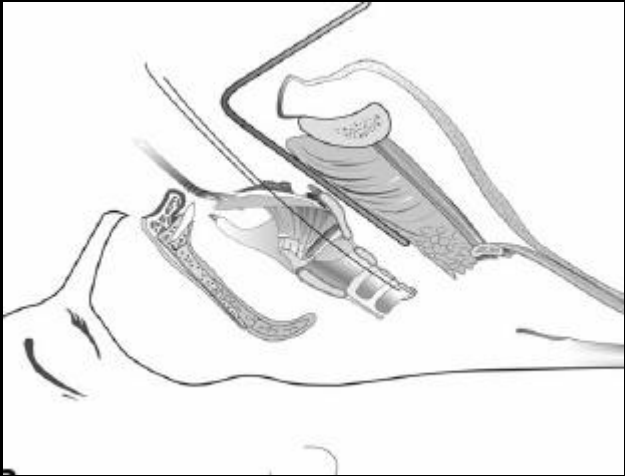
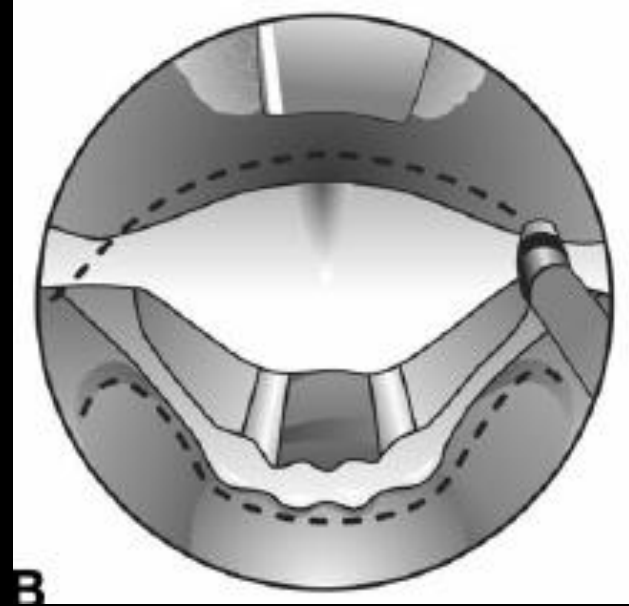
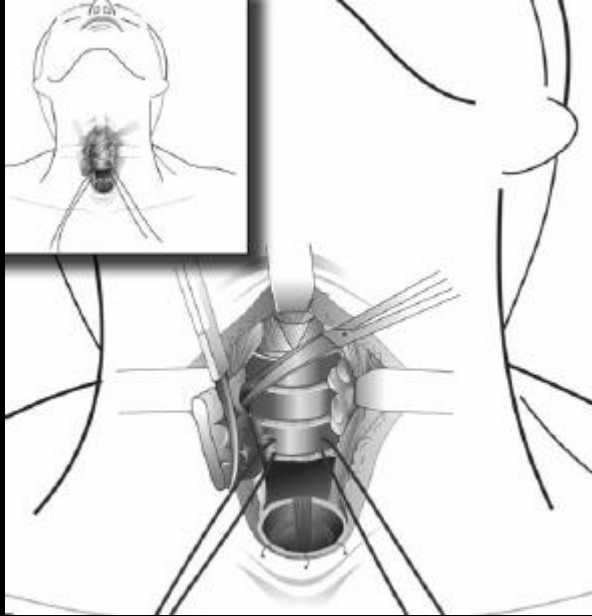


cricopharyngeous bar



pseudovallecula

# Advanced laryngeal / hypopharyngeal tumors    Robotic TL



Lawson et al., 2012

## Advanced laryngeal / hypopharyngeal tumors

**T3 tumors,  
candidates to TL**

# Advanced laryngeal / hypopharyngeal tumors

## Combined treatment

- ✓ functional outcome:
  - ✓ worse dysphagia
  - ✓ better voice X PL / TL
- ✓ difficult recurrence detection
- ✓ late detection: < salvage surgery
- ✓ deeper biopsy under general anesthesia
- ✓ surgical salvage: initial or post-protocol margins?
- ✓ necessity of first lesion documentation
- ✓ image methods limitation (CT, MRI, PET-CT)
- ✓ evaluation after 6 to 8 weeks (< mucositis)

Hutcheson & Lewin, 2012

# Advanced laryngeal / hypopharyngeal tumors

## Chemoradiation

- ✓ high incidence of acute toxicity
- ✓ long term functional sequelae, significant pharyngeal / esophageal edema / stenosis
- ✓ salvage TL: > PCF / complications
- ✓ higher cost
- ✓ aspiration among symptomatic pts.: 24% to 31%  
Goguen *et al.*, 2006; Caudell *et al.*, 2009
- ✓ aspiration among all pts. 30% to 62%  
Eisbruch *et al.*, 2002; Agarwal *et al.*, 2011
- ✓ addition of Cetuximab
  - ✓ well tolerated / promising results
  - ✓ phase II

Suntharaligan *et al.*, 2012

## Advanced laryngeal / hypopharyngeal tumors



## **Advanced laryngeal / hypopharyngeal tumors**

# **Conclusion**



## Advanced laryngeal / hypopharyngeal tumors



X



X



## Biases

- ✓ anatomical preservation  $\neq$  functional pres.
- ✓ RTOG 91-11: laryngectomy-free survival
- ✓ VA:  $>$  ratio of salvage TL among T4 tumors
- ✓  $>$  70 y, previous tracheotomy, gastric tube, pneumonia / aspiration: excluded from preservation protocols

*Hinerman et al., 2002*

*Léfèbvre & Ang, 2009 ; Pignon et al., 2009*



## Advanced laryngeal / hypopharyngeal tumors

QoL just when there is no survival advantage??

