Larynx Preservation: Surgical Options

Dr. Patrick Gullane
Contemporary Surgical Management of Carcinoma of the Larynx

“Cancer is a terrible disease, but I do not accept that the surgeon’s scalpel may be more destructive than the disease itself. The war against the larynx must stop, since its removal is unnecessary and ineffective in many cases. To take away the disease without excising a healthy glottis to make an effort to preserve the function of the organ, to strive not to return a disabled person to the society: that is my motto”

Alonso-1954

Goals:

- Achieve Cure
- Laryngeal Preservation
- Improved Quality of Life
Purpose of the presentation

Review the Management of Early Glottic Cancer

- Radiotherapy vs Transoral laser (TOL)

Review the Option of Horizontal Partial Laryngectomy in Intermediate Staged Larynx Carcinoma

Review the management of recurrent glottic carcinoma following radiation failure
Fundamental Principles
Primary issues

- Local and regional control of disease
- Preservation of functional speech
- Preservation of swallowing function
- QOL
Fundamental Principles
Secondary issues

Voice quality

Swallowing efficacy

Duration and Morbidity of Treatment

Cost of Treatment
Staging of Glottic Cancer

- **Glottis**
  - T1-Limited to vocal cord(s), normal mobility one cord or both cords
  - T2-Supraglottis, subglottis, impaired cord mobility
  - T3-Cord fixation, paraglottic space, thyroid cartilage erosion
  - T4a-Through thyroid cartilage; trachea, soft tissues of neck; deep/extrinsic muscle of tongue, strap muscles, thyroid, oesophagus
  - T4b-Prevertebral space, mediastinal structures, carotid artery
Management Options in Laryngeal Carcinoma

• Early stages
  • laser CO² endoscopic surgery
  • open partial surgery
  • radiation therapy

• 2. Moderately advanced and advanced stages
  • laser CO² endoscopic surgery
  • supracricoid partial laryngectomies
  • partial laryngopharyngectomies
  • total laryngectomy
  • Altered fractionation Radiation Therapy
  • Concomitant Chemoradiation
  • Neoadjuvant

From Lefebvre
Treatment of choice

Glottic cancer

T1
Treatment of choice
There are no treatments of choice but rather choices of treatment
## Radiation Treatment Early Glottic Carcinoma

<table>
<thead>
<tr>
<th>Study</th>
<th>Number of Subjects</th>
<th>Stages</th>
<th>Overall Survival</th>
<th>Local Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fletcher22</td>
<td>330</td>
<td>T1,T2</td>
<td>-</td>
<td>80%</td>
</tr>
<tr>
<td>Horiot24</td>
<td>415</td>
<td>Tis,T1a,T1b</td>
<td>-</td>
<td>83%</td>
</tr>
<tr>
<td>Le26</td>
<td>398</td>
<td>T1,T2</td>
<td>43%</td>
<td>80%</td>
</tr>
<tr>
<td>Wang28</td>
<td>902</td>
<td>T1,T2</td>
<td>95%</td>
<td>88%</td>
</tr>
</tbody>
</table>
CLINICAL INVESTIGATION

T1N0 TO T2N0 SQUAMOUS CELL CARCINOMA OF THE GLOTTIC LARYNX TREATED WITH DEFINITIVE RADIOTHERAPY

Bhishamjit S. Chera, M.D., Robert J. Amdur, M.D., Christopher G. Morris, M.S., Jessica M. Kirwan, M.A., and William M. Mendenhall, M.D.
# Transoral laser excision in early glottic carcinoma

<table>
<thead>
<tr>
<th>Study</th>
<th>Number of Subjects</th>
<th>Stages</th>
<th>Overall Survival</th>
<th>Local Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallo(^3^1)</td>
<td>151</td>
<td>Tis,T1,T2</td>
<td>94%</td>
<td>94%</td>
</tr>
<tr>
<td>Eckel(^3^2)</td>
<td>285</td>
<td>Tis,T1,T2</td>
<td>70%</td>
<td>85%</td>
</tr>
<tr>
<td>Steiner(^3^0)</td>
<td>263</td>
<td>T1a,T1b,T2</td>
<td>76%</td>
<td>88%</td>
</tr>
</tbody>
</table>
TRANSORAL LASER SURGERY VERSUS RADIOTHERAPY: SYSTEMATIC REVIEW AND META-ANALYSIS FOR TREATMENT OPTIONS OF T1a GLOTTIC CANCER

Yasin Abdurehim, MD, Zhang Hua, PhD, Yalkun Yasin, Ayihen Xukurhan, Ilham Imam, Fan Yuqin

Department of Otorhinolaryngology, First Teaching Hospital of Xinjiang Medical University, Urumqi, China.
E-mail: hzhang1106@yahoo.com.cn
Local Control

**FIGURE 4.** Forest plot of comparison between TLS and RT with respect to local control. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]
Larynx Preservation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Events</th>
<th>Total</th>
<th>Laser surgery</th>
<th>Events</th>
<th>Total</th>
<th>Odds Ratio M-H. Random. 95% CI Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.4.1 Study before 2000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epstein 1999[10]</td>
<td>14</td>
<td>17</td>
<td>14.7%</td>
<td>106</td>
<td>43</td>
<td>0.61 [0.13, 2.91] 1990</td>
</tr>
<tr>
<td>Foote 1997[14]</td>
<td>97</td>
<td>106</td>
<td>7.8%</td>
<td>18</td>
<td>18</td>
<td>0.28 [0.02, 4.98] 1997</td>
</tr>
<tr>
<td>Spector 1999[15]</td>
<td>55</td>
<td>61</td>
<td>18.5%</td>
<td>92</td>
<td>104</td>
<td>1.20 [0.42, 3.37] 1999</td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td>184</td>
<td>165</td>
<td>41.0%</td>
<td></td>
<td></td>
<td>0.88 [0.38, 2.01]</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td>166</td>
<td>148</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.00; Chi² = 1.17, df = 2 (P = 0.56); I² = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 0.30 (P = 0.76)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **1.4.2 Study after 2000** |        |       |               |        |       |                                   |
| Goor 2007[22]         | 54     | 54    | 6.7%          | 30     | 31    | 5.38 [0.21, 135.67] 2007           |
| **Subtotal (95% CI)** | 428    | 398   | 59.0%         |        |       | 8.23 [3.61, 18.76]                |
| **Total events**      | 422    | 345   |               |        |       |                                   |
| Heterogeneity: Tau² = 0.00; Chi² = 1.27, df = 4 (P = 0.87); I² = 0% |
| Test for overall effect: Z = 5.01 (P < 0.00001) |

**Total (95% CI)**: 612 / 563 = 100.0% 3.11 [1.16, 8.34]

**Total events**: 588 / 493 = 1.09. Chi² = 16.99, df = 7 (P = 0.02); I² = 59%

Test for overall effect: Z = 2.25 (P = 0.02)

**FIGURE 5.** Forest plot of comparison between TLS and RT with respect to larynx preservation. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]
Rationale for Transoral Laser for Early Glottic Carcinoma

i. Cost
   Outpatient surgery vs 4-6 weeks of Tx
   In North America Laser surgery more cost effective

ii. Voice Results?
   Dependant on extent of resection

iii. Local Control equal or superior except
   Limited access
   Anterior commissure
   Paraglottic space
   Multifocal disease
Management Options in Laryngeal Carcinoma

- Early stages
  - laser CO² endoscopic surgery
  - open partial surgery
  - radiation therapy
- 2. Moderately advanced and advanced stages
  - laser CO² endoscopic surgery
  - Horizontal Partial Laryngectomy
  - partial laryngopharyngectomies
  - total laryngectomy
  - Altered fractionation Radiation Therapy
  - Concomitant Chemoradiation
  - Neoadjuvant
Advanced Laryngeal Cancer
Many T2, T3, T4

Vocal fold mobility/fixation T2/T3
PGS/PE S Invasion T3
Minor Cartilage Erosion T3
Small But Beyond the Larynx T4a
Partial Horizontal Laryngectomy

Open partial horizontal laryngectomies: a proposal for classification by the working committee on nomenclature of the European Laryngological Society

G. Succo · G. Peretti · C. Piazza · M. Remacle ·
H. E. Eckel · D. Chevalier · R. Simo · A. G. Hantzakos ·
G. Rizzotto · M. Lucioni · E. Crosetti · A. R. Antonelli
Open Horizontal Partial Laryngectomy

- Type I Supraglottic Laryngectomy
- Type II- Supracricoid Laryngectomy
- Type III- Supratracheal Laryngectomy
Type I Horizontal Supraglottic

From Succo
Supraglottic Laryngectomy

Indications

✓ Supraglottic T2-T3 limited to the upper medial wall of the piriform sinus or mucosa of the vallecula
✓ Supraglottic T3 with PES involvement

Contraindications

✓ Invasion of cricoid/thyroid cartilage
✓ Bilateral Arytenoid
✓ Invasion of PC/AC
✓ Vocal Cord Fixation
✓ Base of tongue involvement
### Type I Horizontal-Disease Outcome

<table>
<thead>
<tr>
<th>Author</th>
<th>T-staging</th>
<th>OS Survival (5yr)</th>
<th>Local Control (5yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spriano 1997</td>
<td>T1-2 (54)</td>
<td>82%</td>
<td>96%</td>
</tr>
<tr>
<td>Isaacs 1998</td>
<td>T1 (9)</td>
<td>-</td>
<td>100% 78% 72%</td>
</tr>
<tr>
<td>T2 (24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3 (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bron 2005</td>
<td>T1 (16)</td>
<td>-</td>
<td>92%</td>
</tr>
<tr>
<td>T2 (46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Type I Horizontal-Functional Outcome

• Chronic Aspiration in 1.5-20% of patients
  – (Prades 2005)

• Permanent Trach for edema or stenosis 15%
  – (Sevilla 2008)
Type II Supracricoid laryngectomy

Type IIA

Type IIB

From Succo
Supracricoid Partial Laryngectomy-History

- Foederl 1906-suggested approach of repair of anterior larynx by pulling down the epiglottis
- Alajmo (Italy) 1971-first described modern approach
- Piquet (France) 1974
- Laccourreye (France)-1986
Supracricoid Laryngectomy

Indications

– If Glottis and anterior commissure involved
– Invades ventricle
– Vocal cord mobility decreased
– Paraglottic invasion
– Must be able to preserve one arytenoid
Supracricoid Laryngectomy
Supracricoid Laryngectomy

Indications

- T1-T2 supraglottic extending to the ventricle, false cord, glottis or anterior commissure
- T3 Transglottic tumors
- T3 supraglottis with cord fixation
- Invasion of the thyroid cartilage
- Selected anterior commissure tumors

Contraindications

- Fixation of both arytenoids
- Subglottic extension >5mm
- T4a with prelaryngeal infiltration
Supracricoid Laryngectomy with CHEP

• What are the oncologic results?
  – Problems with data
    • Selected patients
    • Small number of institutions
Review

Systematic review on T3 laryngeal squamous cell carcinoma; still far from a consensus on the optimal organ preserving treatment

M. Riga a,*, L. Chelis b, V. Danielides a, T. Vogiatzaki c, T.-L. Pantazis d, D. Pantazis d

a University Otorhinolaryngology Department, Democritus University of Thrace, University Hospital of Evros, Alexandroupolis, Greece
b Department of Clinical Oncology, University Hospital of Evros, Alexandroupolis, Greece
c Department of Anesthesiology, Democritus University of Thrace, University Hospital of Evros, Alexandroupolis, Greece
d Otorhinolaryngology Department, Thriasion General Hospital of Athens, Greece

Accepted 26 May 2016
T3 Laryngeal Cancer - Riga et al

5-year Overall Survival & Disease-specific Survival

- ChRT - Al-Mamgani et al 2012
- OPL - Succo et al 2015
- OPL - Sperry et al 2013
- OPL - Dufour et al 2004
- TLM - Pantazis et al 2015
- TLM - Vilaseca et al 2010
- TLM - Canis et al 2014a,b

Overall survival
Disease specific survival
T3 Laryngeal Cancer - Riga et al

5-year Larynx Preservation and Recurrence Rates

- ChRT - Murakami et al 2006
- ChRT - Al-Mamgani et al 2012
- OPL - Succo et al 2015
- OPL - Sperry et al 2013
- OPL - Dufour et al 2004
- TLM - Pantazis et al 2015
- TLM - Vilaseca et al 2010
- TLM - Canis et al 2014a,b

Recurrence Rates vs Larynx Preservation Rates
Functional Results Supracricoid

- From Gavilan 2012
- Selected patients
Type III-Supratracheal Laryngectomy

Oncologic outcomes of supratracheal laryngectomy: Critical analysis

Giuseppe Rizzotto, MD,1 Erika Crosetti, MD,2* Marco Lucioni, MD,1 Andy Bertolin, MD,1 Valentina Monticone, MD,3 Andrea Elio Sprio, PhD,4 Giovanni Nicolao Berta, PhD,4 Giovanni Succo, MD3,5

1Otorhinolaryngology Department, Vittorio Veneto Hospital, Vittorio Veneto, Treviso, Italy, 2Otorhinolaryngology Department, Martini Hospital, Turin, Italy, 3Otorhinolaryngology Department, San Luigi Gonzaga Hospital, Turin, Italy, 4Department of Clinical and Biological Sciences, University of Turin, Turin, Italy, 5Department of Oncology, University of Turin, Turin, Italy.

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Published online 19 July 2014 in Wiley Online Library (wileyonlinelibrary.com). DOI 10.1002/hed.23773
Type III-Supratracheal Laryngectomy
Type III Supratracheal from Succo
Supratracheal Laryngectomy

Indications

✓ Lateral/Anterior transglottic with fixation of one VF, normal mobility on contralateral
✓ Subglottic extension to upper border of cricoid
✓ Cricoid cartilage erosion

Contraindications

✓ T4a with prelaryngeal involvement
✓ Fixation of both arytenoids
✓ Tracheal involvement
Type III supratracheal from Rizzotto

<table>
<thead>
<tr>
<th></th>
<th>No. of patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, y</strong></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>58.3 ± 10.8</td>
</tr>
<tr>
<td>Range</td>
<td>16–78</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>93/115 (80.9)</td>
</tr>
<tr>
<td>Female</td>
<td>22/115 (19.1)</td>
</tr>
<tr>
<td><strong>Karnofsky Performance Status</strong></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>70/115 (60.9)</td>
</tr>
<tr>
<td>90</td>
<td>30/115 (26.1)</td>
</tr>
<tr>
<td>80</td>
<td>15/115 (13.0)</td>
</tr>
<tr>
<td><strong>Pathological grade</strong></td>
<td></td>
</tr>
<tr>
<td>Supraglottic</td>
<td></td>
</tr>
<tr>
<td>pT2</td>
<td>0/115 (0.0)</td>
</tr>
<tr>
<td>pT3</td>
<td>1/115 (0.9)</td>
</tr>
<tr>
<td>pT4a</td>
<td>11/115 (9.6)</td>
</tr>
<tr>
<td>Glottic</td>
<td></td>
</tr>
<tr>
<td>pT2</td>
<td>14/115 (12.2)</td>
</tr>
<tr>
<td>pT3</td>
<td>49/115 (42.6)</td>
</tr>
<tr>
<td>pT4a</td>
<td>40/115 (34.8)</td>
</tr>
<tr>
<td>pN0</td>
<td>3/75 (4.0)</td>
</tr>
<tr>
<td>pN1</td>
<td>4/75 (5.3)</td>
</tr>
<tr>
<td>pN2</td>
<td>3/75 (4.0)</td>
</tr>
<tr>
<td>Loco-regional Control (%)</td>
<td></td>
</tr>
<tr>
<td>pT2</td>
<td></td>
</tr>
<tr>
<td>pT3</td>
<td></td>
</tr>
<tr>
<td>pT4a</td>
<td></td>
</tr>
</tbody>
</table>

Overall Survival (%)

Disease-free Survival (%)

Loco-regional Control (%)
What about the patient who develops a recurrence following primary radiotherapy?
What about the patient with a T1 or T2 Glottic who fails radiotherapy?

- **Total Laryngectomy**
  - Often used because of the belief that partial surgery not possible post radiation

- **Partial Laryngectomy**
  - Often not considered because of the lack of local tissue available for reconstruction and the belief that disease related outcomes inferior

- **Endoscopic Laser excision**
  - Increasing interest based on the primary Tx experience
What about salvage with Transoral laser?

Evidence: Literature Review

- Computerized Medline search
- From 1990 to current
- Laryngeal neoplasm/AND salvage therapy
- Recurrent SCC after primary radiotherapy for Tis, T1, T2
- Include n ≥ 20, follow-up ≥ 2 years
### Surgical Salvage TOL

<table>
<thead>
<tr>
<th>Study</th>
<th>n T1/2</th>
<th>AC+</th>
<th>F/U</th>
<th>LC</th>
<th>Total laryngectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ansarin Arch ‘07</td>
<td>37</td>
<td>78%</td>
<td>18-88 (44)</td>
<td>68%</td>
<td>30%</td>
</tr>
<tr>
<td>Steiner HN ‘04</td>
<td>21</td>
<td>62%</td>
<td>3-132 (38)</td>
<td>71%</td>
<td>19%</td>
</tr>
<tr>
<td>Quer ‘00</td>
<td>21</td>
<td>10%</td>
<td>30-126</td>
<td>76%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Issues with TOL for salvage

• Literature limited
• Extended margins with high rates of +ve margins
• Many patients require multiple procedures
• Is the ultimate laryngectomy rate higher than patients undergoing segmental procedures?
# Salvage Vertical Partial Laryngectomy: outcomes

<table>
<thead>
<tr>
<th></th>
<th>Rollout</th>
<th>LC (ultimate LC)</th>
<th>Total laryngectomy</th>
<th>DSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewnaik HN ’05</td>
<td>21 (14/7)</td>
<td>76% (100%)</td>
<td>19%</td>
<td>100%</td>
</tr>
<tr>
<td>Nibu HN ’97</td>
<td>21 (17/4)</td>
<td>86% (100%)</td>
<td>14%</td>
<td>100%</td>
</tr>
<tr>
<td>Lavey AJS ’91</td>
<td>25 (17/8)</td>
<td>96% (96%)</td>
<td>4%</td>
<td>92%</td>
</tr>
</tbody>
</table>
### Salvage Vertical Partial Laryngectomy: Outcomes

<table>
<thead>
<tr>
<th></th>
<th>n T1/2</th>
<th>LOS M (range)</th>
<th>Complications</th>
<th>G-tube Swal days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sewnaik HN ’05</strong></td>
<td>21 (14/7)</td>
<td>12 (7-28)</td>
<td>10% Fistula, 15% Chondritis</td>
<td>0% 12 (1-34)</td>
</tr>
<tr>
<td><strong>Nibu HN ’97</strong></td>
<td>21 (17/4)</td>
<td>?</td>
<td>10% Fistula</td>
<td>0% 10 (4-19)</td>
</tr>
<tr>
<td><strong>Lavey AJS ’91</strong></td>
<td>25 (17/8)</td>
<td>11</td>
<td>4% Fistula, 4% Chondritis</td>
<td>0% 7</td>
</tr>
</tbody>
</table>
Salvage Vertical Laryngectomy
Vocal Cord Reconstruction

- Direct Closure
- Epiglottopexy
- Cartilage Muscle Flap
VPL & TPFF Reconstruction

- Mucosal graft
- TP flap
- Cartilage
Strap muscle flap
historical and present

Free Tissue Transfer – TP Flap
(Ralph Gilbert)
Nuance

Stent?
What about supracricoid laryngectomy in the failure setting?

SUPRACRICOID PARTIAL LARYNGECTOMIES AFTER RADIATION FAILURE: A MULTI-INSTITUTIONAL SERIES

Raul Pellini, MD,¹ Barbara Pichi, MD,¹ Paolo Ruscito, MD,¹ Alberto Rinaldi Ceroni, MD,² Umberto Caliceti, MD,² Giuseppe Rizzotto, MD,³ Antonio Piazzaia, MD,³ Pasquale Laudadio, MD,⁴ Cesare Piazza, MD,⁵ Giorgio Peretti, MD,⁵ Diana Giannarelli, PhD,⁶ Giuseppe Spriano, MD¹

¹ Department of Otorhinolaryngology–Head and Neck Surgery, National Cancer Institute “Regina Elena”, Rome, Italy. E-mail: barbapichi@libero.it
² Department of Otorhinolaryngology, “Ospedale Sant’Orsola Malpighi”, Bologna, Italy
³ Department of Otorhinolaryngology, “Ospedale Civile”, Vittorio Veneto, Italy
⁴ Department of Otorhinolaryngology, “Ospedale Maggiore”, Bologna, Italy
⁵ Department of Otorhinolaryngology, University of Brescia, Brescia, Italy
⁶ Biostatistical Unit, National Cancer Institute “Regina Elena”, Rome, Italy

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Published online 30 October 2007 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/hed.20709
FIGURE 1. T classification at the first diagnosis (cT), at the time of the recurrence (rcT) and after salvage surgery (rpT) in this study’s patient population (N = 78).
FIGURE 2. Overall and disease-free survival of patients treated by SCPLs after radiotherapy failure.
Salvage Organ Preserving Surgery vs Total Laryngectomy

<table>
<thead>
<tr>
<th></th>
<th>RT + OPS+/- TL</th>
<th>RT + TL*</th>
</tr>
</thead>
<tbody>
<tr>
<td>local control rate</td>
<td>76% - 96%</td>
<td>70% - 94%</td>
</tr>
<tr>
<td>ultimate control rate</td>
<td>88% - 100%</td>
<td>91% - 95%</td>
</tr>
<tr>
<td>disease-spec survival</td>
<td>86% - 100%</td>
<td>86% - 98%</td>
</tr>
</tbody>
</table>

Laryngeal preservation in 70-80%

*Frata 2005; Garden, 2003; Mendenhall, 2001; Warde, 1998; Le, 1997 : N>3000
Summary RT failure early glottic

TOL appropriate for small volume recurrence-high risk of local failure

Open partial procedures have higher rates of loco-regional control with options vertical partial or supracricoid

Laryngeal and functional preservation possible in a high percentage of patients with disease amenable to partial surgery
Summary

Surgery has an important role in the management of early and advanced stage laryngeal cancer.

New techniques in Reconstructive and Minimally Invasive Surgery have the potential to improve outcomes.

There is no “Treatment of Choice” but rather “Choices in Treatment.”
Summary

1. Focus of the management of patients with laryngeal carcinoma should be the preservation of functional speech and swallowing.

2. A variety of surgical and non-surgical techniques appear to have application in meeting this goal.

3. The surgical community has the responsibility to subject new surgical approaches to clinical trials before the wide acceptance and application of these techniques.

Goals:

- Achieve Cure
- Laryngeal Preservation
- Improved Quality of Life
University Health Network