Oral Cancer: Principles of Management

Patrick Gullane
Purpose of Presentation

- Review the Incidence, Etiology, Evaluation and Treatment Principles in Oral Cancer Management
- Understand the Prognostic Factors affecting selection of treatment
- Be Aware of the Oncologic Outcomes
- Understand Surgical Factors influencing Outcomes
  - Margins of Surgical Resection
  - Management of the Neck
- Review the surgical approaches and Options for Soft tissue and Bony Reconstruction
Oral Cancer – Incidence/Epidemiology

- 6th most common cancer globally
- 24% of Head and Neck Cancer
- Prevalence decreasing
  - 1974 3.6 / 100 000 / yr
  - 2009 2.7 / 100 000 / yr
- Improved survival
  - 5-year overall survival 53% to 57%
- But regional disease...
  - Decreased survival 49% to 43%

Oral Cancer: Etiology

- Tobacco
- Alcohol
- Paan Chewing
- Betel Nut Chewing
- Poor oral hygiene
- Vitamin deficient
- Viruses
  - HPV
- Chemicals
- Immunosuppression
- Genetic
Cancer of Oral Cavity
Histological Distribution

92% Squamous Carcinoma

- Minor Salivary Ca.
- Melanoma
- Lymphoma
- Sarcoma
Oral Cavity is easily accessible

Exophytic tumor with distinct borders
Less risk of incomplete resection = better outcomes
Clinical Assessment

Endophytic tumor with diffuse borders

High risk of incomplete resection = worse outcomes
Clinical Assessment

Relationship to Salivary Duct Openings
Translocation of duct/s if gland will be preserved
Clinical Assessment

Relationship to Bone
Plan resection & appropriate reconstruction
Depth of Invasion of the Primary Tumor and its Impact on Outcome
<table>
<thead>
<tr>
<th>Tumor Thickness</th>
<th>Nodal Metastases</th>
<th>$\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\leq 2\text{mm}$</td>
<td>0/38 0%</td>
<td>0.007</td>
<td>(Fisher’s exact test)</td>
</tr>
<tr>
<td>$&gt; 2\text{mm}$</td>
<td>38/38 40%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\leq 3\text{mm}$</td>
<td>1/37 7%</td>
<td>0.010</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 3\text{mm}$</td>
<td>37/37 41%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\leq 4\text{mm}$</td>
<td>2/36 9%</td>
<td>0.003</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 4\text{mm}$</td>
<td>36/36 43%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\leq 5\text{mm}$</td>
<td>3/35 10%</td>
<td>0.001</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 5\text{mm}$</td>
<td>35/35 46%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\leq 6\text{mm}$</td>
<td>6/32 18%</td>
<td>0.006</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 6\text{mm}$</td>
<td>32/32 45%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\leq 8\text{mm}$</td>
<td>8/30 19%</td>
<td>0.003</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 8\text{mm}$</td>
<td>30/30 48%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$&lt;\leq 2\text{mm}$</td>
<td>0/8 0%</td>
<td>0.004</td>
<td>-</td>
</tr>
<tr>
<td>$3–8\text{mm}$</td>
<td>8/30 26%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$&gt; 8\text{mm}$</td>
<td>30/30 48%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Depth of Invasion

Risk of occult nodal metastasis: 8.9%
Overall incidence of nodal metastasis: 5.5%
Cancer Specific Survival: 94.5%
Depth of Invasion

Risk of occult nodal metastasis

Overall incidence of nodal metastasis

Cancer Specific Survival
Depth of Invasion

Risk of occult nodal metastasis

Overall incidence of nodal metastasis

Cancer Specific Survival
AJCC – 8th Edition

DOI in T staging for Oral Cancer

T1 – Tumor ≤ 2 cms, ≤ 5 mm DOI

T2 – Tumor ≤ 2 cms, DOI > 5 mm and ≤ 10 mm
or Tumor > 2 cm but ≤ 4 cm, and ≤ 10 mm DOI

T3 – Tumor > 4 cm or any tumor > 10 mm DOI

T4 – Same as 7th Edition
TNM Staging

• TNM staging is the current standard for predicting outcomes in an individual patient
Radiographic Imaging

- **Essential for deep Extent & Bone involvement**
  Superior to palpation for lymph node assessment.

- **CT is the workhorse**

- **MRI for specific questions:**
  - Medullary bone invasion
  - Perineural spread

- **PET scan generally not of added value over cross-sectional anatomic imaging**
Oral Cancer: Factors Affecting Choice of Therapy

- Tumor factors
- Patient factors
- Provider/Physician factors
Oral Cancer - Tumour Factors

- Site
- Size (T stage)
- Location
- Multiplicity
- Proximity to bone
- Histology, grade, depth of invasion,
- Tumor type
- Status of cervical lymph nodes
- Previous treatment
Prognostic Factors in Oral Cancer

- T – Stage-Size
- Histologic Grade
- Invasion pattern
- Lymphovascular Invasion
- Perineural Invasion
- Margin Status
- Nodal Stage and ECS
Cancer of Oral Cavity
5 yr. Survival by Stage

Stage I
- T1
- N0
- (75-95%)

Stage II
- T2
- N1
- (65-85%)

Stage III
- T3
- N2
- (45-65%)

Stage IV
- T4
- N3
- (10-35%)

M1
Head and Neck Cancers
Five year Survival

Primary site

- lip
- middle tongue
- gingiva
- floor of mouth
- supra glottic larynx
- hard palate
- buccal mucosa
- tonsil
- base of tongue
- soft palate
- pharynx
- hypopharynx

Five year determinate survival (%)
Oral Cavity: Treatment Selection

• Dependant on multiple factors:

  – Tumor factors
    • Size (T stage), location, proximity to bone, nodal status, histology, depth of invasion

  – Patient factors
    • Functional status, age, tolerability, lifestyle, socioeconomic status, prior treatment (RT)

  – Resource factors
    • Competence, resources available
Oral Cancer: Treatment Goals

- Control of the cancer
- Preserve form and function
- Minimize complications of treatment
- Identify and prevent possible second primary cancers
Oral Cancer – Choice of Treatment

• Stage I & II single modality treatment is effective and preferable

• Stage III & IV multimodal therapy is essential
Single Modality for Early Stage Cancers

SURGERY
Combined Modality for Advanced Cancers

- SURGERY
- RT
- CHEMO
Indications for Adjuvant Treatment

Primary Tumor

- Advanced T stage:
- Positive surgical margins
- Lymphatic permeation
- Vascular invasion
- Perineural spread
- High histological grade
- Invasive islands of tumor
Indications for Adjuvant Treatment

Primary Tumor
- Advanced T stage:
- Positive surgical margins
- Lymphatic permeation
- Vascular invasion
- Perineural invasion
- High histological grade
- Invasive islands of tumor

Nodal Status
- ≥ 2 pN+ nodes
- pN+ node at > 1 level
- ≥ 3 cm node/s
- Extranodal Extension
- Residual neck disease:
  Microscopic
  Gross
Current Indications for ChemoRT

Primary Tumor
- Advanced T stage:
  - Positive surgical margins
  - Lymphatic permeation
  - Vascular invasion
  - Perineural invasion
  - High histological grade
  - Invasive islands of tumor

Nodal Status
- \( \geq 2 \) pN+ nodes
- pN+ node at \( > 1 \) level
- \( \geq 3 \) cm node/s
- Extranodal Extension
- Residual neck disease:
  - Microscopic
  - Gross
Oral Cancer
Surgical Approaches

- Per oral
- Pull through
- Lower cheek flap
- Upper cheek flap
- Visor flap
- Mandibulotomy
Oral Cancer

Surgical approach depends on:

- Tumor size
- Tumor site
- Tumor location
- Proximity to mandible or maxilla
- Need for neck dissection
- Need for reconstructive surgery
Surgical Approaches For the Management of Oral Cavity Tumors

• **Issues in Surgical approaches**
  – Which approach provides appropriate access and least morbidity?

  • **Transoral Resection**
    • Lingual Release
    • Mandibular Swing
    • Composite resection

  – **Evidence Summary**
    • No evidence that Approach Impacts Local Control or survival
Squamous Cell Cancer of the Oral Tongue- Mandible Uninvolved

46 year old healthy male
T2N0M0 carcinoma of the oral tongue

T stage
– clinical (p = 0.003)
– pathological (p = 0.009)

Tumor thickness
– (p = 0.001 for 5mm cut-off)

Multivariate analysis
– tumor thickness was the only independent predictor for nodal metastases (p = 0.014 for 5 mm cut-off)

What tumor characteristics determine management of the primary and neck?
Diagnostic and Therapeutic Neck Controversy

46 year old healthy male
T2N0M0 carcinoma of the oral tongue

- Clinical examination
- CT scan
- MRI
- Ultrasound
- Ultrasound-guided FNA
- PET/CT
- Sentinel Node

Would PET/CT help decide on therapy to the neck?
Would you offer elective neck dissection?
Would advocate for sentinel node mapping and biopsy?
Extent of Neck Dissection

Levels 1-3 or levels 1-4?
Extent of Margin
>5mm

Transoral Resection
?flap
Final Pathology – margins clear
one positive node at 2a, no ecs

Is post operative radiotherapy necessary
for the pathologically N1 (pN1) neck?
If so, what is the optimal dose?
Oral Carcinoma: *Surgical Management*

- Does microscopic tumor cut-through matter and is it an indication for adjuvant treatment?
Oral Carcinoma: Surgical Management

- Does microscopic tumor cut-through matter and is it an indication for adjuvant treatment?

Grp 1 – No cut-through
Grp 2 – Cut-through

Head & Neck 32: 1444-1451, 2010
Conclusion:

Microscopic tumour cut-through...

- in the presence of nodal disease is a powerful adverse prognosticator for cancer control and survival.
- in the absence of nodal disease it is not a poor prognosticator, and adjuvant therapy in these patients may be unnecessary.

Patel, Gullane ,Gilbert et al-Head and Neck 32;1444-1451, 2010
Surgical Approaches for the Management of Oral Cavity Tumors

Issues in Surgical approaches

Which approach provides appropriate access and least morbidity?

- Transoral Resections
- Lingual Release
- Mandibular Swing
- Composite Resection

Evidence Summary

- No evidence that approach impacts local control or survival.
oral carcinoma: surgical management

• “the oncologic step stool”
# Subjective Outcome

<table>
<thead>
<tr>
<th>Domain</th>
<th>Lip-split mandibulotomy</th>
<th>Mandibular lingual release</th>
<th>Analysis of variance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
</tr>
<tr>
<td>Speech UW-QOL</td>
<td>79.00</td>
<td>14.5</td>
<td>60–100</td>
</tr>
<tr>
<td>Swallowing UW-QOL</td>
<td>90.00</td>
<td>21.1</td>
<td>60–100</td>
</tr>
<tr>
<td>Chewing UW-QOL</td>
<td>65.00</td>
<td>24.2</td>
<td>60–100</td>
</tr>
<tr>
<td>Disfigurement UW-QOL</td>
<td>75.00</td>
<td>11.8</td>
<td>60–100</td>
</tr>
</tbody>
</table>

Higher score indicates better function.
Surgical Approaches Advanced Tumors

• **Issues in Surgical approaches**
  – Which approach provides appropriate access and least morbidity?
    • Transoral Resections
    • Lingual Release
    • Mandibular Swing

• **Evidence Summary**
  • No evidence that approach impacts local control or survival
Paramedian Mandibulotomy: Advantages

- Wide exposure
- Preserves hyomandibular complex
- No denervation of skin
- No devascularization
- Easy fixation
- Out of radiation portals
Surgical Approaches for Advanced Tumors
Mandibular Swing-Approaches and Options
Surgical Approaches Advanced Tumors

• Issues in Surgical Approaches
  – Extent of Mandibulectomy
  • Marginal vs Segmental

• Evidence Summary
  – Little published literature on this subject
  – Data suggests that for limited involvement in dentate mandible rim mandibulectomy is adequate treatment
Marginal Mandibulectomy: Contraindications

- Gross tumor invasion
- Massive soft tissue disease
- Radiated, edentulous mandible
**Defects of the Oral Cavity-Free Flap**

- **Soft Tissue repair**
- **Soft Tissue and bone**

**Menu of Options in Soft Tissue Repair**

<table>
<thead>
<tr>
<th>Flap Distribution</th>
<th>Flap Thickness</th>
<th>Volume Adjustment</th>
<th>Sensate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forearm</td>
<td>++++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Anterolateral Thigh</td>
<td>++++</td>
<td>++++</td>
<td>++</td>
</tr>
<tr>
<td>Lateral Arm</td>
<td>++</td>
<td>++++</td>
<td>++</td>
</tr>
<tr>
<td>DIEP</td>
<td>++++</td>
<td>++++</td>
<td>+</td>
</tr>
</tbody>
</table>
How do you determine whether you perform a Marginal or Segmental Mandibulectomy?

Indications for Segmental Resection Include:
- Gross invasion by Cancer
- Bone invasion
  - Inferior Alveolar Nerve Invasion

How do you determine the extent of Mandibulectomy to achieve adequacy of bony margins?
Investigations:

- CT scan
- MRI scan
- Metastatic survey clear.
- Imaging revealed invasion of the symphyseal region of the mandible, floor of mouth, and the mobile tongue with suspicious nodes at levels 2a,b bilaterally.

Management Options?
Segmental Mandibulectomy

Is required for:

- Gross invasion by cancer
- Bone invasion
- Inferior alveolar nerve invasion
- Osteoradionecrosis
- Proximity of oral cancer to irradiated edentulous mandible.
Nerve Stimulation Reveals Movement of the Right and Left Tongue Base from Preservation of the Posterior Branch of the Hypoglossal Nerves
Options in Reconstruction
Composite Flaps

Menu
Radial forearm flap*
Scapular flap
Fibula flap*
Iliac crest flap

Good bone
Good skin

* May be reinnervated
# Defects of the Oral Cavity

- Soft Tissue repair
- Soft Tissue and bone

## Menu of Options in Soft Tissue and Bone Repair

<table>
<thead>
<tr>
<th>Bone Paddle</th>
<th>Bone Length</th>
<th>Bone Quality</th>
<th>Donor Site</th>
<th>Favored Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibula</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Iliac Crest</td>
<td>+</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Scapula</td>
<td>++++</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Forearm</td>
<td>++++</td>
<td>++</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>
Composite Resection

- What has changed?
- 2 flaps – soft tissue and bone
Double Flap: Radial Forearm and Fibula

Double Flaps
72 cases
1995 - 2007
Gullane et al “Leg morbidity and function following fibular free flap harvest.”
Cancer of the R. Tongue
Without Mandible Invasion

Chemoradiation
Surgery

How would you treat this patient in 2017? New discussion
Oncologic Outcomes
TONGUE CANCER THE PMH EXPERIENCE
# Results: Demographic Data

- **N= 319**

<table>
<thead>
<tr>
<th></th>
<th>Median (range)</th>
<th></th>
</tr>
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<tbody>
<tr>
<td><strong>Age</strong></td>
<td>59 years (22 ~ 92)</td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Male:Female 193 (60.5%):126 (39.5%)</td>
<td></td>
</tr>
<tr>
<td><strong>Alcohol use</strong></td>
<td>Moderate/Heavy 78 (24.5%)</td>
<td></td>
</tr>
<tr>
<td><strong>Tobacco</strong></td>
<td>Yes 209 (65.5%)</td>
<td></td>
</tr>
<tr>
<td><strong>Clinical Stage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>88 (35.7%)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>101 (34.9%)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>78 (15.5%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>52 (11.6%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N0</th>
<th>N1</th>
<th>N2a</th>
<th>N2b</th>
<th>N2c</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T1</strong></td>
<td>88</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>T2</strong></td>
<td>101</td>
<td>14</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>T3</strong></td>
<td>39</td>
<td>22</td>
<td>6</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td><strong>T4</strong></td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>
## Results: Treatment Data

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Primary Surgery</th>
<th>305 (96%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary Radiotherapy/chemorads</td>
<td>8 (4.9%)/6</td>
</tr>
<tr>
<td>Primary Surgery</td>
<td>Single Modality</td>
<td>242 (79%)</td>
</tr>
<tr>
<td></td>
<td>Post-Operative RT</td>
<td>77 (21%)</td>
</tr>
<tr>
<td>Neck Dissection</td>
<td>Neck Dissection</td>
<td>226/305 (74%)</td>
</tr>
<tr>
<td></td>
<td>SND: MRND: RND</td>
<td>184:90:14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical T stage</th>
<th>Neck Dissection</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>34 (37.7%)</td>
</tr>
<tr>
<td>T2</td>
<td>97 (80.8%)</td>
</tr>
<tr>
<td>T3</td>
<td>79 (96.3%)</td>
</tr>
<tr>
<td>T4</td>
<td>16 (94.1%)</td>
</tr>
</tbody>
</table>
Overall Survival by Stage

- Stage 1 - 88%
- Stage 2 - 72%
- Stage 3 - 63%
- Stage 4 - 29%
Overall Survival by N Classification

5 yr- OS
pN0- 84%
pN+- 35%
MSKCC Data

• n = 1,866
• Previously untreated patients
• 1985 - 2012
TNM Stage Groups

- Stage I: 42%
- Stage II: 14%
- Stage III: 13%
- Stage IV: 31%
Postoperative Adjuvant Treatment

- S+PORT: 30%
- S+CTRT: 5%
- Surgery: 65%
5-yr Locoregional Recurrence Rate = 30%

Median time to recurrence 9 months
(Range 1 – 141)

75% quartile 19.6 m
Median follow-up of 56 months (Range 1 – 343)

5-yr DSS = 75%
5-yr OS = 63%
5-yr LRRFS = 66%
Cancer Specific Survival: Stage Groups

Cancer Specific Survival

- Stage I: 89.7%
- Stage II: 82.7%
- Stage III: 76.7%
- Stage IV: 45.8%

Proportion Surviving

Time (months)

p < 0.001

2017 International Federation of Head and Neck Oncological Sciences
Cancer Specific Survival: N Stage

- N0/Nx 5yr CSS 86.4%
- N1 5yr CSS 65.9%
- N2/N3 5yr CSS 41.9%
Margins of Surgical Resection
Patients with positive surgical margins have significantly worse outcome.
Risk for positive margins: T Stage

- T1: 10% Pos, 90% Neg
- T2: 16% Pos, 84% Neg
- T3: 30% Pos, 70% Neg
- T4: 45% Pos, 55% Neg

p=0.001

MSKCC Outcomes; 1985-2012
Thicker Tumors Are at Higher Risk for Positive Margins

p<0.001

MSKCC Outcomes; 1985-2012

Thick Tumor Risk of Positive Margins

- ≤2mm: 81% (Neg) vs. 19% (Pos)
- 2-8mm: 77% (Neg) vs. 23% (Pos)
- >8mm: 55% (Neg) vs. 45% (Pos)

Note: Data from MSKCC Outcomes, 1985-2012.
Margin status as surrogate for biological behavior of tumor

Positive Margin → Aggressive Tumor → Escalate Treatment
Management of the Neck
Controversy: Management of the Neck in Oral Cancer

- Cervical node involvement is the most significant prognostic factor in mucosal SCC
- Management of the neck should be part of a comprehensive treatment plan
- Should selection of patients for neck treatment be based on clinical criteria alone?
  - tumour site and stage

Histopathological Parameters as Predictors of Metastasis

Risk of Nodal Involvement by Site and T Stage

<table>
<thead>
<tr>
<th>Site</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Cavity</td>
<td>5-20%</td>
<td>17-30%</td>
<td>43-60%</td>
<td>50-76%</td>
</tr>
</tbody>
</table>

Ross et al Ann Surg Oncol Feb 2004

Multivariate predictors of occult neck metastasis in early oral tongue cancer

ANTHONY SPARANO, MD, GREGORY WEINSTEIN, MD, ARA CHALIAN, MD, MIKE YODUL, MD, and RANDAL WEBER, MD, Philadelphia, Pennsylvania

Fig 1. Relationships of correlates retained in the multivariate model with each other, as well as with the presence of neck micrometastasis by univariate analysis.

Elective versus Therapeutic Neck Dissection in Node-Negative Oral Cancer

Overall Survival and Disease-free Survival

Pattern of Recurrence

Table 2. Pattern of Recurrence.

<table>
<thead>
<tr>
<th>Recurrence</th>
<th>Elective-Surgery Group (N=81)</th>
<th>Therapeutic-Surgery Group (N=146)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number (percent)</td>
<td>number (percent)</td>
</tr>
<tr>
<td>Nodal*</td>
<td>25 (30.9)</td>
<td>108 (74.0)</td>
</tr>
<tr>
<td>Local</td>
<td>23 (28.4)</td>
<td>7 (4.8)</td>
</tr>
<tr>
<td>Distant metastasis</td>
<td>3 (3.7)</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>Combination of above†</td>
<td>4 (4.9)</td>
<td>8 (5.5)</td>
</tr>
<tr>
<td>Second primary tumor</td>
<td>16 (19.8)</td>
<td>11 (7.5)</td>
</tr>
<tr>
<td>Not known</td>
<td>10 (12.3)</td>
<td>9 (6.2)</td>
</tr>
</tbody>
</table>

* In the elective-surgery group, nodal recurrence was defined as any recurrence in the neck. In the therapeutic-surgery group, nodal recurrence was defined as the development of first nodal disease after the excision of the primary tumor.
† Four patients in elective-surgery group and 6 patients in the therapeutic-surgery group had cervical lymph-node metastasis in combination with recurrence at a local or distant site.
Long-Term Regional Control and Survival in Patients With “Low-Risk,” Early Stage Oral Tongue Cancer Managed by Partial Glossectomy and Neck Dissection Without Postoperative Radiation

The Importance of Tumor Thickness

Ian Ganly, MD, PhD1; David Goldstein, MD4; Diane L. Carlson, MD3; Snehal G. Patel, MD1; Brian O’Sullivan, MD5; Nancy Lee, MD2; Patrick Gullane, MD4; Jatin P. Shah, MD1

Cancer March 2017 Pages 1168-1178.
The Sites and levels of neck recurrence are illustrated in patients with pathologic T1-T2N0 oral tongue cancer who underwent partial glossectomy and ipsilateral elective neck dissection without postoperative radiation.
The rate of neck recurrence is illustrated in patients who had pathologic T1-T2N0 oral tongue cancer stratified according to thickness of the primary tumour >4mms <4mm.
Disease-specific survival (DSS) is illustrated for patients who had pathologic T1-T2N0 Oral Tongue Cancer Stratified by Neck recurrence.
Conclusions

• Patients with low-risk, pathologic T1-T2N0 OTSCC had a greater than expected rate of neck failure, with contralateral recurrence accounting for close to 40% of recurrences.
• Failure occurred predominantly in patients who had primary tumors that were 4 mm thick.
• Cancer 2013;119:1168-76.
• VC 2012 American Cancer Society.
The Clinically Positive Neck

- Comprehensive neck dissection including levels I-V (sparing VA)
- Postop adjuvant treatment as indicated
Therapeutic Options for management of the cN0 Neck
Levels I-III are at highest risk

- Level I = 20%
- Level II = 17%
- Level III = 9%
- Level IV = 3%
- Level V = 0%

- Level IV involved in 2-6%
  RMT 6% > BM 4% > OT 2%

Arguments against END

- Routine END over-treats the majority of patients since only 20-30% have occult metastases
- Increased contralateral neck failure
  END disrupts normal lymphatic channels & diverts “in transit” mets to other lymphatic basins
- Added initial cost and morbidity
- No survival advantage for END over observation in 4 prospective RCCTs
  
  Yuen et al. Head Neck 1997; 19:583-8
Conclusion

• Changing distribution of primary tumor:
  – Oral tongue 48% of all oral ca: The highest reported from our institute

• Improved Outcome: 5-year overall survival
  – 1960~1964: 48%
  – 1979~1983: 57%
  – 1986~1995: 68%

• Significant predictors:
  – Disease-specific survival: surgical margins and pathologic N stage
Oral Cancer
Changing Trends in Outcome at MSKCC

5-year Overall Survival

<table>
<thead>
<tr>
<th>Stage III/IV tumors</th>
<th>60~64</th>
<th>79~83</th>
<th>86~95</th>
</tr>
</thead>
<tbody>
<tr>
<td>% patients with</td>
<td>N=494</td>
<td>N=398</td>
<td>N=595</td>
</tr>
<tr>
<td></td>
<td>53%</td>
<td>36%</td>
<td>37%</td>
</tr>
</tbody>
</table>

J. Shah
Oral Cancer Results

Improvement in results is seen due to:

• Early identification and treatment of nodal metastases
• Employment of adjuvant therapy
Oral Cancer
Improvement in quality of life is seen due to

- Contemporary surgical techniques
- Preservation or reconstruction of mandible and soft tissues
- Osseointegrated implants