The International Federation of Head and Neck Oncologic Societies

Current Concepts in Head and Neck Surgery and Oncology 2018

www.ifhnos.net
Thyroid Cancer
Surgery for the primary
Jatin Shah, MD
Some Common Misconceptions about Thyroid Cancer

- All patients need subtotal or near total Thyroidectomy.
- All patients need Post Operative Radio Active Iodine ablation.
- Post operative TSH should be brought down to ‘0’.
- Follow up requires annual whole body RAI scans.
Pathology and Biology of Follicular Cell Derived Cancer of the Thyroid

- Papillary: ~85%
- Follicular: ~14%
- Tall Cell, Insular, etc: <1%

Thyroid Follicular Cell

Prognosis
- Good: ~85%
- Bad: ~14%
- Ugly: <1%
Prognosis in Thyroid Cancer

A very small proportion ~ 10% of Papillary carcinomas will undergo progression to more aggressive variants.
Well Differentiated
• Nearly All Curable

Poorly Differentiated
• Need Aggressive Rx
• Majority Curable

Anaplastic
• Rarely Curable
## Differentiated Thyroid Cancer

### Prognostic Factors

<table>
<thead>
<tr>
<th>Mayo AGES</th>
<th>Lahey AMES</th>
<th>Mayo MACIS</th>
<th>Karolinska DAMES</th>
<th>MSKCC GAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Age</td>
<td>Metastases</td>
<td>DNA Age</td>
<td>Grade</td>
</tr>
<tr>
<td>Grade</td>
<td>Metastases</td>
<td>Age</td>
<td>Metastases</td>
<td>Age</td>
</tr>
<tr>
<td>Extension</td>
<td>Extension</td>
<td>Invasion</td>
<td>Extension</td>
<td>Metastases</td>
</tr>
<tr>
<td>Size</td>
<td>Size</td>
<td>Size</td>
<td>Size</td>
<td>Size</td>
</tr>
</tbody>
</table>
Staging Changes

• Age stratification at 55

• Microscopic ETE will not upstage to T3

• Lymph nodes at Levels VI and VII are now N1a

• Significant changes in ATA and NCCN guidelines
Disease Specific Survival

Age 45 years cut off

Stage 10y DSS
I  100%
II 97%
III 97%
IV 80%

Age 55 years cut off

Stage 10y DSS
I  100%
II 94%
III 94%
IV 72%
Disease Specific Survival
Age stratification at 55

3664 Patients. MSKCC (1986-2012)

68% < 55 yrs

Time (months)

Proportion Surviving

<55 years; 97.8% n=2485
≥55 years; 90.8% n=1179

p<0.01
Age Distribution

3664 Patients. MSKCC (1986-2012)
Disease Specific Survival

Gender

3664 Patients. MSKCC (1986-2012)

- 27% for Male
- 73% for Female

Proportion surviving over time (months)

- Male: 87.2%, n=996
- Female: 96.0%, n=2668

p < 0.01
Disease Specific Survival
Tumor Histology

94 % Papillary Ca
Disease Specific Survival
Tumor Size

92% < 4 cms

Proportion surviving

Time (months)

≤4cm; 95.2% n=3379
>4cm; 74.5% n=265

p<0.01
Disease Specific Survival
Extrathyroid Extension

Only 9% with gross ETE

Proportion surviving

Time (months)

No ETE; 95.9% n=2597
Micro ETE; 96.6% n=722
Macro ETE; 74.9% n=345

p<0.01
Disease Specific Survival
Lymph Node Metastases. N0 vs N+

30 % p N+
Disease Specific Survival
Lymph Node Metastases and Age

Only patients >55 had worse outcome
Only 1.9% developed Distant Metastases
Stage Grouping - Stage Migration

7th Edition and 8th Edition

Stage I
- 69% (7th Edition)
- 84% (8th Edition)

Stage II
- 6% (7th Edition)
- 13% (8th Edition)

Stage III
- 15% (7th Edition)
- 2% (8th Edition)

Stage IV
- 9% (7th Edition)
- 1% (8th Edition)
Cancer Specific Survival

7th Edition

8th Edition

Stage Distribution
I - 84%
II - 13%
III - 2%
IV - 1%
Differentiated Cancer of the Thyroid

Prognostic Factors:
- Age
- Gender
- Size
- Extent
- Grade
- Dist. Mets.

Risk Groups (GAMES):
- Low
  - Age: < 55
  - Gender: Female
  - Size: < 4 cms.
  - Extent: Intraglandular
  - Grade: Low
  - Dist. Mets.: Absent
- Intermediate
  - Age: > 55
  - Gender: Female
  - Size: < 55
  - Extent: Intraglandular
  - Grade: Low
  - Dist. Mets.: Absent
- High
  - Age: > 55
  - Gender: Male
  - Size: > 4 cms.
  - Extent: Extraglandular
  - Grade: High
  - Dist. Mets.: Present
Only 22% of the patients were in the High Risk Group.
Extent of Thyroidectomy for Intrathyroidal Cancer

• All thyroid operations done for proven or suspected Cancer should be “Extra capsular”

• “Subtotal Thyroidectomy” and “Near Total Thyroidectomy” transgress thyroid tissue, and therefore are not Cancer operations, and should not be performed

• There are only two Oncologic operations: “Lobectomy” or “Total Thyroidectomy”
Extent of Thyroidectomy for Intrathyroidal Cancer

- “Extra capsular” operations leave no residual thyroid tissue behind, and thus avoid the need for RAI ablation of Thyroid remnants.

- Pay special attention to the upper pole, pyramidal lobe and the region of the cricothyroid membrane.

- Following an “extracapsular total thyroidectomy”, post operative TGb is not measurable at 6 weeks, and thus it allows biochemical follow-up without RAI.
Lobectomy
Total Thyroidectomy
Changes in Outcomes

- % Total Thyroidectomy
- % Radioactive Iodine
- 10 Year Disease Specific Survival

10 Year Survival

Intra Thyroidal Tumors (up to 4 cms)

Disease Specific Survival 100%
Recurrence Free Survival 98%
### Lobectomy vs Total Thyroidectomy

<table>
<thead>
<tr>
<th>Characteristics (n=884)</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;45y</td>
<td>421 (48%)</td>
</tr>
<tr>
<td>&gt;45y</td>
<td>463 (52%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>185 (21%)</td>
</tr>
<tr>
<td>Female</td>
<td>699 (79%)</td>
</tr>
<tr>
<td><strong>pT Stage</strong></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>634 (72%)</td>
</tr>
<tr>
<td>T2</td>
<td>250 (28%)</td>
</tr>
<tr>
<td><strong>Pathology</strong></td>
<td></td>
</tr>
<tr>
<td>Papillary</td>
<td>798 (90%)</td>
</tr>
<tr>
<td>Follicular</td>
<td>50  (6%)</td>
</tr>
<tr>
<td>Hurthle Cell</td>
<td>36  (4%)</td>
</tr>
<tr>
<td><strong>Risk Group</strong></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>370 (42%)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>449 (51%)</td>
</tr>
<tr>
<td>High</td>
<td>65  (7%)</td>
</tr>
<tr>
<td><strong>Surgery</strong></td>
<td></td>
</tr>
<tr>
<td>Lobectomy</td>
<td>362 (41%)</td>
</tr>
<tr>
<td>Total Thyroidectomy</td>
<td>522 (59%)</td>
</tr>
</tbody>
</table>

- 884 consecutive pts
- All Intrathyroidal tumors
- All N 0 patients
- All M 0 patients
- All Differentiated
## 10 Year Survival

### Intra Thyroidal Tumors

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Lobectomy</th>
<th>Total Thyroidectomy</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Recurrence Free Survival</td>
<td>100%</td>
<td>100%</td>
<td>NS</td>
</tr>
<tr>
<td>Neck Recurrence Free Survival</td>
<td>99.7%</td>
<td>99.2%</td>
<td>NS</td>
</tr>
<tr>
<td>Distant Recurrence Free Survival</td>
<td>99.7%</td>
<td>99.4%</td>
<td>NS</td>
</tr>
<tr>
<td>Disease Specific Survival</td>
<td>100%</td>
<td>100%</td>
<td>NS</td>
</tr>
<tr>
<td>Overall Survival</td>
<td>91%</td>
<td>94%</td>
<td>NS</td>
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</tbody>
</table>
Extent of Surgery for Papillary Thyroid Cancer Is Not Associated With Survival

An Analysis of 61,775 Patients (ACS, NCDB 1998 – 2006)


Extent of Surgery for Papillary Thyroid Cancer Is Not Associated With Survival

An Analysis of 61,775 Patients (ACS, NCDB 1998 – 2006)

Over all Survival:
Tumors 1-4 cms.

Patterns of Treatment Failure
Risk Groups

Low Risk
- Local Rec: 0.4%
- Reg Rec: 10.6%
- Dist Mets: 1.0%
- 5 y DSS: 100%
- 20 y DSS: 100%

Intermediate Risk
- Local Rec: 1.4%
- Reg Rec: 6.8%
- Dist Mets: 2.9%
- 5 y DSS: 100%
- 20 y DSS: 97.1%

High Risk
- Local Rec: 3.4%
- Reg Rec: 11.8%
- Dist Mets: 13.9%
- 5 y DSS: 94.6%
- 20 y DSS: 77.0%
## Differentiated Cancer of the Thyroid
### Trends in Mortality

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Death Rate</th>
<th>Central Neck Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Tollefsen</em></td>
<td>1964</td>
<td>10%</td>
<td>&gt;40%*</td>
</tr>
<tr>
<td>Smith</td>
<td>1988</td>
<td>7%</td>
<td>36%</td>
</tr>
<tr>
<td>Shaha</td>
<td>1996</td>
<td>9%</td>
<td>10%</td>
</tr>
<tr>
<td>Kobayashi</td>
<td>1996</td>
<td>5%</td>
<td>&lt;28%</td>
</tr>
<tr>
<td>Ronga</td>
<td>2002</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Nixon</strong></td>
<td>2012</td>
<td>1%</td>
<td>0% **</td>
</tr>
</tbody>
</table>

* Locoregional recurrence was a common cause of death

** Locoregional recurrence is a rare cause of death
Differentiated Cancer of the Thyroid

Follow up strategies

- Follow up tailored to Risk Group
- Low and Intermediate Risk Groups: 6monthly physical exam. for 2 years and thereafter annually
- Thyroglobulin and Ultrasound (prn)
- Anatomic imaging (prn)
- High risk groups: More intense and more frequent follow up strategies
Thyroid Cancer

Summary

- Rising incidence of favorable low risk cancers
- Appreciation of pathology and exploiting biology to deliver cost effective treatment
- Significance of prognostic factors and risk group stratification
- Discretion in selection of surgical treatment
- Discretion in use of adjuvant therapy and follow up strategy
- Research in molecular biology and new therapies
Thank You