Treatment of Cervical Lymph Node Metastases
Differentiated Thyroid Cancer

R. Nason
Head & Neck Disease Site Group
CancerCare Manitoba

Well Differentiated Thyroid Cancer
Natural History and Prognosis

Incidence and Patterns of Nodal Involvement
Incidence of Node Metastases

Papillary Ca  30 - 90%
Follicular Ca  10 - 15%

Central Compartment
Lateral Compartment

Distribution of Lymph Node Metastases
Frazell and Foote Cancer 1955;8:1164

Plan for Selective Neck Dissection

Clinically Negative  Clinically Positive

*Accessory Nodes*
Impact on Prognosis

Clinically Significant Prognostic Factors for DTC. A Population-Based, Nested Control Study
Lundgren et al. Cancer 2006;106(3):524-531

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage IV vs Stage II</td>
<td>9.1 (5.7-14.6)</td>
</tr>
<tr>
<td>Distant Mets vs No Mets</td>
<td>6.6 (4.1-10.5)</td>
</tr>
<tr>
<td>Incomplete vs Complete Tumor Removal</td>
<td>4.2 (3.1-5.6)</td>
</tr>
<tr>
<td>Poor vs Well Diff</td>
<td>2.7 (1.8-3.9)</td>
</tr>
<tr>
<td>Cervical Node Metastases</td>
<td>2.5 (1.6-4.1)</td>
</tr>
<tr>
<td>FTC vs PTC</td>
<td>1.4 (1.1-1.9)</td>
</tr>
</tbody>
</table>

Impact of Lymph Node Metastases in DTC on Recurrence: “Nodes beget Nodes”

TNM Staging
N-Regional Lymph Nodes

N0
No Regional Metastases

N1a
Paratracheal
Pretracheal
Paralaryngeal

N1b
Lateral
Contralateral
Superior Mediastinal
TNM Staging DTC > Age 45

Trends in Management

“...no single group has had significant experience with all forms of treatment to justify assuredness on all points. However from time to time Jovian cries from on high or elsewhere ring out, and the voice of emotion is heard throughout the temple of the thyroid”

Frazzle & Foote 1955

Cervical Node Metastases-Trends in Management

1930 - 1970


Frequency and Type of Lymph Node Dissection

1958-2002

Palazzo et al. EJSO 2006:32:340-344
### Elective vs Therapeutic Neck Dissection II

<table>
<thead>
<tr>
<th>Study Site</th>
<th>Lymph Node Dissection</th>
<th>Death from Thyroid Ca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helsinki (n=199)</td>
<td>No Information</td>
<td>11.1</td>
</tr>
<tr>
<td>Goteborg (n=195)</td>
<td>Microdissection</td>
<td>1.6</td>
</tr>
<tr>
<td>Bergen (n=167)</td>
<td>Node Picking</td>
<td>8.4</td>
</tr>
</tbody>
</table>


### Elective Treatment of the Central Compartment

**Arguments for:**
- High Incidence of metastases
- Low risk of complications with elective dissection
- High risk of complications with re-operation

** Arguments against:**
- No evidence of survival benefit
- Higher incidence of hypoparathyroidism
- Re-operation can be done relatively safely

### TT VS TT & CND

**Complications**

<table>
<thead>
<tr>
<th></th>
<th>TT</th>
<th>TT &amp; CND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nerve Palsy</td>
<td>0%</td>
<td>1.8 - 1.9%</td>
</tr>
<tr>
<td>Transient Hypocalcemia</td>
<td>8 - 9.6%</td>
<td>14 - 58%</td>
</tr>
<tr>
<td>Permanent Hypocalcemia</td>
<td>0 - 0.5%</td>
<td>1 - 4.6%</td>
</tr>
</tbody>
</table>

Steinmuller Arch Surg 1999  Roh Head Neck 2006
Periera Surgery 2005
Morbidity following central compartment reoperation for recurrent or persistent thyroid cancer.

- Nerve Palsy 0%
- Transient Hypocalcemia 20%
- Permanent Hypocalcemia 5%

Elective Treatment of the Central Compartment
The risk/benefit ratio - a personal perspective

<table>
<thead>
<tr>
<th></th>
<th>TT (n=100)</th>
<th>TT &amp; CND (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transient Hypocalcemia</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Permanent Hypocalcemia</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Re-operation (Central)</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Hypocalcemia with Re-operation</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Cumulative Risk of Hypocalcemia</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Node Picking and Recurrence

<table>
<thead>
<tr>
<th>Extent of Dissection</th>
<th>Recurrence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node Picking</td>
<td>100</td>
</tr>
<tr>
<td>Formal Dissection</td>
<td>9</td>
</tr>
</tbody>
</table>

Summary

Biology of Cervical Lymph Nodes WDTC
• Lymph node metastases are common
• Influence on overall survival is minor
• They do influence recurrence
• Clinical significance increases in older patients

Summary

Management of Cervical Lymph Nodes WDTC
• Elective neck dissection is difficult to justify
• Limited neck dissections for positive nodes are not acceptable
• Compartment orientated selective neck dissections are indicated for positive nodes

Recommendations for Management

Imaging for LN Metastases
• Size is not the only criteria
• Characteristics
  • Shape
  • Echogenecity
  • Punctate calcification
  • Cystic change
• Anatomic imaging important for determining the location and extent of metastases
The Central Compartment

- Careful assessment with thyroidectomy
- Central compartment dissection for positive nodes

The Lateral Compartment

- Pre-operative imaging
- Selective neck dissection II-V for positive nodes
- Preservation AN, IJV, SCM
Postoperative Management

Adjunctive Treatment
- RAI
- TSH Suppression 0.05-0.1

Follow-up
- Thyroglobulin
- Selective Imaging

Controversies
- Elective dissection of the central compartment
- Efficacy of RAI for No disease
- Routine post-operative surveillance with US
- Surgical threshold for central compartment re-exploration
Recurrent Disease

Central Compartment Re-operation

- Imaging is essential
- Confirm diagnosis with FNAB
- +/- Intraoperative RLN monitoring
- Find RLN inferiorly
- Preserve superior parathyroids