Central Neck Lymph Node Dissection for Differentiated Thyroid Cancer

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Introduction

• Anatomy of the central compartment
• First-time operation: Technique
• Controversies re. routine prophylactic central compartment dissection
• Reoperation for central compartment recurrence: Strategy and technique

Adapted from Carty, Thyroid, 2009
**Technique: First-time operation**

- Clear all fibrofatty and node-bearing tissue from the ipsilateral recurrent laryngeal nerve, trachea, and esophagus (compartment-based dissection)
- Nodes may reside behind the nerve (especially at insertion into cricothyroid)
- Lower parathyroid glands at risk for devascularization and may require frozen section confirmation and autotransplantation

**Complications of node dissections**

- Central neck dissection:
  - Neck hematoma (<1%)
  - Recurrent laryngeal nerve injury (2-3%)
  - Hypoparathyroidism (~40% temporary, ~1% permanent)

**Controversies: role of initial prophylactic central dissection**

- Enlarged central nodes should be removed
- Ipsilateral central nodes should also be removed in patients with enlarged lateral nodes
- Non-enlarged central nodes the subject of considerable debate


Mazzaferri, *Thyroid*, 2009
### Controversies: role of initial prophylactic central dissection

**Pros:**
- May improve overall outcomes (recurrence and/or survival)
- Lowers thyroglobulin levels
- Potentially useful for staging (in addition, node-negative patients may bypass postoperative RAI)
- Some reports show acceptably low permanent complication rates

*White, World J Surg, 2007*
*Low, Ann Surg Onc, 2008*
*Sadowski, Surgery, 2009*

**Cons:**
- No conclusive evidence to demonstrate recurrence or survival benefit
- Significantly increased rates of transient hypoparathyroidism; many reports demonstrate increased permanent complication rates as well

*Zuniga, Arch Otolaryngol Head Neck Surg, 2009*
*Cheah, World J Surg, 2002*

### Lymph node dissection during initial operation for PTC: how aggressive?

- **UCSF practice re. LND at initial operation:**
  - Clinically palpable nodes
  - Nodes seen on US > 0.5-1cm
  - Aggressive pathology
  - All patients undergoing thyroidectomy for PTC have preoperative surgeon-performed ultrasound and intraoperative inspection and palpation of the central compartment

- **2009 ATA guidelines:** “Prophylactic central compartment neck dissection may be performed in patients with PTC…”

- **2006 ATA guidelines:** “Routine central compartment neck dissection should be considered for all patients with PTC…”
Total thyroidectomy with and without CLND

- Shen, Surgery, 2010: ~400 patients w/ PTC undergoing either thyroidectomy alone or thyroidectomy + CLND
- Patients undergoing thyroidectomy alone demonstrated modest complication and recurrence rates
- >90% of patients with non-enlarged central nodes did not require CLND
- Surgeon assessment of the central compartment via ultrasound and intraoperative inspection/palpation is an effective means for determining which patients are most likely to benefit from CLND

What to do about small foci of recurrent disease?

- Reoperation for all palpable lesions or those ≥1cm
- <1cm: watchful waiting vs. reoperation
  - Patient preferences often influence treatment decisions

Indications for reoperation?

- Node size > 1cm (?) (ATA guidelines: 5-8mm)
- Biopsy positive for recurrent cancer
- Symptomatic nodes
- Elevated thyroglobulin
- Radioactive iodine positive
- PET positive
- Patient, referring physician, or surgeon preference
Preoperative preparation

- Reoperation can be treacherous because of scarring and altered anatomy
- All patients undergo preoperative laryngoscopy
- If operation done elsewhere, prior operative notes and pathology need to be reviewed

Operative strategies

- Use prior incision whenever possible
- Focused operation
- Preoperative ultrasound by the radiologist and the surgeon (a good road map is the key to success)
- Central vs. lateral approach
- Needle hook localization (out of favor)
- Intraoperative ultrasound-guided blue dye injection

Blue dye localization of small foci of recurrent thyroid cancer

- Under ultrasound guidance, 0.1 cc of dilute (10-50%) methylene blue injected into targeted node
- Washout ~ 1 hour
- Reduces operative time, morbidity associated with extensive dissection in a reoperative field

Sippel, World J Surg, 2009
Summary/Conclusions

• First-time operation:
  – The central compartment should be carefully examined preoperatively and intraoperatively in patients undergoing thyroidectomy for differentiated thyroid cancer
  – Enlarged central nodes should be removed in a compartment-based fashion
  – Non-enlarged nodes: ongoing debate re. prophylactic removal
• Reoperation:
  – Careful preoperative planning and anatomic localization