Neck Dissection

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History – radical neck

- Henry Butlin proposed enbloc removal of upper neck nodes with primary oral cavity cancers\(^1\)
- ‘Radical’ neck dissection first described by George Crile (1906)
- 60/132 patients enjoyed 3 year survival – 4 times better than control group\(^2\)

\(^1\) Butlin HI, Spencer WG, Disease of the tongue, 2nd ed. London: Cassell, 1900
\(^2\) Crile G. Excision of cancer of the head and neck. With special reference to the plan of dissection based on 132 patients. JAMA 1906;47:1780–1786
History – selective neck

- Solis-Cohen proposed removal of uninvolved nodes during laryngectomy in 1901
- Functional Neck Dissection was described by Suarez in 1963
- Bocca popularised this, published outcome in 843 patients in 1984

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Bocca E, Pignataro O, Oldini C, Cappa C. Functional neck dissection: an evaluation and review of 843 cases. Laryngoscope 1984;94:942–945
Why do a neck dissection?

- Eradicate disease
  ‘When a single nodal metastasis exists at presentation or subsequently develops, the cure rate halves’ \(^1\)
- Stage the neck to guide further treatment and prognostic information
- Surgical access to primary tumour or for microvascular anastomosis

Tumour biology

• Incidence of nodal metastases depends mainly on the site and the size of the primary tumour
  – 1% for early glottic tumours, 80% for nasopharyngeal carcinomas

• The majority of tumours will metastasise in a predictable manner but certain tumours will fast track to remote sites
  – nasopharyngeal cancers to level V
  – tongue cancers to jugulo-omohyoid nodes
  – pattern of spread will be disrupted by previous surgery or radiotherapy
Tumour biology

- Possibility of bilateral nodal disease should be considered especially when the primary site involves
  - Tongue base
  - Nasopharynx
  - Supraglottic larynx
Tumour biology

Oral cavity, anterior to circumvallate papillae

Oropharynx

Supraglottic larynx & hypopharynx

Nasopharynx


Elective dissections n = 343


Oral cavity tumours

Oral cavity:
tumours > 4 mm thick predict mets

Original Article

Predictive Value of Tumor Thickness for Cervical Lymph-Node Involvement in Squamous Cell Carcinoma of the Oral Cavity

A Meta-analysis of Reported Studies

Shao Hui Huang, MSc1,2, David Hwang, MB2, Gina Lockwood, MMath3, David P. Goldstein, MD4,5, and Brian O’Sullivan, MD2,4

False negative rate of patients predicted by thickness not to have metastases rises significantly once tumour is more than 4 mm thick
Nasopharyngeal carcinoma
“an exception that proves the rule”

- 43 radical neck dissection specimens post-RT
  - In 70% there was more tumour bearing nodes than expected
  - 70% nodes involved had extra-capsular spread
  - 27.5% had tumour along XI nerve
  - 70% nodes were in posterior triangle

Which neck dissection?

- Radical Neck Dissection
- Modified Radical Neck Dissection
  - Type I spare XI nerve
  - Type II spare XI and IJV
  - Type III spare XI, IJV and SCM
- Selective Neck Dissection
  - Supra-omohyoid (I-III)
  - Anterolateral (I-IV)
  - Lateral (II-IV)
  - Posterolateral (II-V)
  - Central (VI)

When to do a neck dissection?

Head and neck squamous cell carcinoma

- **N+ neck**
  - If primary disease is to be resected
  - After definite radiotherapy, if there is residual nodal disease
  - (After radiotherapy, if neck disease pre-treatment was bulky (N3) i.e. ‘planned neck dissection’)

- **N0 neck (elective neck dissection)**
  - If primary disease is to be resected and the rate of ‘occult’ metastases is 20% or more

Elective dissections n = 343


Clinical Nodal Metastasis

Yes

Perform comprehensive ND (MRND I) if SAN not involved. May consider selective ND in N₂ setting¹

No

Need to enter neck for resection of primary tumor²

Unreliable follow up

Risk of occult metastasis greater than 20-25%³

Observe neck

Perform elective selective ND¹

¹ Oral cavity - SOHND
   Oropharynx - LND or ALND
   Hypopharynx/larynx - LND

² Mandibulotomy, lateral pharyngotomy, supraglottic laryngectomy for example

³ Primary located in oropharynx, hypopharynx or supraglottic larynx. Oral cavity tumor greater than 2 mm thick
Why not observe the N0 neck closely?

60% of patients who recurred in the neck presented with N2 or greater disease
77% had evidence of extracapsular spread
Such patients required more extensive therapy than if they had undergone elective treatment

When to do a neck dissection?

**Differentiated thyroid cancer**
- In N1a+, level VI (central compartment) neck dissection
- In N1b+, level II-V (posterolateral) and level VI neck dissection
- In N0 papillary thyroid cancer, if age > 45, male, >T2, offer elective level VI dissection

**Medullary thyroid ca**
- In N0, level VI-VII neck dissection
- In N0 and pT2-T4, or N1+ disease, add level IIa-Vb neck dissection

Guidelines for the management of thyroid cancer. British Thyroid Association 2007
When to do a neck dissection

**Salivary gland malignancy**
If N+, modified radical neck dissection. XI may be difficult to preserve.
If N0, consider level I-III and V a if high grade histology (e.g. high grade mucoepidermoid, undifferentiated, ca-ex pleo, SCC) T3-4, old age, SMG cancers and recurrent cancers.
THANK YOU!