Management of Suspicious Neck and Thyroid Lumps

Mr Antonio Belloso
ENT Consultant
Head & Neck and Thyroid Surgeon
One-stop Neck lump clinic
• Organisation Neck Lump clinic
• Evaluation neck masses
• Thyroid masses
• Lateral neck masses

Rational approach to H&N cancer
• Principles of management H&N cancer

Larynx and laryngectomy
• Voice restoration
ONE-STOP NECK LUMP CLINIC
RAPID ACCESS NECK LUMP CLINIC

Compulsory for all UK H&N cancer Units
- Recommended by NICE guidelines in 2005 (1.11.1)
  - Suspected H&N cancers sings / symptoms
  - Appropriate specialist or Neck Lump clinic referral
- Improves outcomes of H&N cancer
- Consultant based clinic (ENT, radiology, cytology)
- Referral through Choose & Book (2 weeks rule)

Designed for early diagnosis of H&N cancer
- Fast appointment - 2 weeks-rule referral
- Diagnosis and management plan on the same session
BLACKBURN - E.N.T. NECK LUMP CLINIC

Weekly clinic
- Thursday morning 8:30 am - 13:00 pm

Consultant based clinic
- ENT - Mr A Belloso, Mr P Morar
- Radiology - Dr D Gavan
- Cytologist - Dr M Aslam
PATIENT JOURNEY - NECK LUMP CLINIC

Patient can be in the hospital all morning

8:30–11:00 am - Initial assessment by ENT consultant
- FNAC in the clinic
- USS guided FNAC (by consultant radiologist)
- Management plan (surgery, investigations, discharge..)

9:00-12:00 am - Radiological and/or Cytology test
- Results in 1 hour
  - Radiology: PACS report/telephone
  - Cytology: Telephoned-report (discussion)

11:00-13:00 am - 2nd visit by same ENT consultant
- Patient informed of diagnosis / results
- Management plan
EVALUATION NECK MASSES
3 STEP IN NECK MASSES ASSESSMENT

• **Initial impression** - *Benign v’s Malignant*
  • Children and adults
  • Lateral neck and thyroid/salivary masses

• **Diagnosis** – *Investigations*
  • Clinical examination
  • FNAC
  • Radiological test
  • Excision / open biopsy

• **Management options**
  • Diagnostic / therapeutic
  • Conservative / surgical
# Differential Diagnosis

<table>
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<tr>
<th>Congenital</th>
<th>Infectious</th>
<th>Trauma</th>
<th>Endocrine</th>
<th>Neoplasm</th>
<th>Systemic Others</th>
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<td>Lymphadenitis</td>
<td>Haematoma</td>
<td>Thyroid mass</td>
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<td>Plunging ranula</td>
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<td>Atipical mycobacteria</td>
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<tr>
<td>Laryngocele</td>
<td>Cat-scratch disease</td>
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<td></td>
<td>Syphilis</td>
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<tr>
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<td>Generalized lymphadenopathy</td>
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<td>Mononucleosis</td>
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</table>

- Generalized lymphadenopathy
- Mononucleosis
CLINICAL HISTORY: NECK MASSES

Characteristics of neck mass
- Onset, duration, number, location (level), growth patent, pain

Associated primary symptoms
- **H&N Primary**: Nasal symptoms, sore throat, otalgia, swallowing problems, voice changes
- **Thyroid**: Hyper/hypothyroidism
- **Lymphoma**: Fever, night sweats, malaise

Contributing factors
- Age, gender
- Risks of malignancy
  - Smoking, alcohol
  - Previous Ca, family hx, radiation
- Recent URTI, HPV, TB, travel abroad
EXAMINATION: NECK MASSES

Neck examination
- **Characteristics neck mass** - Size, position (neck levels), distribution, mobility, tenderness, fluctuance, consistency, solitary vs. generalised, overlying skin
- **Solid neck organs** - Thyroid, salivary gland, carotid body..

ENT examination (primary tumour)
- **Oral cavity** (with palpation) – floor mouth, base tongue, tonsil
- **Nasal cavity**
- **Ears**
- **Nasendoscopy** – Pharynx, larynx
- **Scalp?**

Rest of body examination (just consider)
- Other lymphatic site (inguinal, axilla..)
- Other organs: liver, spleen
- Auscultation for vascular abnormalities
THYROID MASS
REFERRAL CRITERIA

Suspicious thyroid Lump

- Extreme age: <20 or >70
- Male gender
- Solitary firm, irregular, fixed nodule
- Acute increased size
- Cervical lymphadenopathy

- New onset of:
  - Pain
  - Swallowing / breathing difficulties
  - Hoarseness

- Previous history of thyroid cancer
- History of external neck irradiation
FNAC - THYROID MASS

• USS guided FNAC
  – USS evaluation thyroid gland
  – FNAC directed to suspicious mass
  – Increase hit rate

THYROID FNAC REPORT

• Thy 1 Non-diagnostic
• Thy 2 Benign
• Thy 3 Follicular
• Thy 4 Suspicious malignancy
• Thy 5 Malignancy
**Thy 1 – Non-diagnostic**
- Sampling problems
- Repeat USS guided FNAC
- If –ve - Tru-cut biopsy
  - Diagnosis - ‘hemithyroidectomy’

**Thy 2 – Benign**
- Reassure patient
- Repeat USS guided FNAC in 3/12
  - If benign - Discharge
Thy 3

- **Thy 3a** Atypia (30% malignant)
- **Thy 3f** Follicular (15% malignant)

- **Thy 3f** - FNAC can’t differentiate benign / malignant
  - 85% Benign (Adenoma) - Capsule intact
  - 15% Malignant (Carcinoma) - Capsule breached

- **Discussed in MDT --- Diagnostic hemithyroidectomy**
Thy 4 – Suspicious Malignant

• **Controversial** (to be discussed in MDT)
  • 80-90% Malignant
  • Depending of clinical / USS findings
• Possibilities:
  1. Diagnostic hemithyroidectomy
  2. Total thyroidectomy

Thy 5 - Malignant

• **Carcinoma treatment** (after MDT discussion)

  • **Conservative**
    • Good clinical factors - < 1cm
    • Good patient factors - Female, <30 y/o
  
  • **Radical**
    • Total Thyroidectomy + Radio-iodine- ablation
<table>
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<tr>
<th>Thy category</th>
<th>% malignant (Bethesda Study)</th>
<th>ELHT % malignant (2005-12)</th>
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<tbody>
<tr>
<td>Thy 1</td>
<td>1 – 4 %</td>
<td>21.5 % (14/65)</td>
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<tr>
<td>Thy 2</td>
<td>0 – 3 %</td>
<td>20 % (27/135)</td>
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<tr>
<td>Thy 3</td>
<td>Thy 3 f Thy 3 a 5 – 15 %</td>
<td>29 % (29/100)</td>
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<td>15 – 30 %</td>
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<tr>
<td>Thy 4</td>
<td>60 – 75 %</td>
<td>94 % (14/15)</td>
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<tr>
<td>Thy 5</td>
<td>97 – 99 %</td>
<td>100 % (5/5)</td>
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LATERAL NECK MASS
## Referral Criteria

**Any suspicious neck mass**

### Suspicious Lateral Neck Lump

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<th>Adults</th>
<th>Children</th>
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<tr>
<td><strong>Risk Factors</strong></td>
<td><strong>Risk Symptoms</strong></td>
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</table>
| ➤ 40 years | • Hoarseness  
• Odynophagia  
• Dysphonia  
• Otalgia  
• Haemoptysis  
• Unilateral hearing loss  
• Mouth ulcer  
• Dental change  
• ‘B’ symptoms |
| **Risk Examination**  
Lump > 1.5 cm | **Antibiotics x 2/52** |
| • Fixed  
• Rubberly / matted  
• Thyroid / parotid mass  
• Cranial nerve palsy | • No resolution  
• Lesion > 4/52 |

**Antibiotics x 2/52**  
• No resolution  
• Lesion > 4/52  
Resolution  
Discharged

Refer to Rapid Access Head & Neck Lump Clinic
NECK MASS IN NECK LUMP CLINIC

Persistent Neck Mass

Clinical Examination
FNAC Neck Mass

A
B
C
D

+ ve
- ve

Safe | Personal | Effective
+ ve Examination
(Primary cancer identified)

+ ve FNAC
(FNAC = Squamous cell carcinoma)
A
+ VE EXAMINATION
+ VE FNAC

- **CT scan** – delineate the primary tumours
- **Endoscopy** - Histology sample (OPD or Theatre)
- To be **discussed in MDT** (see protocol)
- ve Examination
(No obvious primary cancer)

+ ve FNAC
(FNAC = Squamous cell carcinoma)
- **VE EXAMINATION**

+ **VE FNAC**

Depend of **CT scan** results

- **CT scan +ve** --- Panendoscopy with biopsies of:
  - suspicious areas
  - ? Likely primary sites (tonsillectomy, PNS, base tongue, pyriform)

- **CT scan –ve** --- **Urgent PET scan**
  - **PET scan +ve** --- Panendoscopy + biopsies.
  - **PET scan –ve** --- Panendoscopy + blind biopsies of likely areas

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**Considerations MDT discussion**

Primary should be small (Tx,T1)

Treatment of N+ neck - Neck dissection + radiotherapy

Consider Neck dissection during surgery
According to **biopsies results:**

- **Biopsy +ve** -- Primary identified (MDT and protocol)
- **Biopsy –ve** -- **Unknown primary**
  - Treatment of neck (Neck dissection / Radiotherapy)

**Rationale for neck dissection**

Histological confirmation of tumour and extension

**Consider post-op radiotherapy** if:

- Extracapsular nodal spread
- Perivascular / peri-neural invasion
- N1+ neck

*If radiotherapy is used, consider EMI (elective mucosal radiation)*
+ ve Examination
(Primary identified cancer)

- ve FNAC
(FNAC = Non-diagnostic)
C
+
VE EXAMINATION
- VE FNAC

- **CT scan** - delineate suspected tumour + neck involvement

- **Panendoscopy**. Biopsies of suspected primary (significant sample) + likely sites + repeat FNAC under G/A

  - **Biopsy +ve** – MDT and protocol
  - **Biopsy –ve** – ? Malignancy (no histological confirmation)
    - **Excision** of neck mass, follow by neck dissection in 1/52 if histology +ve.
    - **Frozen section** of neck mass, follow by:
      - Frozen –ve -- Excision of mass awaiting for formal histology
      - Frozen +ve – Neck dissection
- ve Examination
  (No obvious primary cancer)
-ve FNAC
  (FNAC = Non-diagnostic)
- VE EXAMINATION
- VE FNAC

No confirmation of malignancy

• **CT scan** delineate neck mass and possible primary

• **Panendoscopy +/- Excision neck mass**
  – Panendoscopy shows suspected primary
    • Biopsy suspected region + repeat FNAC under G/A
  – Panendoscopy normal
    • Excision neck mass (histological confirmation)
      – **Malignant** – Neck dissection +/- radiotherapy (protocol)
      – **Benign** – Reassurance and discharge
MANAGEMENT HEAD & NECK CANCER
BELLOSO – KAUSHIK GUIDE
TMN Classification H&N cancers

Is a cancer staging system that describes the extent of cancer in a patient’s body.

- **T** - Size of the tumour and tissue invasion (0-4)
- **N** - Regional lymph nodes involvement (0-3)
- **M** - Distant metastasis (0-1)
MDT setting + individualized treatment

- tumour factors
- patient factors
- patient preferences
Independent assessment of primary tumour and neck

PRIMARY TUMOUR

- **Early tumour (T1, T2)**
  - Special cases:
    - Oral cavity, Mouth and Tongue --- Surgery (+/- reconstruction)
      » Moving target for radiotherapy
      » Risk radio-necrosis
    - Larynx --- CO₂ laser resection (patient choice)
      » Possibility to offer radiotherapy if recurrence

- **Advanced tumour (T3, T4)**
  - Special cases:
    - T3 Larynx.
      » Low volume (advanced T2) --- Chemo-radiotherapy
      » Large volume --- Surgery + Chemo-radiotherapy
    - T4 tumours --- Consider palliative treatment.
2. Independent assessment of primary tumour and neck

**NECK**
- N0 neck
- Early neck (N1)
- Advanced neck (N2,3)

--- Treatment if risk > 15%*
--- SINGLE MODALITY
-- COMBINED MODALITY

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<thead>
<tr>
<th>&lt;15% risk neck involvement in N0</th>
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<tr>
<td>• Early glottic</td>
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<td>• Lower alveoli</td>
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<td>• Early lip</td>
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<tr>
<td>• Sino-nasal tumour</td>
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3. Pre-treatment considerations

- Dental opinion if radiotherapy is considered
- SALT and voice restoration
- Nutritional status (before, during and after); PEG insertion
Always consider ....

**Chemotherapy**
- Advanced primary
- Advanced neck
- Poor neck features*
  - +ve margins
  - Extracapsular nodal spread
  - Peri-varcicular / paeri-neural invasion
  - N1+ neck

**Bilateral neck treatment**
- Nasopharynx
- Oral cavity / anterior floor of mouth/ palate
- Dorsal tongue
- Supraglottis
- Hypopharynx
- Midline tumours
1. MDT settings + Individual treatment
   - Tumour and patient

2. Independent assessment primary tumour and neck
   - Combined treatment

3. Pre-treatment considerations

4. ... always consider
   - Chemotherapy
   - Bilateral neck treatment
H&N Cancer

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<thead>
<tr>
<th></th>
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<th>N2</th>
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<td>T1</td>
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<td>T4</td>
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- OROPHARYNX
- HYPOPHARYNX
- SUPRAGLOTTIS
- GLOTTIS
- SUBGLOTTIS
- NASOPHARYNX
- THYROID
T2 N2b M0 piriform fossa SCC

1.- MDT settings + individual treatment

2.- Individual primary and neck treatment

Primary - T2 piriform fossa SCC
• Early primary tumour – *Single modality* (Surgery or radiotherapy)

Neck - N2b neck nodes involvement
• Advanced neck involvement -- *Combined modality* (Surgery + Radiotherapy)
  • >15 % contralateral neck involvement -- Treatment other side neck

Proposed treatment option for T2N2bM0 piriform fossa SCC
• Radiotherapy to primary tumour
• Neck dissection ipsilateral neck
• Radiotherapy ipsi and contralateral neck

CONSIDERATIONS

3.- Pre-operative dental assessment (radiotherapy) and nutritional assessment

4.- To be discussed in H&N MDT after surgery
  • chemotherapy if poor neck features in histology
The Larynx
Functions of the Larynx

• **Main Function**
  – Separates respiratory and digestive systems
  – Protects airway from aspiration

• **Secondary**
  – Voice production
Basic Anatomy of the larynx

A
- Nasal cavities
- Oral cavity
- Larynx
- Trachea
- Esophagus

B
- Epiglottis
- Hyoid bone
- Thyroid cartilage
- Cricoid cartilage
- Laryngeal inlet
- Larynx

Safe | Personal | Effective
Examination of Larynx (2)
Voice
Voice Production

Essentials

1. **Air pressure system**
   - Lungs
   - L = Stomach
   - CD = Speaking Valve

2. **Vibratory system**
   - Vocal Cords
   - L = Vibrating PE Segment
   - CD = Mechanical Vibration

3. **Resonating and modifying system**
   - L = Laryngectomy
   - CD = Corrective device
Voice in Laryngectomy patient

Before Laryngectomy

After Laryngectomy

Electro- larynx

Voice prosthesis

Pharynx
Larynx
Trachea
Esophagus

Stoma
Trachea
Esophagus

Safe | Personal | Effective
Vocal Cord Cycle

- Vocal Mucosa
- Vibration Vocal Mucosa
- Myoelastic-Aerodynamic theory
- Bernoulli’s effect