

Guidelines

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Cite this article: Homer JJ, Dawson CC, Naylor A, Winter SC, Paterson C. UK Head and Neck Cancer Multidisciplinary Guidelines – lay summary for non-clinicians. *J Laryngol Otol* 2024;**138**:S1–S25. <https://doi.org/10.1017/S002221512400032X>

Received: 22 January 2024
Accepted: 7 February 2024

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UK Head and Neck Cancer Multidisciplinary Guidelines – lay summary for non-clinicians

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Introduction

The first UK Multidisciplinary Head and Neck Cancer Guidelines were published in 2001. Since then, there have been five further editions, with the current guidelines being the sixth edition. The guidelines have served to describe standards of care, ranging from the management of specific cancers in different head and neck sites through to standards that apply to treatment in general. The guidelines were first written at a time when there was much variation in care.

There has been increasing input in the guidelines from a wide range of healthcare professionals, reflecting the importance of a multidisciplinary approach to improve outcomes.

This document, which is intended to compliment the guidelines, aims to explain the nature of head and neck cancer, and describe how patients with head and neck cancers are managed and why. Whilst not a patient guideline or information document, it is hoped that patients, and their families and friends, will find it beneficial. It will also inevitably be useful for health service managers, administrators and commissioners who wish to understand head and neck cancer management and the landscape from a lay perspective. Key points from the guidelines are summarised in the context of the basic principles of care for head and neck cancer. A glossary of medical terms is shown in [Table 1](#).

The broad consensus of head and neck cancer management is explained, avoiding some areas that are controversial.

Specific management of thyroid and skin cancer is excluded from this document, because of the significant differences in these cancers.

Head and neck cancer in general

What is head and neck cancer?

The term ‘head and neck cancer’ refers to cancers arising from the upper aerodigestive tract, lymph nodes of the neck and the thyroid gland. The upper aerodigestive tract comprises the mouth (oral cavity), throat (pharynx), voice box (larynx), the inside of the nose and sinuses, and major salivary glands in the neck ([Figures 1 and 2](#)).

The most common sites of head and neck cancer in the UK are the oral cavity, larynx and oropharynx. There are about 12 500 new cases of head and neck cancer in the UK per year, and 3900 new cases of thyroid cancer.

[Table 2](#) shows the relative incidence of head and neck cancer of the upper aerodigestive tract. Most cancers of the upper aerodigestive tract arise from the surface lining (mucosa) and are known as squamous cell carcinoma (SCC).

Many patients present with symptoms connected to their primary cancer. However, some patients with SCC present with a neck lump, which is a metastasis (spread of cancer) to a lymph node in the neck. The primary cancer might be found during clinical examination; however, this is not always the case, and there may be no evidence of the primary site from where the cancer has arisen. This is called SCC with an unknown primary. In some cases, the primary site can be found after further tests and is often a virus-induced cancer (human papillomavirus (HPV)) arising from the oropharynx.

Cancers from the salivary glands and nose and sinuses are more varied in nature and type. Thyroid cancers are entirely different.

Causes

The primary causes or risk factors of cancers (SCC) arising from the mouth, throat and voice box are cigarette smoking and alcohol consumption. However, it should be emphasised that not all cancers in these sites are caused by smoking or alcohol.

The majority of cancers of the oropharynx (essentially the tonsils at the back of the mouth and the tongue base) are caused by HPV-16.

There has been a marked increase in cases of a particular type of cancer (HPV-induced oropharyngeal cancer) over the last two decades worldwide. All cancers arising from the oropharynx are tested for HPV and about 80 per cent of cancers in the UK are associated with HPV infection. The main test for HPV looks for a protein called p16 on the cancer cells. This is generally accepted as a reliable indicator of HPV. Medical professionals refer to HPV cancers as ‘p16 positive’ reflecting this assumption.

Human papillomavirus cancers are thought to be due to HPV infection, often occurring in younger life. In a minority of people, this viral infection remains within the oropharyngeal area and, eventually, often decades later, brings about cancerous change. The increase in incidence of these cancers is thought to reflect HPV having become ‘endemic’ over the last several decades, meaning the majority of the population will be exposed to this virus at some point in their life. This is important because developing an HPV-positive cancer does not mean an individual’s behaviour has caused their cancer.

Table 1. Glossary of medical terms

Medical term	Meaning
Squamous cell carcinoma (SCC)	The commonest head & neck cancer type
Upper aerodigestive tract (UADT)	Mouth, throat, voice box, nose & sinuses, & salivary glands
Oral cavity	Mouth
Pharynx	Throat
Larynx	Voice box
Human papillomavirus (HPV)	Virus that causes oropharyngeal (throat) cancer (type 16 mainly)
Mucosa	Surface lining of mouth & throat, & upper aerodigestive tract
Metastasis	Spread of cancer: – Regional = to neck lymph nodes – Distant = elsewhere in the body
P16	A marker of HPV infection
Otolaryngology	Ear, nose & throat (ENT) surgery
Clinical oncologists	Radiotherapy consultants
Allied health professionals (AHP)	Overarching terms for speech & language therapists, & dietitians, as well as physiotherapists & occupational therapists
SLT	Speech & language therapy/therapist
Multidisciplinary team (MDT)	Medical & non-medical healthcare professionals involved in patient care
Fine needle aspiration cytology (FNAC)	Needle aspiration test using a very small needle to draw cells from a tumour for analysis
Core biopsy Fine needle aspiration biopsy (FNAB) Tru-Cut® biopsy	Larger needle inserted into a tumour to remove a small core of tissue for analysis
MR or MRI scan	Magnetic resonance (imaging) scan
CT scan	Computed tomography scan
US or USS	Ultrasound (scan) of neck
Second primary cancer	A different additional cancer that can arise at the same time as a head & neck cancer or later
PET-CT scan	Positron emission tomography using radioactive glucose to show cancer cells
CUP	Cancer with an unknown primary (If squamous cell carcinoma, the term 'HN SCC UKP' is also used)
Flexible endoscopy Naso-pharyngo-laryngoscopy Flexible laryngoscopy	Referring to a small endoscope inserted through the nose to view nasal cavity, pharynx & larynx
Staging TNM staging	A way of describing the size & spread of a cancer TNM stands for tumour (primary cancer), node (lymph node in the neck), & metastasis (distant spread beyond the neck area) A prefix of 'c' means clinical staging based on examination & imaging scans A prefix of 'p' means pathological staging based on analysis of tissue removed as part of surgery
RT	Radiotherapy
CRT	Chemoradiotherapy = chemotherapy given alongside RT
IMRT	Intensity-modulated RT Modern RT technique to limit damage outside of tumour
Proton beam therapy (PBT)	RT using proton particles
Regional lymph nodes & cervical lymph nodes	Lymph nodes in the head & neck (regional) or neck only (cervical) to which cancer might spread
Loco-regional	Referring to the primary tumour & regional lymph nodes
Clinically staged N ₀ neck ('cN ₀ ')	The absence of evidence of metastasis to regional lymph nodes
Transoral surgery	Surgery performed through the mouth (e.g. for cancers of the oral cavity, pharynx or larynx)
Microvascular or free flap surgery	When tissue is transferred with its blood vessels to the head & neck region, & the blood vessels are joined up to recipient vessels in the neck. Commonly used free flaps are radial forearm & anterolateral thigh ('ALT'). If bone is required as well, common free flaps are fibula (lower leg), scapula (wing bone) or iliac crest (deep circumflex iliac artery – 'DCIA')
Extranodal extension (ENE)	Cancer cells that have invaded outside the lymph node capsule
Xerostomia	Dry mouth
Dysgeusia	Taste disturbance

(Continued)

Table 1. (Continued.)

Medical term	Meaning
Dysphagia	Impairment of swallowing
Aspiration	Impairment of swallowing when swallowed content or saliva tend to penetrate the voice box & enter the lungs
Odynophagia	Pain especially on swallowing
Lymphoedema	Poor lymphatic drainage of the head & neck, with face or neck swelling
Dysplasia / carcinoma in situ (severe dysplasia)	Pre-cancerous cell changes or cancer change in a lining cell without any invasion
Tracheostomy	A hole created in the windpipe for breathing kept open with a tube
Oropharyngeal squamous cell carcinoma (OPSCC)	Cancer of the upper throat (tonsils & back of tongue mainly)
Transoral robotic surgery (TORS)	Robotic-assisted surgery through the mouth
Induction or neo-adjuvant chemotherapy	When chemotherapy alone is given before other treatment (e.g. RT or occasionally surgery)
Pharyngo-laryngectomy	Removal of the voice box & some surrounding throat tissue
Total laryngectomy	Removal of the voice box
Transoral laser microsurgery (TLM)	Surgery performed through the mouth using a microscope & laser to the larynx usually
Orbital exenteration	Sacrifice of the eye
Orthopantomogram (OPG)	X-ray of the jaw
Panendoscopy	Examination under anaesthesia of the mouth, pharynx, larynx &/or oesophagus

In the UK, HPV vaccination in girls was introduced in 2008 and in boys in 2019. In addition, men who have sex with men are also eligible for HPV vaccination. However, given the long interval between HPV infection and the development of cancer later in life, the effects of vaccination on HPV cancer incidence may not be apparent for more than two decades. However, it is assumed that, if vaccination policy and roll out is maintained within the UK, then this particular cancer will ultimately become relatively rare.

Cancers of the nasopharynx (the part of the throat at the back of the nose) are rare in the UK. They are much commoner in South East Asia, and are linked to a combination of infection with another virus, Epstein–Barr virus, genetic predisposition and dietary factors.

There are no known underlying causes for the development of salivary gland cancers.

Similarly, with the exception of previous radiation exposure, and occasionally genetic predisposition, most thyroid cancers do not have any specific cause. Head and neck skin cancer

is generally brought about through exposure to ultraviolet radiation.

Head and neck SCC, mainly of the upper aerodigestive tract, is more common in deprived populations. Some of this reflects higher levels of tobacco and alcohol consumption. However, this does not explain all of the variance and higher risk in these populations. Patients from these communities also tend to present later and with more advanced disease. For these reasons, head and neck cancer in deprived communities of the UK remains a very important problem to address.

Changes in incidence (number of cases) of cancers over time vary according to the site involved. Human papilloma-virus induced oropharyngeal cancer continues to rise in incidence. When this rise in incidence will peak and start to plateau is currently not understood.

It might be expected that decreased rates of smoking will bring about decreased rates of upper aerodigestive tract cancers. However, this has not been observed so far. This might reflect

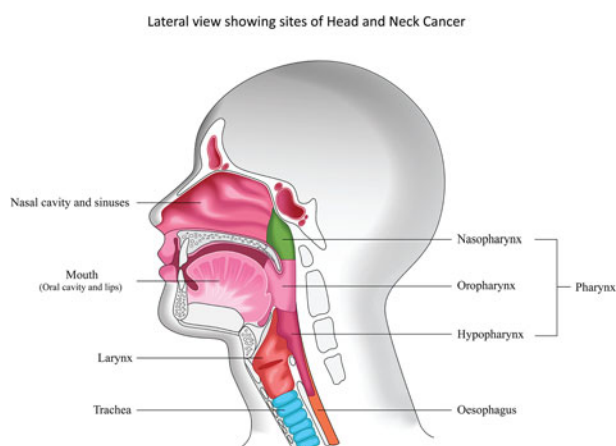
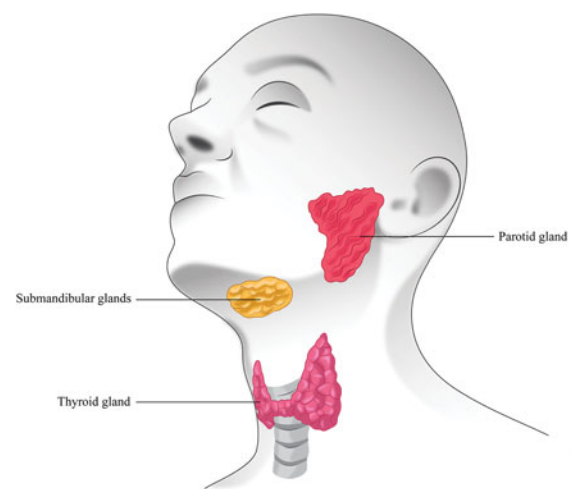
**Figure 1.** Sites of head and neck cancer – lateral view.**Figure 2.** Sites of head and neck cancer – salivary and thyroid glands.

Table 2. Relative incidence of head and neck cancer of the upper aerodigestive tract

Origin	Site	Proportion of head & neck cancers (excluding thyroid) (%)
Upper aerodigestive tract	Oral cavity (mouth) & lip	28
	Nasopharynx (back of the nose)	2
	Oropharynx (part of the throat at the back of the mouth, including soft palate, tonsils & tongue base)	36
	Hypopharynx (lower part of the throat around the voice box leading into the oesophagus or gullet)	6
	Larynx (voice box)	17
	Nasal cavity & sinuses	4
Salivary glands	Parotid gland & submandibular gland	6

the fact that there has not yet been a similar decrease in alcohol consumption. Like many cancers, a risk for head and neck cancer is age, and the population is ageing. Deprivation remains an ongoing and possibly increasing problem in the UK.

The incidence of thyroid cancers has increased significantly over the last two to three decades. However, this is thought to reflect increased detection of cancers rather than a genuine increase in incidence.

Clinicians primarily involved in the management of head and neck cancer

Head and neck cancers are generally diagnosed after referral to a surgical specialty, usually ear, nose and throat surgeons (ENT or otolaryngology) or oromaxillofacial surgeons.

Head and neck cancers are generally treated by one modality, or a combination of modalities: surgery, radiotherapy (RT), or systemic treatment with drugs, including chemotherapy and immunotherapy.

Clinical oncologists treat patients with RT and systemic (drug) treatment.

The surgical specialties involved in the surgical treatment of patients vary according to where the head and neck cancer arises, as well as any reconstructive surgery required. Surgery is provided mainly by ENT, oromaxillofacial surgeons and plastic surgeons in the UK. The dividing line between these surgical specialties is blurred, with many areas of overlap. All surgeons work together within multidisciplinary teams (MDTs).

Many other medically qualified clinicians primarily involved in head and neck cancer include professionals not always involved in direct patient contact, but who nevertheless are very important in planning and assessing treatment. These include radiologists who perform and report imaging (scans), and histopathologists who report biopsy and surgical resection specimens.

Other healthcare professionals are critical to providing care and supporting patients through the various stages of the cancer journey. These include: clinical nurse specialists, allied health professionals (speech and language therapists, and dietitians) and restorative dentists, amongst others. Their roles are explained in more detail in the 'Multidisciplinary support for patients before, during and after treatment' section.

Organisation of head and neck cancer services and how this fits in with the patient journey

Whilst every Trust or hospital group should provide facilities for the diagnosis of head and neck cancer, not every hospital

has the expertise to treat patients with head and neck cancer. This is because head and neck cancer treatment requires a lot of specialist expertise and is significantly less common than cancers of the breast, prostate and lung, for example.

Diagnosis. The diagnosis of head and neck cancer begins with the recognition, by patients and general practitioners and dentists, of potentially suspicious symptoms. This should result in an urgent referral to the local hospital, and then assessment and diagnostic tests.

Management by a head and neck cancer specialist multidisciplinary team. After diagnosis, patients will be referred to a hospital that has a head and neck cancer specialist MDT. The MDT is responsible for treatment (e.g. surgery and RT) and may be based across more than one hospital. In some instances, patients will be local to a hospital that also has the MDT, and therefore external referral is not required.

Patients will then be assessed by the MDT. This will typically take the form of a weekly MDT meeting, which includes looking at the scans with the help of expert radiologists, confirming biopsy results with the help of pathologists, and discussing the case. All members of the MDT can contribute to the MDT discussion, thus ensuring that the right investigations have been carried out, and agree on general recommendations for treatment.

Patients should then be seen in a multidisciplinary clinic by the relevant members of the MDT according to their possible needs. This will include not only surgeons and clinical oncologists who may treat the patient, but also clinical nurse specialists, speech and language therapists, and dietitians, amongst others. Continuity of care and communication between the health professionals at the local hospital and those within the specialist MDT is essential. Patients' needs and preferences for treatment in the context of available options are discussed, but the final decision is one for patients.

The options for care broadly fall into either: (1) treatment with curative intent (either by initial RT or by initial surgery); or (2) palliation for symptom control, and to prolong both the length and quality of life but without the expectation of cure from cancer.

Surgery takes place in a specialised hospital with appropriate expertise from the surgical specialties involved. Radiotherapy, which is sometimes combined with chemotherapy, is provided by clinical oncologists, who treat patients in a similarly specialised unit. This may be at the same Trust or hospital in which surgery is taking place or, in some areas, a separate Trust or hospital site.

Once treatment is complete, care is tailored to patient support, managing the effects of treatment, monitoring the response to cancer and continued follow up to detect recurrence. This care may be provided at the treating hospital or at the local hospital, if different. The patient journey is illustrated in [Figure 3](#).

Referral to ENT and maxillofacial surgery

General practitioners and general dental practitioners are given guidance regarding when to suspect a possible cancer. This is usually agreed upon by all hospitals that form the referral area for an MDT or geographical area. It should be emphasised that most patients (95–97 per cent) referred in this way do not have a cancer, given that it can be difficult to distinguish between common innocent symptoms and symptoms due to cancer.

Additionally, some patients with head and neck cancer are diagnosed because they are admitted with a related emergency presentation (for example, airway obstruction) through the emergency department or through admission by another specialty. Patients who present in this manner tend to have more advanced disease. It is a goal to increase the proportion of patients referred from primary care or general practice, but this requires the early recognition of symptoms.

Assessment in hospital

Every hospital has an obligation to urgently assess patients referred with suspected cancer.

The challenges of the coronavirus disease 2019 (Covid-19) pandemic made it necessary to triage or remotely assess patients on a basis of symptoms and risk factors, including the use of a validated risk calculator tool. This has been shown to be safe and effective in identifying patients who need urgent assessment from those who do not.

A ‘best timed pathway’ or ‘optimal pathway’ ensures that patients undergo the correct investigations, incorporating as many investigations as possible in one single visit. Every

hospital should have a one-stop neck lump clinic incorporating clinical examination, ultrasound and, where needed, ultrasound-guided tissue needle biopsy (fine needle aspiration cytology (FNAC) or core biopsy).

A summary of diagnostic assessments and tests can be found in [Table 3](#), and an example of a best timed pathway is shown in [Figure 4](#).

Biopsies can be conducted in clinic where possible, but some patients will require a general anaesthetic for biopsy and/or to fully assess the extent of a tumour.

Imaging (scans) is an important means of assessing the extent of a tumour, in terms of where and how advanced the primary tumour is and whether there are metastases to lymph nodes in the neck or distantly (mainly in the lungs).

Generally, either magnetic resonance (MR) scans or computed tomography (CT) scans are used to assess the extent of the primary cancer and determine whether there are any metastases to lymph nodes in the neck.

It is also important, in most cases, to establish whether there are distant metastases (spread of cancer below the neck into other areas of the body, most commonly within the chest or lungs). For this reason, a CT scan of the thorax (chest) is performed. In addition, a small proportion of patients may also have a separate cancer (a ‘second primary cancer’), the most common being a lung cancer caused by smoking. This is another reason for performing a CT scan of the thorax.

For some cancers, there is a role for positron emission tomography/computed tomography (PET-CT) scanning. This involves a whole-body CT scan with the administration of radioactive glucose. The latter is preferentially taken up by cancer cells as well as in other areas of high metabolism or inflammation. This is particularly useful for patients in whom it is not clear where the primary cancer is (cancer with an unknown primary) and in patients who may have a significant chance of metastatic disease. This includes advanced cancers of the hypopharynx, and cancers that have extensive spread into the neck.

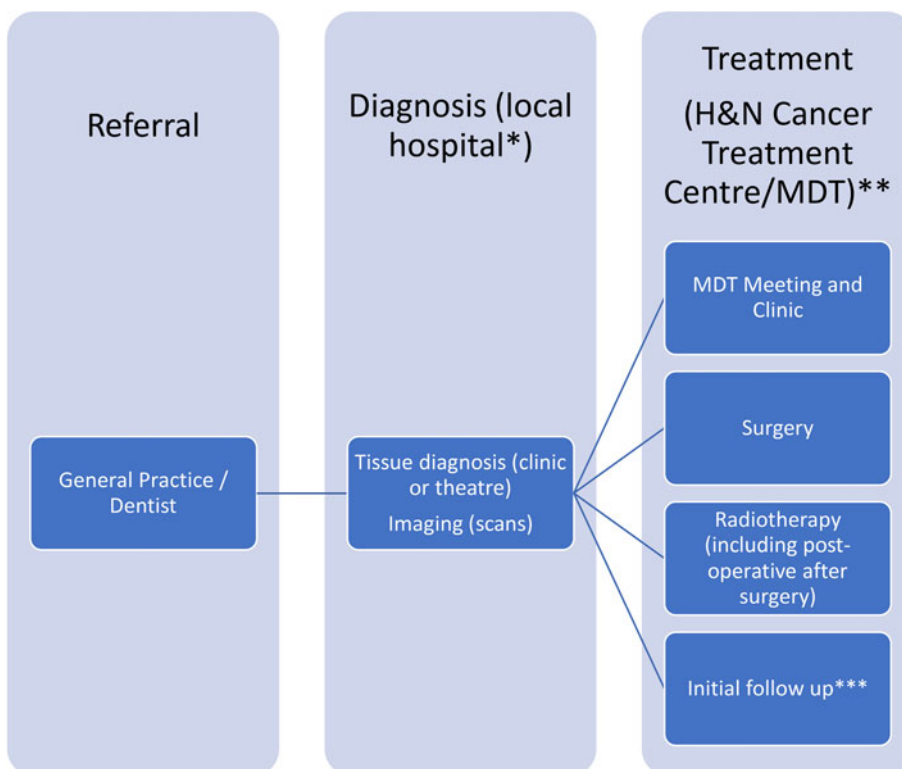


Figure 3. The patient journey. *The local hospital may also be the head and neck cancer treatment centre. **The head and neck cancer treatment centre may be formed of more than hospital (e.g. more than one site for surgery, or surgery and radiotherapy in different hospitals). ***Long-term follow up, when appropriate, should be transferred to the local hospital, if significantly nearer to home

Table 3. Assessment and diagnosis of head and neck cancer

Component	Assessment	Explanation
Assessment by head & neck surgeon	Assessment of symptoms (history)	
	Clinical examination	
	Flexible endoscopy (naso-pharyngo-laryngoscopy in clinic)	A small endoscope inserted through the nose to view nasal cavity, pharynx & larynx
Biopsy	Neck lump needle biopsy: ultrasound-guided FNAC or core biopsy*	As part of one-stop clinic. Choice between FNAC & core biopsy, dependent on local policy & nature of neck lump
	Endoscopic biopsy	Using flexible endoscopes with biopsy channels. Increasingly used for tumours in the larynx or pharynx
	Biopsy of primary tumour in clinic	Accessible lesions in mouth or nose, or tumours with skin involvement
	Biopsy & examination under general anaesthesia	Tumours in the pharynx, larynx or other less accessible sites. Also allows for further assessment of extent, & surgical & radiotherapy planning
Imaging	Ultrasound of neck	With FNAC or core biopsy if suspicious lump found
	CT scan (primary site / cervical lymph nodes)	Choice between CT & MR dependent on primary tumour site
	MR scan (primary site / cervical lymph nodes)	
	CT scan of thorax (chest)	To detect distant metastatic spread to the lungs or lymph nodes in the thorax To detect second primary cancers of the lung
	PET-CT scan	Whole-body scan to detect: – Distant metastatic spread in high-risk patients – Site of primary cancer in patients with metastatic neck lymph node but no obvious primary cancer

*Fine needle aspiration cytology (FNAC) involves a small needle that samples individual cells from a lump; core biopsy involves a larger needle so that a small block of tissue can be studied. CT = computed tomography; MR = magnetic resonance; PET-CT = positron emission tomography/computed tomography

Staging

Staging is a way of describing the size and spread of a cancer. A description of tumour–node–metastasis (TNM) classification can be found in the full guidelines in each site-specific chapter. A useful summary can also be found on the Cancer

Research UK website, for staging in general (<https://www.cancerresearchuk.org/about-cancer/what-is-cancer/stages-of-cancer>) and for different sites in the head and neck (<https://www.cancerresearchuk.org/about-cancer/head-neck-cancer>).

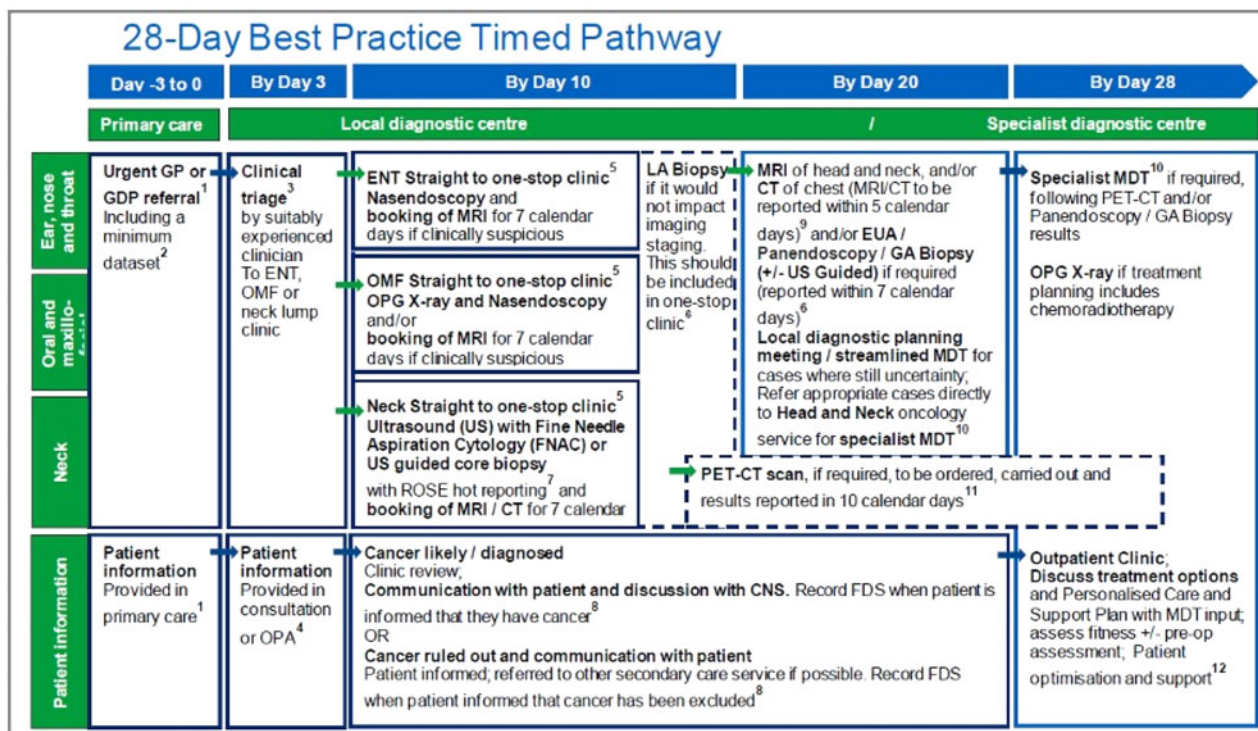


Figure 4. Example of a best timed pathway summary (NHS England). Note: in Wales, best timed pathways are known as national optimal pathways. GP = general practitioners; GDP = general dental practitioners; OMF = oral and maxillofacial; MRI = magnetic resonance imaging; OPG = orthopantomogram; ROSE = rapid on-site evaluation; CT = computed tomography; LA = local anaesthesia; EUA = examination under anaesthesia; GA = general anaesthesia; MDT = multidisciplinary team; PET-CT = positron emission tomography/computed tomography; OPA = out-patient appointment; CNS = clinical nurse specialist; FDS = faster diagnosis standard; pre-op = pre-operative

The international classification used for TNM staging is the Union for International Cancer Control system (currently the eighth edition):

- ‘T’ describes the size and extent of the primary tumour. It ranges from T₁ (small) to T₄ (locally advanced). Stage T₄ is sometimes divided into T_{4a} and T_{4b}.
- ‘N’ describes whether there are any cancer cells in the cervical lymph nodes (in the neck). It ranges from N₀ (no nodes) to N₃ (extensive or large lymph nodes). (Lymph node status is also referred to as regional disease.)
- ‘M’ describes whether the cancer has spread to a different part of the body (most often the lungs in head and neck cancer). It can be either M₀ or M₁.

Each site has its own T classification. There is a generic N classification, but HPV cancers of the oropharynx and cancers of the nasopharynx have their own classification. It should also be noted that T and N classification can be based on clinical examination and imaging (clinical stage) or after surgery (pathological stage). The latter can only be applied for those patients who undergo surgery as part of their treatment.

In general terms, T₁₋₂N₀M₀ cancers can be regarded as ‘early’. In some cases, patients with a small single metastatic lymph node (N₁) could be included in that classification. Stage T₃₋₄ or N₁₋₃ M₀ cancers are regarded as ‘loco-regionally advanced’.

Cancers staged as T_{4b} are generally inoperable.

The stage M₁ means that a cancer is distantly metastatic and is regarded as incurable.

Stages can also be grouped into an overall stage I, II, III or IV (Roman numerals are used to avoid confusion with T stage). This is not used very often in clinical practice, but can be useful for reporting outcomes in research papers and other documents.

Treatment

General comments

Treatment decisions are shared between the patient and the treating team, but ultimately the patient makes the decision on an informed basis, within an MDT clinic.

The first decision is whether treatment with the intention of cure is possible or realistic.

Treatment with the intention of cure depends on a combination of factors, including:

- The absence of distant metastatic disease
- The ability to completely resect (surgically remove) cancer, if surgery is needed for cure
- The patient’s wishes to prioritise possible cure over risk and effects from treatment
- The chance of cure for the cancer involved (which depends on type, site and stage)
- The patient’s fitness to undergo curative treatment

If it is decided that curative treatment is not possible, the focus of treatment is to control symptoms and prolong both the quality and length of life (see the ‘Palliative care’ section). This may involve treatments to reduce the amount of cancer by palliative chemotherapy or RT, or immunotherapy. However, sometimes, the basic treatment of symptoms is more appropriate. This is known as best supportive care.

Early and loco-regionally advanced disease

Curative treatment involves surgery, RT or chemotherapy, or a combination of these. Chemotherapy is generally given alongside RT, which is called chemoradiotherapy.

In general, for most head and neck cancers, early disease (small primary cancer, with no or very limited lymph node metastases) is treated with a single treatment modality, either surgery alone or RT alone.

More advanced disease is more often treated with either:

- Radiotherapy combined with chemotherapy* (chemoradiotherapy). Treatment response is assessed with imaging (usually MR and/or PET-CT) approximately three to four months after treatment has finished. This leaves surgery in reserve for persistent or recurrent disease (although this is not always possible).

*If suitable for chemotherapy (age, fitness and other medical illnesses may be contraindications)

- Surgery, usually followed by either post-operative RT or chemoradiotherapy. The need for post-operative treatment is made on the basis of analysis (pathology or histopathology) of the resected tumour, and is discussed in the MDT meeting. In many cases, the need for post-operative treatment can be anticipated before surgery and should be discussed with the patient before surgery. This includes an assessment as to whether a patient is able to go through major surgery and post-operative chemoradiotherapy.

The choice between different types of treatment is based on the chance of cure and the impact on the patient, with these factors being fully considered by the MDT ahead of a discussion with the patient around the available treatment options.

Treatment of cervical lymph nodes in the neck

Head and neck cancers can metastasise to regional lymph nodes in the neck (cervical lymph nodes). The location of lymph nodes in the neck are described according to anatomical boundaries, or levels (Figure 5). In most cases, there needs to be some form of treatment to cervical lymph nodes.

When there is evidence of lymph node metastasis on imaging, this is known as a clinically staged N+ neck (or ‘cN+’). These lymph nodes are treated by the same type of treatment (modality) as the primary tumour, either by surgery (‘neck dissection’) or by chemoradiotherapy/RT.

When there is no evidence of lymph node metastasis on imaging, this is known as a clinically staged N₀ neck (or ‘cN₀’). For many cancers, there is a small but significant risk of undetectable or microscopic metastases; surgical neck dissection or RT is used to treat these.

The selection of lymph nodes groups or ‘levels’ that are treated in both circumstances is tailored to the exact site of the primary tumour and the presence or extent of lymph node metastases.

Surgery

Surgery to remove cancer is generally only considered as part of curative treatment. There are exceptions, whereby surgery might be offered to control symptoms; for example, with advanced disease involving the skin, with significant skin breakdown and risk of bleeding.

Details of surgical technique are outside of the remit of the full guidelines. In general, the nature of the surgery for

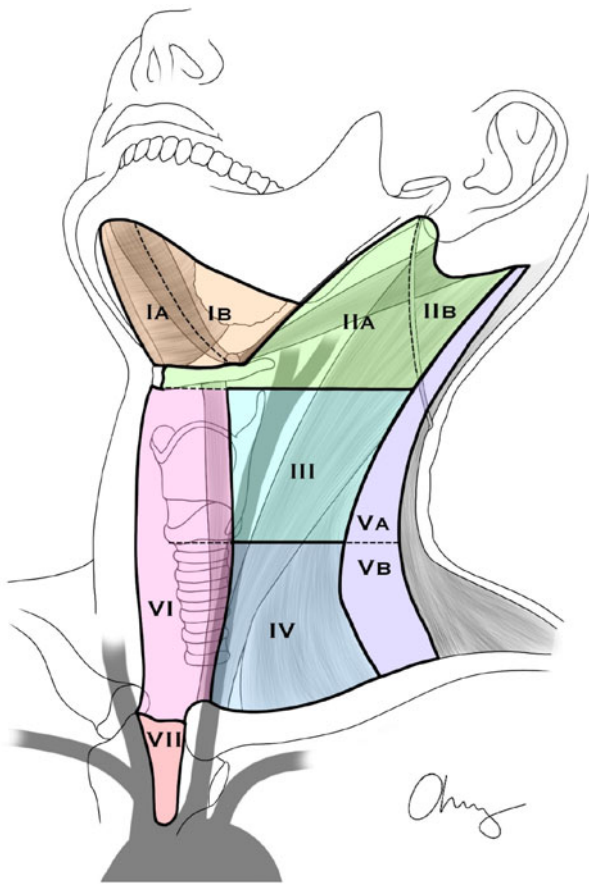


Figure 5. Levels of cervical lymph nodes in the neck.

primary disease depends on the site and stage of the primary tumour, and can range from day-case transoral surgery (through the mouth) to multiple-hour, complex, major operations involving reconstruction and long in-patient stays of two to three weeks.

Optimisation for surgery, and the provision of supportive care before, during and after a surgical course of treatment, is crucially important (see the 'Multidisciplinary support for patients before, during and after treatment' section).

Where possible, especially for early cancers, less invasive surgical techniques can be employed. These include transoral surgery (through the mouth) to access tumours of the mouth, pharynx and larynx. When that is not possible, surgery via incisions to gain access to the tumour is required, often through the soft tissues of the neck, but sometimes involving removal or access via the upper and lower jaws of the face. Sometimes when this is necessary, reconstruction is required to fill the defect caused by the removal of the cancer and to help restore function.

The standard of care in many instances is to perform reconstructive surgery in which skin and soft tissue, and sometimes bone, is transferred from one part of the body to another, joining up its blood supply to recipient blood vessels in the neck. This is known as microvascular or free flap surgery.

The more commonly used free flaps are soft tissue from the forearm (radial artery free flap), thigh (antero-lateral thigh free flap), and, for bone, the fibula bone in the lower leg, iliac crest (top of hip bone) and scapula (the wing bone).

In general terms, the aim of surgery is to achieve complete resection of the cancer, with a safety margin or clear margin (usually 5 mm).

Post-operative chemoradiotherapy or RT should be considered when there is a significant risk of recurrence. In practice, this usually means after surgery for advanced tumours (pathologically staged T₃₋₄) or when there are significant lymph node metastases (pathologically staged N₂₋₃). After surgery, tumour histopathology (the analysis of resected tissue by pathologists) is discussed at the MDT meeting, which determines the need for post-operative RT or chemoradiotherapy. In general, other indications include incomplete removal of cancer by surgery or close excision margins, and indicators of an aggressive tumour, such as invasion by cancer cells of nerves, blood and lymphatic vessels, or extension of cancer cells through a lymph node capsule (extranodal extension).

It can be very demanding for a patient to have major surgery and then to have six weeks of post-operative RT or chemoradiotherapy. If patients present with disease that is locally advanced so as a realistic chance of cure is only possible through major surgery and post-operative RT or chemoradiotherapy, then it is critical to assess and discuss with the individual to see if they can get through all of this treatment before surgery. Recommending a major resection for locally advanced disease when the individual cannot complete post-operative RT may not be to their advantage.

Post-operative RT or chemoradiotherapy should ideally commence within six to seven weeks of surgery. This can sometimes be challenging to achieve, particularly if there have been post-operative complications.

Radiotherapy and chemoradiotherapy

Radiotherapy uses high energy X-rays to treat cancer. External beam RT, in which highly targeted RT beams from outside the body are used, is the main form of RT for head and neck cancer.

Many of the developments in RT techniques over the last 20 years have been applied to great effect in head and neck cancers, to reduce side effects. Intensity-modulated RT is now the standard of care; it can reduce radiation dosage to normal surrounding tissues.

Radiotherapy planning initially involves the fabrication of a mask, fitted over the head, neck and shoulders, which is used to keep the patient precisely and accurately positioned for each fraction of treatment. This is followed by a planning CT and sometimes an MR imaging (MRI) scan in the mask. The images from the planning CT (and MRI, if applicable) are used by the clinical oncologist to identify and mark out areas that need to be treated with RT, and areas of normal tissue that should be avoided with RT. Medical physics experts use computer software to create an RT plan to achieve these objectives.

Radiotherapy is usually given in 30–35 sessions (fractions) over six to seven weeks (Monday to Friday). Shorter courses that deliver a higher dose each day ('hypofractionation') are often given for small tumours of the larynx and for palliation. For each fraction, a patient will typically be in the treatment room for 10–20 minutes, although RT delivery itself will only be for a few minutes of this time.

Radiotherapy can be given alone or with chemotherapy (chemoradiotherapy), depending on disease stage and patient suitability.

Radiotherapy often has both short-term (acute) and long-term (late) side effects. Short-term side effects gradually build up during a course of fractionated treatment and can last for a number of months after treatment. These include skin reactions, mucositis, xerostomia (dry mouth), dysgeusia

(altered taste), throat secretions, swallowing problems and voice changes. Long-term side effects are very variable, and can include long-term swallowing problems, damage to bones (particularly the jaws) osteoradionecrosis, xerostomia (dry mouth), dysgeusia (altered taste), lymphoedema (poor lymphatic drainage of the head and neck, with face or neck swelling), an underactive thyroid gland, skin and skin fibrosis or thickening, and, very occasionally, an RT-induced cancer in the treated area many (usually 10–15 or more) years later.

The provision of supportive care prior to, during and after a course of treatment is a key component of the delivery of RT. This includes therapy radiography, restorative dental, nursing, dietetic, and speech and language therapy input (see the ‘Multidisciplinary support for patients before, during and after treatment’ section). Some patients may suffer with significant treatment-related anxiety and claustrophobia because of the mask, and can receive individualised support. Continued smoking during head and neck RT has been shown to approximately double the risk of treatment failure and the risk of death, along with increased side effects. Smoking cessation management is therefore a key component of RT.

Response to (chemo)-radiotherapy is assessed clinically and, except for small cancers of the larynx, using scans. A post-treatment MR and/or a PET-CT scan is usually performed three to four months after treatment completion.

Proton beam therapy is RT using proton particles. The advantage is a sharp reduction in radiation dose beyond the tumour, meaning a reduction in the RT dose delivered to normal tissues. NHS England now has proton beam therapy centres in Manchester and London. Proton beam therapy is used in preference to standard photon RT for children and young adults, because of the reduced dose to nearby tissues. The potential benefits of proton beam therapy are currently being evaluated for head and neck cancers.

Follow up

Follow up is an essential component of the management of patients who have undergone radical treatment for head and neck cancer. The rationale for follow up is multifactorial:

- Early detection of recurrent disease
- Surveillance for second primary tumours
- Management and mitigation of the effects of treatment
- Multidisciplinary support for patients and caregivers

Approximately 25 per cent of patients treated for head and neck cancer develop cancer recurrence, most of which is loco-regional, with the majority of recurrences occurring within the first two years after treatment.

Patients with head and neck cancer are also at risk of developing subsequent second primary tumours, particularly those patients who have been smokers or have an excessive alcohol intake. Over 10 years, around 17 per cent of patients will develop a second cancer, mostly in another site within the head and neck or in the lung.

Because the risk of recurrence decreases with time after treatment, the interval between follow-up clinic visits is relatively short in the first two years, gradually lengthening intervals through to five years. A typical follow-up schedule is:

- Year one: at least every two months
- Year two: every two to three months
- Year three: every three to four months

- Year four: every four to six months
- Year five: every six months
- After year five: consider discharge (the risk of recurrence can be assumed to be minimal for most cancers)

This is only an indicative guidance, and the exact frequency is determined by the type and nature of the tumour (and therefore risk of recurrence), and by the patient’s needs. Patients with tumours where the chance of recurrence remains significant after five years may need longer-term follow up, as will patients with significant support needs and/or side effects from the original treatment.

Follow up is important for patients, although it should be noted that most head and neck cancer recurrences are detected by the patient being aware of a new symptom or finding, rather than a finding on clinical examination in a patient without any symptoms that suggest recurrence. Therefore, patients should be able to access urgent clinical assessment for suspicious symptoms at any time during follow up (generally through contact with their clinical nurse specialist).

Patients should expect the following services:

- Patients should undergo follow up in clinics at, or linked to, a head and neck treatment centre, and have access to the wider MDT, including clinical nurse specialists, speech and language therapists, and dietitians (See the ‘Multidisciplinary support for patients before, during and after treatment’)
- Access to clinics in between scheduled visits, for concerning symptoms or support needs
- Thyroid function blood tests (treatment can cause hypothyroidism) at 6–12-month intervals
- Clinical examination
- Post-treatment imaging:
 - MR and/or PET-CT scans, approximately three to four months after RT or chemoradiotherapy (except some small cancers)
 - Baseline MR scan after major surgery, at approximately three months (because of altered anatomy and for comparison if subsequent imaging is required)
 - Surveillance imaging for some cancers in which clinical examination is limited

Recurrent cancer

When a cancer recurs at the primary site or in neck lymph nodes, treatment with curative intent may be possible. However, the chance of overall survival for patients with a cancer recurrence may be low, and most patients will have some degree of impairment from the initial cancer treatment (and further treatment will add to this). Hence, the decision-making process is highly complex and requires multidisciplinary input. Patients and their families should be aware of prognosis, chance of treatment success and complications when making decisions about possible treatment.

Re-staging, often with a PET-CT scan, should be carried out, as a proportion of patients with recurrence in the primary site or neck will also have distant metastases.

Treatment options depend on the initial treatment given. When RT or chemoradiotherapy has been used as the initial treatment, surgery (sometimes referred to as ‘salvage surgery’) can be considered. The commonest examples in head and neck cancer are total laryngectomy for a laryngeal cancer recurrence and neck dissection for any cancer when the recurrence is in cervical lymph nodes.

If the chance of cure is poor, or if the risks or effects of surgery are unacceptable, then a palliative approach may be preferred.

Palliative treatment

When it is decided that curative treatment is not possible, the focus of treatment is to control symptoms, and to increase the quality and time of life. This may involve treatments to reduce the amount of cancer by palliative chemotherapy or RT, or immunotherapy. However, sometimes, basic treatment of symptoms is more appropriate. This is known as best supportive care. The involvement of the MDT is vital. This will include access to expert palliative care doctors and nurses, and the co-ordination of care between the hospital and community (e.g. Macmillan Nurses).

Options to treat an incurable cancer are:

- Palliative RT
- Palliative drug treatment (chemotherapy or immunotherapy)

Palliative RT, often given over only a few treatments (or fractions), can be used in those who are not fit enough to undergo curative-intent treatment with surgery or radiation. This can be with an aim of local control of an incurable tumour, or for short-term palliation of distressing symptoms such as pain or bleeding. Palliative RT may also have a role in the management of symptomatic metastatic disease, in lungs or bones for example.

Palliative drug treatment may be considered in suitable patients. This may be with immunotherapy or chemotherapy drugs, or a combination of the two, depending on what the tumour is likely to respond best to (based on some tests carried out on the biopsy sample), as well as other considerations like patient fitness, other medical illnesses and symptoms. Immunotherapy drugs, known as immune check point inhibitors, improve the ability of the immune system to recognise and destroy cancer cells.

There may be further drug treatment options when there is either no response to initial drugs or a response followed by further tumour growth. However, many patients in this situation are not well enough for further treatment that can be associated with significant side effects. Participation in clinical trials may also be an option for suitable patients.

Multidisciplinary support for patients before, during and after treatment

Support and care for the individual with cancer is a fundamental part of head and neck cancer treatment, delivered by many members of the team. Multidisciplinary teams are specially trained to support all elements of diagnosis and recovery, recognising the complex issues that head and neck cancer causes. A summary of this support is detailed, dividing the patient treatment journey into diagnosis and preparation for treatment, support during treatment, and support after treatment, the latter of which includes rehabilitation, survivorship and, when required, palliative care.

The roles of multidisciplinary team members

Clinical nurse specialist

National guidelines recommend that all patients should have access to a clinical nurse specialist in head and neck cancer from the point of diagnosis onwards. The clinical nurse specialist performs a pivotal role in co-ordinating the patient's

care, to ensure a seamless journey. They may also be referred to as a key worker.

A clinical nurse specialist will have the relevant knowledge and expertise about head and neck cancers, treatments, and problems that patients may experience and their likely support needs.

A 'holistic needs assessment' at the point of diagnosis will help identify and detail what the patient's requirements are, helping the team to create a personalised care plan of support and relevant services; for example, referral to financial benefits advisors, nutritional support, lifestyle changes and psychological support.

The role of the clinical nurse specialist within MDT meetings includes advocating for the patient during discussions about treatment, to ensure that the patient's needs are met holistically.

A diagnosis of head and neck cancer can cause a significant amount of distress, which can affect patients' psychological, physical and social well-being. It is widely known that all treatments can have a lifelong impact, because of changes in the ability to swallow, being able to speak, and changes to the individual's face and neck. Sometimes this can lead to isolation from both family and social circles.

The clinical nurse specialist can support, signpost and help navigate the patient through the complex pathway of their diagnosis, treatment and subsequent follow up. Co-ordination of the patient's pathway, in particular, across different hospitals, is key to ensuring the patient is not overwhelmed and that they are informed of the key members of the MDT.

In recognising the needs of the carers, as they may take on a nurse role for their loved ones, the clinical nurse specialist can ensure that they also receive support. The impact of getting the patient to treatment visits, ensuring medication is taken appropriately, managing front of neck airways (after laryngectomy or tracheostomy) and managing feeding tubes, for example, can have a physical and emotional impact both on patients and their carers.

A clinical nurse specialist will often remain a key person for the patient to contact throughout their clinical follow up, right the way through to their discharge at five years.

Speech and language therapist

The speech and language therapist is the professional who will assess and help manage any problems an individual may have with swallowing, communication or voice. The speech and language therapist is a core member of the team, and will be alongside the individual and their family from the point of diagnosis.

Many people with head and neck cancer experience swallow and voice problems. This can be because of the cancer's location within the mouth, throat or voice box, and/or because of the treatment required to remove the cancer. Food and drink normally pass from the mouth to the throat and into the gullet (oesophagus). Head and neck cancers can change the way a person can swallow, sometimes causing food and drink to pass into the breathing tube (trachea), causing coughing and feeling like something has 'gone the wrong way'. This can be called 'aspiration'. 'Dysphagia' is the word used to describe problems with swallowing.

Swallowing and voice are of key importance when planning and undergoing head and neck cancer treatment. A poor swallow can result in malnutrition and dehydration, and in some cases a life-threatening chest infection due to food and drink going into the lungs. This needs to be carefully assessed and

managed, to help prevent deterioration and to optimise the way swallow works. Sometimes, the speech and language therapist and dietitian may suggest tube feeding into the stomach before treatment. This may be through nasogastric tubes (through the nostril), or through gastrostomy tubes placed under local anaesthesia via an endoscope (camera) in the mouth inserted into the stomach or under X-ray control. These are known as percutaneous gastrostomy feeding tubes (called radiologically inserted gastrostomy, or percutaneous endoscopic gastrostomy known as PEG). This is to make sure the right amount of food and fluid is provided to the individual if they are unable to swallow it well enough via mouth. These tubes can be removed after treatment as and when they are no longer needed. The insertion of a tube does not necessarily mean the individual cannot eat and drink anything, but it ensures they receive enough calories and fluid if swallowing is hard or not working well enough.

The speech and language therapist will provide exercises, suggest the best positions to improve swallow, suggest changes to the texture of food making it softer to swallow, deliver voice or speech therapy, and offer hands-on support, before during and after treatment. They will also lead the rehabilitation required for people who need their voice boxes removed and who will have surgical voice restoration, where a small valve is placed in the trachea.

During both surgical and non-surgical treatment, patients may struggle with swallowing; hence, close monitoring is needed by speech and language therapists, so that interventions can be initiated as soon as possible.

Dietician

Optimisation of nutrition plays an important role in preparing patients for treatment. Malnutrition, partly because of the effects of the cancer, is common in patients with head and neck cancer, and can be further affected by treatment. Dietitians have an important role in assessing and treating malnutrition. Malnutrition is an important risk factor for a higher chance of complications arising from treatment and for survival. To a certain extent, it is modifiable, hence the importance of dietetics and nutrition. Dietitians should play a part in patients' initial assessment, so that patients who are malnourished or are at risk of malnutrition are identified at an early stage. If necessary, this can be mitigated through intervention, with alteration of oral diet, and with dietary changes and/or supplements. When malnourishment has occurred through the inability to swallow, close assessment with speech and language therapists is essential, so that patients may be given tube feeding into the stomach, initiated prior to treatment (see above).

During both surgical and non-surgical treatment, patients may become malnourished, and close monitoring by dietitians is essential so that interventions can be initiated as soon as possible.

Restorative dentistry

Consultants in restorative dentistry are core MDT members, who are often involved throughout the patient's cancer journey. Surgery to treat head and neck cancer may involve removal of part of the upper or lower jaws and associated loss of teeth, sometimes creating a communication between the nose and mouth. A significant proportion of patients with head and neck cancer have subsequent dental issues, either as a result of the cancer or its treatment. Radiotherapy often forms part of the treatment for head and neck cancer,

and it can have long-lasting effects on the teeth and mouth. This includes a dry mouth, which significantly increases the risk of tooth decay, and may lead to changes in the bone that can prevent healing after surgery, such as a tooth extraction. In addition to diagnosing and managing dental issues, consultants in restorative dentistry are experts in maxillofacial prosthodontics, which involves planning and restoring orofacial defects resulting from cancer surgery, with prostheses often retained by implants.

The initial role of restorative dentistry consultants in the patient's journey involves an assessment of the teeth and mouth. It is important that significantly diseased teeth are removed before RT, to ensure treatment is not delayed or interrupted, and to prevent the teeth causing issues later on. Tooth extraction occurs at least 10 days before primary RT or can be performed at the time of surgery where applicable.

Surgery may involve removal of teeth, and/or alteration of the anatomy of the jaws and palate. In some circumstances, a communication may be created between the mouth and nose. The consultants in restorative dentistry will lead on planning and executing the dental rehabilitation, and work closely with the head and neck surgeons providing the reconstruction. This may involve the planning and placement of dental implants, to help retain an intra-oral prosthesis. Similarly, for defects involving the loss of facial structures such as a nose or an eye, implants may be used to help retain a facial prosthesis. Again, the consultants in restorative dentistry are often involved in the planning and placement of such implants. Contemporary methods frequently use digital surgical planning, utilising a 'tooth down' approach to ensure that any reconstruction can provide the optimum functional outcome when surgical reconstruction of the upper or lower jaws forms part of the intended surgery. In most cases, implants are placed at the time of primary surgery, although in certain cases it is better to delay this as a second operation. Consultants in restorative dentistry may also be involved in the management of patients who have trismus (an inability to open their mouth) after RT or surgery, using devices such as a TheraBite® device and providing dental rehabilitation.

For patients undergoing RT, the reduction of dental disease caused by the effects of RT is paramount. This can be achieved with dietary advice to limit sugar intake, the prescription of high fluoride dental products and regular dental examinations. Patients must have close and regular contact with a primary care dental practitioner, who provides high-quality preventative advice and closely monitors a patient's dentition. The consultants in restorative dentistry can liaise with primary care dentists to advise them how best to manage such patients.

Physiotherapy

Physiotherapy services tend to be delivered as part of general physiotherapy rather than specific services for head and neck cancer. Physiotherapy may be given when patients are in hospital during treatment and at home, often by community-based physiotherapy services.

Nonetheless, physiotherapy has an important role in the support of patients, particularly through and after treatment, both surgical and non-surgical.

There may be shoulder or upper arm disfunction after head and neck cancer treatment, particularly after neck dissection surgery. Early physiotherapy input to help patients with exercise and rehabilitation is important. Ideally, in a surgical setting, it should begin before discharge from hospital and be continued thereafter for as long as is necessary. In addition,

both surgical and non-surgical treatment can cause neck stiffness and fibrosis, limiting the range of movement of the neck. Again, early and, where necessary, continued physiotherapy input should be provided for patients affected in this way.

Physiotherapists have an important role, particularly in surgical patients, in early mobilisation and, where needed, chest physiotherapy to improve lung function and reduce the chance of and severity of chest infections post-operatively.

Physiotherapy and exercise prescription forms an important component of prehabilitation, discussed separately below. Patients who are likely to experience effects of treatment on, for example, shoulder and neck function, should ideally be given education and, preferably, exercises to mitigate these effects pre-operatively.

Other specific circumstances in which physiotherapy is vital for patients include specialised facial muscle physiotherapy and rehabilitation for patients who have facial paralysis or weakness as a result of the tumour or due to surgery.

Prehabilitation

Prehabilitation is an overarching term for the optimisation and comprehensive preparation and support for patients before cancer treatment.

Evidence shows that actively improving physical and mental health can help speed up recovery after cancer treatment, and reduce side effects or complications from treatment. Even in the typical two-to-three-week interval from assessment for treatment in an MDT clinic to starting treatment, it has been shown that even a small number of prehabilitation sessions can make a difference.

The essential elements of it are:

- Exercise (both 'cardio' and strength)
- Nutritional support and optimisation
- Psychological support
- Smoking and alcohol cessation

Many of the elements have been described in the roles of clinical nurse specialist, speech and language therapist, and dietetic support above. A formal prehabilitation programme aims to ensure all these elements of service are provided for patients in a co-ordinated fashion, with the addition of an exercise programme.

Palliative care

Palliative care refers to the care for patients who have incurable disease; it is centred on improving the quality of life of patients and their carers when faced with a life-limiting illness. It is centred on the early identification, correct assessment, and treatment of pain and other problems, whether physical, psychosocial or spiritual.

Patients with head and neck cancer, including those who cannot be given curative treatment, have a high rate of complex palliative care needs and symptom burden.

All of the MDT healthcare professionals deliver elements of palliative care, particularly clinical nurse specialists in close liaison with local or community-based services from, for example, Macmillan nurses. Head and neck cancer MDTs should be linked to specialist palliative care teams for when additional help is required. This may be for pain control, helping with discharging neck wounds, bleeding either from the skin where there is skin involvement with an advanced tumour or internally, and helping with problems breathing.

Palliative care, for patients with head and neck cancer that cannot be cured, and their carers, is centred on making patients as comfortable as possible, by managing pain and other distressing symptoms. It also involves psychological, social and spiritual support.

Patients with incurable head and neck cancer often have numerous and complex palliative care needs, and a high degree of symptom burden. Issues that may arise for patients in this situation include:

- Common physical symptoms for those with incurable cancer (e.g. pain, nausea, distress)
- Management of secretions
- Bleeding and wound management
- Airway (breathing) problems
- Eating and drinking
- Advance care planning, including resuscitation and care for a dying patient

Every MDT healthcare professional has a role and responsibility towards providing palliative care. Co-ordination is very important between the MDT and local services (e.g. general practitioner, community Macmillan nurses), and, when needed, specialist palliative care teams and hospices. Specialist palliative care teams should be involved, when required, at an early stage.

Summary – support through the patient journey

The members and different components of the MDT collaborate to support patients through their journey, with significant areas of overlap. The key elements of support are summarised in [Table 4](#).

At diagnosis and before treatment

A lot takes place in this phase of a patient's journey, in a comparatively short space of time. Typically, a patient may be given a diagnosis of cancer, and, within two weeks, attend an MDT clinic with the treating team for guidance and decisions on possible treatments. Treatment may begin within two to four weeks of that date, leaving a short space of time to prepare for it.

During treatment

During a surgical admission, the clinical nurse specialist, and depending on a patient's needs, speech and language therapist and dietitian, will review patients and co-ordinate care with medical staff. As well as continuing to support patients generally and continue to advocate for them, they will often assist and advise ward nursing staff with issues relating to, for example, tracheostomy or laryngectomy care. This may include addressing issues with swallowing post-operatively and with nutrition. The speech and language therapists will provide hands-on rehabilitation post-surgery. Physiotherapists are frequently required to help with mobilisation, and chest or shoulder physiotherapy. A number of patients will have complex hospital discharge needs. This may include managing a tracheostomy or laryngectomy stoma, gastrostomy feeding tubes, wound management, and so on. The team will teach patients and their carers how to manage these, as well as ensure that patients are discharged with all relevant equipment and with ongoing supplies of relevant consumable items.

When patients are treated with RT or chemoradiotherapy, that treatment is mainly as an out-patient. The same holistic

Table 4. Key elements of support through the patient journey

Key components	MDT professionals involved
Support & advocacy for patient	Clinical nurse specialist (mainly), with other MDT healthcare professionals
Holistic needs assessment	Clinical nurse specialist
Co-ordination of care & preparation for further investigations, & treatment planning	Clinical nurse specialist (mainly), with other MDT healthcare professionals
Provision of education / patient information	Clinical nurse specialist (mainly), with other MDT healthcare professionals for education relevant to discipline
Signposting to / assistance with smoking cessation	Clinical nurse specialist, in conjunction with local smoking cessation services
Alcohol cessation	Clinical nurse specialist, in conjunction with hospital medical staff if detox required pre-operatively
Pre-operative assessment for surgery	Anaesthesia consultants & pre-operative nurses
Swallow assessment if affected by tumour	Speech & language therapist (in clinic, with radiological assessment if required)
Therapy &/or dietary modification to prevent aspiration (including pre-treatment swallow exercises when indicated)	Speech & language therapist with dietitian
Assessment of any need for gastrostomy tube feeding	Speech & language therapist with dietitian
Education & support for anticipated changes in swallow & voice function due to treatment	Speech & language therapist
Nutritional assessment	Dietician
Dietary modification & supplementation if required	Dietician
Dental & mouth assessment	Restorative dentist
Advice on oral/dental health & hygiene	Restorative dentist
Dental extractions if required	Restorative dentist
Education of patient on changes to oral anatomy & function	Restorative dentist
Pre-operative decision-making & planning for dental & facial rehabilitation work (implants, prosthetics)	Restorative dentist
Psychological assessment & support	Clinical nurse specialist, with referral to linked psychological services when required
Help with financial effects of diagnosis & benefits	Social worker
Invitation to participate in suitable clinical trials	Research nurse

MDT = multidisciplinary team

support is required, with expertise to assess and help patients manage the expected reactions to RT, especially regarding inflammation of the lining of the mouth and throat. Swallowing may be affected by treatment, and input from speech and language therapists and dietitians may be required.

After treatment – rehabilitation and survivorship

The same sort of support described above continues. The clinical nurse specialist acts a patient's point of contact, and provides holistic assessment and support. Patients may need help with managing side effects of treatment, including swallowing and nutritional problems. For patients recovering swallowing function, continued swallow assessments may guide to the eventual safe removal of a gastrostomy tube.

For patients requiring significant care after treatment, co-ordination and communication between the MDT team and either or both of similar teams from the patient's local hospital or community-based services is essential.

Some patients require psychological support. Patients recovering from treatment that appears to be successful still require help with survivorship. Hospitals and/or local patient groups or charities may organise health and well-being events to assist with this.

Treatment of specific head and neck cancers

This section summarises the basic investigation and treatment of upper aerodigestive tract cancers according to the site of the primary cancer. The summary of guidance should be read in the context of the 'Head and neck cancer in general' section, and, in particular, the subsections deal with the principles of treatment, including surgery, RT/chemoradiotherapy, management of potential cervical lymph node metastases and follow up.

Cancer of the oral cavity (mouth) and lip

Introduction

Cancers of the oral cavity (mouth) and lip are grouped together, although cancers of the lip behave more like skin cancers than upper aerodigestive tract cancers. These cancers form the most common group of malignant tumours affecting the head and neck region. In the UK, there are over 3500 new diagnoses each year.

The medical term for the mouth is the oral cavity. Mouth cancer can start anywhere in the oral cavity. This includes the following subsites (Figures 6 and 7):

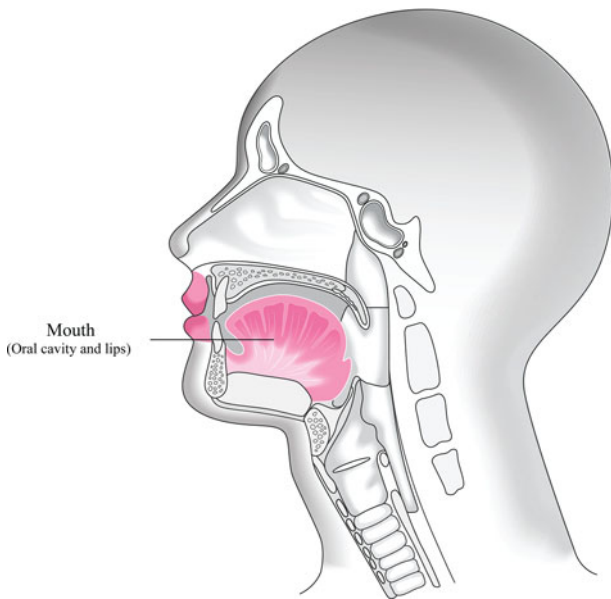


Figure 6. Oral cavity and lips – lateral view of site and subsites.

- Lips
- Inside lining of the cheeks and lips (buccal mucosa)
- Front two-thirds of the tongue
- Gums (gingiva)
- Floor of the mouth
- Roof of the mouth (hard palate)
- Area behind the wisdom teeth (retromolar trigone)

Within the oral cavity, the tongue and floor of the mouth are most commonly affected.

Most oral cavity cancers are SCC. Surgical resection is the primary treatment modality for the vast majority of oral and lip cancers.

There can be significant effects on the functions of the mouth (e.g. eating and drinking, forming words) and on appearance, because of the cancer itself and its treatments. This, together with the fact that many patients have other chronic health problems and social issues, means that MDT

management is particularly important, as many patients have significant support needs.

Presentation and diagnosis

Most mouth cancers present as a non-healing ulcer, a discoloured white or red area (known as leucoplakia or erythroplakia), or a mass (lump).

Advanced tumours may also cause or present with a loose tooth, pain, inability to open the mouth (trismus), numbness, or a neck lump (lymph node metastasis).

Cancers of the lip often present as a raised lump, which is often crusty. Most arise from the lower lip.

A diagnosis is made via a biopsy, which can often be performed in clinic. Examination under anaesthesia (EUA) might be necessary for lesions further back in the mouth, and/or to aid with staging and operation planning.

Imaging

Primary site (mouth or lip). An MR scan should be performed, but CT and an X-ray of the jaw (orthopantomogram) can assist with suspected bone invasion. Early lip cancers do not necessarily require imaging.

Neck lymph node metastases. The MR scan will also detect any lymph node metastases in the neck. Ultrasound can be used in addition, with guided FNAC if necessary.

Distant metastasis. The presence of distant metastasis or second primary cancer of the lung is assessed by CT scan of the lung or whole-body PET-CT (see the ‘Head and neck cancer in general’ section).

Staging

The TNM staging can be found in the full guidelines and in the Cancer Research UK website (<https://www.cancerresearchuk.org/about-cancer/mouth-cancer/stages-types-grades/number-stages>).

Generally, T₁₋₂N₀M₀ cancers are viewed as early cancers. Cancers staged as T_{3-4a} or N₁₋₃ but M₀ are loco-regionally advanced, but may be curable.

Treatment

It is generally accepted that the primary treatment modality in suitable patients is surgery, both for early and advanced disease.

Dysplasia. Pre-cancerous (or pre-malignant) changes in the mouth may be diagnosed before they become true cancers (invasion beyond the superficial lining layer of the mouth). This is called dysplasia. There is a three-tier grading system of mild, moderate and severe dysplasia. To add to potential confusion, the term ‘carcinoma in situ’ is a form of severe dysplasia.

There is a risk of these lesions, if left untreated, progressing to invasive cancer, with an overall malignant transformation rate of around 25 per cent. The risk is dependent on the grade of dysplasia and other risk factors (e.g. continued tobacco or alcohol exposure). Help with smoking or alcohol cessation is very important.

Generally, low-risk lesions may be observed clinically, with an appropriate review regimen that should include clinical photography. Patients with high-risk lesions should be offered surgery. However, some pre-cancerous changes are so

Oral Cavity and Lips

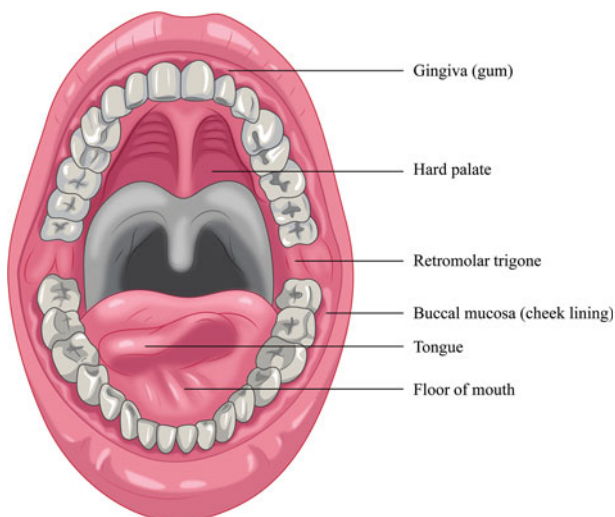


Figure 7. Oral cavity and lips – anterior view of site and subsites.

widespread within the mouth that surveillance is the only pragmatic option.

Cancer surgery. Smaller cancers can be resected using access through the mouth (transoral). This avoids damage to the muscles that surround the mouth, the lip and/or the jaw, and can avoid external facial scars. Resection of larger cancers might require an access procedure (such as temporally cutting the jaw or ‘mandibulotomy’). When this is conducted, a temporary tracheostomy may be required. When it is thought that the cancer may invade the jaw bones, resection is required. This may take the form of removing the bone lining (periosteal stripping); removing some of the rim of the jaw near the tumour (marginal mandibulectomy); or removing an entire segment of the lower jaw (segmental mandibulectomy). The purpose of this is to attain adequate clearance of cancer.

Reconstruction with flaps may be necessary to restore function (e.g. if surgery involves removing a significant amount of the tongue, lip or a section of the jaw). This will often require microvascular free tissue transfer of soft tissue, with or without bone. This is typically sourced from the forearm or thigh (soft tissue), or from the lower leg fibula, hip bone or scapula (wing bone) if bone is also required to replace the jaw.

Management of neck lymph node metastasis. The issues around the risk of the spread of cancer to lymph nodes in the neck are discussed in the ‘Head and neck cancer in general’ section, regarding lymph node metastases. There is a relatively high rate of lymph nodal metastases that are not detectable on imaging in mouth cancer, of up to 30 per cent of patients.

When there is no evidence of lymph node metastases on pre-treatment imaging and assessment (a clinically negative (‘cN₀’) neck), patients should be offered either surgery (a selective neck dissection) or, in order to avoid the morbidity of a neck dissection, sentinel lymph node biopsy. Sentinel lymph node biopsy involves the injection of a radioactive tracer into the primary cancer and the removal of the lymph node in the neck where the tracer is found. If cancer is detected, the patient can then undergo a neck dissection. There is currently a lack of evidence of any reduction in morbidity when sentinel lymph node biopsy is compared to elective neck dissection, but sentinel lymph node biopsy is endorsed by the National Institute for Health and Care Excellence (NICE). Clinical trials are ongoing.

It should be noted that, in a significant proportion of patients, the neck will be accessed surgically for microvascular reconstruction. The neck dissection can easily be carried out as the relevant lymph node groups are accessible, with little additional surgery needed when the neck is accessed and dissected for vessel preparation.

For patients who decline or are medically unfit for neck dissection, regular surveillance in clinic, including ultrasound surveillance, can be considered.

Post-operative radiotherapy or chemoradiotherapy. Post-operative RT or chemoradiotherapy may be required after surgery for advanced tumours and/or when the histopathology of the tissue removed at surgery shows features associated with a poor prognosis. This is discussed in the ‘Head and neck cancer in general’ section, relating to post-operative RT.

Primary radiotherapy. Radiotherapy is not recommended as the primary curative treatment in mouth cancer. Disease control is likely to be inferior and the treatment effects of RT in

the mouth are significant. However, in selected patients, usually those unwilling yet fit enough to undergo surgery, it may be carefully considered.

Treatment – lip cancer. Early-stage lip cancer can be treated by surgery or RT. The prognosis is generally excellent, as patients tend to present early. Locally advanced disease is best treated by surgery. Surgery for advanced lip cancer often requires reconstruction with local flaps and, occasionally, free tissue transfer, in order to have enough lip tissue and to restore the ability of the lips to seal the mouth.

Lymph node metastases are relatively uncommon. Cancers with evidence of lymph node metastases – and occasionally cancers without evidence of lymph node metastases – require neck dissection.

In the absence of clear margins, further surgical excision to achieve this may be preferable to adjuvant RT, and should be considered.

Follow up

See the ‘Head and neck cancer in general’ section. Follow up after treatment is generally conducted through standard outpatient assessment in clinic. Routine scans or imaging is not usually indicated.

Cancer of the oropharynx

Introduction

The incidence of oropharyngeal SCC has almost doubled over the last 10 years, because of the increase of those caused by HPV, which accounts for about 80 per cent of cases currently in the UK. This is discussed in the ‘Head and neck cancer in general’ section, concerning causes and incidence.

The oropharynx is the area of the throat that is essentially at the back of the mouth, starting at the tonsils and soft palate, extending backwards to the back (posterior wall) and downward to include the base of tongue (the bit of the tongue that cannot be seen through the mouth) (Figures 8 and 9).

Oropharyngeal SCC arises mostly from the tonsils or tongue base. A minority of cases also arise from the soft palate or back wall of the throat.

Presentation and diagnosis

Patients with oropharyngeal cancer may present with a variety of symptoms. These include persistent throat symptoms that are common in the general population (such as a feeling of minor discomfort in the throat). It should be emphasised that the vast majority of patients with these symptoms do not have cancer.

Most patients with oropharyngeal cancer, however, present with a neck lump, a lymph node metastasis from a small, often asymptomatic, primary cancer. Sometimes, there is no initial evidence of the primary cancer, which is known as SCC with an unknown primary. This is discussed in a separate section.

If there is evidence of the primary cancer on examination, it may be biopsied in clinic, or under general anaesthesia if it is not accessible in clinic.

The diagnosis can also be made by FNAC or fine needle aspiration biopsy of the lymph node in clinic, ideally under ultrasound guidance.

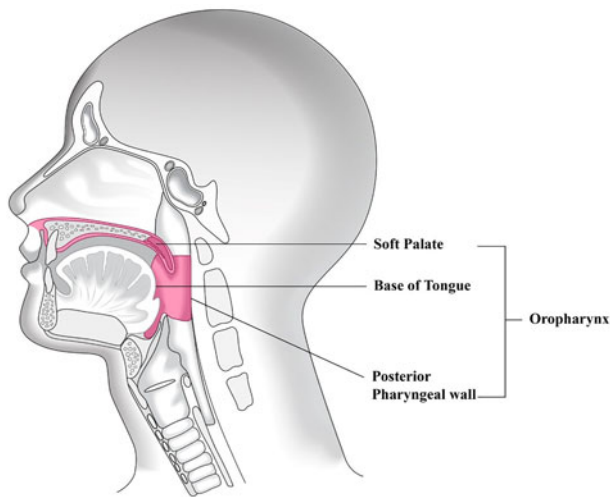


Figure 8. Oropharynx – lateral view of site and subsites.

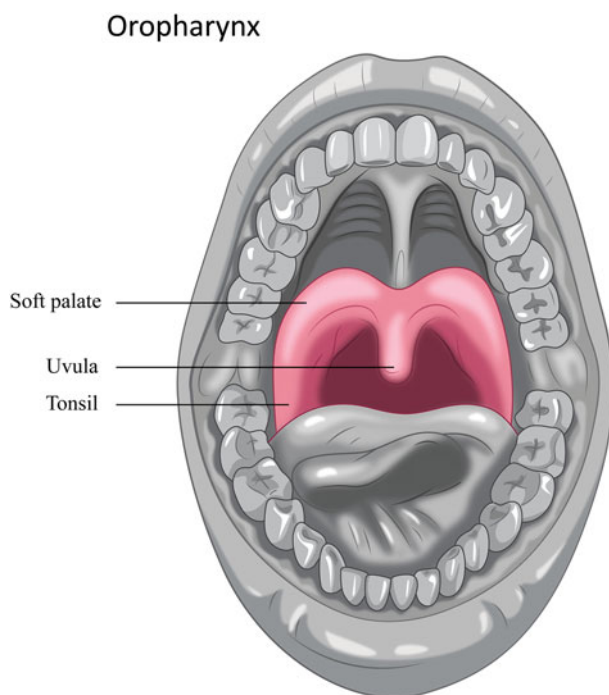


Figure 9. Oropharynx – anterior view of site and subsites.

Imaging

Primary site (throat) and neck lymph node metastases. An MR scan is preferred to assess the primary cancer and to detect any lymph node metastases in the neck. Ultrasound can also be used, with guided FNAC if necessary. Computed tomography is an alternative if a patient cannot undergo MRI.

Distant metastasis. The presence of distant metastasis or second primary cancer of the lung is assessed by a CT scan of the lung or whole-body PET-CT (see the 'Head and neck cancer in general' section).

Human papillomavirus status and impact on management

The prognosis (chance of cure) of HPV-associated cancers is significantly better than that for cancers which are HPV-negative (many of these are caused by smoking or alcohol consumption).

Despite this, there is currently no evidence to offer a different treatment approach or treatments of reduced intensity based on HPV status, even though the staging system is different (see below). Clinical trial evidence, expected in the next few years, may change this.

Staging

The TNM staging can be found in the full guidelines and in the Cancer Research UK website (<https://www.cancerresearchuk.org/about-cancer/mouth-cancer/stages-types-grades/stages-oropharyngeal>).

It should be noted that the staging is different for HPV cancers. This reflects the better prognosis in patients with these cancers.

Generally, $T_{1-2}M_0$ cancers are viewed as early cancers, although $T_{1-2}N_1$ (when N_1 means a single lymph node metastasis) could also be regarded as early. Cancers staged as T_{3-4} or N_{1-3} but M_0 are loco-regionally advanced, but may be curable. Any cancer with distant metastasis (M_1) is incurable.

Treatment

For early and some more advanced cancers, there is a valid choice between non-surgical treatment with RT or chemoradiotherapy, or primary surgery (often with post-operative RT). In oropharyngeal cancer, perhaps more than in any other site, there is a lack of good evidence as to which approach is better. Clinical evidence from current clinical trials may help clarify some of these issues. It is important that both surgical and non-surgical options are discussed with patients who have oropharyngeal cancer.

Early cancers. The main options for treatment for cancers staged $T_{1-2}N_0$, or with a single lymph node metastasis of less than 3 cm, are either:

- (1) Primary RT only (for $T_{1-2}N_0$ cancers) or chemoradiotherapy (T_{1-2} cancers with a single with single lymph node less than 3 cm); or
- (2) Primary surgery (transoral surgery* and neck dissection), with or without post-operative RT

*Surgery via the mouth. This can be performed with the use of a robot (transoral robotic surgery), using a laser, using an endoscope, or with basic surgical illumination or magnification aids. No evidence exists to suggest superiority of any of these techniques.

Radiotherapy is always a single-modality treatment, whereas a significant proportion of patients undergoing primary surgical treatment will require post-operative RT (i.e. dual modality: surgery and RT). The key factor in decision-making is often whether surgery can be offered with confidence that it can be given without the need for post-operative RT, with the commonest reasons for the latter being the finding of more than one lymph node metastasis or a close clearance margin.

Advanced cancers. The main treatment options for cancers staged T_3 or T_4 , or more than a single lymph node sized less than 3 cm, are either:

- (1) Radiotherapy (RT) with chemotherapy (chemoradiotherapy), if suitable; or
- (2) Surgery (for the primary tumour* and neck dissection) with post-operative RT or chemoradiotherapy

*Usually transoral (through the mouth)

There is no good evidence of superiority of either approach, but surgery may cause more problems with swallowing. Most locally advanced cancers are treated with chemoradiotherapy. The choice between the two approaches is complex. In general, for HPV-associated oropharyngeal cancers, the guidelines explain that it is preferable to avoid 'triple modality' treatment, i.e. surgery and post-operative chemoradiotherapy. Therefore, when post-operative chemoradiotherapy is inevitable (e.g. multiple or large lymph nodes), treatment with chemoradiotherapy without surgery is preferred.

Management of neck lymph node metastasis. The issues around the risk of spread of cancer to lymph nodes in the neck are discussed in the 'Head and neck cancer in general' section, regarding lymph node metastases.

Follow up

Imaging is required after treatment. Following RT or chemoradiotherapy, imaging to assess the treatment response is performed by PET-CT scan at three to four months. When there is evidence of persistence of lymph node metastases, a neck dissection can be offered (although a relatively small proportion of patients will have proven persistent cancer after neck dissection). For patients with HPV-positive cancers, a significant proportion may have a borderline PET-CT finding. When this occurs, a repeat scan performed three months later is often recommended. In many patients, the subsequent scan shows a complete response, meaning that most patients can be spared an unnecessary neck dissection.

In those patients treated with primary surgery, a post-treatment baseline MRI scan performed at three to four months is helpful as a future method of comparing changes, if further imaging is required in the future.

After imaging, follow up after treatment is generally through standard out-patient assessment in clinic. Routine scans or imaging is not usually indicated. See the 'Head and neck cancer in general' section.

Cancer of the nasopharynx

Introduction

The nasopharynx is the area behind the nasal cavity (Figure 10). Nasopharyngeal carcinoma (NPC) is rare in the UK and other Western populations. It has a relatively high incidence in Southeast and East Asia. A significant proportion of patients with NPC are younger (adolescents and young adults).

Most cases of NPC are strongly associated with Epstein-Barr virus (EBV) infection.

Presentation and diagnosis

The commonest presenting symptoms are single-sided (unilateral) nasal obstruction, deafness (typically unilateral, and due to Eustachian tube blockage by the tumour) and lymph node metastases in the neck.

Endoscopic examination in clinic may show evidence of the primary cancer. An endoscopic-guided biopsy of the primary tumour should be performed to confirm the diagnosis (in clinic or under anaesthesia in the operating theatre). In cases that present with metastatic cervical lymph nodes, needle biopsy of the lymph node can be tested for EBV, which is highly suggestive of NPC.

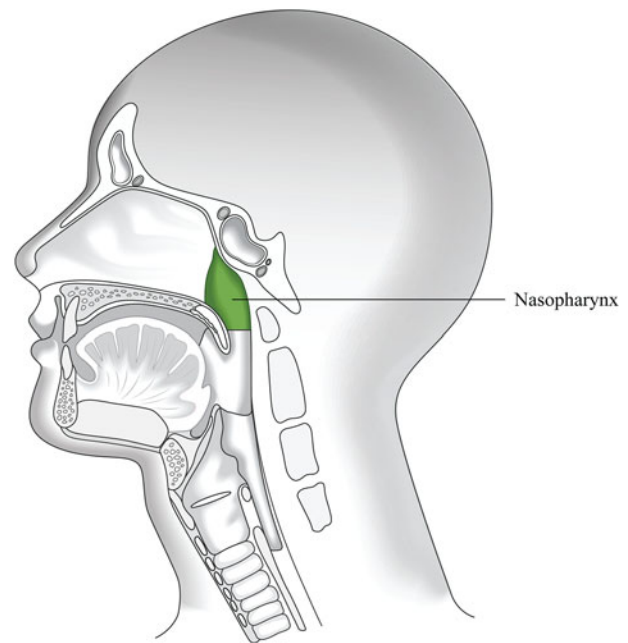


Figure 10. Nasopharynx.

Imaging

Primary site and neck lymph node metastases. An MR scan is preferred to assess the primary cancer and to detect any lymph node metastases in the neck. Ultrasound can also be used, with guided FNAC if necessary.

Distant metastasis. The presence of distant metastasis is assessed by whole-body CT scan or PET-CT scan. Although current NICE guidelines recommend PET-CT in T₄ disease only, this is increasingly used for most cases, as a whole-body CT is recommended in any case. It is helpful to assess treatment response by comparing pre- and post-treatment PET-CT scans.

Staging

The TNM staging can be found in the full guidelines and in the Cancer Research UK website (<https://www.cancerresearchuk.org/about-cancer/nasopharyngeal-cancer/stages/tnm>).

Nasopharyngeal carcinoma has its own N staging, differing from the standard N staging for head and neck cancer.

Treatment

Treatment is almost always non-surgical, involving RT or, more commonly, chemoradiotherapy. Radiotherapy alone can be used for early NPC (T₁₋₂N₀).

For some patients with advanced NPC, chemoradiotherapy is given with initial chemotherapy (known as induction or neo-adjuvant chemotherapy) before chemotherapy and RT together.

Management of neck lymph node metastasis. There is a relatively high rate of neck lymph node metastasis that can affect either side of the neck. Bilateral neck treatment by RT or chemoradiotherapy is standard, even when there is no evidence of lymph node metastases on pre-treatment imaging.

Follow up

As for most head and neck cancers treated with RT or chemoradiotherapy, either an MR scan or PET-CT scan is performed three to four months after treatment to assess response.

After this, follow up is the same as for head and neck cancer in general. Ongoing follow up should include clinical examination with nasendoscopy. Surveillance imaging is not routinely recommended.

Cancer of the hypopharynx

Introduction

The hypopharynx is the lowest part of the throat that leads to the oesophagus or gullet (Figure 11). It essentially sits immediately behind the larynx.

Cancers originating in the hypopharynx are relatively rare, accounting for approximately 6 per cent of head and neck cancers. The prognosis is generally worse than that for cancer in other head and neck sites, with an overall five-year survival rate of around 25 per cent in the UK; a significant proportion of patients with this cancer have incurable disease. A significant proportion of patients have poor general health.

The vast majority of cancers are SCC, and the commonest causes are smoking and alcohol consumption.

Presentation and diagnosis

Symptoms include throat pain especially on swallowing ('odynophagia'), often with referred ear pain, difficulty swallowing (dysphagia) and difficulty breathing because of airway obstruction. However, the most common presentation is cervical lymph node metastasis.

The primary tumour may be visible on endoscopic examination in clinic. Biopsy in out-patients can be performed with the use of endoscopes with biopsy channels, but most patients need examination under general anaesthesia for biopsy.

Imaging

Primary site (throat) and neck lymph node metastases. An MR or CT scan should be performed.

Distant metastasis. The presence of distant metastasis or second primary cancer of the lung is assessed by a CT scan of the lung or whole-body PET-CT (see the 'Head and neck cancer in general' section). The NICE recommends the use

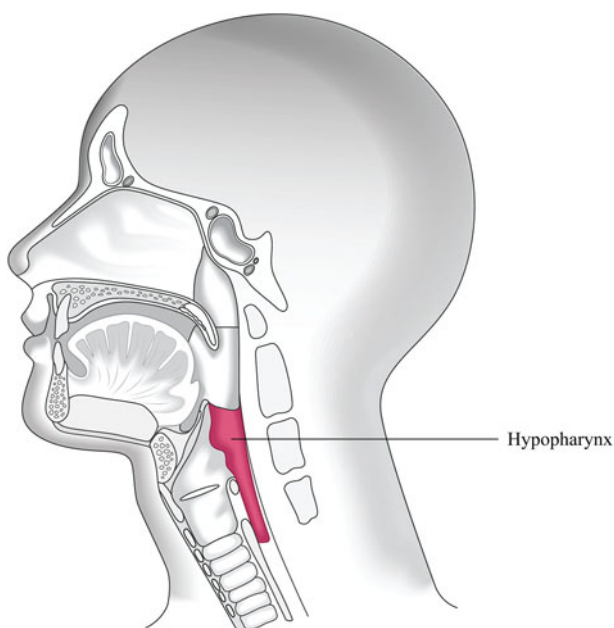


Figure 11. Hypopharynx.

of PET-CT for patients with T₄ hypopharyngeal cancer or N₃ disease.

Staging

The TNM staging can be found in the full guidelines.

Generally, T₁₋₂N₀M₀ cancers are viewed as early cancers. Cancers staged as T₃₋₄ or N₁₋₃ but M₀ are loco-regionally advanced, but may be curable.

Treatment

Early-stage human papillomavirus. Most patients with cancers staged T₁₋₂N₀ are treated with RT. Primary surgery (transoral surgery and neck dissection) is occasionally an alternative, but there is no evidence of any advantages over RT and how often primary surgery is possible as a single-modality treatment option without the need for post-operative RT.

Locally advanced cancer. The options for curative treatment for cancers staged T₃₋₄ or N₁₋₃ are:

- Radiotherapy, ideally as chemoradiotherapy, or;
- Primary surgery with pharyngo-laryngectomy (involving removal of the voice box)

Radiotherapy or chemoradiotherapy preserves the voice box and is generally preferred, if possible. In general, T₃ cancers that have not caused airway obstruction or the inability to swallow (severe or total dysphagia) are treated with RT or chemoradiotherapy.

However, surgery may be recommended for very advanced cancers (large T₃ tumours with functional impairment and T₄ tumours). When the cancer has caused severe impairment of the throat and voice before treatment (e.g. airway obstruction or the inability to swallow), the functional results with RT or chemoradiotherapy are likely to be poor (i.e. with patients still not able to swallow or requiring a tracheostomy). In this situation, and for T₄ cancers in general, patients may be better treated with surgery (pharyngo-laryngectomy), which should restore or maintain the ability to swallow, and gives rise to superior local control of cancer.

Pharyngo-laryngectomy involves removal of the voice box and at least some of the surrounding throat tissue. This means that flap reconstruction is often required for there to be enough tissue to repair the throat to allow swallowing. This involves a long major operation; this is very demanding for the patient, and may not be the best option in patients unfit to undergo and rehabilitate from this. More information can be found on the Macmillan Cancer Support website (<https://www.macmillan.org.uk/cancer-information-and-support/treatments-and-drugs/laryngectomy>).

Standard indications for considering post-operative RT or chemoradiotherapy apply after surgery, as for other head and neck cancer. This is discussed in the 'Head and neck cancer in general' section, relating to post-operative RT.

Follow up

See the 'Head and neck cancer in general' section. Imaging with MR and/or PET-CT is standard after primary treatment with RT or chemoradiotherapy. Routine scans or imaging is not usually indicated.

It is particularly important that thyroid function blood tests be carried out every 6–12 months, as the radiation field in this area can damage the thyroid gland, and part of the thyroid

gland is often removed when patients undergo total laryngectomy.

Cancer of the larynx

Introduction

The larynx is the voice box; it is responsible for voice production, and acts as the entrance to the trachea (windpipe) and lungs. It is divided into three subsites: the supraglottis (above the vocal cords or folds), the glottis (the vocal folds), and the subglottis (beneath the vocal folds) (Figure 12). Most cancers arise from the vocal folds or the supraglottis.

Most laryngeal cancer is SCC. Laryngeal SCC is primarily caused through cigarette smoking, although approximately 20 per cent of patients are non-smokers.

Presentation and diagnosis

Patients with laryngeal cancer often present with a hoarse voice. Those with supraglottic cancers may present with pain, especially with swallowing (odynophagia), swallowing difficulty (dysphagia) or with a metastatic lymph node in the neck.

The primary tumour may be visible on endoscopic examination in clinic. Biopsy in out-patients can be performed with the use of endoscopes with biopsy channels, but most patients need examination under general anaesthesia for biopsy.

Imaging

Primary site (larynx) and neck lymph node metastases. An MR or CT scan should be performed.

Distant metastasis. The presence of distant metastasis or second primary cancer of the lung is assessed by a CT scan of the lung or by whole-body PET-CT (see the 'Head and neck cancer in general' section).

Staging

The staging is different for glottic (vocal fold) cancers and supraglottic cancers.

The TNM staging can be found in the full guidelines and in the Cancer Research UK website (<https://www.cancerresearchuk.org/about-cancer/laryngeal-cancer/stages-types-grades/TNM-number-stages>).

Generally, T₁₋₂N₀M₀ cancers are viewed as early cancers. Cancers staged as T_{3-4a} or N₁₋₃ but M₀ are loco-regionally advanced, but may be curable.

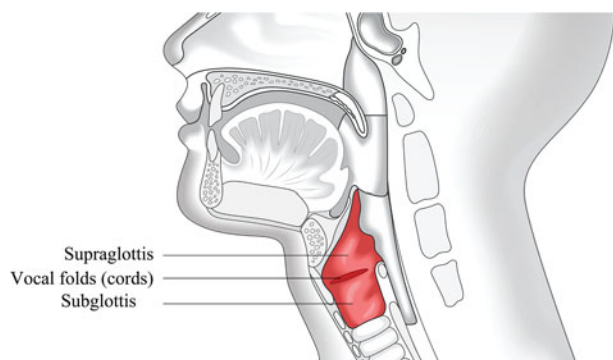


Figure 12. Larynx – site and subsites.

Treatment

Dysplasia. Pre-cancerous (or pre-malignant) changes in the in the larynx, often on the vocal folds, may be diagnosed before they become true invasive cancers. This is called dysplasia. There is two-tier system of low grade (or mild) and high grade (or severe) dysplasia. Carcinoma in situ is a form of severe dysplasia.

There is a risk that these lesions, if left untreated, will progress to invasive cancer. The risk for low grade dysplasia is about 10 per cent and for high grade is about 30 per cent.

Low grade dysplasia can be treated by excision biopsy. It is important that patients are advised to and given help with smoking cessation, if they are smokers. Patients are then routinely examined in clinic.

High grade dysplasia (including carcinoma in situ) is usually treated by complete surgical excision via the mouth (transoral). Radiotherapy can also be considered for carcinoma in situ. Surveillance also remains an option.

Early laryngeal cancer of the glottis. The treatment options for early laryngeal cancer (T₁₋₂N₀M₀) of the glottis (vocal folds) are surgery (transoral laser microsurgery) or RT. There is no high-quality comparative evidence to suggest which one is better for cancer control or voice quality preservation. Both options should be discussed with patients.

The risk of lymph node metastases is very low and lymph nodes do not require treatment.

Early laryngeal cancer of the supraglottis. Most patients with early cancers (T₁₋₂N₀M₀) of the supraglottis are treated by RT. However, surgery (transoral, via transoral laser microsurgery or robotic surgery) is an alternative option. However, lymph nodes on both sides of the neck often require treatment (see the 'Head and neck cancer in general' section), because most supraglottic cancers are at least near the midline. For patients treated by surgery, this means bilateral neck dissection as well as transoral surgery. Standard indications for considering post-operative RT or chemoradiotherapy apply after surgery, as for other head and neck cancers. This is discussed in the 'Head and neck cancer in general' section, concerning post-operative RT.

Advanced laryngeal cancer. The options for curative treatment for advanced laryngeal cancer (T₃₋₄ or N₁₋₃) are:

- Radiotherapy (RT), ideally as chemoradiotherapy; or
- Primary surgery with total laryngectomy (involving removal of the voice box)

Radiotherapy or chemoradiotherapy preserves the voice box and is generally preferred, if possible. In general, T₃ cancers that have not caused airway obstruction or the inability to swallow (severe or total dysphagia) are treated with RT or chemoradiotherapy. Surgery (total laryngectomy) is generally recommended for patients with T₄ cancers or if the cancer has caused airway obstruction or the inability to swallow.

Total laryngectomy involves removal of the voice box and, sometimes, some of the surrounding throat tissue (pharyngolaryngectomy). More information can be found on the Macmillan Cancer Support website (<https://www.macmillan.org.uk/cancer-information-and-support/treatments-and-drugs/laryngectomy>).

Standard indications for considering post-operative RT or chemoradiotherapy apply after surgery, as for other head

and neck cancers. This is discussed in the 'Head and neck cancer in general' section, relating to post-operative RT.

Recurrence

A significant proportion of patients treated with RT or chemoradiotherapy with primary site recurrence may be suitable for total laryngectomy. Selected cases of local recurrences that remain highly localised ($T_{1-2}N_0$) may be suitable for surgery that preserves the larynx (transoral surgery or via neck incisions).

Follow up

See the 'Head and neck cancer in general' section. Imaging with MR and/or PET-CT is standard after primary treatment with RT or chemoradiotherapy. Routine scans or imaging is not usually indicated.

It is particularly important that thyroid function blood tests should be carried out every 6–12 months, as the radiation field in this area can damage the thyroid gland, and part of the thyroid gland is often removed when patients undergo total laryngectomy.

Cancer of the temporal bone

Introduction

The temporal bone is the skull bone that contains the ear canal, middle and inner ears (Figure 13). As well as the ear structures, there are important structures within and near to the bone, including the facial nerve, brain, and major blood vessels, such as the internal carotid artery and internal jugular vein.

Most cancers arise from the external auditory canal or middle ear, and are termed 'primary temporal bone malignancies'. Similar principles of treatment apply to nearby locally advanced skin or parotid malignancies that have invaded the temporal bone.

Primary temporal bone malignancies are rare, and account for less than 1 per cent of all head and neck cancers. The majority of these are SCC.

Primary surgery, often with post-operative RT, is generally used for treatment with curative intent.

Presentation and diagnosis

Cancers of the external auditory canal or middle ear often present with pain, ear discharge, bleeding and hearing loss. Both

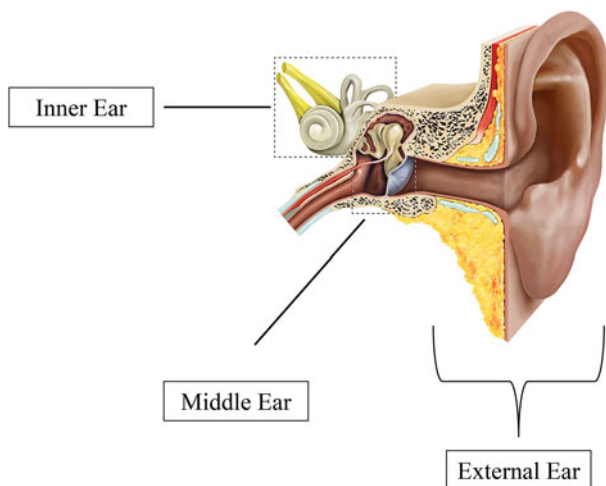


Figure 13. Temporal bone.

the symptoms and signs of this rare malignancy can be similar to much more common chronic external and middle-ear inflammation, often resulting in a late diagnosis. In many cases, it is the degree or persistence of pain, or the development of, for example, facial nerve palsy that raises the possibility of malignancy.

Skin cancers near the ear canal will usually be visible as a lump or ulcer.

Diagnosis is through biopsy in clinic or under general anaesthesia.

Imaging

Primary site (temporal bone). Both MR and CT should be performed.

Neck lymph node metastases. Either MR or CT scans, used to image the temporal bone, can be extended to cover the neck and detect any lymph node metastases in the neck.

Distant metastasis. The presence of distant metastasis of the lung is assessed by a CT scan of the lung or whole-body PET-CT (see the 'Head and neck cancer in general' section).

Staging

The TNM staging can be found in the full guidelines. For these tumours, most clinicians use a bespoke T staging system known as the modified Pittsburgh staging classification (T_{1-4}).

As with other cancers, $T_{1-2}N_0M_0$ cancers are viewed as early cancers. Cancers staged as T_{3-4} or N_{1-3} are loco-regionally advanced.

Treatment

Surgery. Surgery for early cancers usually entails at least a lateral temporal bone resection. This is removal of the ear canal and middle ear with surrounding bone. The external ear (pinna) can sometimes be preserved. The prognosis for early cancers treated this way is generally very good, with cure in most patients.

More advanced tumours may need deeper temporal bone resection, including the inner ear (causing more hearing loss balance problems), and sacrifice of the facial nerve, causing facial palsy, amongst other consequences. Part of the adjacent mandible (jaw bone) may need to be removed.

In patients with very advanced cancers, the chances of cure may be very poor, and surgery has a high risk of serious complications or consequences (e.g. brain injury, loss of important nerves for swallowing and speech). Hence, for many patients with very advanced disease, surgery may not be in their best interests.

Rehabilitation and reconstruction are very important for patients undergoing primary surgery. The tissue loss caused by the loss of the temporal bone is ideally addressed using a free flap (usually an anterolateral thigh free flap).

Facial nerve palsy, caused either by the tumour or by surgery, is an important consideration. Patients will require detailed pre- and post-operative counselling for the functional and cosmetic consequences resulting from a facial nerve palsy. Management options include a nerve graft at the time of surgery and lifting procedures to prevent drooping of the cheek and mouth. Additional interventions to help with eye closure and to prevent eyelid drooping are often performed later after surgery.

Audiologists, usually after treatment has finished, can offer help to address the hearing loss caused by the operation (there

will be at least no ear canal and middle-ear apparatus, and possibly no functioning inner ear either).

Post-operative radiotherapy or chemoradiotherapy. Most patients have post-operative RT or chemoradiotherapy.

Primary radiotherapy or chemoradiotherapy. Primary RT or chemoradiotherapy may be used as an approach in selected cases where surgery is not appropriate or acceptable, and for inoperable cancers without distant metastases.

Follow up

The follow up is as for other head and neck cancers. Imaging, usually by MRI, is often performed three to four months following treatment. As most tumour recurrences are not detectable by clinical examination, after flap reconstruction, MR scans are usually performed to assist with tumour surveillance.

Cancer of the nose and sinuses

Introduction

Cancers of the nose and paranasal sinuses represent less than 5 per cent of all head and neck cancers, and comprise a variety of tumour types. Treatment is complicated by the proximity of critical anatomical structures, particularly the eye or orbit, the anterior skull base (which separates the nose and sinuses from the brain), and the teeth-bearing lower part of the maxilla (cheek bone) (Figures 14 and 15).

There are occupational risk factors for certain types of sinonasal cancer. These include exposure to wood and leather dust for a tumour type called intestinal type adenocarcinoma. Nickel/chromium, organic solvents, and construction and textile site environments are risk factors for SCC.

Presentation and diagnosis

Many cancers are diagnosed at a locally advanced stage, as the symptoms of early cancers can be similar to very common sinonasal symptoms because of congestion and inflammation of the nose and sinusitis.

New, single-sided nasal symptoms should raise suspicion (e.g. nasal obstruction or facial pain). Locally advanced disease

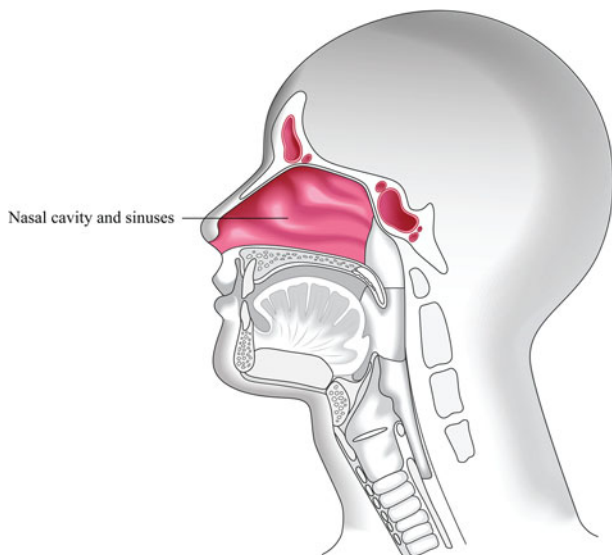


Figure 14. Nasal cavity and sinuses – lateral view.

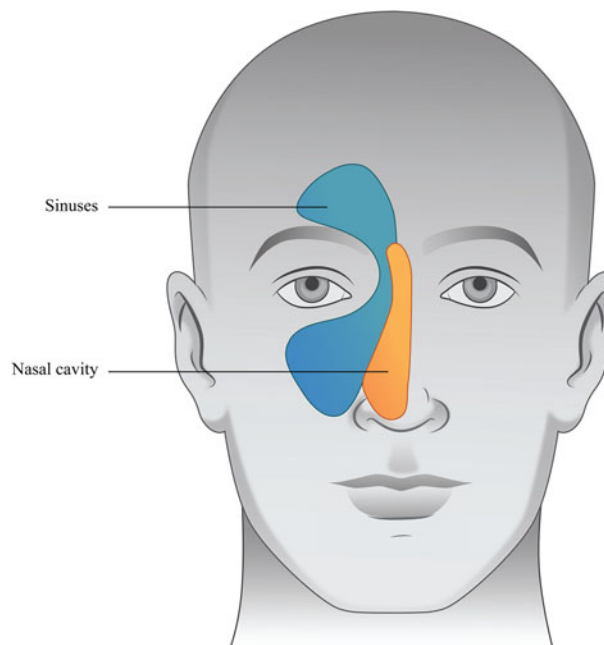


Figure 15. Nasal cavity and sinuses – anterior view.

may present with orbital symptoms, facial or dental numbness, or limitation or pain on jaw opening.

The tumour will usually be seen on endoscopic examination in clinic. Biopsy can be performed in clinic or in an operating theatre setting.

Imaging

Primary site. Both MR and CT scans should be performed.

Neck lymph node metastases. Either MR or CT scans, used to image the nose and sinuses, can be extended to cover the neck and detect any lymph node metastases in the neck.

Distant metastasis. The presence of distant metastasis of the lung is assessed by a CT scan of the lung or whole-body PET-CT (recommended for high grade cancers). (See the 'Head and neck cancer in general' section.)

Staging

The TNM staging can be found in the full guidelines. There are also specific staging systems used for olfactory neuroblastoma (Kadish classification) and for cancers of the nasal vestibule (Wang classification).

As with other cancers, $T_{1-2}N_0M_0$ cancers are viewed as early cancers. Cancers staged as T_{3-4} or N_{1-3} are loco-regionally advanced.

Tumour types

There are many different types of cancer that arise from the nose and paranasal sinuses, more than anywhere else in the head and neck. In general, treatment is the same irrespective of tumour type, with some exceptions. The commonest types are:

- Squamous cell carcinoma
- Adenocarcinoma (intestinal and non-intestinal types)
- Olfactory neuroblastoma
- Sinonasal undifferentiated carcinoma
- Sarcomas

Treatment

Surgery. Most cancers are treated with primary surgery, with most patients also undergoing post-operative RT or chemoradiotherapy. Some very advanced cancers with significant brain invasion may be inoperable.

Surgery may involve a number of different techniques, tailored to the tumour extent. Many early cancers can be operated on entirely endoscopically (through the nostrils). When a cancer has invaded the orbit (eye), cheek or nasal bones, open surgery (with facial incisions) is generally required, and surgery will leave a facial defect, sometimes including sacrifice of the eye (orbital exenteration) or nose (rhinectomy). If the lower part of the cheek bone or maxilla is involved, the teeth-bearing bone and palate will be included in the resection.

When a cancer has invaded through the skull base, additional access through the bone of the forehead area may be required. A neurosurgeon is often required for cases when there is brain involvement.

Consequently, for these more advanced cancers, surgery can be deforming, and reconstruction or rehabilitation will be required. Reconstruction of the cheek (maxilla) is best conducted using a free flap including bone, usually from the scapula (wing bone), fibula (lower leg) or iliac crest (hip). A defect caused by loss of the eye or orbit can be addressed by free flaps to fill the defect and/or using bone implants to secure a fabricated prosthesis. Implants and a prosthesis can also be used when nasal reconstruction is not possible.

Radiotherapy. Primary RT or chemoradiotherapy can be used for inoperable cancers. Initial chemotherapy (called induction or neo-adjuvant chemotherapy) is increasingly used for sino-nasal undifferentiated carcinoma, followed either by surgery and/or by chemoradiotherapy.

Follow up

Imaging, usually by MRI, should be performed three to four months following treatment. As some tumour recurrences will not be detectable by clinical examination alone, especially after flap reconstruction, MR scans are usually performed to assist with tumour surveillance.

Cancer of the major salivary glands

Introduction

Salivary glands are glands in the neck that make saliva for the mouth. The two principal glands are the parotid and submandibular glands (Figure 16). In addition, there are other smaller salivary glands that line the mouth and throat. Salivary gland cancers contribute about 6 per cent of head and neck cancers. The facial nerve, which controls muscles of the face, runs through the parotid gland, and may be affected by the cancer or by surgery.

There are many different cancer types, which broadly can be categorised as low grade and high grade ('high grade' meaning more aggressive).

Operable cancers are treated with surgery, often with post-operative RT.

Presentation and diagnosis

In general, malignant salivary gland tumours present as a neck lump, and may be indistinguishable from benign salivary gland lumps. More advanced cancer may present with pain or, for parotid cancers, facial weakness.

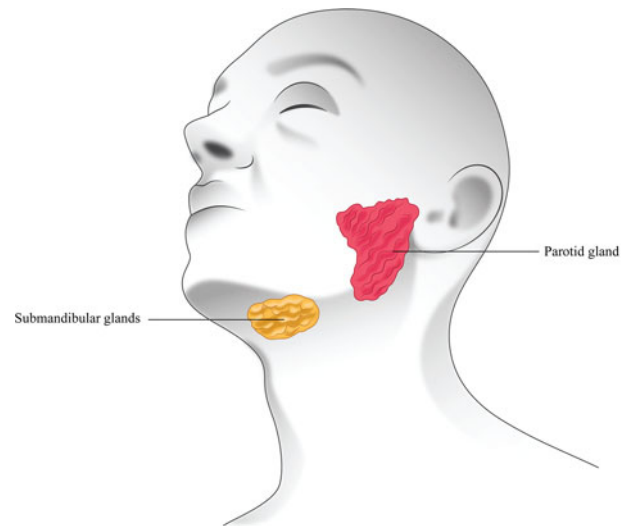


Figure 16. Parotid and submandibular salivary glands.

Patients should be ideally assessed in a one-stop neck lump clinic, with access to ultrasound with needle biopsy (either FNAC or core biopsy).

Imaging

Primary site (mouth or lip) and neck lymph node metastases.

An MR scan should be performed, but CT and an X-ray of the jaw (orthopantomogram) can assist with suspected jaw bone (mandible) invasion.

Ultrasound will often be used for FNAC or core biopsy.

Distant metastasis. The presence of distant metastasis is assessed by a CT scan of the lung or, particularly for high grade cancers, whole-body PET-CT. (See the 'Head and neck cancer in general' section.)

Staging

The TNM staging can be found in the full Head and Neck Cancer: United Kingdom National Multidisciplinary Guidelines (available in: Homer JJ, Winter SC, Abbey EC, et al. Head and Neck Cancer: United Kingdom National Multidisciplinary Guidelines, Sixth Edition. *The Journal of Laryngology & Otology*. 2024;138(S1). doi:10.1017/S0022215123001615 and in the Cancer Research UK website (<https://www.cancerresearchuk.org/about-cancer/salivary-gland-cancer/stages/tnm-staging>).

Treatment

Surgery. Surgery is recommended for all cancers that are operable, often including neck dissection of surrounding cervical lymph nodes.

Other forms of treatment do not generally offer a chance of cure. For submandibular cancers, the whole gland is removed. The parotid gland is divided into a superficial and a much smaller deep lobe, by the facial nerve. Total parotidectomy is usually performed for high grade cancers, but the deep lobe can be preserved for low grade cancers. If the facial nerve is working, and is not invaded by cancer, it can be preserved in many cases. The decision-making around facial nerve sacrifice is complex and highly individualised, dependent in part on the cancer type.

Facial nerve palsy, caused either by the tumour or by surgery, is an important consideration. Patients will require detailed pre- and post-operative counselling for the functional and cosmetic

consequences resulting from a facial nerve palsy. Management options include a nerve graft at the time of surgery, and procedures to prevent drooping of the cheek and mouth. Additional interventions to help with eye closure and to prevent eyelid drooping are often performed later, after surgery.

Occasionally, resections may be needed for advanced cancers, including the skin and/or jaw, and reconstruction may be required.

Post-operative radiotherapy. Post-operative RT is recommended for virtually all high grade cancers. It may not be necessary for low grade early cancers (T₁₋₂N₀) that are completely excised with an appropriate clearance margin.

Follow up

See the 'Head and neck cancer in general' section. Baseline imaging with MR is standard after surgical treatment. Routine scans or imaging may be indicated when clinical assessment for recurrence is difficult (e.g. after free flap reconstruction).

Head and neck cancer of an unknown primary presenting with a metastatic lymph node

Introduction

Many cancers of the head and neck present with a lymph node metastasis from the primary cancer. When a patient presents with a metastatic lymph node but without evidence of a primary cancer, this is known as cancer with unknown primary. When the cancer is SCC, and the lymph node is cervical (in the neck), it is assumed to be a head and neck cancer of an unknown primary. Cancers that are not SCC may have a primary cancer in the head and neck region, but equally may have a cancer elsewhere in the body. Management of these cancers falls outside of the head and neck guidelines.

A significant proportion of head and neck SCCs presenting with an unknown primary are HPV-related cancers arising from the oropharynx.

Investigation, imaging and diagnosis

As described in the 'Head and neck cancer in general' section, a patient presenting with a neck lump will undergo full examination, including naso-pharyngo-laryngoscopy (a flexible endoscope inserted through the nostrils to view the upper aerodigestive tract), and ultrasound with guided needle biopsy of the lymph node. This should be carried out in a one-stop clinic setting.

When the lump is shown to be a SCC, and there is no evidence of the primary cancer on examination, there begins a sequence of investigations intended to localise the primary cancer. As these investigations are performed, the primary cancer site in the majority of patients is identified, leaving a smaller group of patients who, despite exhaustive investigation, remain with a truly unknown primary cancer site.

The first tests that can be performed to help identify the primary are imaging and further tests on the needle biopsy specimen.

An MR scan of the head and neck area should be carried out, and whole-body PET-CT scan may demonstrate the primary site of the cancer as well as the presence of other metastatic lymph nodes. The PET-CT scan also helps identify any distant metastatic disease at the same time.

If the imaging demonstrates the primary site, that primary site is biopsied, and further investigations, staging and

treatment are performed according to the primary site as described in these guidelines.

Further laboratory tests on the needle biopsy sample are also conducted, to ascertain whether the SCC is associated with an HPV infection or EBV infection. This is helpful as an HPV-associated SCC is very likely to have arisen from the oropharynx (the tonsil or the tongue base in general). If EBV is identified, it can be reasonably assumed that the primary site is the nasopharynx, which can be targeted for biopsy and appropriate onward investigation and management.

When imaging has not identified the primary cancer, the next stage in investigation is to examine the patient under anaesthesia. This involves a 'panendoscopy', which is a general term for inspecting all areas of the mouth and upper aerodigestive tract, through the mouth, whilst the patient is asleep. Any obvious abnormalities can be biopsied.

The guidelines recommend that, for SCCs, at least the tonsil and tongue base on the same side as the cervical lymph node metastasis should additionally be sampled to identify a primary site. Thus, tonsillectomy from the tonsil on the same side of the neck should be performed, with removal of the surface lining of the tongue base (called a tongue base mucosectomy) also on the same side. There is variance in practice as to whether the same is carried out on the other side at the same time.

Following examination under anaesthesia, tonsillectomy and tongue base mucosectomy, the primary site is identified in about 50 per cent of these patients. Further investigation and management are carried out according to the primary site. In the majority of cases, this is in the oropharynx.

The remaining patients have a cancer that is truly undetectable. That means that initial needle biopsy, imaging and examination under anaesthesia have not identified the primary cancer. Treatment of these patients is described below.

Treatment

The two main elements of treatment for patients with a truly unknown primary cancer site despite appropriate investigations are: treatment of the cervical lymph node metastases and consideration of treatment (RT) to cover sites where there may be an undetectable primary cancer site.

In patients who have a single metastatic lymph node of less than 3 cm and with no spread beyond the lymph node, the most common treatment is neck dissection. If there are no other lymph nodes found, no further treatment is usually required. The advantage of this approach is that RT is avoided, but it is still an option should the primary cancer become detectable later on.

When it is found that there is more than one lymph node or a lymph node of greater than 3 cm, then either neck dissection with post-operative RT or chemoradiotherapy, or chemoradiotherapy alone can be considered.

The treating team will discuss the option of giving RT only to the lymph nodes in the side of the neck involved with cancer, or also to the possible sites of origin of the cancer and to the opposite side of the neck. There are advantages and disadvantages to each strategy.

Follow up

Follow up is as described for head and neck cancer in general. The dilemma in this patient group is how to monitor for evidence of the primary cancer declaring itself later on, after the initial treatment has finished. This occurs in a small

proportion of patients. There is currently no standard protocol for the role and frequency of imaging scans to do this.

Summary

This document, which is intended to compliment the guidelines, aims to explain the nature of head and neck cancer, and describe how patients with head and neck cancers are managed and why. Whilst not a patient guideline or information document, it is hoped that patients, and their families and friends, will find it beneficial. It will also inevitably be useful for health service managers, administrators and

commissioners who wish to understand head and neck cancer management and the landscape from a lay perspective. Key points from the guidelines are summarised in the context of the basic principles of care for head and neck cancer.

Acknowledgements. The authors and endorsing associations of the full Head and Neck Cancer: United Kingdom National Multidisciplinary Guidelines, available in: Homer JJ, Winter SC, Abbey EC, et al. Head and Neck Cancer: United Kingdom National Multidisciplinary Guidelines, Sixth Edition. *The Journal of Laryngology & Otology*. 2024;138(S1). doi:10.1017/S0022215123001615.

Competing interests. None declared