



## Synchronous carcinoma of the thyroid and hypopharynx; a diagnostic and management challenge

Louise McMurrin<sup>1</sup>, Usman Rasul<sup>2</sup>, Seok Jun Jeong<sup>2</sup>, Vamsidhar Vallamkondu<sup>1</sup>, Muhammad Shakeel<sup>1,\*</sup>

<sup>1</sup> Department of otolaryngology-head and neck surgery, Aberdeen Royal infirmary, Aberdeen, AB252ZN, UK

<sup>2</sup> Medical student, University of Aberdeen, Aberdeen, UK

\*Corresponding author Email: [drshakeel@doctors.org.uk](mailto:drshakeel@doctors.org.uk)

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**Abstract:** A 73-year-old Chinese origin woman presented with a right neck swelling associated with recent swallowing issues and hoarseness. She had an apparent goitre and a right posterior neck swelling. An ultrasound guided fine needle aspiration demonstrated papillary thyroid carcinoma in both thyroid lobes and right neck lymphadenopathy. While awaiting total thyroidectomy and neck dissection she presented with haemoptysis. She was found to have an exophytic mass in right pyriform fossa. The CT scan confirmed an intralaryngeal extension of the thyroid mass via thyroid cartilage and metastatic disease in the lung. Unexpectedly histology showed that the tissue from the right pyriform fossa was squamous cell carcinoma and papillary carcinoma in the thyroid was confirmed. She had synchronous cancers in the thyroid and hypopharynx. Synchronous tumours are a big challenge to diagnose and to treat. In her case the CT scan was misleading. We discuss this unusual presentation of synchronous head and neck cancers and difficulty in managing them.

**Keywords:** Ear, Nose and Throat, Thyroid cancer, Squamous cell carcinoma, Synchronous, Head and neck cancer, Oncology

### Key learning points:

1. The incidence of multiple cancers in the head and neck region is high and is likely to increase with an ageing population and advances in diagnosis and treatment
2. The possibility of multiple cancers should be considered in patients with unusual symptoms or response to treatment
3. Each case should be considered by the multidisciplinary team on its own merits

### 1. Introduction

An ageing population, combined with improved diagnosis, staging and management of carcinoma has led to an increasing frequency of patients found to have multiple cancers [1]. The development of these cancers may be described as simultaneous, synchronous or metachronous [2]. Simultaneous carcinomas develop in parallel with another malignancy whereas synchronous tumours are diagnosed within 6 months of another cancer diagnosis [3]. Patients who develop a second primary beyond six months have metachronous or consecutive cancers.

These multiple cancers are particularly common in the head and neck, due to the consequences of field change from carcinogens such as smoking and alcohol use. Specific risk factors for diagnosis of these second primary cancers include increasing age, index cancers at the hypopharyngeal site and alcohol excess [4]. Synchronous cancers are seen in 15% of patients with head and neck carcinoma, and there is a 4% incidence of metachronous cancers [3]. These are generally other head and neck cancers, lung cancers or oesophageal cancers [5]. Papillary thyroid carcinoma is another possible second primary seen in roughly 0.5-5% of cases [6]. However papillary thyroid carcinoma is generally an indolent cancer that is completely asymptomatic in these patients. Evidence of papillary thyroid carcinoma may be found incidentally in thyroid tissue included in a total laryngectomy or from metastatic spread to cervical lymph nodes excised as part of a neck dissection. In this case report we present the unusual occurrence of a locally advanced papillary thyroid carcinoma with lymph node metastasis, where a second synchronous primary squamous cell carcinoma of the hypopharynx became symptomatic within a matter of weeks. This situation is



particularly unusual because there is no shared risk factor for these cancers other than increasing age.

## 2. Aim

To raise awareness about this rare case of synchronous thyroid cancer and hypopharyngeal squamous cell carcinoma. We discuss clinical presentation, examination findings, investigations and management of our patient in a multidisciplinary team setting.

## 3. Case presentation

A 73-year-old Chinese female presented with a right anterior neck swelling with recent swallowing issues and hoarseness. These issues were discussed with translation from the patient's daughter because she does not speak English. The patient has a past medical history of Type 2 Diabetes Mellitus, Hypertension and Hypothyroidism. She had been seen in the Ear, Nose and Throat Clinic two years prior with a post-viral left vocal cord palsy that recovered with conservative management. On examination, the patient had an apparent goitre and a further right sided neck swelling in the posterior triangle measuring 3x3 cm. When seen in the thyroid clinic, there was no facility to perform flexible pharyngolaryngoscopy and it was planned for a later date before definitive surgery.

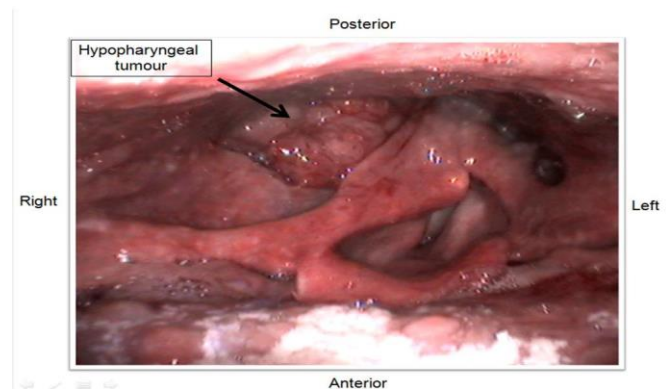
## 4. Investigations

An ultrasound scan showed abnormal neck nodes along with suspicious thyroid nodules (Figure 1). An ultrasound guided fine needle aspiration taken demonstrated papillary thyroid carcinoma in samples from both right and left thyroid lobes and from the associated lymphadenopathy in the right posterior triangle. Thyroid function tests were unremarkable, T3 – 5.0, T4 – 18 and TSH – 1.63. The patient was discussed at the Thyroid Multi-Disciplinary Team (MDT) meeting. The recommendation was made for total thyroidectomy and right selective neck dissection. However, prior to her admission for surgery, the patient presented acutely with haemoptysis and was found to have an exophytic, friable mass in the right pyriform fossa on flexible nasendoscopy (Figure 2).

The laryngeal anatomy was severely distorted as the whole larynx was pushed to the left. The right vocal cord was fixed and the left vocal cord had minimal abduction. The true vocal cords could not be seen readily on laryngoscopy and the airway assessment proved challenging ([Video 1](#)).



**Figure 1** Ultrasound scan of the neck revealing abnormal neck nodes.



**Figure 2** Flexible pharyngolaryngoscopy reveals an exophytic lesion in the right hypopharynx along with distortion of the larynx.

## 5. Video 1: Assessment of airway

The patient was regarded as at risk of significant deterioration of her airway. A Computed Tomography scan of neck and chest suggested that this pyriform fossa mass was an intra-laryngeal extension of the papillary thyroid carcinoma via the thyroid cartilage (Figures 3 and 4).

Furthermore, multiple small pulmonary nodules were present in both lungs, in keeping with metastases. Therefore, the decision was taken to proceed with the planned total thyroidectomy and selective neck dissection but at the same time to take biopsies from the right pyriform fossa with tracheostomy to facilitate post-operative recovery. It was expected that intralaryngeal disease and pulmonary nodules could potentially be treated with radio-iodine (RAI) therapy.

## 6. Treatment

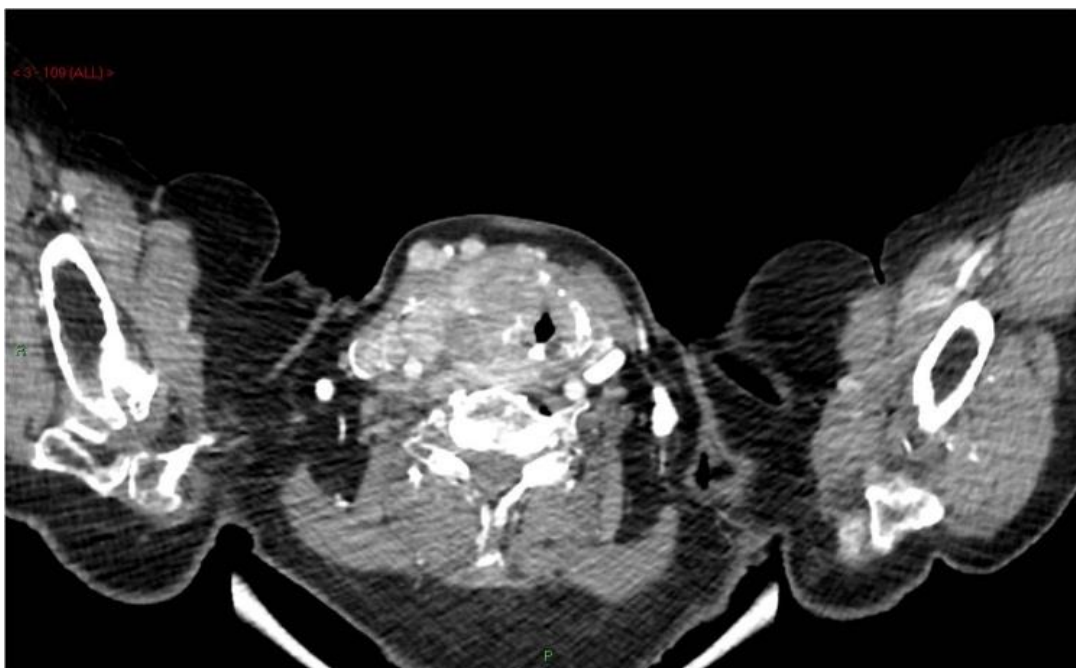
The patient underwent total thyroidectomy with right sided selective neck dissection. Biopsies were taken of the right pyriform fossa mass, and a



tracheostomy was placed due to suspected deterioration of her compromised airway obstruction post-operatively. She had an uneventful recovery.



**Figure 3** CT scan shows swelling in the right hypopharynx pushing the larynx to the left. Multiple pulmonary nodules can also be seen suspected to be metastatic in nature.



**Figure 4** CT scan shows destruction of the right thyroid cartilage lamina suspected to be secondary to local destruction by the thyroid carcinoma.



Pathological examination of the specimens obtained unexpectedly showed that the tissue from the right pyriform fossa mass was in fact squamous cell carcinoma. The case was rediscussed at various MDTs to consider further management of these synchronous cancers. Initially, a plan was made to perform radioiodine scanning to define whether the lung metastases were linked to the thyroid malignancy, and therefore were treatable, or were related to the squamous cell carcinoma and therefore would not be suitable for radical treatment. Our patient needed one to one nursing care as she was quite frail and was unable to look after her tracheostomy. The challenges posed by the required tracheostomy care during RAI treatment it was agreed to continue treatment with radiotherapy only to the neck with palliative intent.

## 7. Outcome and follow-up

Following the course of palliative radiotherapy and insertion of the PEG tube, the patient stated that she wished to return to China. She was discharged to the care of her family who had arranged her transfer back to China under the care of a medical team in Shanghai. She was happy to be able to live with her family during her illness. We have not had any contact with the patient after her discharge from our ward.

## 8. Discussion

We present the unusual occurrence of two separate symptomatic cancers in the thyroid and hypopharynx that presented within weeks of each other. The initial presentation was with a very locally advanced papillary thyroid carcinoma, with evidence of compressive symptoms and effects on the recurrent laryngeal nerve. This kind of presentation is unusual in its own right, as these cancers commonly present at an early stage with no nodal metastases [7]. However, in this case, it was the diagnosis of the second head and neck carcinoma which posed a bigger diagnostic challenge.

It has been noted that head and neck carcinoma is often associated with second primary cancers, though these are usually other cancers in the head and neck, lung or oesophagus which have developed due to common risk factors including smoking and alcohol use [5]. Incidental papillary thyroid carcinoma as a finding in specimens from surgical management of head and neck carcinoma is also common, [6,8] and is associated with a poorer prognosis overall [9]. However, prognosis and treatment in these cases is ultimately guided by the

head and neck cancer staging,[10] as it is the more aggressive of the two cancers. Therefore, this situation where a symptomatic thyroid papillary carcinoma is discovered prior to a synchronous head and neck squamous cell carcinoma is very uncommon. From our literature review, there are no previously published accounts of this type of presentation.

This case report then raises a number of issues regarding the way we assess and manage patients who may have multiple cancers. Diagnosis of synchronous cancers can be challenging, because symptoms may be linked incorrectly to the index tumour. For example, in this case, the increasing swallowing difficulties and hoarseness seen were associated with the locally invasive thyroid carcinoma. Even when a flexible nasendoscopy and CT scan showed evidence of tumour within the larynx, this was interpreted as an extension of the thyroid carcinoma, rather than evidence of a second primary. Squamous cell carcinoma would have been the primary differential if there had been no previous cancer diagnosis. Staging of synchronous cancers is commonly problematic because it is not clear without a tissue diagnosis whether lymphadenopathy or other likely metastasis is due to one cancer or the other. In this case, although the cervical lymphadenopathy was of the same tissue type as the thyroid carcinoma, the lung metastases may have been due to either cancer. A plan was made to define this issue, though the patient's clinical condition prevented further investigation.

A final challenge comes with the management of synchronous cancers because of the differing treatment modalities used for different cancer types. In this case, the difference was between surgery followed by radioiodine therapy for thyroid carcinoma and the choice of surgery or combined chemoradiotherapy (external beam radiotherapy) for squamous cell carcinoma of the head and neck. Management was particularly problematic in this case because of the uncertainty regarding staging for the two cancer types, and the fact that the patient was unfit to undergo radioiodine therapy.

In summary, clinicians should be aware of the possibility of multiple cancers presenting simultaneously. In particular, symptoms that do not fit with the likely behaviour of a particular cancer, or a poor response to adequate treatment should highlight the need for further investigation. Once there is evidence of separate disease processes then each case should be discussed with the specialist multidisciplinary





team, and investigation and management planned on an individualised basis.

## 9. Conclusion

Synchronous thyroid cancer and hypopharyngeal squamous cell carcinoma can occur and pose diagnostic and management challenges. A patient presenting with a thyroid swelling along with cervical lymphadenopathy should undergo flexible pharyngolaryngoscopy along with cross sectional imaging like CT scan before definitive surgery is undertaken. Such patients are best managed in multidisciplinary team setting.

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## Authors Contribution

Data collection, analysis and preparation of initial draft (LM, UR, SJJ & VV); Designing the study, data collection, analysis, preparation and finalising the manuscript (MS).

## Data sharing statement

Video content of this article is available on <https://www.youtube.com/watch?v=SGIGOBZr8Bs&feature=youtu.be>

## Ethics Approval

Approval was sought and granted by the Departmental Ethics Committee.

## Informed consent

Informed written consent obtained from the patient

## Conflict of interest

The authors declare no conflict of interest.

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