



# Incidental detection of unexpected neck lymphatic level III node metastasis from occult papillary thyroid carcinoma during cervical disc surgery: first literature report

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Although neck malignant lymphadenopathy is not uncommon, cervical lymph node metastasis as the initial manifestation of occult papillary thyroid carcinoma (PTC) is indeed a very rare phenomenon, with around 200 cases reported in the literature [1]. Patron et al., analysing 140 prophylactic lateral neck dissections in 131 patients, reported that occult lymph node metastases in level III occur in 10% of patients with PTC [2].

We report a patient with clinically silent neck node metastasis of asymptomatic PTC by incredible coincidence. Detection of occult PTC metastasis to the cervical lymph node during anterior cervical disc surgery, described herein, to our knowledge has never been reported and is an exceptional finding.

A middle-aged female was admitted to our department in January 2014 with a complaint of numbness in both hands, especially in III–IV–V fingers, which had gradually evolved for the past 14 months, with severe pain in the neck and shoulders radiating to the elbows and associated with sleep-wake disturbances. There was no clinical improvement after physiotherapy and conservative treatment. She had no history of thyroid diseases. In 1986, at the age of 21 years, she was exposed to external radiation over Poland due to the Chernobyl nuclear accident. Preoperative MRI (without contrast) showed extensive and concentric disc protrusion C5/C6 (Fig. 1).

Anterior cervical microdiscectomy with fusion was performed. During surgery, just after dissecting the superficial layer of the deep cervical fascia and platysma, the sternocleidomastoid muscle was exposed and a hard oval nodule was noticed. This nodule, 1 cm in diameter, strictly adhered to the medial edge of the sternocleidomastoid muscle, lying just beneath

a thin and transparent muscle fascia, 1 cm above the omohyoid muscle. The nodule was extirpated due to malignant suspicion and as a precautionary process. On the fourth day the patient was discharged with clinical improvement.

Histology showed metastatic deposit of papillary thyroid gland carcinoma (Fig. 2A) within the lymph node.

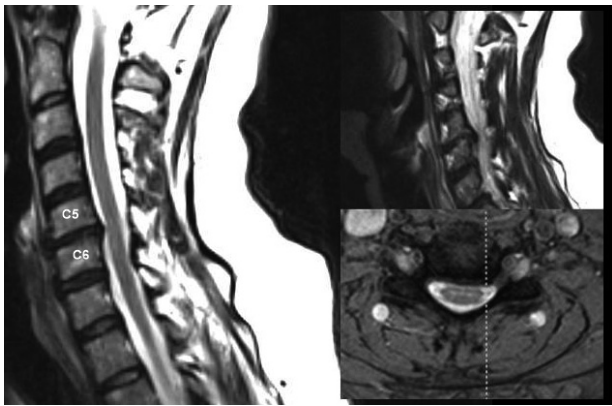
Microscopically, PTC foci invaded lymphatic tissue, which was preserved only at its periphery (Fig. 2B).

In addition, a natural border existed between the pathological metastatic carcinoma and the muscle (Fig. 2C).

Two months later total thyroidectomy was performed, with therapeutic central and lateral neck dissection (mediastinum, paratracheal, and cervical lymph nodes on the left side resection *modo Crile*). The final pathological report of a thyroid tumour of 12 mm in diameter indicated follicular variant of well-differentiated PTC. The patient was graded as pT3N1bM0 according to TNM staging. Five months after thyroid surgery, the patient underwent <sup>131</sup>Iodine therapy (100 mCi). Post-therapy whole body scanning, after 72 hours, showed no extrathyroidal tracer uptake. Six years later, in January 2020, the patient is in good clinical condition without discovery of recurrent locoregional or distant disease.

Although Sampson et al. reported in 1970 that Woolner et al. called neck lymph node metastasis “occult papillary carcinoma”, Woolner et al. credited Klinck and Winship for being the first to suggest this term in the medical literature [3]. The presented case illustrates a patient with double occult thyroid disease: occult neck lymph node metastasis of occult PTC. The incidentally uncovered metastatic tumour was located at level III





**Figure 1.** On the left side — sagittal magnetic resonance imaging (MRI) scan presenting disc protrusion C5/C6 and degenerative osteophytes modelling the anterior wall of the dural sac with concomitant spinal stenosis at 9.5 mm. On the right side — MRI scans of axial and sagittal projections at the level of lateral disc protrusion C5/C6. The structures of thyroid and neck lymph nodes are not visualised in this MRI study

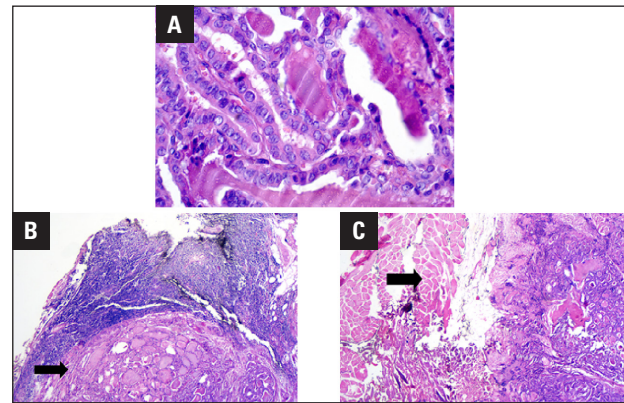
(middle jugular region), which is the most common site for metastasis. These nodes are usually associated with other locoregional malignancy, as in the reported case, because a suggested route of metastasis is an upward direct cells spreading via jugular lymphatic vessels; therefore, there is no possibility to skip all the nodes on the way from the thyroid gland to level III nodes.

The case described does not fall under any of the four occult thyroid carcinoma groups classified by Boucek et al. [4], nor the additional group supplemented by Liu et al. [5]. This is not the case with the following: PTC found after thyroidectomy for benign disease or at autopsy (group I), diagnosed on imaging study (group II), clinical symptoms of PTC metastases (group III), thyroid carcinoma in ectopic thyroid tissue (group IV), or locoregional or distant metastases where thyroid gland is benign tissue (additional V group). The case considered is unique and was discovered by chance for reasons other than thyroid disease. That is why the authors propose another sixth group of occult thyroid carcinoma classification. This group may be called “double occult PTC”.

Occult neck lymph node metastasis of occult papillary thyroid cancer is a unique medical case that has never been reported before. The reported case justifies adding to the current classification of occult thyroid carcinoma an additional sixth group: “double occult PTC”.

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**Figure 2.** Histopathology analysis of papillary thyroid carcinoma metastasis **A.** Typical thyroid gland papillary carcinoma ground-glass nuclear chromatin appearance, haematoxylin and eosin stain, magnification  $\times 400$ . **B.** Metastatic deposit of thyroid gland papillary carcinoma (arrow) within lymph node (remnants of lymph node structure — upper half of the picture), haematoxylin and eosin stain, magnification  $\times 40$ . **C.** Cancer tissue (right half of the picture) spreads beyond the lymph node capsule. Striated muscle (arrow) is not infiltrated by the cancer, haematoxylin and eosin stain, magnification  $\times 40$

### Conflict of interest statement

None of the authors have any conflict of interests to declare.

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None.

### Authors' contributions

L.H. and W.D. designed this study. L.H. accomplished the cervical disc surgery and collected the data of this case. W.D. performed the histopathological study of the nodule. L.H. drafted the case report and was the major contributor in the writing of the manuscript. L.H and W.D. revised this manuscript. Both authors read and approved the final manuscript.

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