

# 갑상선의 피라미드엽에서 생긴 유두암종: 증례 보고

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## Papillary Carcinoma Arising from the Pyramidal Lobe of the Thyroid

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The authors present a rare case of papillary carcinoma arising from the pyramidal lobe of the thyroid in a 54-year-old woman, who presented with a right submental palpable mass. An ultrasound evaluation depicted a 3 cm mixed echoic mass from the thyroid cartilage level without a focal lesion in the thyroid gland. Surgical specimens obtained during bilateral thyroidectomy confirmed papillary carcinoma of the pyramidal lobe. To the authors' knowledge, this is the first case report to describe papillary carcinoma arising from the pyramidal lobe of the thyroid gland.

**Key words :** Papillary carcinoma; Thyroid; Pyramidal lobe

### Introduction

Half of the general population have a pyramidal lobe (also called Lalouette's lobe) [1, 2], but primary malignancy from the pyramidal lobe is rare. The pyramidal lobe is considered to be a part of the thyroglossal duct and arises from the isthmus of the thyroid gland. Since this lobe can be a source of recurrence and reduce the effect of Iodine-131 therapy after thyroidectomy, the presence of pyramidal lobe must be noted during surgery [3]. Furthermore, as surgical excision of the pyramidal lobe can be overlooked during thyroid gland excision, radiologists are expected to determine the presence of the lobe and inform surgeons preoperatively. Malignant tumors arising from the pyramidal lobe are rare as compared with malignancy in the main thyroid gland. Although a case of follicular carci-

noma from the pyramidal lobe has been described in the literature [4], no case of papillary carcinoma from the pyramidal lobe has been previously reported.

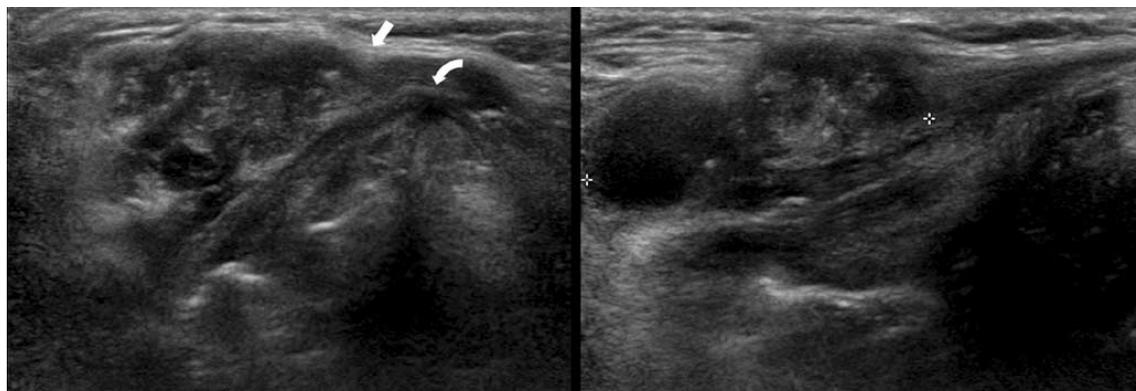
Here, we report a rare case of papillary carcinoma arising from the pyramidal lobe that was evaluated by ultrasonography (US) and computed tomography (CT) before surgery.

### Case Report

A 54-year-old woman was referred to our hospital with a palpable mass in the submental area. On US, the mixed echoic, 3 cm sized mass, which contacted surrounding muscle, was found to have internal microcalcifications and to start inferiorly from the thyroid cartilage level and to end superiorly at the submental area (Fig. 1A). US depicted no other focal lesion in the both thyroid glands. Pathologic lymph

nodes were observed in right neck level IV and in left neck levels III and IV (Fig. 1B). CT evaluation revealed a dumbbell shaped mass with a dominant cystic component in its upper portion and a slightly enhancing solid portion in its lower portion (Fig. 1C). Furthermore, this lower portion was connected to nor-

mal appearing thyroid tissue extending from the right side of the isthmus. Papillary carcinoma with lymph node metastasis was diagnosed based on US-guided fine needle aspiration of the mass and lymph nodes in right level IV and left level III. The patient underwent bilateral total thyroidectomy with central compart-



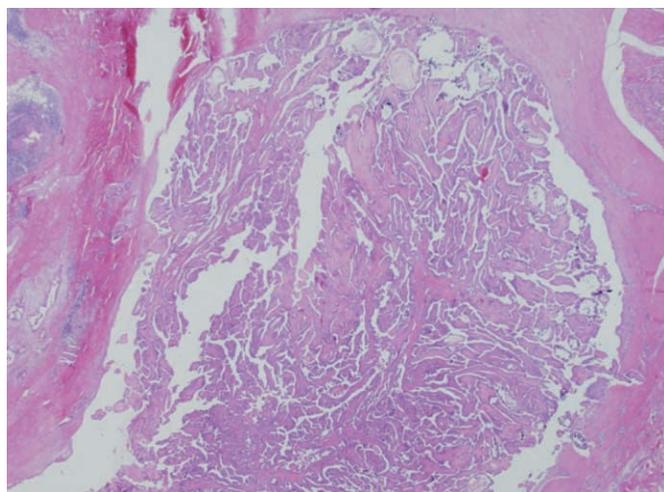
A



B



C



D

**Fig. 1. A.** Transverse and longitudinal ultrasound images (left and right images, respectively) of a 54-year-old woman with a submental mass. The approximately 3 cm sized mass with mixed echogenicity and internal microcalcifications started from thyroid cartilage (curved arrow) and extended superiorly to the submental area. The mass was observed to contact surrounding muscle, which suggested muscle invasion (straight arrow). **B.** Round lymph nodes with internal microcalcifications were noted bilaterally in the neck. **C.** Computed tomographic image showing the dumbbell shaped mass with a cystic component in its superior portion (arrow) and a slightly enhancing solid portion in its inferior side (curved arrow). There was no evidence of direct hyoid bone invasion. **D.** The histopathological investigation revealed tumor extending to extrathyroidal soft tissue and skeletal muscle by hematoxylin and eosin staining (original magnification,  $\times 12.5$ ).

ment neck dissection and bilateral modified radical neck dissection. The histopathologic examination revealed papillary carcinoma of 1.5 cm in diameter with adjacent strap muscle involvement (Fig. 1D), and confirmed bilateral metastasis to lymph nodes. No thyroglossal duct cyst was found during pathologic examination, which suggested that the mass was from the pyramidal lobe and not from a thyroglossal duct cyst.

## Discussion

The thyroid gland starts developing during the third week of the embryonic period from the first and second branchial pouches [5]. The pyramidal lobe of the thyroid gland is an embryologic remnant of the caudal end of the thyroglossal tract and can be either absent or present singly or in duplicate [6]. During embryonic development, the thyroid bud migrates from a foramen cecum on a tongue and passes through the base of the oral cavity and hyoid bone. The descending tract so formed produces a cavity called the thyroglossal duct, and the pyramidal lobe is a thyroid tissue in the distal portion of this duct. Only about 50% of the population have a pyramidal lobe [1, 2], which is usually attached to the isthmus on the left side, although it can also join with a lateral lobe [7].

Malignant tumors arising in the pyramidal lobe are rare. Sturniolo et al. found 44 cases of pyramidal lobe associated thyroid carcinoma among 1,405 surgically treated patients [2], although these cases involved a primary lesion in main thyroid tissue. Ogawa et al. reported a case of follicular carcinoma from the pyramidal lobe; this was the first case encountered among 778 surgically treated thyroid carcinoma cases over 15 years [4]. The histologic evaluation in our case revealed papillary carcinoma with psammomatous calcification from the pyramidal lobe, and no thyroglossal duct cyst was found around the surgical specimen.

The management of papillary carcinoma in the main thyroid lobe depends on tumor size, invasion, and the presence of lymph node metastasis. The pyramidal lobe is an important consideration during thyroidectomy, because failure to resect the structure can lead to

the recurrence of thyroid malignancy. Furthermore, a remaining pyramidal lobe can reduce the effect of postoperative Iodine-131 therapy [3]. Because surgical excision of the pyramidal lobe constitutes a pitfall during the excision, the possible presence of the structure should be borne in mind during preoperative US. Thus, in addition to surrounding neck areas, the submental area should be thoroughly evaluated during US in those with a thyroid lesion.

During US, if pyramidal lobe mass or a thyroglossal duct cystic mass is suspected, the possibility of hyoid bone invasion should be investigated. This is because the pyramidal lobe represents the inferior portion of the thyroglossal duct and may or may not be attached to the hyoid bone [8, 9]. If carcinoma in the pyramidal lobe is observed to invade hyoid bone, surgical resection of the involved bone region should also be considered. However, in our case, there was no evidence of hyoid bone involvement during either preoperative imaging and postoperative pathologic evaluations.

To our knowledge, this is the first case report of papillary carcinoma primarily arising from the pyramidal lobe of the thyroid gland. The mass was mixed echoic with internal microcalcifications with muscle invasion but without hyoid bone invasion. When performing neck US in a patient with a longitudinal mass extending from the thyroid, we advise that pyramidal lobe malignancy as well as a thyroglossal duct anomaly be considered.

## 요 약

유두암종은 갑상선에서 주로 발생하며 갑상선 피라미드엽에서 발생하는 경우는 드물다. 오른쪽 턱밑에 만져지는 종괴를 주소로 내원한 54세 여자의 초음파를 시행한 결과 3 cm 크기의 석회화를 포함한 혼합 에코 병변을 발견하였고 이 병변은 갑상선 연골높이에서 시작하여 이보다 상방으로 놓여있었다. 양쪽 갑상선에는 특이 병변이 관찰되지 않았고 양측 갑상선절제술을 시행한 결과 피라미드엽에서 발생한 유두암종으로 밝혀졌다. 이에 저자들은 갑상선 피라미드엽에서 발생하는 유두암종의 영상의학적 소견에 대해 기술하고 관련된 문헌에 대해 고찰한다.

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