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CASE REPORT

Double Pyramidal Lobe of the Thyroid Gland a Rare Variation: Case Report

Arsheed Hussain Hakeem [1] · Imtiyaz Hussain Hakeem [2] · Hassaan Javaid [3] · Fozia Jeelani Wani [4]

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Abstract

Knowledge of the variations of the pyramidal lobe of the thyroid is important for surgeons to perform complete resection of the functional thyroid tissue. Complete excision of the thyroid tissue surgery reduces the chances of recurrence in both the benign and the malignant diseases. It is important to remove all functioning thyroid tissue especially in the differentiated thyroid cancer so the postoperative radioiodine ablation is more effective and serum thyroglobulin acts as an efficient marker. We report a case of the double pyramidal lobe of thyroid gland in a woman of age 63 years with follicular thyroid cancer. Our literature search revealed only three documented cases of the double pyramidal lobe. Knowledge and recognition of such a rare variation is essential to perform safe and effective thyroid surgery.

Keywords Thyroid gland · Pyramidal lobe · Total thyroidectomy · Radioiodine ablation · Thyroglossal duct

Introduction

Variations in the size, shape, and position of the pyramidal lobe of the thyroid are well documented in the literature [1–4]. However as far as the variation in the number is concerned, only three documented cases of double pyramidal lobes have been reported in the English language scientific literature [5–7]. Knowledge of this rare variation of the pyramidal lobe is of significance to the thyroid surgeons as incomplete removal of the thyroid tissue has important implications. If not recognized and completely excised at the time of primary surgery, it may result in the recurrence in case of both benign and malignant diseases [3, 4]. Gross complete excision of thyroid tissue is more important in surgery of well-differentiated thyroid cancer, as residual functioning thyroid tissue in the pyramidal lobe will result in less effective postoperative radioiodine ablation. Not only will be the therapeutic benefit be compromised but also serum thyroglobulin will not act as an effective post surgery marker for the follow-up of such cases.

The aim of this case report was to present a rare variation of the double pyramidal thyroid lobe in an operated woman with follicular carcinoma thyroid. Clinicians involved in thyroid surgery should have knowledge of such a variation so that any such variation is recognized on table and effectively dealt with and hence reduce the chances of local recurrence and ensuring complete gross total resection of the thyroid.

Case Report

A 63-year-old woman was operated for a follicular neoplasm involving the left lobe of the thyroid. Ultrasonography of the thyroid showed hypoechoic solid nodule measuring 5 × 4 cm in the left thyroid lobe with multiple isoechoic nodules in the left and right lobes. There was no significant lymph-

✉ Arsheed Hussain Hakeem
drahhakim@gmail.com

Imtiyaz Hussain Hakeem
imtiyaz.hakim@gmail.com

Hassaan Javaid
23voldemort@gmail.com

Fozia Jeelani Wani
drfozia80@gmail.com

[1] Consultant Surgical Oncology (Head and Neck), Apollo Cancer Hospitals, Jubilee Hills, Hyderabad 500096, India

[2] Department of Nephrology, Metroplex Hospital, Killeen, TX, USA

[3] Department of Internal Medicine, Government Medical College, Srinagar, J&K, India

[4] Department of Gynqaecology and Obstetrics, Apollo Hospitals, Hyderabad 500096, India

adenopathy associated. Fine needle aspiration cytology was in favor of follicular neoplasm (Bethesda III). USG was not useful in detecting pyramidal lobes preoperatively. In view of the nodular disease in both lobes of the thyroid gland, total thyroidectomy was performed. At the time of neck exploration during the surgery, double pyramidal lobe was recognized. Careful dissection of both the pryramidal lobes was performed right from the isthmus up to the hyoid bone. Both the pyramidal lobes were arising from the isthmus and were excised in continuity (Figs. 1 and 2) Postoperative period was uneventful. Histopathology was in favor of minimally invasive follicular carcinoma thyroid. Patient was treated with postoperative adjuvant radioiodine ablation. She is being regularly followed in our outpatient services.

Discussion

There are differing views about the pyramidal lobe of the thyroid gland, some authors consider it as an anatomical anomaly, while others consider it as a morphological variation and now most are of the view that it is normal component of the thyroid gland [2, 4]. The reported prevalence of the pyramidal lobe of thyroid of as high as 65% also suggests it to be normal anatomic component rather than morphological variation [2, 4, 8, 9]. The completeness of thyroid removal has significant impact on appropriate surgical management of both the benign and malignant disease. Complete excision of the functional thyroid tissue is important to prevent recurrence and repeat surgery. It also allows efficient follow-up of well-differentiated thyroid cancers with serum thyroglobulin (Tg) measurement [10]. About 23% patients had pyramidal lobe remnant as estimated by ^{99m}Tc pertechnetate nuclear scan after total thyroidectomy as reported by Gurleyik E et al. [10]. Zeuren R et al. found RAI uptake in the region of the pyramidal lobe in 46% of the patients localized by SPECT/CT imaging at the time of RAI remnant ablation in 141 DTC patients undergoing total thyroidectomy [11]. Nadia Sawicka also found pyramidal lobe remnant in 30% cases in a retrospective analysis after radioiodine neck scans in 302 cases of thyroid cancer. They reported more repeat surgical procedures in the group where pyramidal lobe was detected on RAI scan than the control group where no remnant pyramidal lobe was noticed [12].

Knowledge of the variations of the pyramidal lobe is desired for clinicians to achieve gross total removal of the thyroid tissue. Recognition and complete excision of the pyramidal lobe is more important in the malignant conditions of the thyroid as not only can it be a potential site for recurrence but it may result in inefficient postoperative radioiodine ablation. The remnant functioning thyroid tissue in the pyramidal lobe will take up most of the post surgery radioiodine and hence serum thyroglobulin will not act as effective marker for disease persistence or

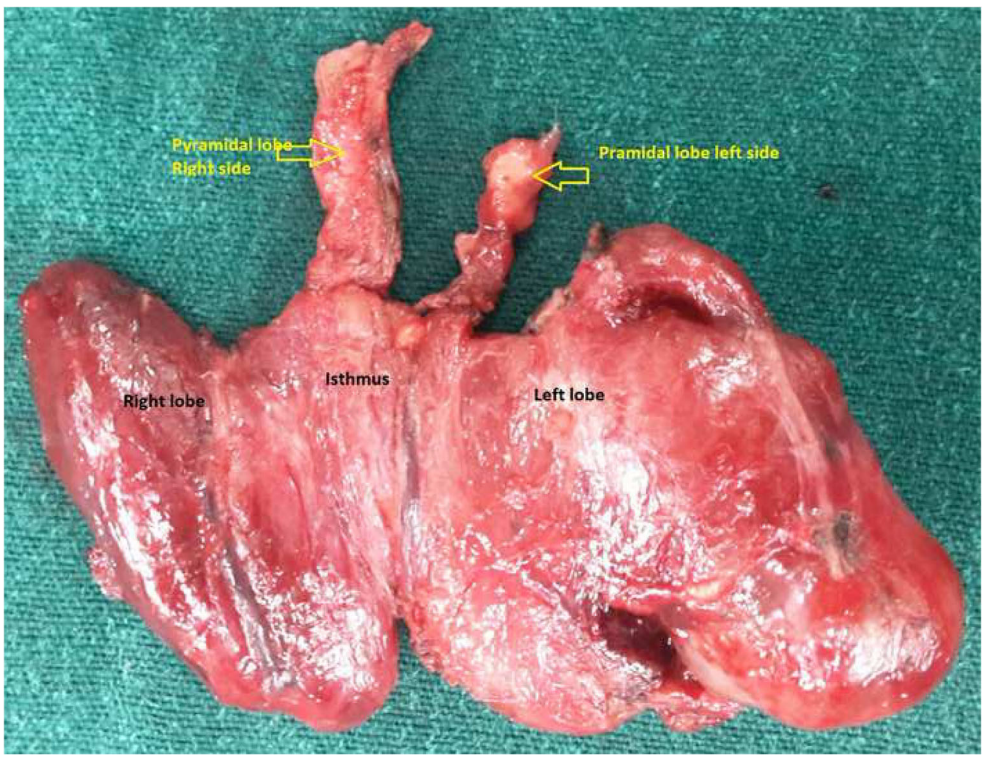

Fig. 1 Clinical photograph of the total thyroidectomy specimen with double pyramidal lobes arising from the isthmus (anterior view)

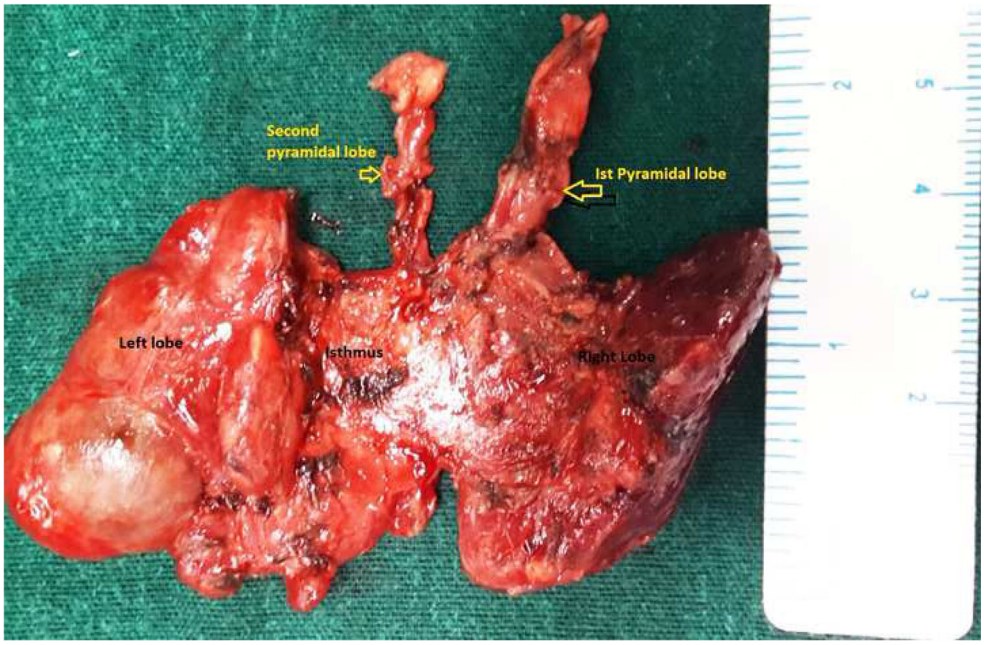

Fig. 2 Clinical photograph of the total thyroidectomy specimen with double pyramidal lobes arising from the isthmus (posterior view)

recurrence. Our literature search revealed only three documented such cases of double pyramidal lobe [6–8]. Since surgical removal is the main and only effective treatment modality for thyroid nodular disease, exploration of the thyroid region for existence of the pyramidal lobe should not be ignored. One more factor that emphasizes the identification during primary surgery is that pyramidal lobe often remains non-visualized during preoperative imaging studies.

Conclusion

Anterior compartment of the neck should be explored for variations of the pyramidal lobe like duplication and completely excised during thyroid surgery as it is highly significant to avoid recurrence in benign and malignant nodular disease. It will allow serum thyroglobulin to act as an efficient marker for follow-up of the differentiated thyroid cancer and achieve better therapeutic outcomes.

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Compliance with Ethical Standards

Competing Interests The authors declare that they have no competing interests.

Informed Consent The informed consent was obtained from the patient for the publication of this report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Ethical Approval All authors read and approved the final manuscript.

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