

# Diagnostic Pitfalls on Thyroid Ultrasound: Recognizing Diffuse Sclerosing Papillary Thyroid Carcinoma

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## Background

- ❖ Diffuse sclerosing variant (DSV) is a rare, aggressive subtype of papillary thyroid carcinoma (PTC)<sup>1</sup>
- ❖ Recognizing its unique and variable US features and identifying suspicious lymph nodes may prevent diagnostic delays

## Initial Case Presentation

- ❖ 37-year-old female presented to PCP with palpable right neck lymph node noticed several weeks ago
- ❖ No past medical history
- ❖ Family history: thyroid cancer
- ❖ ROS: Positive for fatigue. Negative for fever, chills, recent illness, changes to hair/skin/nails, weight changes, night sweats
- ❖ Exam: normal head and neck exam, no thyromegaly
- ❖ Imaging: ultrasound in central panel (Figure 1)

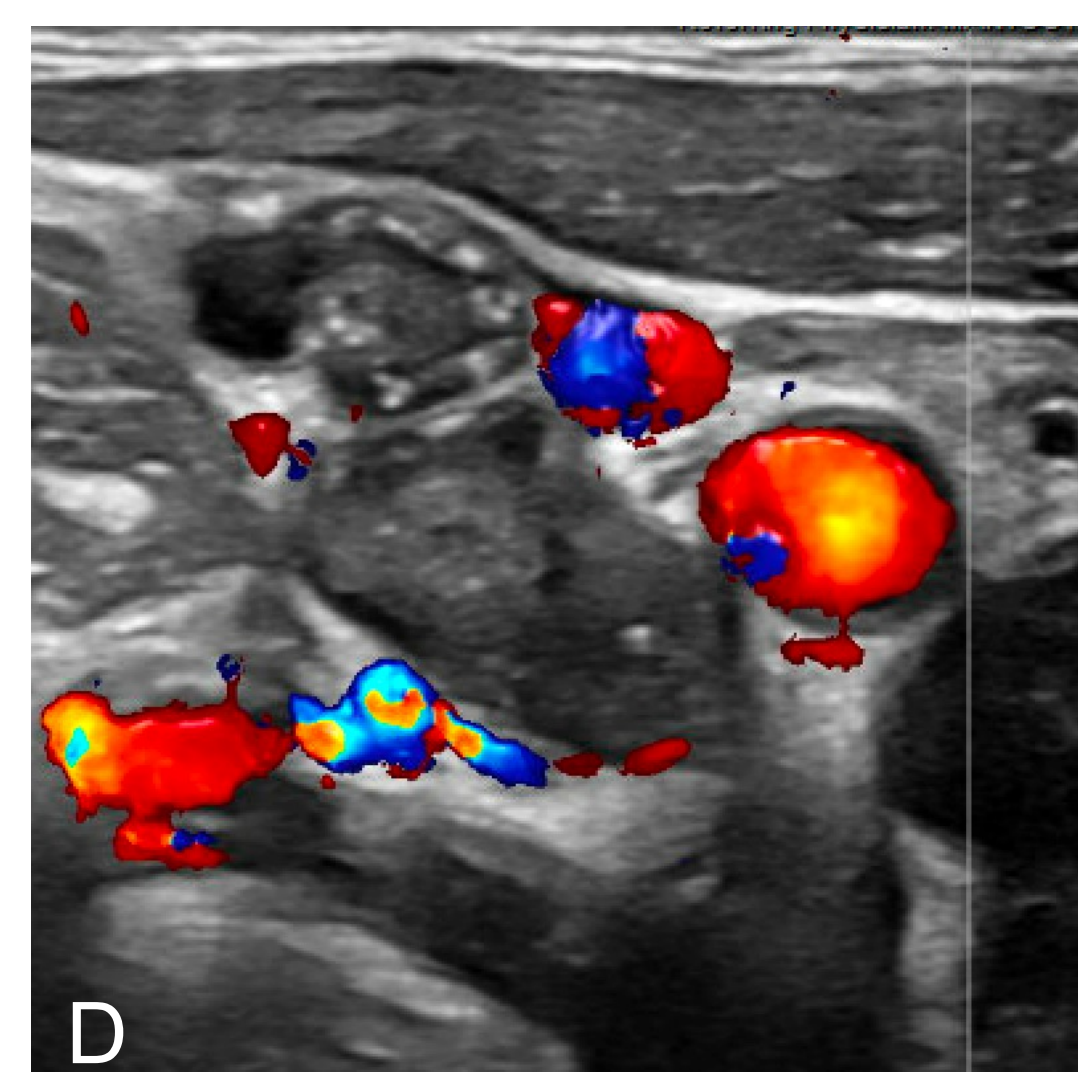
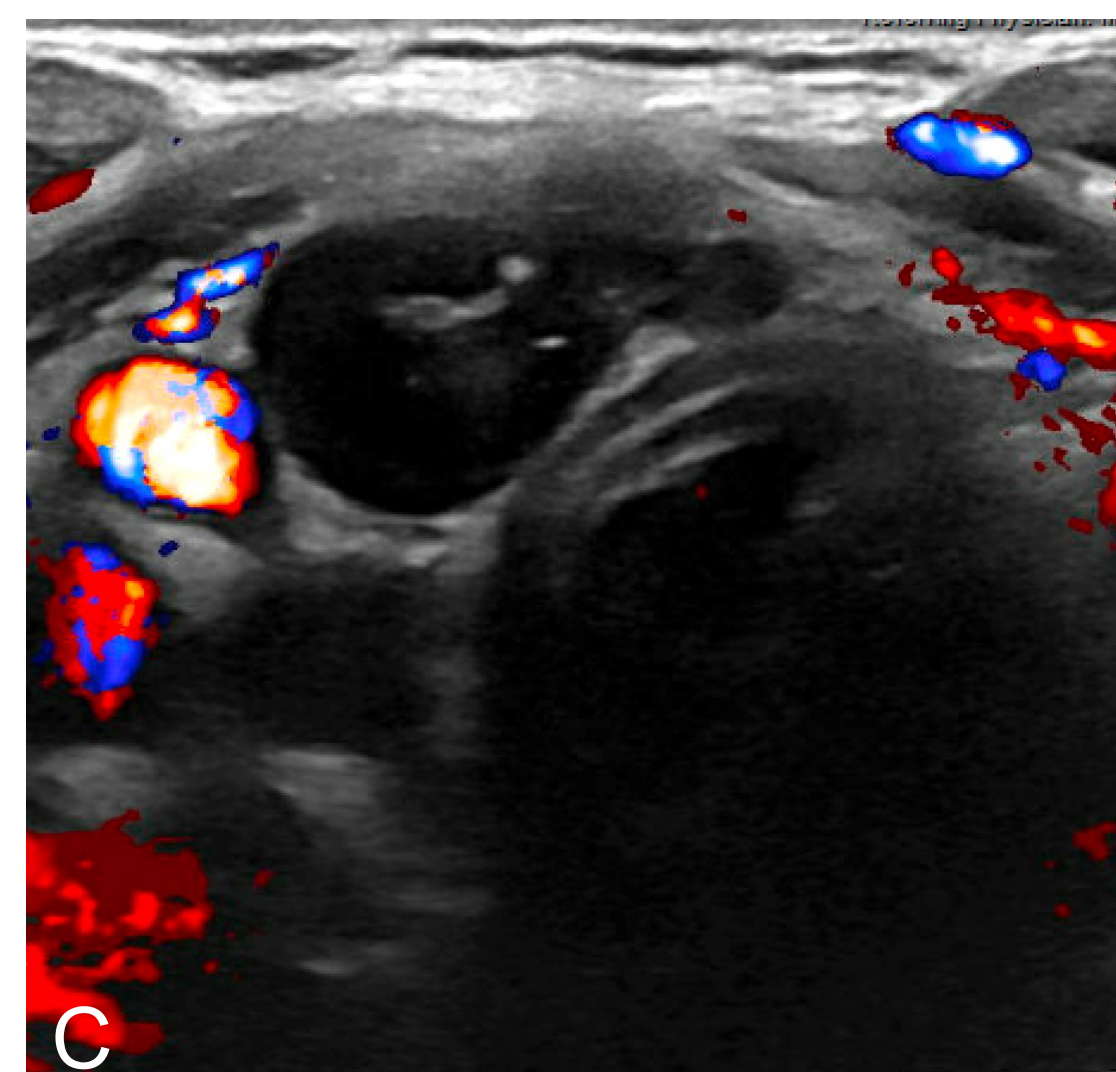
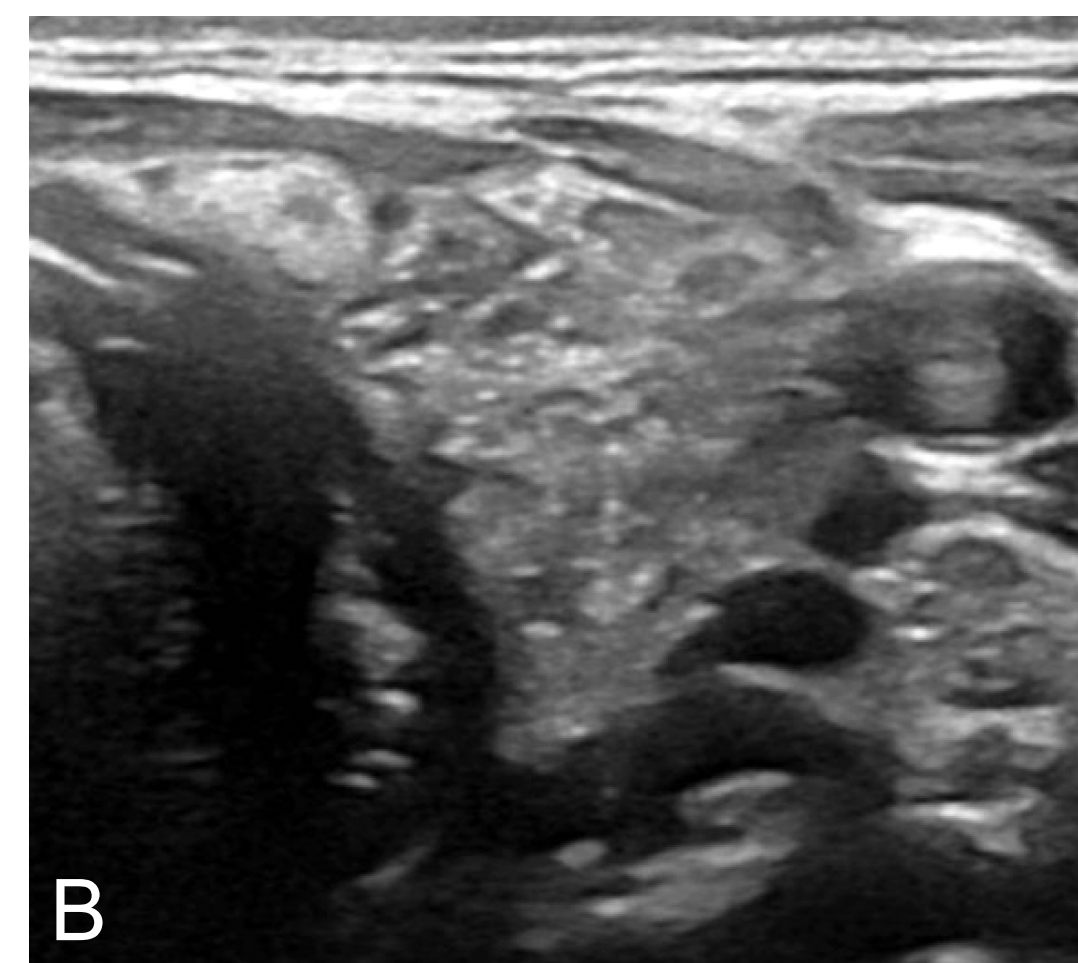
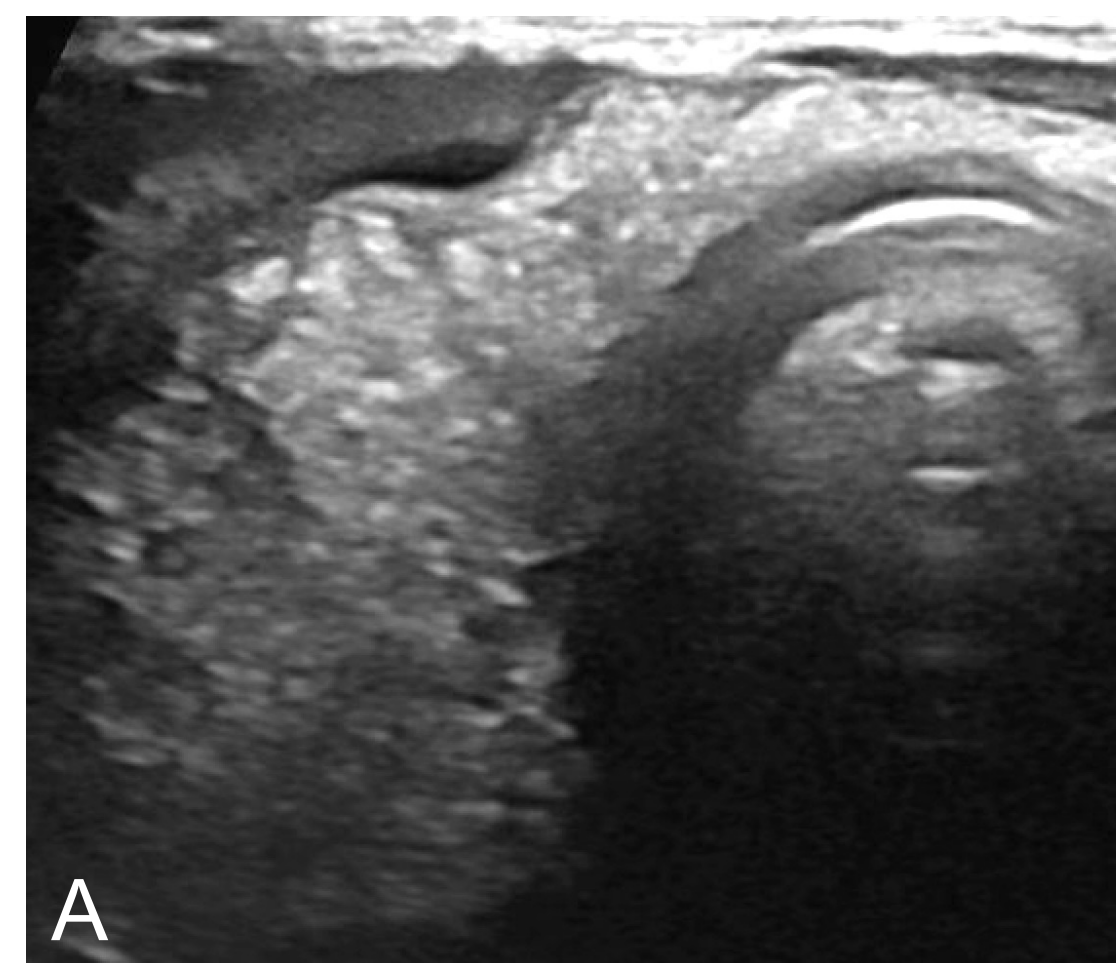
### Labs:

- ❖ TSH: 2.783
- ❖ Free T4: 0.9
- ❖ TPO antibodies: 736

- ❖ Referred to endocrinology for suspected Hashimoto's thyroiditis based on labs and ultrasound appearance

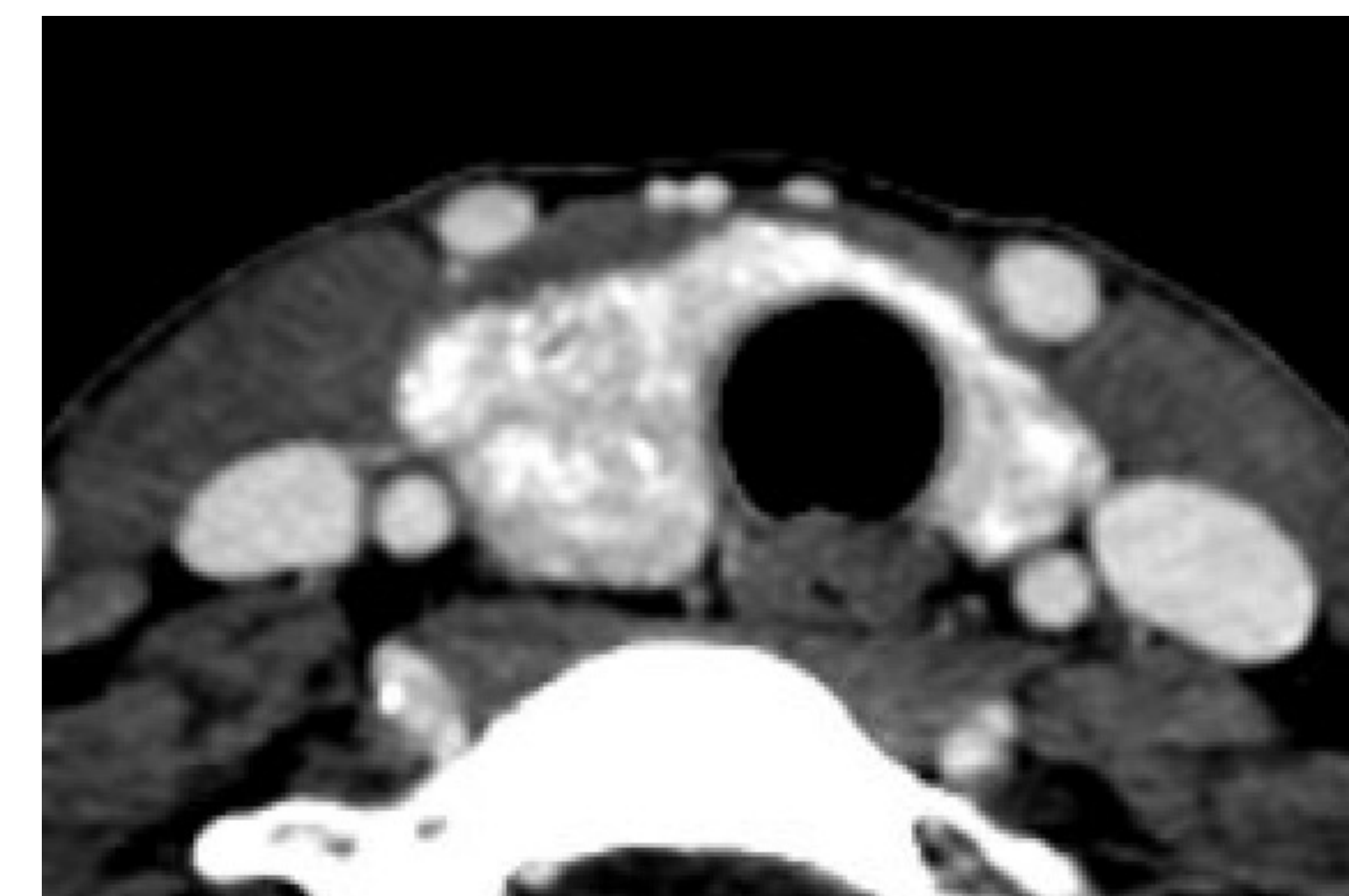
- ❖ POCUS prompted lymph node fine needle aspiration (FNA) → consistent with PTC

## Review of Imaging



**Figure 1.** Ultrasound (left) showing nonspecific parenchymal heterogeneity of the (A) right and (B) left lobes of the thyroid gland without discrete nodules. Mild to moderate right cervical lymphadenopathy of the (C) right central neck and (D) and right lateral neck level 3 is demonstrated.

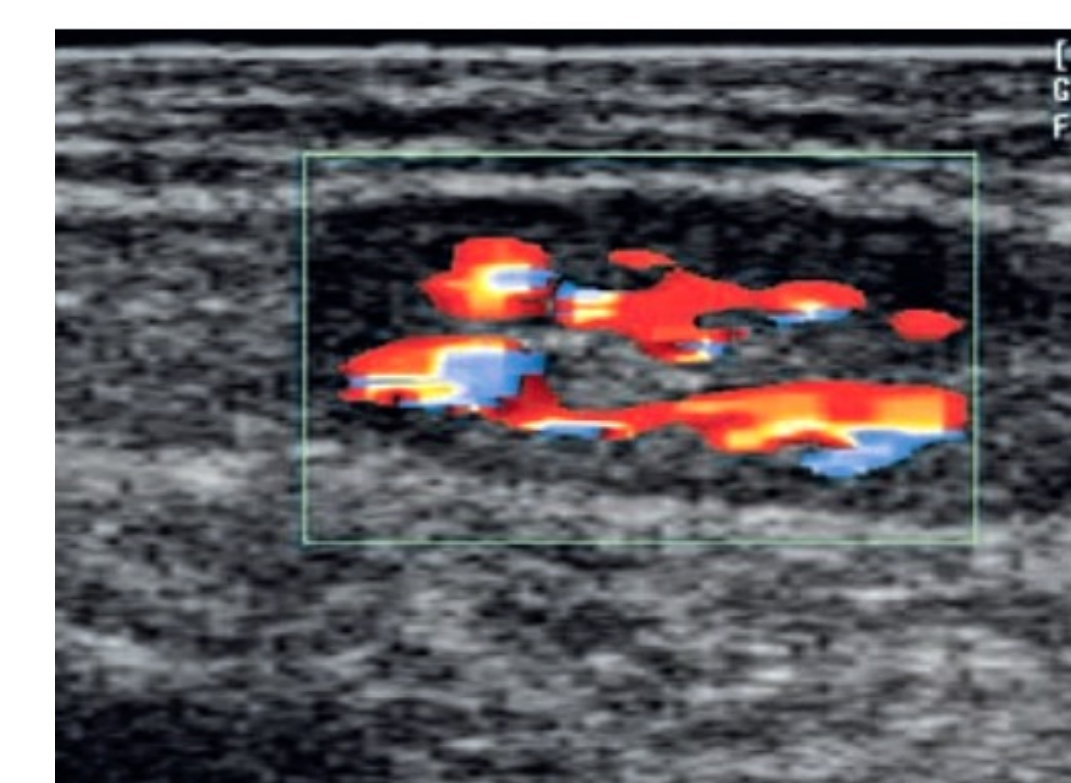
**Figure 2.** CT scan (below) showing heterogeneous mass-like enlargement of the right lobe with diffuse calcifications



**Table 1.** Comparison of Lymph Node Characteristics

	Pathologic nodes	Normal nodes
Size	> 1.0 cm	< 0.5 cm
Shape	L/S ratio < 2 (round)	L/S ratio > 2 (elliptical)
Hilum	Absent fatty hilum	Central fatty hilum
Vascular pattern	Peripheral or absent vascular pattern	Central vasculature
Echogenicity	Heterogeneous, hyperechoic	Homogenous, hypoechoic
Margins	Irregular, blurred margins	Well-defined margins
Exam findings	Fixed, nontender, progressive enlargement	Mobile, tender, stable size

Long axis/Short axis ratio has accuracy of up to 94%<sup>4</sup>



Baskin 2012<sup>2</sup>

## Case Wrap-Up

- ❖ Patient underwent total thyroidectomy with bilateral central and lateral modified radical neck dissections
- ❖ Pathology: diffuse sclerosing PTC involving entire gland
- ❖ Papillary carcinoma seen in 19 of 71 lymph nodes across bilateral central and lateral neck compartments, with the largest metastasis measuring 4.5cm (stage pT3apN1b)
- ❖ She recovered without complications, underwent I-131 thyroid ablation (151 mCi), and was disease-free at three months

## Discussion

- ❖ DSV accounts for 0.7-6.6% of PTC cases<sup>1</sup>
- ❖ Characterized by diffuse thyroid infiltration, extrathyroidal extension, and nodal metastasis at presentation<sup>1,2</sup>
- ❖ Epidemiology: increased prevalence in women and children, most common in third decade (vs. fifth for classic PTC)
- ❖ DSV and Hashimoto's thyroiditis:
  - ❖ Both can have on ultrasound diffuse heterogeneity, lack of discrete nodule, and microcalcifications (though fewer in Hashimoto's)
  - ❖ Up to 90% of DSV cases coexist with Hashimoto's thyroiditis<sup>3</sup>
- ❖ Thorough lymph node mapping prior to surgery is necessary given the prevalence of lymph node metastases at diagnosis
- ❖ Prognosis: Meta-analyses (Vuong 2017, Crayton 2023) show that DSV has higher odds of lymph node and distant metastases, vascular invasion, extrathyroidal extension, and recurrence compared to classic PTC<sup>6,7</sup>
  - ❖ Despite this, survival tends to be similar to classic PTC

## Learning Points

- ❖ DSV can mimic and coexist with Hashimoto's thyroiditis
- ❖ **Pathologic lymph node identification is critical** →
  - lymph nodes may be the only clue distinguishing malignancy from Hashimoto's thyroiditis
- ❖ Early recognition is crucial due to higher rates of metastasis and recurrence

## References

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