



## Author's Reply

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Dear Editor,

We appreciate the interest in our article, which presents our findings on thyroid incidentalomas in FDG-PET/CT and decision-making for fine needle aspiration biopsy (FNAB).<sup>[1]</sup> In this retrospective study, we investigated the SUVmax values for thyroid incidentalomas in FDG-PET/CT and their relationship with ultrasonography findings and FNAB results.

In our study, 14,003 FDG-PET/CT reports of 8,259 patients were retrospectively evaluated, and a total of 383 thyroid incidentalomas were detected. Histopathological analyses of 73 patients were used to define the SUVmax cutoff value, which was determined according to the ROC curve. The area under the curve was 0.718, and it was statistically significant ( $p=0.018$ , 95%CI:0.564–0.872). In statistical methodology, the area under the ROC curve indicates the accuracy of the test in distinguishing between benign and malignant nodules. The magnitude of the area under the ROC curve reflects the discriminatory ability of the diagnostic test (0.90–1.00=excellent, 0.80–0.90=good, 0.70–0.80=average, 0.60–0.70=weak, 0.50–0.60=fail).<sup>[2]</sup> Based on our results, the SUVmax value can be considered discriminative in the evaluation of thyroid incidentalomas for malignancy, although its discriminatory ability was average. Additionally, in nodules with an SUVmax above 5.5, the malignancy rate was 30%, whereas in patients with SUVmax<5.5, the malignancy rate was 10%; therefore, the SUVmax value may contribute to the decision to perform a biopsy ( $p=0.023$ ).

According to the latest American Thyroid Association guideline on the management of thyroid nodules, FNAB should be performed for any thyroid incidentaloma detected on FDG-PET/CT larger than 1cm and confirmed with ultrasonography, without requiring additional risk assessment.<sup>[3]</sup> Therefore, no selection bias was expected in this group based on nodule characteristics. However, as discussed in the Discussion section of our manuscript, patient selection may be influenced by systemic involvement of the primary malignancy and the general performance status of patients, which can affect the completion of diagnostic procedures or lead to patient refusal. This represents

an important limitation in retrospective studies related to thyroid incidentalomas detected on FDG-PET/CT imaging.<sup>[4–6]</sup> Unfortunately, it is not feasible to perform biopsies in all patients with thyroid incidentalomas undergoing oncological treatment or to randomly select patients for biopsy in clinical settings.

Our findings regarding the relationship between SUVmax and malignant thyroid nodules are supported by several previous studies. In a study by Chung et al.,<sup>[7]</sup> 71,878 patients underwent FDG-PET/CT, and a total of 234 thyroid incidentalomas were evaluated. In the final analysis of 234 thyroid nodules, higher SUVmax ( $\geq 6.25$ ; OR, 2.55; 95%CI:1.44–4.52;  $p=0.001$ ) was found to be a statistically significant predictor of malignancy.

In another study including 11,591 patients, an SUVmax of 3.5 or higher was associated with malignant potential in thyroid incidentalomas.<sup>[8]</sup> Similarly, in a study by Şencan Eren et al.,<sup>[9]</sup> 4,204 patients were evaluated, and a cutoff SUVmax of 3.5 for malignancy risk was identified. Previous studies have suggested that these cutoff values may depend on the PET/CT device, patient characteristics, and the evaluating healthcare center. Nevertheless, our findings are consistent with previous studies regarding malignancy risk in thyroid incidentalomas detected on FDG-PET/CT.

It is noteworthy that several studies in the literature have not found a correlation between SUVmax and malignancy risk. In a study conducted by Sager et al.,<sup>[10]</sup> FDG-PET/CT scans of 12,796 patients were retrospectively evaluated. A total of 221 thyroid incidentalomas were detected, and based on pathological data from 126 patients, no correlation was found between SUVmax and malignancy, with a reported malignancy rate of 34%.

Our manuscript does not suggest the use of FDG-PET/CT as a standalone imaging modality for predicting malignancy. However, FDG-PET/CT findings should be carefully evaluated and may serve as a criterion for indicating FNAB in ultrasonographically detected nodules, especially in patients with SUVmax>5.5. Further studies are still needed to better understand the relationship between PET/CT findings and thyroid nodule characteristics.

## References

1. Kostek M, Kostek H, Unlu MT, Caliskan O, Cakir Y, Sengul Z, et al. Deciding on fine needle aspiration biopsy in thyroid incidentalomas in FDG-PET/CT: should ultrasonographic evaluation or FDG uptake be in the foreground? *Sisli Etfal Hastan Tip Bul* 2025;59:20–7. [\[CrossRef\]](#)
2. Kanik EA, Erden S. Tanı testlerinin değerlendirilmesinde ROC (receive operating characteristics) eğrisinin kullanımı. *Mersin Üniv Tıp Fakültesi Derg* 2003;3:260–4.
3. Haugen BR, Alexander EK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE, et al. 2015 American Thyroid Association Management Guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: The American Thyroid Association Guidelines Task Force on thyroid nodules and differentiated thyroid Cancer. *Thyroid* 2016;26:1–133. [\[CrossRef\]](#)
4. de Leijer JF, Metman MJH, van der Hoorn A, Brouwers AH, Kruijff S, van Hemel BM, et al. Focal thyroid incidentalomas on 18F-FDG PET/CT: a systematic review and meta-analysis on prevalence, risk of malignancy and inconclusive fine needle aspiration. *Front Endocrinol (Lausanne)* 2021;12:723394. [\[CrossRef\]](#)
5. Keskin Y, Bağcı D, Ulucanlar AH, Uçmak G. Beyond the primary tumor: malignancy risk and evaluation strategies for 18F-FDG PET/CT-detected Incidentalomas. *Mol Imaging Radionucl Ther* 2026;35:28–34. [\[CrossRef\]](#)
6. Coerts HI, van Kemenade FJ, van Ginhoven TM, Vriens MR, Medici M, Vriens D, et al. The malignancy risk of thyroid incidentalomas detected by [18F]FDG PET/CT lower than expected: a nationwide observational study in the Netherlands. *Eur J Nucl Med Mol Imaging* 2026. [\[CrossRef\]](#)
7. Chung SR, Choi YJ, Suh CH, Kim HJ, Lee JJ, Kim WG, et al. Thyroid incidentalomas detected on 18F-fluorodeoxyglucose positron emission tomography with computed tomography: malignant risk stratification and management plan. *Thyroid* 2018;28:762–8. [\[CrossRef\]](#)
8. Abdulrezzak U, Temizer E, Tutus A. The importance of FDG avidity in incidental thyroid nodules on FDG PET/CT. *Clin Imaging* 2025;128:110626. [\[CrossRef\]](#)
9. Şencan Eren M, Özdoğan Ö, Gedik A, Ceylan M, Güray Durak M, Seçil M, et al. The incidence of 18F-FDG PET/CT thyroid incidentalomas and the prevalence of malignancy: a prospective study. *Turk J Med Sci* 2016;46:840–7. [\[CrossRef\]](#)
10. Sager S, Vatankulu B, Sahin OE, Cınaral F, Uslu L, Baran A, et al. Clinical significance of standardized uptake values in thyroid incidentaloma discovered by F-18 fluorodeoxyglucose positron emission tomography/computed tomography. *J Cancer Res Ther* 2018;14:989–93. [\[CrossRef\]](#)