

Ossifying fibroma presented as an incidental [¹⁸F]FDG PET/CT uptake within the hard palate

Minchanat Satja^{1,2}, Napisa Bunnag^{1,2}, Sira Vachatanont^{3,4} 

¹Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

²Department of Radiology, King Chulalongkorn Memorial Hospital, Bangkok, Thailand

³Nuclear Medicine Unit, King Chulalongkorn Memorial Hospital, Bangkok, Thailand

⁴International Doctor of Medicine program (CU-MEDI), Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

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Abstract

Incidental uptake in [¹⁸F]FDG PET/CT is not uncommon, but uptake in the oral and sinonasal regions was less frequently reported. We present a case of incidental focal [¹⁸F]FDG PET/CT uptake within the hard palate, which was later revealed to be an ossifying fibroma. We also reviewed some relevant literature and suggested that further investigation may be necessary for some patients with incidental [¹⁸F]FDG PET/CT uptake in the oral and sinonasal regions.

KEY words: ossifying fibroma; [¹⁸F]FDG PET/CT; incidental findings; hard palate

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A 37-year-old woman with ovarian and rectal cancer underwent a [¹⁸F]-fluorodeoxyglucose ([¹⁸F]FDG) positron emission tomography/computed tomography (PET/CT) to evaluate the responses after the completion of her chemotherapy. Approximately one year before the [¹⁸F]FDG PET/CT, she presented with abdominal pain and the abdominal computed tomography (CT) showed right ovarian and rectal masses. She received a total abdominal hysterectomy with bilateral salpingo-oophorectomy, which revealed an endometrioid adenocarcinoma of the right ovary and a subsequent low anterior resection, which also revealed a poorly differentiated adenocarcinoma. Her adjuvant chemotherapy ended approximately two months before the [¹⁸F]FDG PET/CT.

The [¹⁸F]FDG PET/CT did not show evidence of [¹⁸F]FDG-avid disease in her abdominopelvic cavity. Although the patient denies any symptoms related to the nasal cavity and upper airway, such as nasal congestion, runny nose, epistaxis, pain, or growth sensation, the PET/CT revealed an [¹⁸F]FDG-avid expansile ossified lesion in the left palatine process of the maxilla. The lesion had a bulging contour in the adjacent nasal and oral cavities with a maximum standardized uptake value (SUV_{max}) of 10.3 (Fig. 1). Subsequently, the surgeon performed a fiber-optic laryngoscopy

with tumor excision using an oral approach. The histopathology of the mass was consistent with ossifying fibroma (Fig. 2).

Ossifying fibroma is a rare entity with a constantly changing classification [1]. Since the 2017 World Health Organization (WHO) classification of head and neck tumors, ossifying fibroma has been classified as a type of fibroosseous lesion [2]. Increased [¹⁸F]FDG uptake has been reported in several fibroosseous lesions, including non-ossifying fibromas, fibrous cortical defects, cortical desmoids [3], ossifying fibromas associated with hyperparathyroidism-jaw tumor syndrome [4], juvenile psammomatoid ossifying fibromas [5]. According to previous reports, the [¹⁸F]FDG uptake in fibroosseous lesions did not correlate with the size of the lesions and did not subside in follow-up [¹⁸F]FDG PET/CT. Therefore, some researchers suggested that these lesions should be characterized based on their CT appearance, rather than on [¹⁸F]FDG uptake [6].

The incidence of [¹⁸F]FDG-avid foci is increasing with the more widespread use of PET/CT. In the head and neck region, most common incidental [¹⁸F]FDG uptakes were seen within the thyroid gland, followed respectively by the pituitary gland, the parotid gland, and the naso-oropharynx. Pencharz et al. [7] suggested that proper management of incidental [¹⁸F]FDG uptake should depend on location, and standardized uptake values (SUV) were useful only in some locations.

No consensus guideline has been established on the management of incidental [¹⁸F]FDG uptake in the oral and sinonasal regions. It was reported that the most common cause of incidental [¹⁸F]FDG uptake in these regions on PET/CT was chronic rhinosinusitis.

Correspondence to: Sira Vachatanont, Nuclear Medicine Unit, King Chulalongkorn Memorial Hospital, 1873 Rama IV Rd, Pathum Wan, 10330 Bangkok, Thailand
e-mail: siravac@gmail.com

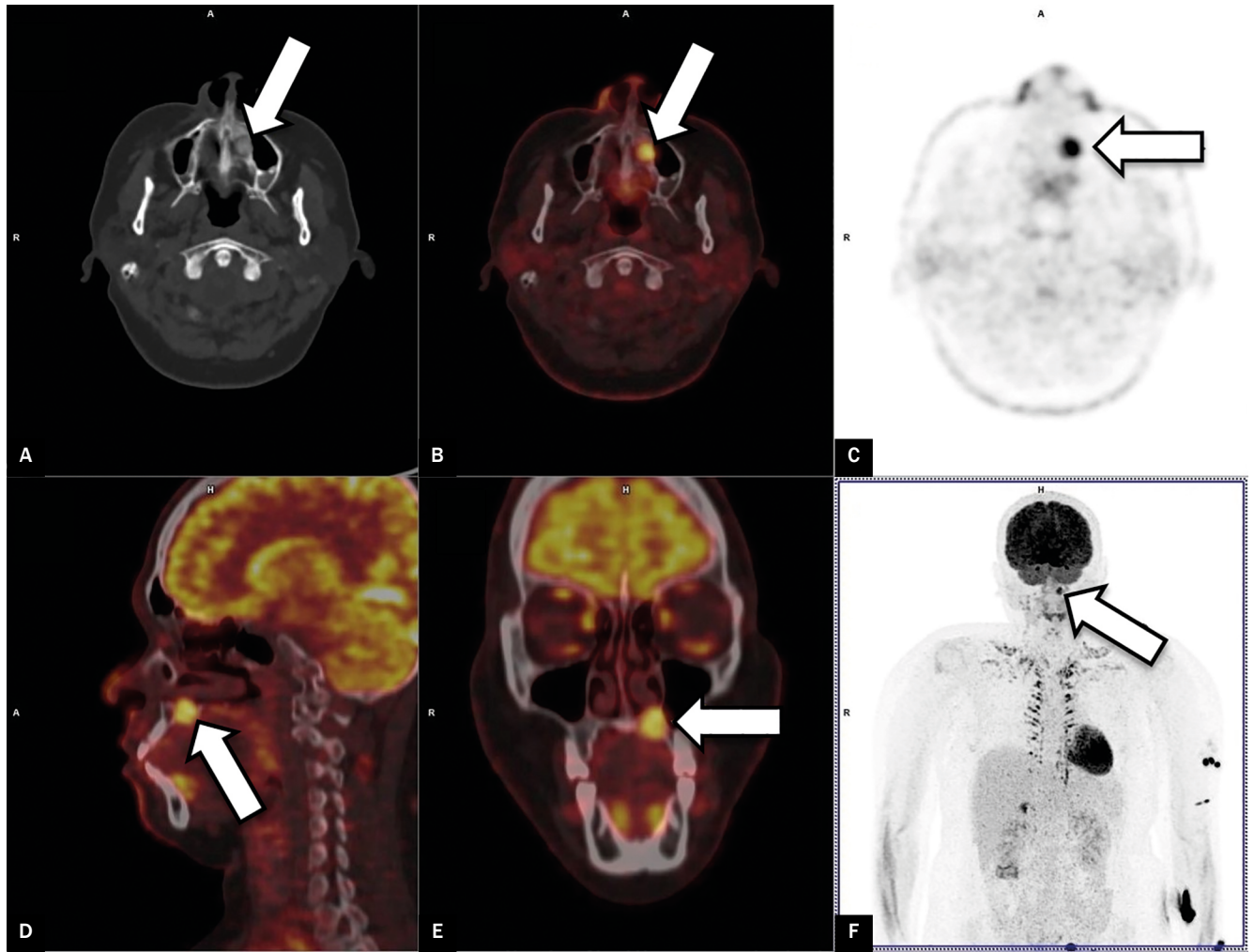


Figure 1. [¹⁸F]FDG PET/CT displayed in axial CT projection (A), axial fused PET/CT projection (B), axial PET maximum intensity projection (C), sagittal fused PET/CT projection (D), coronal fused PET/CT projection (E), and PET maximum intensity projection (F). The images show an expansile ossified lesion with focal [¹⁸F]FDG uptake, indicated by arrows, seen in the left palatine process of the maxilla on the [¹⁸F]FDG PET/CT. The lesion was later proven to be an ossifying fibroma

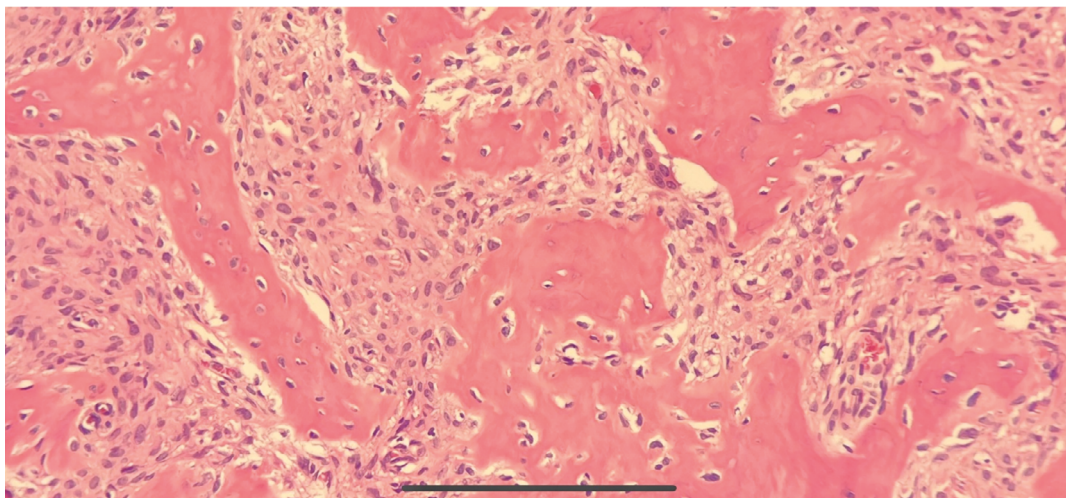


Figure 2. Histopathological image of the excised lesion from the hard palate. The histopathology section of the lesion showed mature bone spicules arranged in a random pattern surrounded by fibrous stroma

Unfortunately, malignancy could account for up to 27% of incidental uptake in the sinonasal region [8] and up to 14% of incidental uptake in the palatine tonsils [9]. Since malignancy was responsible for a substantial fraction of incidental oral and sinonasal uptake, additional investigation could be warranted in some patients with incidental oral and sinonasal uptakes based on the clinical context, type of uptake (diffuse vs. focal), and CT appearances.

Conflict of interest

The authors declare no conflicts of interest.

References

1. Nagar SR, Mittal N, Rane SU, et al. Ossifying fibromas of the head and neck region: a clinicopathological study of 45 cases. *Head Neck Pathol.* 2022; 16(1): 248–256, doi: [10.1007/s12105-021-01350-4](https://doi.org/10.1007/s12105-021-01350-4), indexed in Pubmed: [34184157](https://pubmed.ncbi.nlm.nih.gov/34184157/).
2. El-Naggar AK. WHO classification of head and neck tumours. International Agency; 2017.
3. Goodin GS, Shulkin BL, Kaufman RA, et al. PET/CT characterization of fibrous defects in children: 18F-FDG uptake can mimic metastatic disease. *AJR Am J Roentgenol.* 2006; 187(4): 1124–1128, doi: [10.2214/AJR.06.0171](https://doi.org/10.2214/AJR.06.0171), indexed in Pubmed: [16985165](https://pubmed.ncbi.nlm.nih.gov/16985165/).
4. Nazerani Hooshmand T, Pernthaler B, Szurian K, et al. 18F-FDG PET/CT in the hyperparathyroidism-jaw-tumor syndrome. *Clin Nucl Med.* 2021; 46(6): 497–498, doi: [10.1097/RLU.0000000000003625](https://doi.org/10.1097/RLU.0000000000003625), indexed in Pubmed: [33826572](https://pubmed.ncbi.nlm.nih.gov/33826572/).
5. Nakajima R, Saito N, Uchino A, et al. Juvenile psammomatoid ossifying fibroma with visual disturbance: a case report with imaging features. *J Neuroimaging.* 2013; 23(1): 137–140, doi: [10.1111/j.1552-6569.2011.00603.x](https://doi.org/10.1111/j.1552-6569.2011.00603.x), indexed in Pubmed: [21699600](https://pubmed.ncbi.nlm.nih.gov/21699600/).
6. Costelloe CM, Chuang HH, Chasen BA, et al. Bone windows for distinguishing malignant from benign primary bone tumors on FDG PET/CT. *J Cancer.* 2013; 4(7): 524–530, doi: [10.7150/jca.6259](https://doi.org/10.7150/jca.6259), indexed in Pubmed: [23983816](https://pubmed.ncbi.nlm.nih.gov/23983816/).
7. Pencharz D, Nathan M, Wagner TL. Evidence-based management of incidental focal uptake of fluorodeoxyglucose on PET-CT. *Br J Radiol.* 2018; 91(1084): 20170774, doi: [10.1259/bjr.20170774](https://doi.org/10.1259/bjr.20170774), indexed in Pubmed: [29243502](https://pubmed.ncbi.nlm.nih.gov/29243502/).
8. Tzelnick S, Bernstine H, Domachevsky L, et al. Clinical implications of incidental sinonasal positive FDG uptake on PET-CT. *Otolaryngol Head Neck Surg.* 2019; 160(4): 729–733, doi: [10.1177/0194599818821862](https://doi.org/10.1177/0194599818821862), indexed in Pubmed: [30598053](https://pubmed.ncbi.nlm.nih.gov/30598053/).
9. Reinholdt KB, Dias AH, Hoff CM, et al. Incidental FDG-avid foci in palatine tonsils on PET/CT. *Laryngoscope.* 2022; 132(12): 2370–2378, doi: [10.1002/lary.30081](https://doi.org/10.1002/lary.30081), indexed in Pubmed: [35226376](https://pubmed.ncbi.nlm.nih.gov/35226376/).