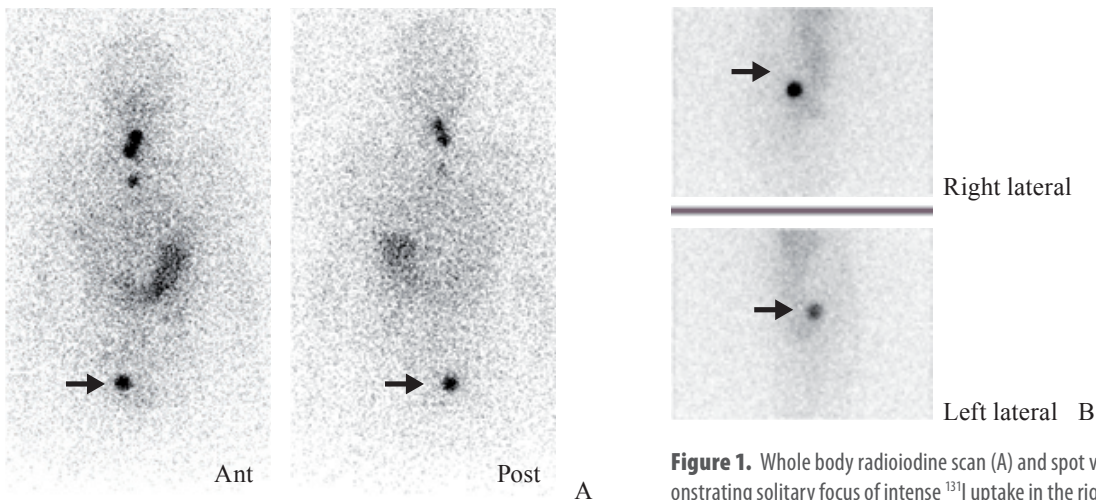


# Ovarian dermoid cyst serendipitously detected by pelvic radioiodine-<sup>131</sup>I uptake and by diffusion weighted MRI in a post-thyroidectomy case of papillary thyroid carcinoma

**To the Editor:** A 30 years old nullipara with a diagnosis of papillary thyroid carcinoma with nodal metastases had undergone total thyroidectomy and nodal dissection for the same. In the postoperative work-up for radioiodine-131 (<sup>131</sup>I) ablation of the residual tissue, she was found to have on <sup>131</sup>I whole-body scan multifocal uptake in the neck and a solitary focus in the mediastinum (Fig. 1a). In addition, there was a relatively intense focal uptake in the right pelvis above the

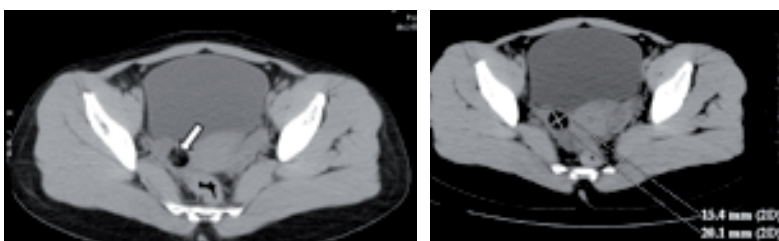
urinary bladder (Fig. 1a and b). Ultrasonography (USG) of the pelvis (Fig. 2) demonstrated a 2.3 x 2.0cm mostly echogenic mass with some sound attenuation in the right ovary. No color uptake to suggest internal vascularity was observed within this mass. Axial plain CT without contrast, undertaken in order to discard iodine interference, demonstrated in the 2.0x1.54cm right ovarian mass cavity with fat attenuation (Fig. 3). Magnetic resonance imaging (MRI) of the pelvis (Fig.



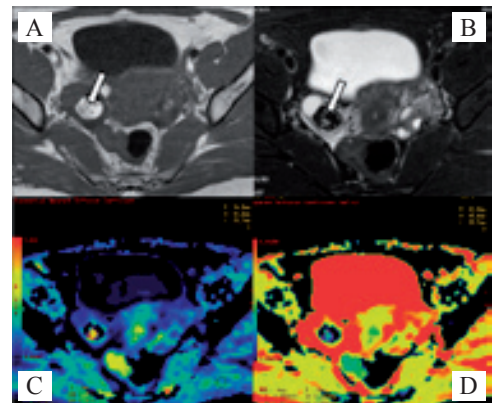
**Figure 1.** Whole body radioiodine scan (A) and spot view of the pelvis (B) demonstrating solitary focus of intense <sup>131</sup>I uptake in the right pelvis (arrows).



**Figure 2.**



**Figure 3.**



**Figure 4.**

**Figures 2-4.** Correlative USG, non-contrast CT and MRI of the pelvis demonstrating the right ovarian lesion. The characteristics of DWI-MRI (detailed in manuscript text) are commensurate with the features of ovarian dermoid.

4) with diffusion weighted imaging (DWI) was undertaken to further characterize the right ovarian lesion noninvasively. The axial T1-weighted spin-echo MR image (Fig. 4a) showed a high-signal-intensity mass of the right ovary (arrow). On the fat-saturated T2-weighted fast spin-echo MR (Fig. 4b), the mass demonstrated saturation of the cystic contents with punctate high signal intensity of size 2.0x1.8cm. On diffusion weighted MRI (Fig. 4c and d) the cystic contents of the lesion showed high signal on DWI, which had low apparent diffusion coefficient (ADC) value, attributable to fat and keratinoid substance [1, 2]. The ADC value of the cystic contents was  $0.570 \times 10^{-3} \text{mm}^2/\text{s}$ , while the cystic component presented values of  $1.77 \times 10^{-3} \text{mm}^2/\text{s}$ . The above findings were commensurate with the diagnosis of an ovarian dermoid cyst.

Dermoid cysts are cystic teratomata that contain developmentally mature skin, complete with hair follicles and sweat glands and can differentiate into a variety of tissues (e.g. sebum, blood, fat, bone, nails, teeth, eyes, cartilage) including thyroid tissue. The incidence of thyroid tissue in the ovarian dermoids ranges from 11% to 18% though in one series it was 7.3% [3]. Though mostly benign, they may undergo malignant transformation in one of its elements, usually develop squamous cell carcinoma. Malignant transformation of the thyroid tissue is extremely rare [4], usually being papillary thyroid carcinoma. A struma ovarii is a rare form of mature teratoma that contains mostly thyroid tissue. They can present with intriguing findings on functional scans, an understanding of which is important to obviate errors. Noting the age and nulliparous status of the patient, treatment with  $^{131}\text{I}$  was postponed so that the dermoid cyst could be surgically removed before high dose administration of  $^{131}\text{I}$ , so as to reduce the absorbed radiation dose to the right ovary.

*In conclusion*, it is important to recognize the physiological and pathological aetiologies (unrelated to thyroid) that demonstrate  $^{131}\text{I}$  uptake and may lead to false positive  $^{131}\text{I}$  scan in patients of DTC.

*The authors declare that they have no conflicts of interest.*

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