

## CASE REPORT

# A Case of Incidentally Detected Bladder Lipoma and a Review of the Literature

Emre Emekli<sup>1,\*</sup> and Elif Gundogdu<sup>2</sup>

<sup>1</sup>Department of Radiology, Etimesgut Sehit Sait Ertürk State Hospital, Ankara, Turkey; <sup>2</sup>Department of Radiology, Faculty of Medicine, Eskisehir Osmangazi University, Eskisehir, Turkey

**Abstract: Background:** Lipomas are benign fatty tumors made of fat tissue. Bladder lipomas are extremely rare. For this reason, it is necessary to be aware of the imaging features when incidentally detected in imaging.

**Case Report:** In the abdominal Computed Tomography (CT) performed as part of the follow-up examination of a 43-year-old patient, who had undergone surgery for adrenal adenoma five years earlier, a 14x9x8 mm smoothly marginated, ovoid-shaped, hypodense mass lesion with a homogeneous internal structure was detected in the anterior bladder wall. The pre-contrast density of the lesion was measured as -105 HU. The magnetic resonance imaging performed one year after the CT examination revealed a 14x9x8 intramural mass in the bladder wall, showing protrusion toward the lumen. The mass was observed to be markedly hypointense on fat-suppressed T1 and T2-weighted images and considered to be consistent with a bladder lipoma.

**Discussion:** Bladder lipomas are benign lesions that can vary in clinical presentations but usually cause hematuria. In imaging, bladder lipomas are present as homogeneous lesions containing macroscopic fat. The differential diagnosis of bladder lipomas includes other mesenchymal rare benign tumors that can arise from the submucosal layer of the urinary bladder including leiomyoma, hemangioma, plasmacytoma, fibroma, and neurofibroma. Only the liposarcoma and pelvic lipomatosis could show similar features. The less differentiated liposarcomas tend to present more heterogeneous enhancement, irregular-shaped margins, and infiltrative behaviour. Also, appropriate multiplanar reconstructions may allow the radiologist to determine if it is an extravesical pelvic lipomatosis.

**Conclusion:** Using CT and MRI, the lesions that are rich in adipose tissue can be distinguished from other lesions, and their diagnosis can be made to a great extent. However, a histopathological examination is required for a definitive diagnosis.

**Keywords:** Bladder lipoma, computed tomography, magnetic resonance imaging, incidental finding, hematuria, tumor.

## 1. INTRODUCTION

Lipomas are benign tumors of fat tissue and the most common soft tissue masses in humans. Lipomas are classified according to their histological types; the conventional type lipomas are the most common. This variant consists of properly encapsulated mature fat cells and is frequently observed in the extremities and proximal trunk [1]. Lipomas are generally observed superficially, being less frequently detected in visceral and deep tissues.

Leiomyomas are the most common mesenchymal tumor of the bladder, whereas bladder lipomas are extremely rare [2]. In our review of the literature, we identified 20 previously

reported bladder lipomas. In the current study, we aimed to present a case of bladder lipoma detected incidentally and review the literature data.

## 2. CASE REPORT

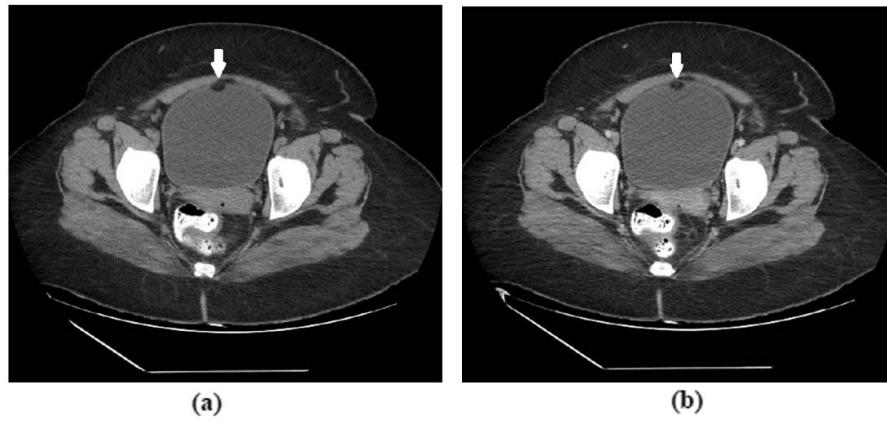
In the abdominal Computed Tomography (CT) performed as part of a follow-up examination of a 43-year-old patient, who had undergone surgery for adrenal adenoma five years earlier, a 14x9x8 mm smoothly marginated, ovoid-shaped, hypodense mass lesion with a homogeneous internal structure was detected in the anterior bladder wall. It was observed that the mass formed an indentation into the bladder lumen. The lesion had a pre-contrast density of -105 HU, but it was not contrast-enhanced after the intravenous injection of iodinated contrast material. Based on the defined features, the lesion was evaluated in favor of being a bladder wall lipoma. The patient was asymptomatic at the

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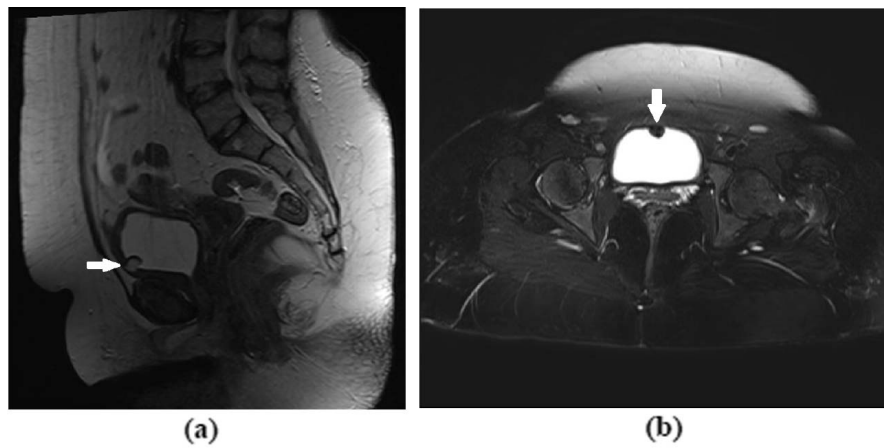
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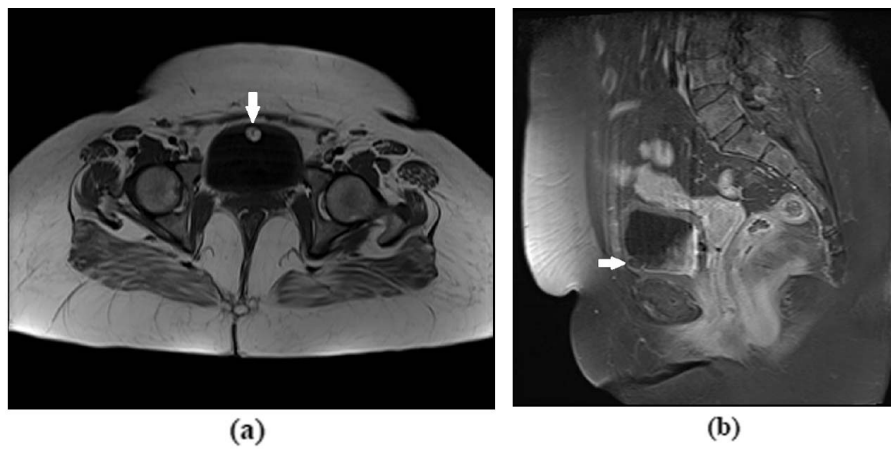
\*Address correspondence to this author at the Department of Radiology, Etimesgut Sehit Sait Ertürk State Hospital, Ankara, Turkey;  
Tel: 0 222 229 3979; Fax: 0 222 229 1418;  
E-mail: [emreemekli90@gmail.com](mailto:emreemekli90@gmail.com)



**Fig. (1).** (a) Non-contrast pelvic computed tomography image showing an ovoid, smoothly margined, markedly hypodense mass lesion indenting the lumen in the anterior bladder wall. (b) No enhancement in the contrast examination.



**Fig. (2).** (a) Sagittal T2-weighted images showing the high-signal mass lesion in the anterior of the bladder, (b) Axial fat-suppressed T2-weighted images showing the suppression of the signal.



**Fig. (3).** An intramural mass lesion with (a) markedly high signal characteristics in axial T1-weighted images and (b) suppressed characteristics in sagittal fat-suppressed T1-weighted images.

time of diagnosis, and no specific finding was observed in the urinalysis. The Magnetic Resonance Imaging (MRI) performed one year after the CT examination revealed a 14x9x8 intramural mass in the bladder wall, showing protrusion toward the lumen (Fig. 1). The mass was hyperintense on T1-Weighted Images (T1WI) and T2-Weighted Images (T2WI) without fat suppression, while fat-suppressed T1WI and T2WI showed marked hypointensity (Figs. 2 and 3). There was no marked contrast enhancement in the images taken after the use of contrast material (Fig. 4). There was also no change in the size of the mass on the MRI examination compared to the CT examination. The mass was evaluated to be consistent with a bladder lipoma due to its intramural location, homogeneous internal structure, no contrast enhancement, and its stable course over the one-year follow-up. During the MRI examination, the patient did not have any symptoms, and his urinalysis was normal.



Fig. (4). Contrast examination showing no enhancement of the mass lesion.

### 3. DISCUSSION

Masses of the bladder constitute approximately 2-6% of all neoplasms. When divided into epithelial and mesenchymal types, 95% of the masses are of epithelial origin. Among epithelial tumors, urothelial carcinoma (90%), squamous cell carcinoma (2-8%), and adenocarcinoma (2%) are seen with a decreasing frequency [3]. Bladder lipomas are among the less common masses of mesenchymal origin. Although their incidence is not clearly known, to date, only twenty cases have been reported (Table 1) [2, 4-22], indicating their rarity. A bladder lipoma is usually asymptomatic [2]. However, cases presenting with microscopic or gross hematuria have also been described in the literature. Lipomas grow slowly, but deep visceral lipomas can cause different symptoms, such as dysuria, microscopic hematuria, macroscopic hematuria, recurrent urinary tract infection, and urinary incontinence, depending on their size and location [20].

Among the 20 patients with bladder lipomas described in the literature, the mean age was calculated as 57.85 (32-75) years. Eight of the patients were female, and 12 were male. According to these findings, it can be stated that bladder lipomas are seen in a wide age range, and there is no difference in frequency between gender. As the most common finding, microscopic and macroscopic hematuria was seen in half of the patients. Seven of the cases had symptoms, such as urgency, frequency, incontinence, and dysuria. Concerning their reported locations of bladder lipomas, they originated from any part of the bladder.

In imaging, similar to lipomas that develop in other areas of the body, bladder lipomas are present as homogeneous lesions containing macroscopic fat. This leads to a

Table 1. Review of the bladder lipoma cases reported in the literature.

Author's-Year	Age	Gender	Location	Maximum Lesion Size (cm)	Symptom/Finding
Sederl J., 1957 [4]	43	F	Fundus/ posterior wall	20	Colic pain when urinating
Kracht H., 1966 [5]	72	F	Posterior wall	Not reported	Macroscopic hematuria
Zajackowski T., 1976 [6]	54	M	Fundus	4.5	Incidental
Alonso Gorrea M <i>et al.</i> , 1982 [7]	72	F	Fundus	0.40	Incidental
Egger SE <i>et al.</i> , 2001. [8]	53	M	Posterior wall	1.3	Microscopic hematuria
Ulker S <i>et al.</i> , 2001 [9]	32	M	Lateral wall	0.7	Microscopic hematuria
Meraj S <i>et al.</i> , 2002 [10]	53	M	Posterior wall	Not reported	Microscopic hematuria, urgency
Kunke Da <i>et al.</i> , 2005 [11]	48	M	Anterior and lateral walls	Not reported	Urgency
Lang EK <i>et al.</i> , 2005 [12]	73	M	Trigon	0.8	Macroscopic hematuria
Lang EK <i>et al.</i> , 2005 [13]	54	M	Trigon	0.9	Macroscopic hematuria
Brown C <i>et al.</i> , 2008 [14]	44	M	Dome	Not reported	Dysuria
Harisinghai Mg <i>et al.</i> , 2009 [15]	46	F	Posterior wall	Not reported	Microscopic hematuria
Ukita S <i>et al.</i> , 2009 [16]	61	F	Retropelvic cavity	15	None
Tsui JF <i>et al.</i> , 2013 [17]	61	F	Anterior	1.2	Microscopic hematuria, urgency
Akan S <i>et al.</i> , 2014 [18]	59	F	Lateral wall	1.5	Microscopic hematuria, incontinence
Ates M <i>et al.</i> , 2015 [19]	67	F	Dome	0.7	Dysuria
Val-Bernal JF <i>et al.</i> , 2015 [2]	75	M	Dome	0.5	Not reported
Gilbert B <i>et al.</i> , 2018 [20]	66	M	Posterior wall	0.6	Microscopic hematuria
Ekren F <i>et al.</i> , 2019 [21]	61	M	Lateral wall	1	Not reported
Paniagua M <i>et al.</i> , 2020 [22]	63	M	Right wall	1.3	None

density of -50 and -150 HU in the CT examination and a high signal intensity image in T1-weighted MRI while suppressed signal in fat-suppressed sequences. Although they are usually observed as hyperechogenic compared to the bladder wall on ultrasonography, further investigation is required since it may be difficult to distinguish them from urethral neoplasms [20, 23].

The differential diagnosis of bladder lipomas includes other mesenchymal rare benign tumors that can arise from the submucosal layer of the urinary bladder including leiomyoma, hemangioma, plasmacytoma, fibroma, and neurofibroma. These neoplasms are almost indistinguishable; they are presented as endophytic bladder nodules with soft-tissue density smooth margins [21, 22]. Leiomyomas can be largely distinguished based on their imaging features, and these are the most common mesenchymal tumors in the bladder. In the ultrasonographic examination, leiomyomas are usually observed as homogeneous, hypoechoic masses with smooth margins. A thin echogenic surface can also be seen on the periphery of the mass, and some may have cystic degenerations. They show moderate contrast enhancement on CT. In MRI images, they exhibit moderate signal features in T1-weighted and low signal features in T2-weighted sequences. Heterogeneous enhancement to varying degrees can be observed in contrast-enhanced examinations due to the presence of areas of degeneration [24]. Another malignant entity to be considered in the differential diagnosis is urethral carcinoma, which can be confused with a lipoma if it is small in size. In ultrasonography, urethral carcinomas are observed as hypoechoic masses extending to the papillary lumen as diffused wall thickness increases. Similarly, in CT examinations, they are in the form of intraluminal masses or wall thickening and are considered iso-hypoechoic. They show enhancement in contrast-enhanced CT. In MRI, they have signal features similar to muscles in T1-weighted images and higher signals than muscles in T2-weighted images. Significant enhancement is seen in contrast-enhanced imaging [25]. Bladder lipomas having a hyperechogenic structure in the ultrasonographic examination due to their fat content and exhibiting higher signal features in T1-weighted MRI images examination compared to both leiomyomas and urothelial carcinomas, as well as their higher signal than leiomyomas in T2-weighted images help differentiate bladder lipomas. Signal loss in the lesion is another important distinguishing feature in the fat-suppressed series. Lastly, a significantly low-density value due to fat content in the CT examination has an important place in the differential diagnosis.

Only the liposarcoma and pelvic lipomatosis could show similar features. They are also constituted by fat. The less differentiated liposarcomas tend to present more heterogeneous enhancement, irregular-shaped margins, and infiltrative behaviour, but especially well-differentiated liposarcomas, which usually show smooth margins, can be misdiagnosed as lipomas. Regardless of the presence of symptoms, lipomas are recommended to be treated with cystoscopy because there is a risk of liposarcoma, even if low. To date, no post-operative recurrence has been reported [22]. Pelvic lipo-

matosis is a rare disease characterized by the deposition of fat tissue in the pelvic cavity. Sometimes, this tissue compresses the rectum, blood vessels, and bladder; pelvic lipomatosis can simulate fatty tumors of the bladder wall. CT and MRI define the cause of compression of the bladder, demonstrating the perivesical involvement by fat. Also, appropriate multiplanar reconstructions may allow the radiologist to determine it is an extravesical disease. Most of the time, CT and MRI establish the diagnosis of pelvic lipomatosis [26, 27].

## CONCLUSION

Bladder lipomas are benign lesions that may vary in clinical presentations but generally cause hematuria. As in our case, they can be detected incidentally in imaging performed for other reasons. Differential diagnosis of bladder lipoma includes many mesenchymal benign tumors. But the majority of these tumors can be distinguished from lipomas by imaging features. Liposarcoma and pelvic lipomatosis should be considered in the differential diagnosis of lipoma with imaging features. The less differentiated form of liposarcoma can tend to be more heterogeneous and infiltrative. Well-differentiated forms of liposarcoma may not be distinguished by imaging features from lipoma. Therefore, in this case, pathology results are helpful. Also, increase in size in the follow-up images is considered as liposarcoma. In pelvic lipomatosis, appropriate multiplanar reconstructions may allow the radiologist to determine it is an extravesical disease. Finally, with CT and MRI, these lesions that are rich in adipose tissue can be distinguished from other lesions, and the diagnosis can be made to a great extent. However, a histopathological examination is required for a definitive diagnosis.

## AUTHORS' CONTRIBUTIONS

Emre Emekli was responsible for conceptualization, data curation, investigation and writing the original draft. Elif Gündoğdu was responsible for the formal analysis, investigation, review, supervision and editing.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

## HUMAN AND ANIMAL RIGHTS

Not applicable.

## CONSENT FOR PUBLICATION

Informed consent was obtained from the patient prior to the study.

## STANDARDS OF REPORTING

CARE guidelines were followed in this study.

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**CONFLICT OF INTEREST**

The authors declare no conflict of interest, financial or otherwise

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**REFERENCES**

- [1] Kumar V, Robbins SL, Cotran RS, Abbas AK, Fausto N. Robbins and cotran pathologic basis of disease. Philadelphia, Pa: Elsevier Saunders 2010.
- [2] Val-Bernal JF, Azueta A, Ballester R, Fuentes J, Fernández-Flórez A. Incidental bladder lipoma: a case report and review of the literature. *Turk Patoloji Derg* 2015; 31(1): 64-7. PMID: 25371024
- [3] Wong-You-Cheong JJ, Woodward PJ, Manning MA, Davis CJ. From the archives of the AFIP: Inflammatory and nonneoplastic bladder masses: radiologic-pathologic correlation. *Radiographics* 2006; 26(6): 1847-68. <http://dx.doi.org/10.1148/rg.266065126> PMID: 17102055
- [4] Sederl J. An unusual tumor of the urinary bladder. *Zentralbl Gynäkol* 1957; 79(11): 438-44. PMID: 13434426
- [5] Kracht H. Lipoma of the urinary bladder mucosa. *Z Urol Nephrol* 1966; 59(4): 269-72. PMID: 5987095
- [6] Zajaczkowski T. Lipoma of the bladder. *Pol Przegl Chir* 1976; 48(2 A): 301-3. PMID: 1250796
- [7] Alonso Gorrea M, Tramoyeres Celma A, Pastor Sempere F, *et al.* Bladder lipoma: apropos of a case. *Arch Esp Urol* 1982; 35(6): 381-3. PMID: 7165403
- [8] Eggener SE, Hairston J, Rubenstein JN, Gonzalez CM. Bladder lipoma. *J Urol* 2001; 166(4): 1395. [http://dx.doi.org/10.1016/S0022-5347\(05\)65784-9](http://dx.doi.org/10.1016/S0022-5347(05)65784-9) PMID: 11547089
- [9] Ulker V, Gunhan M, Vural G, Dal H. Lipoma of the urinary bladder. *BJU Int* 2001; 88: 644.
- [10] Meraj S, Narasimhan G, Gerber E, Nagler HM. Bladder wall lipoma. *Urology* 2002; 60(1): 164. [http://dx.doi.org/10.1016/S0090-4295\(02\)01658-8](http://dx.doi.org/10.1016/S0090-4295(02)01658-8) PMID: 12100952
- [11] Kunkle DA, Mydlo JH. Bladder wall lipoma in patient with irritative voiding symptoms. *Urology* 2005; 66(3): 653-4. <http://dx.doi.org/10.1016/j.urology.2005.03.074> PMID: 16140097
- [12] Lang EK. Symptomatic bladder lipomas. *J Urol* 2005; 174(1): 313. <http://dx.doi.org/10.1097/01.ju.0000167214.17437.cb> PMID: 15947681
- [13] Lang EK. Recurrent macroscopic and microscopic hematuria with lipoma at the trigone of the bladder. *J Urol* 2005; 174(2): 724. <http://dx.doi.org/10.1097/01.ju.0000171310.06764.9f> PMID: 16006964
- [14] Brown C, Jones A. Bladder lipoma associated with urinary tract infection. *ScientificWorldJournal* 2008; 8: 573-4. <http://dx.doi.org/10.1100/tsw.2008.91> PMID: 18604440
- [15] Harisinghani MG, Mueller PR. Teaching atlas of abdominal imaging, case 124. New York: Thieme Medical Publishers Inc 2009.
- [16] Ukita S, Koshiyama M, Ohnaka M, *et al.* Retroperitoneal lipoma arising from the urinary bladder. *Rare Tumors* 2009; 1(1): e13. <http://dx.doi.org/10.4081/rt.2009.e13> PMID: 21139884
- [17] Tsui JF, Weinberger JM, Kasha M, Weiss JP, Robinson BD, Blaiwas JG. Bladder lipoma. *J Urol* 2013; 190(4): 1387-8. <http://dx.doi.org/10.1016/j.juro.2013.07.021> PMID: 23871930
- [18] Akan S, Yüksel O, Özbay N, Uruç F, Verit A. A rare entity of benign bladder neoplasm: female lipoma. *Georgian Med News* 2014; 228(228): 17-20. PMID: 24743117
- [19] Ates M, Karalar M, Akin Y, Okur N, Ozardali I, Keles I. An extremely rare mass of bladder: lipoma in the bladder. *Ir J Med Sci* 2015; 184(3): 719-21. <http://dx.doi.org/10.1007/s11845-015-1322-5> PMID: 26048644
- [20] Gilbert B, Britcliffe A, Redwig F. Submucosal lipoma of the urinary bladder: Case report and systematic review. *Urol Case Rep* 2018; 20(20): 54-6. <http://dx.doi.org/10.1016/j.eucr.2018.06.008> PMID: 29988688
- [21] Ekren F, Eker GE, Esen M, *et al.* Bladder lipoma in a patient diagnosed with urothelial carcinoma previously: A rare case report. *Eur Urol Suppl* 2019; 18: e2469. [http://dx.doi.org/10.1016/S1569-9056\(19\)32176-1](http://dx.doi.org/10.1016/S1569-9056(19)32176-1)
- [22] Paniagua M, Parra V, De Miguel E. Urinary bladder lipoma: an illustrative case. *J Radiol Case Rep* 2020; 14(6): 15-21. <http://dx.doi.org/10.3941/jrcr.v14i6.3887> PMID: 33088413
- [23] Degheili JA, Bustros GD, El-Asmar JM, Nasr RW. A yellow-colored lipomatous lesion of the bladder: An unorthodox finding seen upon investigation for microscopic hematuria. *Turk J Urol* 2018; 45(5): 389-92. <http://dx.doi.org/10.5152/tud.2018.68047> PMID: 31509513
- [24] Khater N, Sakr G. Bladder leiomyoma: Presentation, evaluation and treatment. *Arab J Urol* 2013; 11(1): 54-61. <http://dx.doi.org/10.1016/j.aju.2012.11.007> PMID: 26579246
- [25] Lee EK, Dickstein RJ, Kamta AM. Imaging of urothelial cancers: what the urologist needs to know. *AJR Am J Roentgenol* 2011; 196(6): 1249-54. <http://dx.doi.org/10.2214/AJR.10.6232> PMID: 21606285
- [26] Pereira JM, Sirlin CB, Pinto PS, Casola G. CT and MR imaging of extrahepatic fatty masses of the abdomen and pelvis: techniques, diagnosis, differential diagnosis, and pitfalls. *Radiographics* 2005; 25(1): 69-85. <http://dx.doi.org/10.1148/rg.251045074> PMID: 15653588
- [27] Da Cruz JMN, Vieira Filho MAA, Mendes LV, Bezerra Junior AF, de Oliveira Aragao BL, da Cruz Filho JMN. Pelvic lipomatosis: a case report and literature review. *Radiol Bras* 2012; 45: 175-7. <http://dx.doi.org/10.1590/S0100-39842012000300012>

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