

Unusual sites of leiomyoma

¹Dr Kamal Karishma Reddy, ²Dr Karuna Vadlapally, ³Dr Vinodh Naidu Majji

¹Post Graduate(3rd year), ²Associate Professor.

Department of Radio Diagnosis,

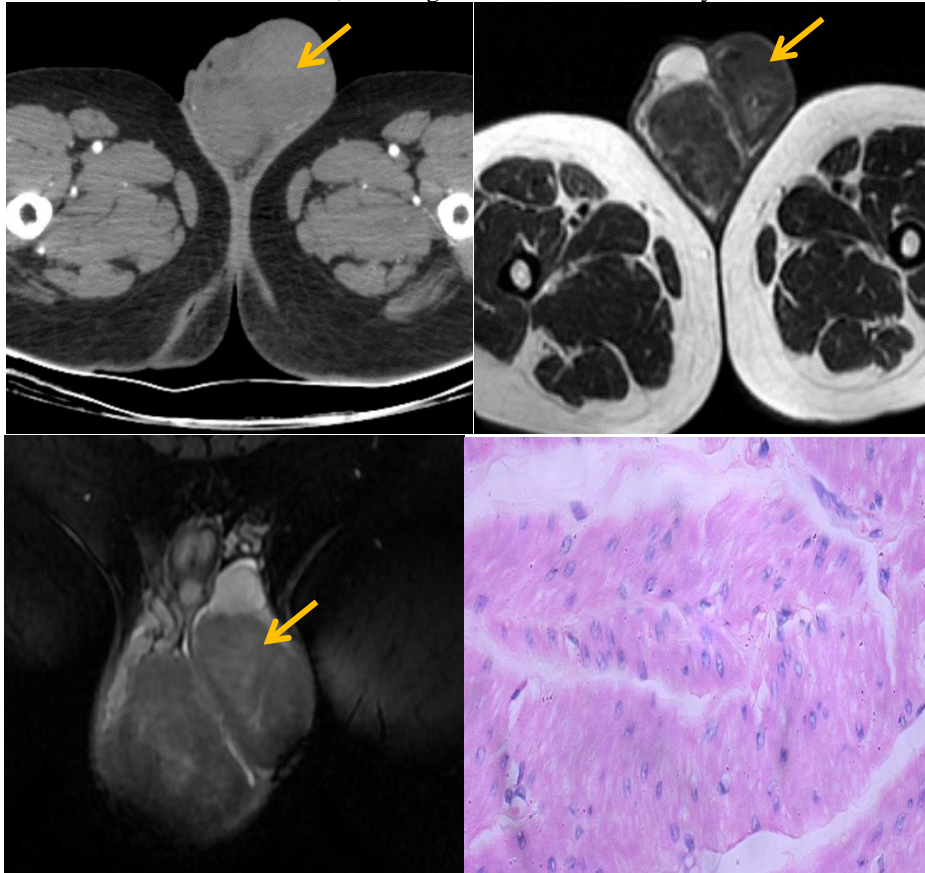
NRI academy of Sciences, Chinakakani, Guntur District, Andhra Pradesh, India.

³Senior Resident, MIMS, Vijayanagaram.

Abstract: Leiomyoma is one of the most common uterine lesions affecting approximately 30 % of women older than 35 years. Clinical presentation ranges from being asymptomatic to causing abnormal uterine bleeding. These benign tumors originate from smooth muscle cells arising from any part of the genitourinary tract, which includes the vulva, ovaries, urethra, scrotal sacs, and urinary bladder. Some extra genitourinary sites include the esophagus which may pose a diagnostic challenge. The most commonly used modalities for the diagnosis of extra-uterine leiomyoma are USG, CT, and MR. Because of its excellent soft tissue resolution, MR is considered an Investigation of choice - particularly valuable for characterizing these tumors, which show low signal intensity on T2 and intermediate signal on T1 (smooth muscle on T2-weighted images). The radiologist's recognition of this and other characteristic features may help steer the clinician toward timely, appropriate management and away from unnecessary interventions.

Case 1: Scrotal Leiomyoma.

A 45-year-old male patient presented with a history of trauma to the scrotum 1 year back and C/O scrotal swelling since then, gradually increasing in size. On clinical examination, swellings were soft in consistency.



On CECT imaging findings were,

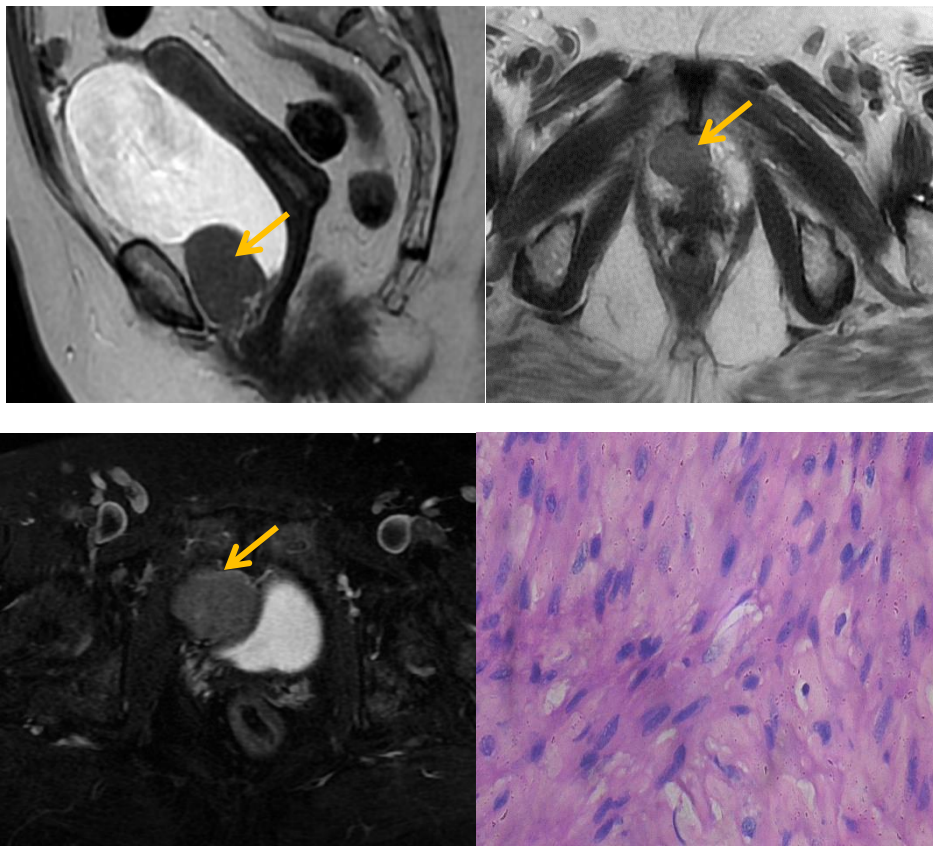
Well-defined heterogenous minimally enhancing mass noted in bilateral scrotal sacs measuring approximately 96 x 88x 81 mm and 67x 58 x 44 mm (CC x AP XT) in right and left scrotal sacs seen displacing both the testes.

In correlation with MRI, the lesions are heterogeneously isointense to muscle on both T2 and T1. Hyperenhancement and thickening were noted in the scrotal wall.

Further biopsy was done and HPE- benign leiomyoma.

Case 2: Space of Retzius Leiomyoma.

A 65-year-old female patient came with chief complaints of pain in the right lower quadrant of the abdomen for 1 year. No history of bleeding per vagina/ Per rectum. No evidence of altered bladder/ bowel habits. Ultrasound abdomen was advised – which was normal with post-hysterectomy status. MRI pelvis was advised for further evaluation.

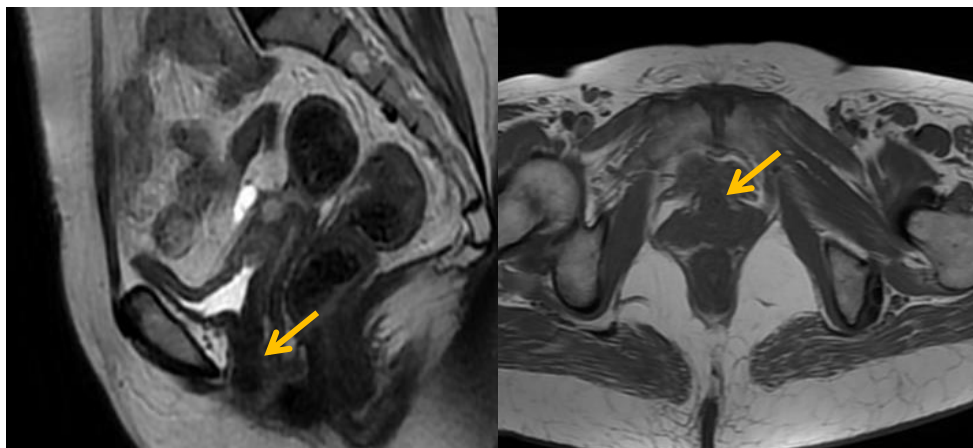


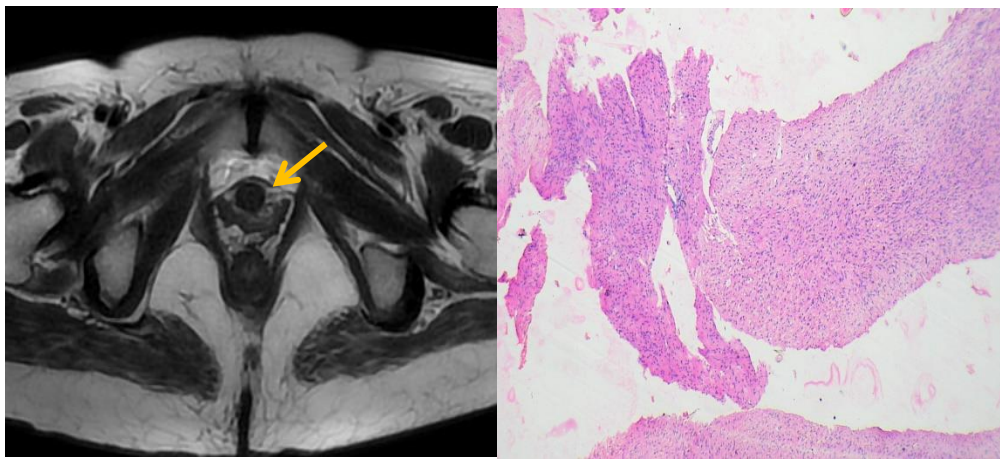
Findings:

There is a well-defined lesion of size 4.0 x 3.0 x 2.4 cms (CC x APx T) noted in the perivesical space of Retzius, which is hyperintense compared to adjacent muscle on T2 and PDFS, isointense on T1.
 No diffusion restriction within the lesion. No flow voids within the lesion.
 Postero-medially abutting the right inferolateral aspect of the anterior wall of the bladder.
 Fat planes between the bladder wall and proximal urethra are maintained.
 Laterally, fat planes with the pelvic bone are maintained.
 HPE: features suggestive of leiomyoma.

Case 3: URETHRAL LEIOMYOMA

A 55-year-old female patient, hysterectomised 15 years back for uterine leiomyoma, came to Ultrasound for a regular follow-up. On USG, well-defined polypoidal growth was seen in the anterior aspect of the vagina and was asked for further evaluation. On MR imaging





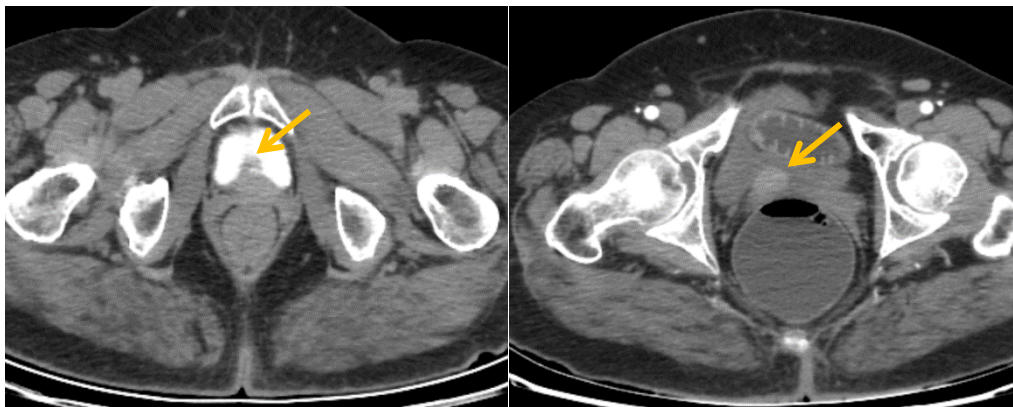
There is well defined intermediate signal intensity lesion of size 2.3 x 2 cm noted arising from the urethra, which is isointense to muscle on T1 and T2.

A biopsy was done and HPE – leiomyoma.

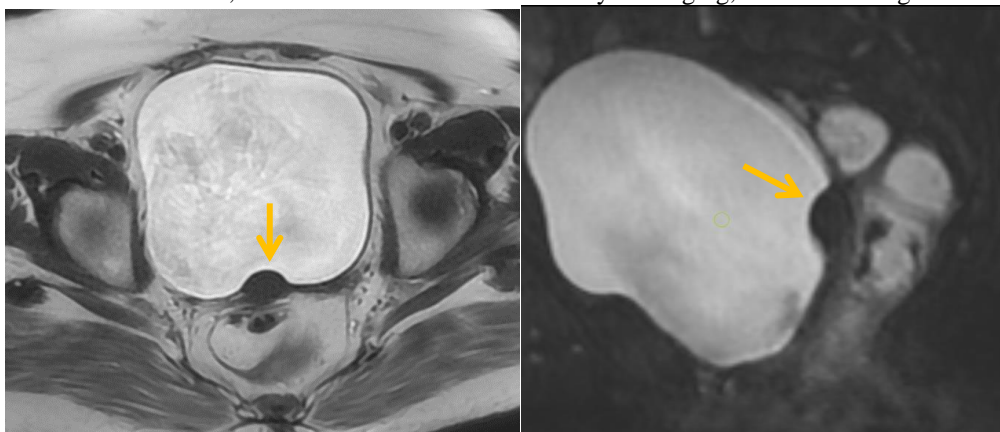
Case 4: Bladder leiomyoma.

A 50-year-old female patient presented with chief complaints of supra-pubic pain and loss of appetite. The patient was hysterectomized for Abnormal uterine bleeding. CECT was advised to rule out malignancy.

Findings:



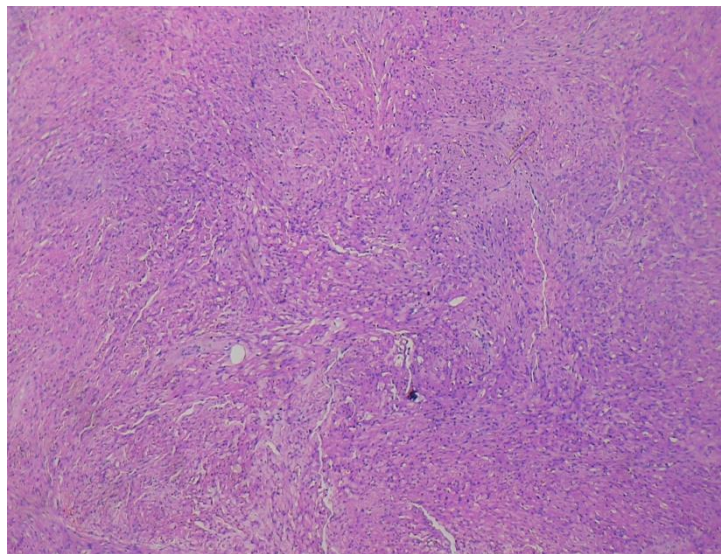
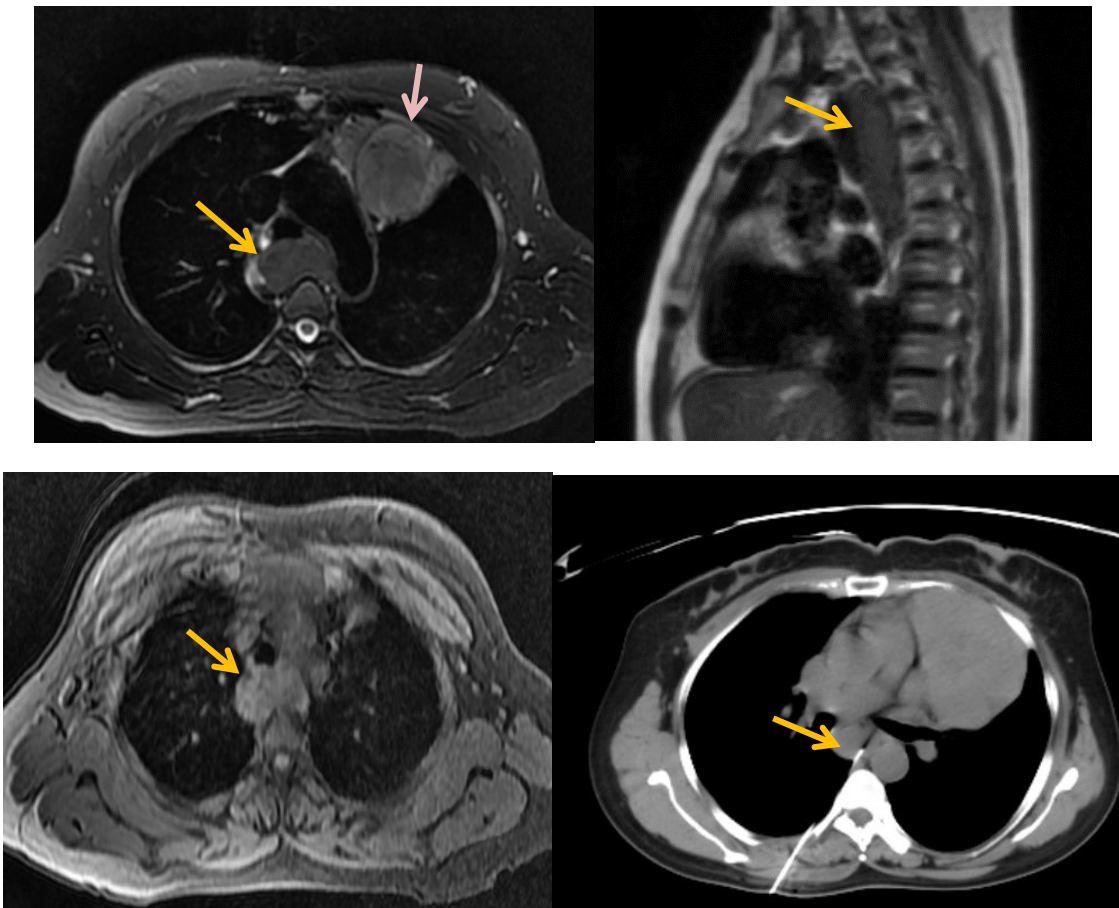
Well-defined homogenously hyperdense lesion of size 18 x 13mm and average attenuation HU 80 noted in the posterior aspect of the bladder. On contrast administration, there is no enhancement. On delayed imaging, there is a filling defect.



On MR Imaging - A well-defined lesion iso-intense to muscle was noted arising from the posterior wall of the bladder projecting into the lumen.

Case 5: Esophageal Leiomyoma

A 49-year-old female patient with, a known case of anterior mediastinal mass - thymoma, came with chief complaints of dysphagia for 3 months for which CT was done. In view of the thymic mass, directly CE-MRI was done.



Findings:

Thymic mass of size approximately 8.1x8.3x6.9cm (APxCCxT) was noted in the anterior mediastinum (Lesion in pink arrow). There is well defined extraluminal hypointense mass on both T1 and T2 showing mild enhancement noted at the extraluminal location of posterior mediastinum, in the mid-thoracic region seen arising from the esophagus, causing mild luminal narrowing with no/minimal proximal luminal dilatation. This lesion is measuring approximately 6.2x2.5x3.6cm (CCxAPxT) extending from the D1- D5 level. - possible leiomyoma of the esophagus/ neural origin (Lesion in yellow arrow). Suggest biopsy for further evaluation.

CT-guided FNAC was done from the posterior mediastinal mass - ?leiomyoma of the esophagus.

Endoscopy guided biopsy was done and HPE report was given as benign leiomyoma.

DISCUSSION:

1) BLADDER & URETHRA:

Smooth muscle fibers give rise to benign tumors known as leiomyomas. The uterus is the most frequent place, although other uncommon locations include the bladder, vulva, urethra, scrotum, and esophagus. (1) Although bladder leiomyomas are uncommon, they are the most prevalent benign tumor, making up about 35% of all cases. (2) Only 1% to 5% of bladder tumors are benign, nevertheless.

Leiomyosarcoma, postoperative spindle cell nodule, and inflammatory pseudotumor are among the differential diagnosis for spindle cell lesions of the bladder.

While leiomyomas and leiomyosarcomas are both reactive processes for persistent stimulation by deposition of smooth muscle - actin, and desmin, they differ histopathologically due to poor cellularity, absence of cytologic atypia, and lack of mitotic activity in the former. (3,4) Although pleomorphic and highly cellular, inflammatory pseudotumors differ from sarcomas in that they are highly myxoid and inflammatory background. (5)

Ninety-five percent of bladder neoplasms originate from the epithelium, with urothelial carcinoma accounting for 90% of cases as the most frequent kind. Squamous cell carcinoma (2–15%) and adenocarcinoma (2%) are two other carcinomas that frequently develop in association with persistent bladder irritation or infection.

With the help of ultrasound, CT, and MRI, bladder leiomyomas can be distinguished from other neoplasms. On ultrasound, bladder leiomyomas are known to have a soft tissue mass that is normally iso to hypoechoic to the bladder wall. The Doppler flow may be visible. The mass is isodense to muscle on a CT scan and may exhibit a little augmentation.

For accurate staging, MRI is the investigation of choice. On MRI, in both T1- and T2-weighted images, leiomyomas are seen as low signal intensity lesions with smooth surfaces, in a submucosal location with intact mucosa arising from the bladder wall and resembling uterine leiomyoma. By contrast, the more common transitional cell carcinoma affects the mucosa.

2) SCROTAL:

Scrotal leiomyoma is a rare entity as its prevalence rate is reported to be 1 of 1000 of all scrotal tumors by a review of 11,000 scrotal tumor cases [6].

Epididymis, spermatic cord, tunica albuginea, or scrotal dartos muscle are possible origins [7]. Scrotal leiomyomas' sluggish growth and absence of discomfort can cause a delay in diagnosis.

The main imaging modality used is ultrasound, which typically shows a well-defined solid paratesticular lesion with varied echogenicity, a whirling pattern, necrosis with or without a cystic component, and calcifications. Doppler mode shows a little amount of vascularity [8,9].

Because it may identify additional components including fat, blood products, and fibrosis to rule out other differentials, MRI is once again the investigation of choice. On T1, these appear as a low to medium signal, and a medium to high signal on T2. These exhibit lower contrast enhancement than nearby testes and show low to intermediate signal on T1 and intermediate to high signal intensity on T2 [10].

Fibroma, sebaceous cysts, and squamous cell carcinoma are examples of differentials. Therefore, a definite diagnosis requires surgical removal.

3) SPACE OF RETZIUS :

Leiomyomas are found in the extraperitoneal region 73% of the time in the pelvis minor and 1% of the time in the wide ligament (11).

The Retzius space is a portion of the extraperitoneal space and is located between the pubic symphysis and the bladder. It is also known as retro-pubic space and pre-vesical space. Only a few occurrences of leiomyomas in the Retzius area have been reported in the literature thus far. (12)

Females seldom develop tumors in the Retzius area, and those that do often have benign histology. The majority of benign tumors in the Retzius area are connective tissue-based and have a favorable prognosis. Granuloma, hemangiopericytoma, lymphangioma, neurinoma, subpubic cartilaginous cyst, and very infrequently leiomyoma are examples of differentials. (12)

The results are typical of other leiomyomas. Diagnostic biopsy and histological investigation can aid in the diagnosis before surgery.

4) ESOPHAGUS:

Although it is the most common benign esophageal tumor, esophageal leiomyoma is relatively rare, its overall incidence being 8-43 per 10,000 autopsy series (13,14). Esophageal leiomyomas typically range in size from 2 to 6 cm and are solitary tumors (13,14). Numerous imaging modalities can be used to show esophageal leiomyoma.

They show up as round or lobulated filling defects on barium imaging, with a clear line separating the lesion from the affected esophagus. Normal mucosal folds that don't show signs of invasion or ulceration are noted.

These appear smoothly marginated on CT scans, lying eccentrically or intramurally within the esophagus wall. In most cases, mediastinal fat is not affected. In contrast, leiomyomas have uniform moderate enhancement while esophageal cancers exhibit heterogeneous enhancement.

Esophageal leiomyomas typically exhibit an isointense signal to muscle on T2-weighted imaging, but esophageal cancer typically exhibits a high-intensity signal.

References:

1. Fasih N, Prasad Shanbhogue AK, Macdonald DB, et al. Leiomyomas beyond the uterus: unusual locations, rare manifestations. *Radiographics* 2008;28:1931–48 [PubMed] [Google Scholar]
2. Silva-Ramos M, Massó P, Versos R, et al. Leiomyoma of the bladder. Analysis of a collection of 90 cases. *Actas Urol Esp* 2003;27:581–6 [PubMed] [Google Scholar]
3. Chevillat J. Leiomyoma. In: Elbe JN, Sauter G, Epstein JI, Sesterhenn IA, eds. *World Health Organization Classification of Tumours. Pathology and Genetics of Tumours of the Urinary System and Male Genital Organs*. Lyon, France: IARC Press; 2004:144 [Google Scholar]
4. Rosai J. (ed.). *Rosai and Ackerman's Surgical Pathology*. Ninth edition Philadelphia, PA: Mosby; 2004 [Google Scholar]
5. Cruz Guerra NA, Fradejas Rodríguez A, del Valle Manteca A, et al. Bladder leiomyosarcoma: case report. *Arch Esp Urol* 2006;59:198–201 [PubMed] [Google Scholar]

6. Ariafar Ali, Soltani Mohammmdreza, Khajeh Fatemeh, Zeighami Shahryar, Miladpour Behnoosh. Scrotal leiomyoma a rare benign intra-scrotal mass could lead to unnecessary orchiectomy. *Urol case rep.* 2020;32 doi: 10.1016/j.eucr.2020.101170. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
7. Siegal Gene P., Gaffey Thomas A. Solitary leiomyomas arising from the tunica dartos scroti. *J Urol.* 1976;116(1):69–71. doi: 10.1016/S0022-5347(17)58680-2. [PubMed] [CrossRef] [Google Scholar]
8. Aganovic Lejla, Cassidy Fiona. Imaging of the scrotum. *Radiol Clin.* 2012;50(6):1145–1165. doi: 10.1016/j.rcl.2012.08.003. PMID: 23122043. [PubMed] [CrossRef] [Google Scholar]
9. Aluko Titilope, Masi Zachary, Tomaszewski Jeffrey, Germaine Pauline. Scrotal sac leiomyoma: case report of a rare benign scrotal mass. *Radiol case rep.* 2018;13(2):411–414. doi: 10.1016/j.radcr.2018.01.018. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
10. Wolfman Darcy J., Marko Jamie, Frank Gould C., Sesterhenn Isabell A., Jr Grant E.Lattin. Mesenchymal extratesticular tumors and tumorlike conditions: from the radiologic pathology archives. *Radiographics.* 2015;35(7):1943–1954. doi: 10.1148/rg.2015150179. [PubMed] [CrossRef] [Google Scholar]
11. Niwa N, Yanaihara H, Horinaga M, Asakura H. Leiomyoma in retzius' space: an unusual location. *Can UrolAssoc J.* 2013;7: E612-613.
12. Stutterecker D, Umek W, Tunn R, Sulzbacher I, Kainz C. Leiomyoma in the space of Retzius: a report of 2 cases. *Am J Obstet Gynecol.* 2001;185:248-9.
13. Reisenauer C, Walz-Mattmueller R, Solomayer EF, Siegmann K, Wallwiener D, Wehrmann M. Leiomyoma
14. Seremetis MG, Lyons WS, Deguzman VC, Peabody JW. Leiomyomata of the esophagus. *Cancer.* 1976;38:2166–2175. [PubMed] [Google Scholar]