DOI: 10.7860/NJLM/2025/78467.2919

Case Series

Pathology Section

Leiomyoadenomatoid Tumour of the Uterus Presenting as Rare and Enigmatic Tumour: A Series of Three Cases

SHIMA KANNADAS[1], SILY SREEDHARAN[2]

ABSTRACT

Leiomyoadenomatoid Tumour (LAT) of the uterus is an exceedingly rare neoplasm characterised by the intermingling of Adenomatoid Tumour (AT) components within a leiomyoma. A very small number of cases of LAT have been documented in the literature to date, and this case series presents three cases of LAT diagnosed at our institution. An ultrasonogram of all three cases showed large uteri with multiple intramural fibroids, except for one patient with subserosal fibroids, for whom surgery was performed. Histopathological examination of some of the nodules revealed smooth muscle bundles infiltrated by small tubular structures lined with cuboidal cells. Immunohistochemical tests confirmed the diagnosis of LAT, showing positivity for calretinin and negative results for Cluster of differentiation 34 (CD34) and Cytokeratins (CK7 and CK20). As the mainstay of treatment is surgery, all patients remained asymptomatic after hysterectomy. This series highlights the significance of identifying LAT as a distinct pathological entity to prevent misdiagnosis and ensure proper treatment.

Keywords: Adenomatoid tumor, Calretinin, Leiomyoma, Mesothelial cells

INTRODUCTION

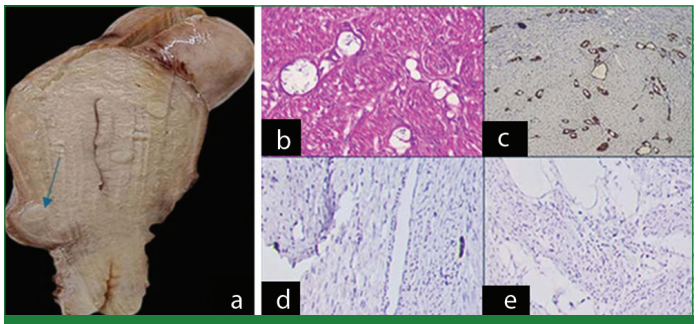
Adenomatoid tumours (ATs) are rare benign mesothelial neoplasms, commonly found in the genital tract [1]. In the uterus, ATs typically occur in the subserosa and outer myometrium [1]. A rare variant, the LAT, features a prominent smooth muscle component that can resemble leiomyomas [2]. The adenomatoid component may appear infiltrative under the microscope, raising concerns regarding malignancy [1]. Due to its rarity and the potential for diagnostic confusion with other uterine lesions, pathologists must be aware of this entity for proper patient management [1]. This case series presents three cases of LAT of the uterus, emphasising their clinicopathological features and diagnostic challenges.

Case 1

A 45-year-old female presented to the gynaecology department with complaints of abdominal mass, abdominal distension, and lower abdominal pain for two months. She also provided a history of menorrhagia and an uneventful obstetric history. She was hypertensive and on medication. A previous endometrial aspirate showed proliferative changes. On examination, the uterus was palpable at the size of eight weeks. An ultrasonogram revealed a bulky uterus with multiple intramural and subserosal fibroids. A hysterectomy was performed, and gross examination [Table/Fig-1a] revealed multiple intramural fibroids, the largest measuring 1.5×1 cm, and subserosal fibroids, the largest measuring 3×2 cm. The cut surface of all the fibroids was solid, whitish, and whorled. The provisional diagnosis was leiomyomata of the uterus.

Sections from a small subserosal fibroid measuring 1×1 cm [Table/Fig-1a] showed bundles of smooth muscle arranged in fascicles, with infiltration of small glands and cystic spaces between the muscle fascicles. These spaces were lined by round cuboidal cells with uniform nuclei and eosinophilic cytoplasm, with occasional vacuoles [Table/Fig-1b].

The presence of muscle bundles with intermingled glands raised the possibility of a LAT, which was followed by Immunohistochemistry (IHC) for confirmation. The cells lining the glands and cysts were positive for calretinin and negative for CD34, CK7, and CK20, confirming their mesothelial origin [Table/Fig-1c-e]. The smooth muscle bundles showed positive staining with Smooth Muscle Actin (SMA). The final diagnosis was confirmed as LAT. Six months after the hysterectomy, there was no history of recurrence or malignant transformation, as surgery is the definitive treatment for this benign tumour.



[Table/Fig-1]: a) Subserosal location of the tumour (arrow); b) Haematoxylin and Eosin (H&E) showing small glands and cystic spaces between the muscle (40x); c) Positivity of calretinin in the glands {Immunohistochemistry (IHC), 4x}; d) Negative CK7 expression (10x); e) Negative CK20 expression (10x).

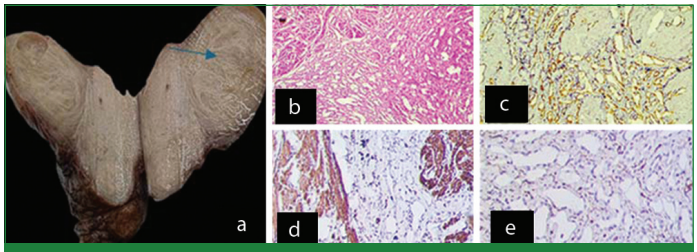
Case 2

A 56-year-old post-menopausal female presented to the gynaecology department with complaints of lower abdominal pain for one year. The pain was intermittent, not associated with bleeding, and relieved by analgesics. Her menstrual and obstetric history was uneventful. She had hypothyroidism and was on medical treatment. Upon abdominal examination, she displayed mild abdominal distension. A per vaginal examination was unremarkable. An ultrasonogram revealed a bulky uterus with multiple intramural fibroids.

Hysterectomy was performed, and the uterus showed multiple intramural fibroids, the largest measuring 3×3 cm [Table/Fig-2a]. The cut surface of all the fibroids was solid, whitish, and whorled. Microscopy of one nodule showed [Table/Fig-2b] bundles of smooth muscle arranged in fascicles with infiltration by small tubules and cords between the muscle fibres, lined by round cuboidal cells with uniform nuclei and eosinophilic vacuolated cytoplasm, which is typical of LAT.

IHC with calretinin showed diffuse cytoplasmic positivity in the cells lining the tubules [Table/Fig-2c]. The smooth muscle bundles

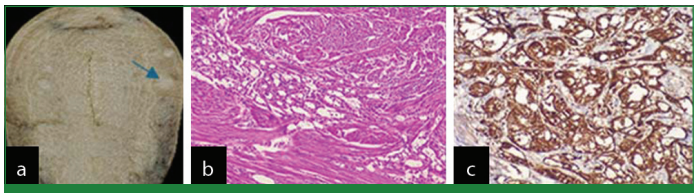
showed positive staining with SMA [Table/Fig-2d]. The lining cells were negative for CD34, CK7, and CK20 [Table/Fig-2e], which led to the final diagnosis of a LAT. After surgery, the patient received post-surgical supportive care and was discharged; follow-up after one month and six months revealed no signs of relapse.



[Table/Fig-2]: a) Intramural mass (arrow); b) H&E section showing tubules in between muscle bundles (4x); c) IHC showing calretinin-positive cells (4x); d) SMA positivity in the smooth muscle component (4x); e) Negative CD34 expression (10x).

Case 3

A 44-year-old female presented to the gynaecology department with complaints of a vaginal mass for five years, associated with urinary retention. There were no menstrual abnormalities. She was neither diabetic nor hypertensive. Her abdomen was soft, non-tender, and no mass was felt. On per vaginal examination, the uterus was anteverted and bulky, with a grade 2 cystocele and an eroded cervix. An ultrasonogram indicated a bulky uterus with multiple small intramural fibroids. A clinical diagnosis of uterine prolapse with fibroids was made, and a hysterectomy was performed. The gross examination revealed multiple seedling intramural fibroids, the largest measuring 0.5×0.5 cm [Table/Fig-3a-c].



[Table/Fig-3]: a) Seedling nodule (arrow); b) H&E section showing tubules in between muscle bundles (4x); c) IHC showing calretinin positivity (40x).

The H&E section from one of the fibroids showed tubules between muscle bundles [Table/Fig-3b]. The provisional diagnosis was LAT. Calretinin IHC staining demonstrated cytoplasmic positivity in the tumour cells [Table/Fig-3c]. The smooth muscle bundles showed positive staining with SMA. The cells were negative for CD34, CK7, and CK20. The final diagnosis was confirmed as LAT. The patient's symptoms were completely alleviated after the surgical removal of the uterus, and no signs of recurrence were noted even after one year of follow-up.

DISCUSSION

The LAT is a tumour of mesothelial origin that commonly develops in the male and female genital tracts [3]. Extra-genital sites, particularly in organs close to serosal membranes (pleura, peritoneum, and pericardium), as well as the adrenal gland and other visceral organs, can also be involved [1]. The incidence in females is approximately 1%, with tumours mostly located in the uterus and fallopian tubes, and rarely in the ovaries and para-ovarian connective tissue. These tumours are often encountered during the reproductive period.

Most LATs are incidental findings and are typically situated in the outer myometrium [2]. They usually present as solitary, small (<4 cm), solid tumours; however, they can sometimes be diffuse, multifocal, large (>10 cm), or predominantly cystic [4]. Microscopically, LATs are characterised by prominent smooth muscle proliferation with areas of glandular infiltration and tubules. These glands are lined by flat or cuboidal cells, some exhibiting a signet ring-like appearance.

The majority of LATs can be readily diagnosed based on their location and typical microscopic features. However, in some cases, the diagnosis can be challenging. The microscopic appearance may mimic a malignant tumour due to irregular pseudo-infiltration, with tubular formations that suggest infiltration by carcinoma or a malignant mesothelial neoplasm into a leiomyoma or vascular neoplasm [5].

A definitive diagnosis can be made using IHC. These tumours are positive for mesothelial markers like calretinin, WT-1, and D2-40, suggesting a mesothelial origin of the tumour cells [6]. SMA is positive in the smooth muscle component, while CK7, CK20, and CD34 are negative. Several theories have been postulated regarding the cell of origin. One hypothesis suggests that the tumour arises from pluripotent mesothelial stem cells within the myometrium. Another theory proposes that mesothelial cells become trapped inside the uterus as inclusions from the uterine serosal layer into the outer myometrium [5]. Some studies have also indicated an association between adenomyosis and leiomyoma [2,7].

Reported patient ages among the cases range from 24 to 76 years, with the size of the masses varying between 1.5 and 4 cm, except for one case where the tumour size was 9 cm [8-15]. Below is a table focusing on the salient features of LAT cases reported in the literature over the last five years, including the cases discussed in the present series [Table/Fig-4] [2, 14-16]. All five reported cases were intramural in location, in contrast to one of our present cases with a subserosal mass. Another case was recorded as a very small seedling nodule, representing the smallest size reported. Similar to other cases, all were diagnosed after immunohistochemical confirmation, and the patients were disease-free on follow-up visits.

	Author	Year	Age	Location	Size
1	Koufopoulos N et al., [14]	2019	76	Antero-lateral wall of the corpus uteri	2.5 cm
2	Makni S et al., [16]	2019	37	Uterus-intramural	4 cm
3	Adorno FA et al., [2]	2021	38	Uterus-intramural	3.8 cm
4	Adorno FA et al., [2]	2021	26	Uterus, intramural	3.3 cm
5	Hafiz B [15]	2021	35	Uterus, intramural	9 cm
6	Present series	2025	45	Uterus-subserosal	1 cm
7	Present series	2025	56	Uterus, intramural	3 cm
8	Present series	2025	44	Uterus, intramural	0.5 cm

[Table/Fig-4]: Review of literature of leiomyoadenomatoid tumours cases reported in the uterus in the last five years [2,14-16].

CONCLUSION(S)

The diagnosis of LAT requires careful histopathological evaluation and appropriate immunohistochemical staining to differentiate them from malignant entities. The benign nature of these tumours is reinforced by the absence of recurrence in all three patients following surgical intervention. Increased awareness and documentation of such cases are essential for enhancing clinical understanding and guiding future research into this rare tumour type. Given the limited number of reported cases in the literature, further studies are warranted to elucidate the clinical significance and biological behaviour of LAT.

REFERENCES

[1] Amre R, Constantino J, Lu S, Charney D. Pathologic quiz case: A 52-year old woman with a uterine mass. Leiomyo-adenomatoid tumour of the uterus. Arch Pathol Lab Med. 2005;129:e77-e78.
[2] Adorno FÁ, Coelho KM, Bublitz GS. Leiomyoadenomatoid tumour of uterus: Two case reports with literature review. Surg Exp Pathol. 2021;4(1):01-05.
[3] David, LW, Wunsch PH, Hartmann A. Adenomatoid tumours of the female and male genital tract. A comparative clinicopathologic and immunohistochemical analysis of 47 cases emphasizing their site-specific morphologic diversity. Virchow Arch. 2011;458:593-602.
[4] Kurman RJ, Carcangiu ML, Herrington CS, Young RH. WHO classification of tumours of female reproductive organs. 4th ed. Lyon: International Agency for Research on Cancer; 2014.
[5] Epstein JI. Differential diagnosis in pathology: urologic disorders. Igasku-Shoin, New York, 1992; pp 173-74.
[6] McGrath N, Aja-Okorie U, Pather S. Leiomyo-adenomatoid tumor of the uterus: Finding the rare in the routine. Int J Gynecol Pathol. 2022;41(6):573-77.
[7] Erra S, Pastormerlo M, Gregori G, Costamagna D, Pavesi M. A case of leiomyoadenomatoid tumour of uterine serosa: Speculations about differential diagnosis. BMJ Case Rep. 2009;2009:bcr02.2009.1586.

[8] Pransgaard T, Lykke R, Hansen ES. Leiomyoadenomatoid tumour of the uterus: Report of a rare entity. J Gynecol Surg. 2013;29:219-21.
[9] Hong R, Choi DY, Choi SJ, Lim SC. Multicentric infarcted leiomyoadenomatoid tumour: A case report. Int J Clin Exp Pathol. 2009;2:99-103.
[10] Bedir R, Üstüner I, Mürtezaoglu AR. Leiomyoadenomatoid tumour of the uterus: Case report and literature review. Natl Lab Med. 2014;3:15-18.
[11] Ersavas¸ S, Eliyatkin N, Sayhan S, Zihni I. Leiomyoadenomatoid tumour of the uterus in pregnancy: A case report. Anatol J Gen Med Res. 2015;25:120-24.
[12] Ranjan R, Singh L, Nath D. Uterine adenomatoid tumours: A study of five cases including three cases of the rare leiomyoadenomatoid variant. J Obstet Gynaecol India. 2015;65(4):255-58.
[13] Junainah EM, Elrashidy A, Elnashar H. Multifocal leiomyo-adenomatoid tumour of the uterus a distinct pathological entity. Allied J Clinicl Path. 2017;1(1):13-15.
[14] Koufopoulos N, Karopoulou E, Arapaki A. EP727 presentation of the 14th case of leiomyoadenomatoid tumour in the English literature. Int J Gynecol Cancer. 2019;29:A411.
[15] Hafiz B. Leiomyoadenomatoid tumours of the uterus. Am J Case Rep. 2021;22:e934012.
[16] Makni S, Moussa A, Njima M, Njim L, Zakhama A. Leiomyoadenomatoid tumour of the uterus: A case report of a rare entity. Ann Gynecol Obstetr Res. 2019;2(2):1012.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Pathology, Malabar Medical College, Ulleri, Kozhikode, Kerala, India.
2. Professor, Department of Pathology, Malabar Medical College, Ulleri, Kozhikode, Kerala, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Shima Kannadas,
Aksharam House, Near Eranhoth Kalari Devasthanam, Koodathumpoyil,
Kakkodi Post, Kozhikode-673611, Kerala, India.
E-mail: drkshima@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Feb 06, 2025
- Manual Googling: Mar 29, 2025
- iThenticate Software: Apr 05, 2025 (6%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Feb 04, 2025**
Date of Peer Review: **Mar 17, 2025**
Date of Acceptance: **Apr 08, 2025**
Date of Publishing: **Jul 01, 2025**