

Case Report

Myxoid Degeneration of Leiomyoma of the Posterior Vaginal Wall: A Rare Case and Literature Review

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Abstract

Introduction: Vaginal leiomyoma, particularly those arising from the posterior vaginal wall, is a rare benign tumor. Myxoid degeneration in vaginal leiomyoma is also an exceedingly rare finding, which may further complicate the diagnostic process and management.

Case: A 37-year-old woman presented with a vaginal lump and urinary discomfort. Gynecologic examination revealed a posterior vaginal wall mass. Pelvic ultrasound and contrast-enhanced MRI identified a semisolid mass involving the posterior vagina and uterus. Intraoperative exploration confirmed a gray-white, flat-surfaced cystic mass measuring 8x7 cm, originating from the posterior vaginal wall. Vaginal enucleation was performed without complications. Histopathology confirmed a myxoid leiomyoma, characterized by an abundant mucoid matrix and low cellularity. Postoperative follow-up at 6 months showed no recurrence.

Conclusions: Posterior vaginal leiomyoma with myxoid degeneration poses diagnostic challenges due to its rarity. Vaginal enucleation provides effective, low-recurrence management.

Keywords: Enucleation; myxoid degeneration; vaginal leiomyoma

Leiomioma Dinding Vagina Posterior dengan Degenerasi Miksioid: Laporan Kasus Langka dan Tinjauan Pustaka

Abstrak

Pendahuluan: Leiomioma vagina, terutama yang berasal dari dinding posterior vagina, merupakan tumor jinak yang jarang ditemukan. Degenerasi miksioid pada leiomioma vagina juga merupakan temuan yang sangat jarang dilaporkan sehingga dapat menambah kesulitan dalam proses diagnosis dan penatalaksanaan.

Kasus: Seorang perempuan berusia 37 tahun datang dengan keluhan benjolan pada vagina disertai rasa tidak nyaman saat berkemih. Pemeriksaan ginekologi menemukan adanya massa pada dinding posterior vagina. Pemeriksaan ultrasonografi pelvis dan magnetic resonance imaging (MRI) dengan kontras menunjukkan massa semisolid yang melibatkan bagian posterior vagina dan uterus. Eksplorasi intraoperatif menemukan massa kistik berwarna putih keabu-abuan dengan permukaan rata berukuran sekitar 8x7 cm yang berasal dari dinding posterior vagina. Dilakukan enukleasi massa melalui pendekatan vagina tanpa komplikasi. Pemeriksaan histopatologi mengonfirmasi diagnosis leiomioma dengan degenerasi miksioid yang ditandai oleh matriks mukoid yang melimpah dan selularitas yang rendah. Pada tindak lanjut enam bulan pascaoperasi tidak ditemukan kekambuhan.

Kesimpulan: Leiomioma vagina merupakan entitas yang jarang sehingga menimbulkan tantangan dalam penegakan diagnosis yang akurat. Enukleasi tampaknya merupakan penatalaksanaan yang paling optimal.

Kata kunci: Enukleasi; degenerasi miksioid; leiomioma vagina

Introduction

Vaginal leiomyoma is a rare entity that presents with clinical features that mimic conditions such as pain, vaginal mass, urinary obstruction, and vaginal bleeding. These tumors primarily arise from the anterior vaginal wall and less commonly from the posterior or lateral walls.¹⁻³

The case involved a rare posterior vaginal leiomyoma with myxoid degeneration, presenting diagnostic challenges due to its unusual location and histopathology. Its rarity and similarity to other vaginal masses made accurate preoperative identification difficult, requiring careful imaging and clinical assessment.

Case

A 37-year-old woman presented to the outpatient clinic with a one-year history of a vaginal lump causing persistent discomfort, especially during urination. She also reported discomfort when sitting or squatting. The patient is multiparous, with two living children delivered vaginally, and reports regular, normal menstrual cycles. Gynecological examination (Figure 1) showed a posterior vaginal wall mass that became more visible with straining. Internal examination revealed a solid, rubbery, mobile 6×6×6 cm mass on the right lateral posterior vaginal wall. The cervix was difficult to visualize but was palpable and clearly separated from the mass.

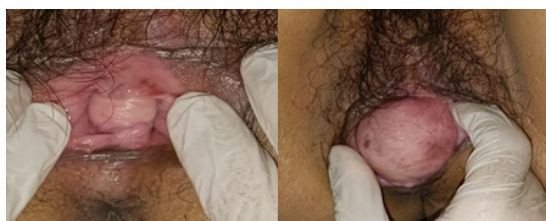


Figure 1 A Posterior Vaginal Mass

Ultrasound showed a well-defined hyperechoic mass measuring 8×6×5 cm in

the posterior vagina, compressing the cervix. Pelvic MRI with contrast demonstrated a semisolid mass in the posterior vagina and uterus, displacing both structures anteriorly. The lesion showed hyperintense signal on T1WI and T2WI, with restricted areas on DWI-ADC. Based on these findings, the patient was assessed as having a suspected solid posterior vaginal wall mass, and surgical excision was planned.

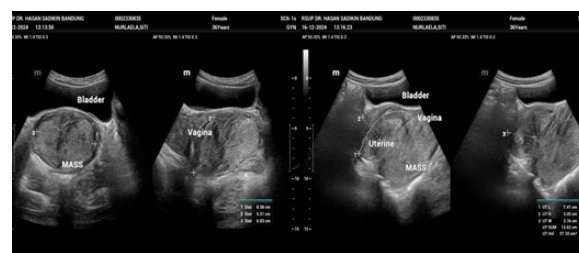


Figure 2 An 8×6 cm Posterior Vaginal Mass



Figure 3 A Semisolid Mass in The Posterior Vagina and Uterus

Intraoperative exploration revealed a well-defined, mobile, gray-white cystic mass measuring 8 × 7 cm, with a smooth surface and a firm, spongy consistency. The mass extended from the posterior vaginal wall to the perineum. Adequate exposure of the posterior vaginal wall and perineal region was achieved by creating superior and inferior perineal skin flaps. An incision was made, and careful dissection of the rectovaginal space was performed until the



Figure 4 Intraoperative and Specimen Images of Vaginal Mass

pseudocapsule was identified. Enucleation of the myoma was performed using a traction–countertraction technique, allowing complete separation of the mass from the posterior vaginal wall and prerectal space.

The tumor was found to originate from the posterior vaginal wall, approximately 0.5 cm from the introitus, and extend proximally. Digital rectal examination confirmed no involvement of the anal canal. After complete removal of the mass, reconstruction of the prerectal space, perineum, and posterior vaginal wall was performed. The specimen was sent for histopathological examination.

The patient was discharged in good condition after three days of treatment. Histopathology confirmed a myxoid leiomyoma of the vagina. Macroscopically, the 10×9×5 cm mass was brownish-white, solid, and rubbery. Microscopically, it consisted of spindle-shaped cells with hyperplastic growth within a myxoid matrix. The nuclei were oval, slightly hyperchromatic, and mitotic. Mild lymphocytic infiltration, vascular dilatation, and obstruction were noted. No malignant features or atypical tumor cells were identified, as shown in Figure 5.

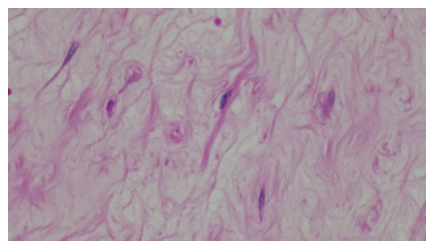


Figure 5 Histopathology Power x100

At the 6-month postoperative follow-up, the patient reported no complaints. Micturition and defecation were within normal limits, and sexual function was preserved. The surgical wound had healed well, with no evidence of recurrence.

Discussion

Leiomyomas are benign tumors arising from smooth muscle cells and are the most common tumors of the female reproductive organs. They are most often seen in women of reproductive age, usually develop in the uterus, and about 50% of cases are asymptomatic.¹

Vaginal leiomyomas are extremely rare, with about 330 cases reported since Denys de Leyden first described one in 1733. Bennett and Erlich identified only nine cases among 50,000 surgical specimens and 1 among 15,000 autopsies. They occur more often in Caucasians and may or may not coexist with leiomyomas elsewhere. The literature remains scarce, mostly limited to isolated case reports.¹ There were only 42 cases reported by 39 authors over the last 24 years. Table 1 shows cases reported over 10 years.

Although vaginal leiomyomas rarely originate in the vagina, they are hormone-dependent and arise from vaginal smooth muscle, arterial musculature, or adjacent bladder or urethral smooth muscle. Despite their rarity, they most commonly occur on the anterior vaginal wall, followed by the

lateral wall, and least often on the posterior wall. Among 42 reported cases, only five originated posteriorly. Our case involved a vaginal leiomyoma arising from the posterior vaginal wall, an unusual localization.

Vaginal leiomyoma may be asymptomatic or present with varied clinical features that can mimic genital organ prolapse (GOP).¹ The most common clinical presentation was a protruding mass from the vagina,³⁻¹⁷ followed by dyspareunia,^{5,7,8,17-19} vaginal and/or uterine bleeding dysfunction,^{1,2,13,15} vaginal discharge,^{6,9,10,20} and vaginal discomfort.¹³ However, other clinical features include urinary symptoms,^{2,10,12} infertility,¹⁸ pain in the right iliac fossa,²¹ and abdominal pain.^{8,19} The patient reported a protruding vaginal mass resembling a cyst, along with urinary discomfort and pain when sitting or squatting.

Differential diagnoses include urethral prolapse, diverticulum, Skene's or Gartner's duct cysts, epithelial cysts, fibrous polyps, ureterocele, and vaginal and urethral tumors.¹ Diagnosis involves TVUS, pelvic MRI, CT, cystourethrography, and cystoscopy, with translabial sonography useful as an adjunct for suspected vaginal fibroids.^{1,4}

MRI is preferred for characterizing vaginal masses because ultrasonography and physical examination may not accurately distinguish them. Vaginal leiomyomas typically show low T1 and relatively low T2 signal intensity with homogeneous enhancement. In contrast, leiomyosarcomas demonstrate high T2 signal intensity with heterogeneous regions of hemorrhage or necrosis.¹⁻⁴

On MRI, the myxoid component appears hyperintense on T2-weighted images and hypointense on T1-weighted images, with minimal or no gadolinium enhancement. Myxoid leiomyomas are characterized by collagen degeneration, abundant myxoid stroma, and prominent thick-walled vessels, a feature not typically seen in myxoid leiomyosarcomas. The myxoid matrix

between smooth muscle cells appears heterogeneous on T2-weighted images and may show mild peripheral enhancement due to its multivesicular nature.^{22,23}

In this case, clinical examination, ultrasonography, and pelvic MRI identified a semisolid mass in the posterior vagina. Evidence indicates that combining clinical assessment, ultrasound, and MRI improves diagnostic accuracy for vaginal leiomyomas and helps distinguish them from malignant lesions.^{3,4,6,9,10,14-17,24} The MRI findings in this case showed a lesion with hyperintense signal on both T1- and T2-weighted images, along with areas of restricted diffusion on DWI/ADC. Although these features are not specific to myxoid lesions, they may help differentiate them from malignant tumors.

Definitive treatment is surgical, with enucleation or excision as the preferred approach. The approach depends on tumor location. Vaginal excision is typically favored, while an abdominoperineal approach may be required for large lesions that cannot be safely removed through the vaginal route.^{2,7} Most cases were managed with vaginal enucleation, followed by vaginal excision. However, the abdominal approach might be necessary and has been reported in a few cases.^{12,13} In certain cases, tumor origin, size, or complications may require an abdominal approach. In this patient, vaginal enucleation was chosen to remove the mass completely and minimize the risk of recurrence. Enucleation was performed by exposing the posterior vaginal wall and perineum, where a hard mass was identified extending from the posterior vaginal wall into the perineum. Superior and inferior flaps of the perineal skin were created to expose the mass. An incision was made, and the rectovaginal space was dissected until the pseudocapsule was exposed. The myoma was enucleated using traction-countertraction. The mass was dissected from the posterior vaginal wall and the prerectal area. After removal of the mass,

Table 1 Cases Reported for Vaginal Leiomyomas

Author	Year	Age	Presentation	Size (cm)	Position	Diagnosis	Surgery	Histopathology
Manjula and Jyothi ¹⁸	2015	22	Dyspareunia Infertility	6 × 6	Anterior	Clinical, MRI	Vaginal enucleation	Vaginal leiomyoma
Kant et al ⁸	2015	40	Something coming out, pain abdomen	5 × 5	Anterior	Clinical USG, MRI	Vaginal enucleation	Vaginal leiomyoma
Halder et al ⁹	2015	45	Something coming out, vaginal discharge	9 × 4 × 2	Posterior	Clinical USG FNAC	Vaginal enucleation	Vaginal leiomyoma
Bansal et al ¹⁰	2015	40	Mass per vagina, discharge, dysuria, incomplete voiding, pressure feeling	10 × 8	Right anterolateral	Clinical, USG, MRI suspected as carcinoma fibroid	Vaginal enucleation	Vaginal leiomyoma with myxoid degeneration
Yu et al ¹¹	2015	44	Mass protruding at urethral opening	3–4	Anterior	Clinical, MRI	Vaginal removal	Vaginal leiomyoma
Agarwal et al ¹²	2016	43	Mass coming out per vagina, frequent urine	4 × 5	Anterior	TVS, MRI, Pre-op urethrocele	Vaginal enucleation	
Asnani et al ²⁰	2016	30	Oligomenorrhea, purulent discharge	18 wks Preg.	Anterior	Pre-op as cervical fibroid.	Vaginal attempt followed by TAH and removal	
Kaba et al ¹	2016	45	DUB	4	Anterior	Pre-op as cystocele	Vaginal enucleation	
Zuber et al ²⁴	2016	23	Pain in left hip joint	6 x 7	Left lateral wall	Clinical, USG, MRI	Vaginal enucleation	Vaginal leiomyoma
Lorinez et al ³	2017	42	Solid mass in fornix	2 x 2 x 2.5	Right fornix	Clinical, USG, MRI	Vaginal enucleation	Vaginal leiomyoma
Gupta et al ⁴	2017	44	Mass in vagina	6 x 5	Posterolateral vaginal wall	Clinical, USG, MRI	Vaginal enucleation	Vaginal leiomyoma

Upadhyay et al ²	2018	14	Difficulty in passing urine, irregular vaginal bleeding	10 x 8.9 x 8	Anterior	USG, MRI	Vaginal enucleation	Vaginal leiomyoma with hyaline degeneration
Chatcjotikawong et al ⁶	2019	41	Vaginal discharge and vaginal solid mass	5.9 x 5.3 x 5.8	Superior segment of vagina	Clinical, TVUS, MRI	Vaginal excision	Vaginal leiomyoma
Yordanov et al ⁵	2019	47	Pain and feeling heaviness in vagina	5 x 5	Anterior	Clinical, abdominal echography	Vaginal enucleation	Vaginal leiomyoma with hyaline degeneration
		41	Dull pain in the groins	4 x 4	Posterior	Clinical, TVUS	Vaginal enucleation	Vaginal leiomyoma with hyaline degeneration
		46	Painful during sexual contact	1 x 2	Posterior	Clinical	Vaginal enucleation	Vaginal leiomyoma
Caltekin et al ¹³	2019	51	Menometrorrhagia	3 x 3	Anterior wall uterine + Anterior vaginal wall	Clinical	TAH + Vaginal excision	Uterine leiomyoma + Vaginal leiomyoma
		45	Bulging and discomfort feeling in vagina	3 x 3.5	Anterior	Clinical +TVUS	Vaginal excision	Vaginal leiomyoma
Shresta et al ¹⁴	2021	47	Mass per vaginum, difficulty in walking, chronic pelvic pain	12 x 10	Left lateral wall	Clinical, USG, MRI	Vaginal excision	Vaginal leiomyoma
Benjelloun et al ⁷	2022	65	Vaginal swelling, pelvic heaviness, dyspareunia	2.8 x 2 x 1.8	Anterior wall	Clinical, MRI	Vaginal excision	Vaginal leiomyoma
Daneshyar et al ¹⁹	2022	51	Lower abdominal pain, dyspareunia	2.5 x 1.5 x 1.5	Right lateral wall	Clinical	Vaginal excision	Vaginal leiomyoma

Ying Gao et al ¹⁵	2022	48	Vaginal bleeding, prolapsed vaginal mass	6.5 x 4.6	Anterior vaginal wall	US, MRI, CT scan urethral angiography, Colposcopy	Vaginal mass resection and frozen section	Vaginal leiomyoma
Muhammad Huda et al ¹⁶	2023	48	Mass in vagina	3 x 2.8	Anterior vaginal wall	Clinical, US, MRI	Vaginal mass resection	Vaginal leiomyoma
Jalal et al ¹⁷	2024	27	Dyspareunia	6	Anterior wall	Clinical, TVUS, MRI	Vaginal enucleation	Vaginal leiomyoma

the prerectal area, the perineum, and the posterior vaginal wall were reconstructed.

Leiomyomas are typically firm, rubbery, solid tumors. As they enlarge, a limited blood supply can lead to degenerative changes, including hyaline, cystic, myxoid, red degeneration, and dystrophic calcification. Hyalinization is the most common, occurring in up to 60% of cases. Myxoid degeneration is rare, occurring in about 19%, and is difficult to diagnose clinically because of nonspecific symptoms.^{22,25}

Myxoid leiomyoma was first described in 1979 by Tavassoli and Norris, who reported 10 cases of leiomyoma with myxoid changes, seven of which were pregnant.²³ Clinical diagnosis of myxoid leiomyoma is difficult. On MRI, degenerated leiomyomas show foci of high signal intensity that correspond to a combination of edematous swelling of myoma cells due to ischemia, cystic change, and/or myxoid degeneration.⁴ Definitive diagnosis requires histopathology. M. Chaouki et al. emphasized that myxoid leiomyoma is a rare benign tumor diagnosed only microscopically, and that leiomyosarcoma must always be carefully excluded.^{22,25} Over 10 years, only one case was reported as myxoid degeneration,¹⁰ and four cases had hyaline degeneration.^{2,5,13,21}

This case presented with myxoid vaginal leiomyoma, requiring follow-up

to detect recurrence or possible malignant transformation.

Myxoid changes can occur in benign smooth muscle tumors but must be differentiated from myxoid leiomyosarcoma, which shows infiltrative growth, marked myxoid areas, and nuclear atypia. Leiomyoma's myxoid stroma results from collagen degeneration, leaving thick-walled vessels absent in leiomyosarcoma.^{22,25}

Conclusion

Vaginal leiomyoma is rare, especially when arising from the posterior vaginal wall. Clinical examination, ultrasound, and MRI aid diagnosis, with MRI useful for excluding leiomyosarcoma. Complete vaginal excision is the preferred treatment. Histopathology confirms the diagnosis, and myxoid degeneration is an uncommon histologic change in leiomyomas.

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