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Case Series

Obstetrics and Gynaecology Section

Vulvar Smooth Muscle Tumours: Case Series and Review of Literature

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ABSTRACT

Smooth muscle tumours are rare in vulva. Here we discuss three cases all presenting with vulvar mass but with different clinical features. The first patient was 26-year-old primigravida at 18 weeks gestation with vulvar mass in the region of bartholin gland. The second patient was 31-year-old presenting at term pregnancy in labour and with vulvar mass. The third patient was 38-year-old para 3 woman with complaints of pain, ulceration of a gradually growing mass in vulva for the last eight months. Local excision was done in first and second patient and wide local excision in third patient with good postoperative recovery and no recurrence till date. The aim of reporting these cases is to emphasise the need of having high clinical suspicion of vulvar smooth muscle tumours in any woman presenting with vulvar mass to avoid missing out on malignant ones and provide the best prognosis to patients.

Keywords: Leiomyoma, Leiomyosarcoma, Vulvar mass

INTRODUCTION

Smooth muscle tumours are rare in vulva comprising of 0.03% of all gynaecologic neoplasms [1] and malignant variety i.e., sarcomas accounting for only 1% to 2% of vulvar tumours [2].

Here we present three cases, two of vulvar leiomyomas and third of vulvar leiomyosarcoma with an aim to emphasise the need for broad vision of differentials and clinical suspicion to avoid missing out on malignant ones and provide the best prognosis to patients.

CASE SERIES

Case I

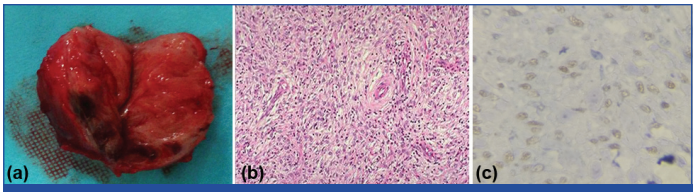
A 26-year-old primigravida at 18 weeks gestation presented with complaints of discomfort due to a mass in perineum which appeared first when she was eight-year-old. Clinical examination revealed a spongy mass of size 6.5×4 cm on right labia majora in the region of bartholin gland with absence of inguinal adenopathy. It had well defined borders and was non-tender, soft in consistency. There was no organomegaly. Haemogram, urinalysis, and blood chemistry reports were normal.

A clinical diagnosis of bartholin cyst was made and planned for day care surgery. Incision at the mucocutaneous junction was given and a soft, fleshy, and well defined mass was removed. Cut surface of the lesion was white, whorled, and rubbery, without hemorrhage or necrosis [Table/Fig-1a]. The patient had a good recovery postoperatively and delivered a healthy baby vaginally at term gestation. Patient is regularly followed up with no recurrence till 2.5 years now.

Sections stained with haematoxylin and eosin stain showed spindle shaped cells arranged in fascicles with eosinophilic cytoplasm [Table/Fig-1b]. Focal myxoid change was seen with no atypical mitosis. Tumour cells were positive for vimentin, Smooth muscle actin, Progesterone Receptor [Table/Fig-1c] and negative for keratin and Estrogen Receptor. Hence a diagnosis of vulvar leiomyoma with focal myxoid change was made.

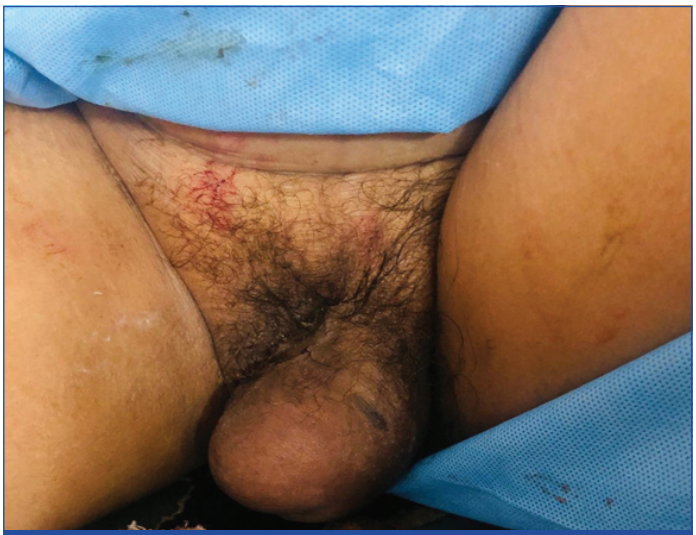
Case II

A 31-year-old, third gravida woman presented to us at third trimester of pregnancy at term and in labour. She had no complaints and the vulvar mass was discovered during routine examination [Table/Fig-2].



[Table/Fig-1]: (a) Encapsulated soft tissue mass showing white, whorled, rubbery surface on cut section without hemorrhage or necrosis; (b) Tumour cells are oval to elongated in shape arranged in fascicles with eosinophilic cytoplasm (20x); (c) Tumour cells are positive for Progesterone Receptor (PR).

The mass was around 5×6×4 cm soft and non-tender on left vulva. Patient delivered vaginally and was discharged with instruction to follow-up at six weeks. After six weeks, the mass was excised and defect was closed. Immunohistochemistry and microscopic study confirmed it to be benign vulvar leiomyoma.



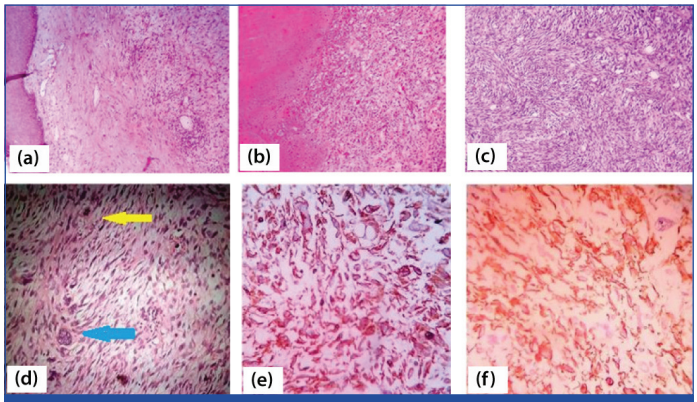
[Table/Fig-2]: Vulvar mass on left labia.

Case III

A 38-year-old, para 3 woman presented with complaints of pain, ulceration of a gradually growing mass in vulva for the last eight months. Her BMI was 26 with no significant medical history and no previous gynaecologic illness. On examination 8×6.5×5 cm sized soft, ulcerated, tender mass on right upper vulva was seen. Biopsy revealed the diagnosis of malignant sarcoma.

Lymphangiographic studies revealed normal inguinal and iliac nodes. No abnormality was detected in proctoscopy, cystoscopy, barium enema study, intravenous pyelography, bone scan, pelvic and chest roentgenograms. Positron Emission Tomography-Computed Tomography (PET-CT) revealed no distant metastasis. A wide local excision was performed and defect was closed without graft with satisfactory appearance. In view of the absence of lymphovascular space invasion and metastasis on imaging, inguinal lymphadenectomy was decided not to be done. Patient recovered well and postoperative period was uneventful.

Final pathologic study revealed a highly cellular tumour underlying dermis [Table/Fig-3a], showing infiltration and extensive areas of haemorrhage and necrosis [Table/Fig-3b]. The tumour cells were spindle in shape arranged in fascicles and bundles [Table/Fig-3c] showing high degree of pleomorphism and atypical mitosis (4-5/hpf) along with many tumour giant cells [Table/Fig-3d]. There was no lymphovascular invasion. Tumour cells were positive for vimentin [Table/Fig-3e], SMA [Table/Fig-3f] and negative for CK, desmin, S-100, HMB-45, CD34, ER and PR all features suggestive of pleomorphic sarcoma more specifically MFH (Malignant Fibrous Histiocytoma).



[Table/Fig-3]: (a) Skin lined tissue showing spindle cell tumour underlying dermis (20x); (b). Tumour along with area of necrosis (20x); (c) Highly cellular spindle cell tumour where tumour cells arranged in fascicles and bundles (20x); (d) showing pleomorphic tumour cells, atypical mitosis (yellow arrow) and tumour giant cell (blue arrow) (40x); (e) Tumour cells are positive for vimentin (100x); (f) Tumour cells are positive for SMA (100x).

Patient was given chemoradiation in the postoperative period. The case was discussed further in oncology board meet of the institution where decision for regular follow-up and surveillance was taken after reviewing pathology and imaging. Patient has since then been followed up every four months with no evidence of disease 21 months now postvulvectomy.

DISCUSSION

Smooth muscle tumours of vulva are rare. Reidel found an incidence of 0.7% of leiomyoma in a review of 144 vulvar tumours [3]. Diagnosis poses a challenge in view of its rarity apart from distinguishing benign from malignant ones. This is due to different diagnostic criterion used for smooth muscle tumours of gynaecologic and nongynaecologic origin. Microscopy showing significant mitotic activity, focal degenerative cellular atypia, and/or hyaline necrosis can be normal finding in benign gynaecologic leiomyoma but the same features may suggest leiomyosarcoma in smooth muscle tumours of nongynaecologic origin [4].

Tavassoli FA et al., in 1979 reviewed the histologic slides of 32 smooth muscle tumours, seven of them being leiomyoma found in pregnant patients and seven cases of leiomyosarcoma. He predicted three determinants of prognosis which were tumour, size, contour and mitotic activity. Tumours with size more than 5 cm, having infiltrative margins, and ≥5 mitotic figures per 10 hpf were likely to recur and should be regarded as sarcomas. But the sample size was too small to validate the role of mitotic activity in predicting the tumour histology [5]. Nielsen GP et al., in 1996 did an analysis of clinical and pathological features of 25 smooth muscle tumours out of which two cases were leiomyoma in pregnant patients and five cases were that of leiomyosarcoma. It was observed that the tumour which recurred or metastasized had certain common features viz., size more than 5 cm, an infiltrative margin, a mitotic count of 5 or more per 10 hpf, and grade 2 to 3 nuclear atypia. If at least three out of these four features were present, leiomyosarcoma was diagnosed, if only two were present, atypical leiomyoma was diagnosed and if only one or none of the features were present, it was assumed to be leiomyoma. They hence added moderate to severe cytological atypia as a fourth feature to distinguish benign from malignant smooth muscle growth [6]. Considering these criterion, our first and second cases were diagnosed as benign leiomyoma in second and third trimester of pregnancy respectively. The tumours were well circumscribed with no atypical mitosis. Although the size crossed the 5 cm mark, in the absence of other 3 features, leiomyoma was diagnosed and local excision was done in both cases. [Table/Fig-4] summarises the 13 cases of leiomyoma in pregnant patients including our present cases [5-8].

Kawaguchi K et al., observed that ER expression was suppressed in the secretory phase and during pregnancy both in myometrium and in leiomyoma's whereas PR was expressed both in the myometrium and leiomyoma's throughout the menstrual cycle and pregnancy [9]. Our case was positive for progesterone receptor and negative for ER receptors. Hence there may be a significant role of progesterone receptors in the growth of smooth muscle tumours arising in uterus and vulva. This may explain why tumour in our case grew during pregnancy under the influence of increased level of progesterone. Even Kajiwara H et al., in his literature review found PR expression in 85.0% in contrast to ER expression in 73.7% smooth muscle tumours of the vulva [7]. However, the other 4 cases [Table/Fig-4] were equivocal in determining this fact as 2 cases (cases 9 and 11) stained positive for both ER and PR receptors and other 2 cases (cases 8 and 10) negative for both of them. More studies have to be undertaken to validate the role of PR receptors in the probable role of growth of vulvar SMTs [6-8].

Myxoid change was evident in 11 cases who were less than 35-year-old. Only one case of Nielsen GP et al., series (case 8) who was 40-year-old had no myxoid change [6]. This finding calls for research related to influence of young age and pregnancy on degeneration of tumours. The manifold hormonal changes of pregnancy may induce myxoid change in smooth muscle tumours of vulva which is yet to be established. Newman PL et al., noted that myxoid or hyalinizing changes were found more commonly in smooth muscle tumours of the vulva than those that occurred in scrotum and nipple [10].

All of them had spindle cells in microscopy. Follow-up records were available for 10 patients and none of them had recurrence after enucleation or local excision. Local excision is hence recommended as initial therapy and for recurrences as well.

However, our third case had all the four features viz., size greater than 5cm, margin with infiltration, cellular atypia, atypical mitosis of 4-5/hpf, hence leiomyosarcoma more specifically malignant fibrous histiocytoma was diagnosed and partial radical vulvectomy was done. This rare variant of leiomyosarcoma of the vulva (MFH) comprise of 20-24% of all soft-tissue sarcomas, first described by O'Brien and Stout way back in 1964 [11]. With less than 10 cases reported mostly in younger and middle age women, pathogenesis of the neoplasm remains a riddle [12,13]. The tumour clinically presents as a gradually enlarging painful mass mostly found in labia majora and reaching 3-6 cm in diameter [12,14]. As a characteristic feature of sarcomas, the tumour metastasizes by haematogenous route mainly to lungs and occasionally to bones [15]. In view of the high chances of recurrence in our patient, regular follow-up of the patient is done with no recurrence till 21 months now after surgery. No specific treatment protocols have been formulated for this rare entity. However, the standard treatment recommended is surgical excision with confirmed negative margins followed by radiation therapy [16,17]. Chemotherapy may reduce the chances of recurrence and metastasis although its administration is not mandatory [18].

	No of cases	Serial no:	Age	Size (cm)	Atypia	Mitotic figures per 10 hpf	Margins	SMA	Vimentin	Desmin	Cytokeratin	S 100	ER	PR	Cell type	Myxoid change	Diagnosis	Treat-ment	Follow-up
Tavassoli FA et al, [5]	7	1	30	11.5	1+	0	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	WLE	NR
		2	24	1.5	1+	0	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	NR, 7 years
		3	28	4.5	1+	2	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	NR, 7 years
		4	26	1.5	1+	2	ID	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	NR, 7 years
		5	35	6	1+	1	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	Lost to FU
		6	31	4	1+	1	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	Lost to FU
		7	25	3	0	0	WC	ND	ND	ND	ND	ND	ND	ND	SC	P	L	EN	Lost to FU
Nielson GP et al., [6]	2	8	40	8	2	3	U	P	P	P	N	N	N	N	SC	N	AL	LE	NR till 19 years
		9	20	2.8	3	2	FI	P	P	P	N	N	P	P	SC	P	AL	LE	NR till 3 years
Kajiwara H et al., [7]	1	10	29	4×4×4.5	0	0	NTR	P	P	P	N	N	N	N	SC	P	L	LE	NR
Zhou J et al., [8]	1	11	29	8.5×7.5×6.5	0	<1	NTR	P	P	P	N	ND	P	P	SC	P	L	LE	NR till 29 months
Our cases, 2019	2	12	26	6.5×4	0	0	WC	p	p	p	N	N	N	P	SC	P	L	LE	NR till 2.5 years
		13	31	5×6×4	0	0	WC	P	P	P	N	N	N	P	SC	P	L	LE	NR till date

[Table/Fig-4]: Cases of vulvar leiomyoma diagnosed during pregnancy [5-8].
WC: Well circumscribed; ID: Indeterminate; FI: Focally infiltrating; U: Unknown; SC: Spindle cell; NTR: Not reported; ND: Not done; L: Leiomyoma; AL: Atypical leiomyoma; WLE: Local wide excision; EN: Enucleation; LE: Local excision; P: Positive; N: Negative; NR: No recurrence; S 100: Homodimeric proteins used as marker; FU: Follow-up

[Table/Fig-5] summarises the cases of leiomyosarcoma from literature. As evident it occurs in women of middle and older ages, the mean age at presentation being 42-year-old and youngest patient reported was 14-year-old [19-36]. Wide local excision was treatment of choice in most of the cases at first presentation as well as after recurrence. Metastasis to lung was observed in four cases who were treated with excision/vulvectomy with radiotherapy and chemotherapy (cases 5,6,7,8: [Table/Fig-5]). However, all of them succumbed to their disease despite receiving best treatment thus showing metastasis as the poorest prognostic factor.

Serial no.	Author	Year	Age	Size (cm)	First line tx	LR	M	Tx of recurrences	Follow-up
1	Davos I et al., [19]	1976	41	NS	WLE	-	-	-	28 months, NR
2			49	NS	LE	+	-	WLE	9 years, NR
3	Audet-Lapointe P et al., [20]	1976	48	4	Tumourectomy,	+	-	Radical vulvectomy+b/l inguinal LN resection	24 months, NED
4	Guérard MJ et al., [21]	1976	48	4	Simple excision	+	_	Radical vulvectomy	NED 6 months after recurrence
5	Bakri YN et al., [22]	1979	17	15	Local excision	+	lung	Local excision+ CT	DOD 9 yr
6		1978	29	9	Local excision	+	lung	Local excision+CT+RT	DOD 10 yr
7		1982	41	10	Local excision	+	lung	Local excision+CT+RT	DOD 7.5 yr
8	Guidozzi F et al., [23]	1984	47	6	Radical vulvectomy with B/L inguinal LN resection	+	lung	CT+RT	DOD 5 months
9	Lenaz MP et al., [24]	1984	58	NS	LE	+	-	Anterior vulvectomy with groin dissection.	NS
10	Patel S et al., [25]	1986	60	6	Radical vulvectomy with B/L inguinal LN dissection	+	_	Local reexcision	NED 4 months after recurrence
11	Miller LBK et al., [26]	1990	54	8	Radical vulvectomy+inguinofemoral adenectomy	-	-	-	NED 30 months
12	Aartsen EJ et al., [27]	1994	15	7	RT	+	-	1. RT 2. WLE	24 years, NR
13	Tawfik O et al., [28]	1994	52	15	LE+RT	_	_	_	NED 14 months
14	Torres Lobaton A et al., [29]	2000	14	6	LE	+	-	1. WLE 2. WLE + CT 3. WLE + RT 4. Vulvectomy + Hysterectomy + RT	22 years, NR
15	Di Gilio AR et al., [30]	2004	36	6	WLE + ipsilateral lymphadenectomy	-	-	-	30 months, NR
16	Dewdney S et al., [31]	2005	36	5	Vulvectomy	-	-	-	13 months, NR
17	González Bugatto F et al., [32]	2009	52	6	Hemivulvectomy + ipsilateral lymphadenectomy + RT + CT	+	-	WLE	4 years, NR
18	Salehin D et al., [33]	2011	71	2	Hemivulvectomy + hysterectomy and salpingo - oophorectomy + inguinal lymphonodectomy.	-	-	-	NTR
19	Mowers EL et al., [34]	2014	48	4	Radical hemivulvectomy	-	-	-	18 months, NR

20	Levy RA et al., [35]	2014	57	4×2	WLE	-	-	-	-
21	Korkmaz V et al., [36]	2015	65	5.5	LE	-	-	-	6 months, NR
22	Our case	2019	38	8×6.5×5	WLE	-	-	-	21 months, NR

[Table/Fig-5]: Cases of vulvar leiomyosarcoma [19-36].
NR: No recurrences; CT: Chemotherapy; LE: Local excision; LR: Local recurrence; M: Metastasis; NS: Non-specified; RT: Radiotherapy; WLE: Wide local excision; NTR: Not reported; DOD: Died of disease; WC: Well circumscribed; ID: Indeterminate; FI: Focally infiltrating; U: Unknown; SC: Spindle cell; NTR: Not reported; ND: Not done; L: Leiomyoma; AL: Atypical leiomyoma; tx: Treatment, LN: Lymph node; NED: No evidence of disease

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent

Informed consent was obtained from all individual participants included in the study and for publication of their case reports.

CONCLUSION

Since this is a rare entity, chances to miss the diagnosis are high which in turn increases morbidity and mortality too. Any woman presenting with vulvar mass need to be closely monitored with rapid diagnosis and definite treatment.

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