

# Vaginal mature teratoma: a case report and literature review

**Lixing Chen, Xinliang Deng, Songshu Xiao, Sili He, Min Xue**

*Department of Gynecology, The Third Xiangya Hospital of Central South University, Changsha (China)*

## Summary

Mature teratomas are usually detected in the ovary, while they are very rarely found in the vagina. Only several cases of vaginal mature teratomas have been reported. In this article, the authors describe the case of a 28-year-old female with dyspareunia for four months diagnosed by MRI. The MRI findings in vaginal teratoma are easily confused with other vaginal cysts. Pelvic MRI is valuable in evaluating the nature of vaginal mass and determining the treatment approach.

**Key words:** Vagina; Teratoma; MRI; Cysts.

## Introduction

Teratomas most frequently occur in the gonads, such as ovary and testis [1]. However, extragonadal teratomas are very rare, constituting only 1-5% of all germ cell tumors (GCTs) [2], and usually occur in midline sites, such as sacrococcygeal region, retroperitoneum, and mediastinum [3]. Vagina is an extremely rare location for primary GCTs [4]. To the best of the authors' knowledge, only eight cases of vaginal teratoma have been reported so far in English literature. A cutaneous dermoid cyst derived from totipotent stem cells is buried when the embryonic clefts and sinuses by skin fusion close during the embryonic stages [5]. These cells can differentiate into skin, appendages, hair, and even mesodermal tissues, such as bone and cartilage [5]. Rarely, it may not be readily considered by clinicians and easily be mistaken for other common benign cysts due to their similar manifestations, such as vaginal discomfort, vaginal pressure, dyspareunia, vaginal bleeding, or urinary symptoms [6].

MRI has become extremely reliable to evaluate the vaginal mass due to its superior soft-tissue contrast resolution and multiplanar capability [7]. MRI findings in vaginal teratoma have not yet been documented. Here, the authors reported a case of primary vaginal mature teratoma with its MRI appearances along with a literature review. The MRI features of various vaginal cysts are also summarized.

## Case Report

A 28-year-old Chinese female came to the outpatient department with the complaint of dyspareunia for four months. She had a history of one abortion and one ectopic pregnancy surgery. There was no history of dysuria, frequent urination, and dyschezia. Her medical history was not remarkable. A transvaginal examination revealed a soft and mobile mass located in the left-lateral vaginal

wall extending from the upper third of the vagina to hymen lever, which could be easily compressed manually. An ultrasonography showed an 11×7.9×8.4-cm anechoic mass mixed with weakly pasty hyper-echo mass limited to paravaginal space. MRI revealed an 8.5×6.6×9.8-cm inhomogeneous cystic mass with isointensity T1 and high T2 signal intensities (Figure 1). The cyst was round-shaped with smooth, thin, and integrated cyst wall, well demarcated from the adjacent tissues and showed no remarkable enhancement when contrasted. No other abnormality was found in the pelvis on the MRI. In conclusion, a possible diagnosis of vaginal cyst was made. The mass was completely removed by vaginal approach under general anesthesia. The tumor was then sent for histopathological examination with diagnosis of vaginal mature teratoma. Gross examination revealed a 10×8-cm cystic mass with appearance of hair and liquid fat in the cut section with thin and smooth capsule wall. The histopathological examination revealed that the mass was covered with squamous epithelium, while subepithelial connective tissues included irregular-shaped, diverse-size glandular structures, and constitution of hair follicle, consistent with the diagnosis of vaginal mature teratoma (Figure 2). The patient's postoperative course was uneventful.

## Discussion

Teratomas are commonly detected in the ovaries. Therefore, clinicians readily take it into consideration when evaluating pelvic mass in females. Nevertheless, in extragonadal sites, mature teratoma is rarely described and the occurrence in the vagina is exceedingly rare (Table 1) [5, 8-14].

As some cysts have not been reported, the actual prevalence of the vaginal cysts remains unclear, but it is estimated to be < 1% [6]. Vaginal cysts include Müllerian, epidermal inclusion, Gartner's duct remnants, Bartholin's cysts, endometriotic, and rare types such as dermoid cyst, unilateral hematocolpos, ectopic ureterocele, and paraurethral cyst [12]. Rarely, vaginal mature teratomas could be easily mistaken for other common vaginal cysts.

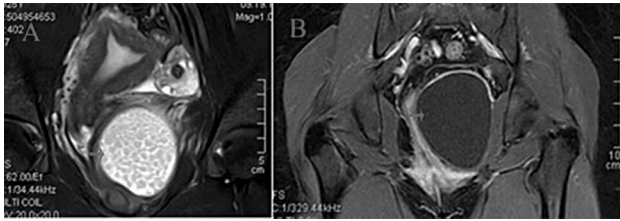


Figure 1. — Sagittal T2-weighted MRI (A) showing a vaginal dermoid cyst located in the paravaginal space with thin, smooth cyst wall (arrow). Postcontrast coronal T1-weighted MRI (B) showing no remarkable enhancement, indicating benign nature of the vaginal cyst (arrow).



Figure 2. — Microscopic appearance of the vaginal mature teratoma. Squamous epithelium and skin appendages, including sebaceous gland, hair follicle, and sweat gland, are observed in the cyst wall.

Most vaginal cysts are benign and asymptomatic, and they are usually detected incidentally by physical examination. Therefore, excision is not necessary for most of them [7]. However, the presence of malignancy, such as vaginal carcinoma, and even secondary malignant neoplasm cannot be ruled out. Previous investigation has re-

ported that there is primary vaginal squamous-cell carcinoma arising in a squamous inclusion cyst [15]. Therefore, it is rather significant for clinicians to make relatively accurate diagnosis of the vaginal mass to settle the treatment plans. History taking and pelvic examination are essential to estimate the location, mobility, and the connection with the surrounding tissues when evaluating vaginal mass. Imageological examinations are required to characterize the lesion further. Pelvic sonography and CT provide limited information about the lesion in continuity with the vagina [7]. However, MRI has become an extremely reliable test for vaginal mass because of its soft-tissue contrast and multiplanar imaging [7]. MRI findings in vaginal cysts are seldom reported. Here the authors summarize the MRI features of the various vaginal cysts: (1) Müllerian cyst appeared a homogenous vaginal cyst with high T2 signal intensity without enhancement [16]. (2) Epidermal inclusion cyst showed a homogeneous cyst with slightly high T1 signal intensity and isointensity on the T2 image. The intensity on the images was not suppressed by the fat-saturation technique [17]. (3) Gartner cysts usually showed low T1 and high T2 signal intensity [7]. (4) Bartholin cysts common revealed high T2 signal intensity and variable T1 signal intensities depending on the mucin content of the cystic fluid [7]. (5) Endometriotic cysts typically appeared various T1 and T2 signal intensities due to the amount and age of blood products [7]. (6) Dermoid cyst in this case demonstrated isointensity on T1 image and high T2 signal intensity without contrast enhancement. The intensity on the images was suppressed by the fat-saturation technique. (7) Ectopic ureterocele showed the dilatation of the collecting system with ureterocele in the bladder, which could be seen on T2 imaging, and it may protrude from the external urethral meatus [18]. (8) Paraurethral cyst appeared independent without relationship with the urethra on MRI to exclude diverticula [19]. (9) Hematocolpos was characterized by a grossly distended vagina containing hemorrhagic fluid without enhancement, revealing similar signal intensities to those of blood in different stages of evolution [7].

In conclusion, MRI accurately presented the vaginal plane and the surrounding tissues, suggesting its biological nature [20], which helped select appropriate surgical pro-

Table 1. — Summary cases of vaginal mature teratoma.

References	Age	Presentation	Size (cm)	Location	Treatment	Gross examination	Histological features
Stokes JE [8]	44	None	1	Hymen	RS	SG/H	SE
Curtis A [9]	None	None	2	VW	RS	SG/H	None
Johnston HW [10]	None	Asymptomatic	10	VW	RS	SG/H	None
Hirose R [11]	30	Painful	5	VW	RS	Fatty fluid/ H	SE/SA
Siu SS [12]	29	Dyspareunia	6	PS	RS	Cheese-like material/ H	SE/SA/SM
Al-Shahrani MS [13]	36	Asymptomatic	6	PS	RS	SG	SE/SM/SG/apocrine glands
Sharma R [14]	30	Dyspareunia	7	PS	RS	Keratin flakes/H	SE/SG/hair shaft
F. Vural [6]	15	Vaginal mass	5	VW	RS	CT	SE/CT/glandular structures

SE: squamous epithelium; SG: sebaceous gland; PS: paravaginal space; SA: skin appendage; VW: vaginal wall; SM: skeleton muscle; CT: cartilage tissue; H: hair; RS: resection

cedure. Changing the capillary filling of the bladder and the use of intravaginal aqueous gel to distend vagina on MRI, if necessary, might also be valuable to more accurately evaluate the vaginal mass [7].

Vaginal cysts are commonly detected in gynecological and female urological practices. They can be identified with a reasonable degree of certainty according to their history, physical examination and MRI characteristics. Therefore, it is very important to recognize the typical MRI features of vaginal cysts, by which the treatment approach can be often determined and surgery may be avoided.

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Corresponding Author:

MIN XUE, M.D. PH.D.

Department of Gynecology

The Third Xiangya Hospital of Central South University

No. 138, Tongzipo Road

Changsha, Hunan 410013 (China)

e-mail: 1196350112@qq.com