Experience with the diagnosis and management of paraurethral cysts in adult women

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Objective: *There is no consensus on diagnosis and treatment of paraurethral cyst which is a rare benign cystic neoplasm. We present our experience to describe diagnosis and management of paraurethral cysts in adult women.*

Materials and methods: *Ten women were diagnosed with paraurethral cysts. Cysto-urethroscopy was performed on all patients to rule out urethral diverticulum just before surgery. All patients underwent surgical excision. Symptoms, parity, diagnostic tests, complications, recurrence and histologic examination of the cysts wall were analyzed in all patients.*

Results: *The presenting symptoms were sensation of a mass, dyspareunia, and dysuria. All of the patients were multipareous. The cysts were diagnosed by physical examination and cysto-urethroscopy in most of the patients. Transvaginal ultrasonography and magnetic resonance imaging was performed in only one patient. All patients healed without complication and no sign of recurrent cyst formation was observed in any of our patients at follow-up. Histologically, the cyst wall was composed of squamous epithelium in eight patients and squamous epithelium with transitional epithelium in two patients.*

Conclusions: *Most of paraurethral cyst can be diagnosed by PE and cysto-urethroscopy. Noninvasive diagnostic tests such as TVUS or MRI can be used for ruling out urethral diverticula or other urogenital abnormalities if needed. Surgical excision is an effective treatment modality for paraurethral cyst in adult women.*

Key Words: paraurethral cyst, diagnosis, treatment

Introduction

Paraurethral cysts are rare lesions in adult women and they can also be found in infants and children. The etiology of paraurethral cysts is not clear, but it may occur secondary to inflammation in adults. It can cause a variety of symptoms including a palpable or visible mass, pain, dyspareunia, dysuria, a distorted voiding stream, and a vaginal discharge.[1-3] The diagnosis can be made on patient history and physical examination alone.[4] However, Blavias et al recommend voiding cysto-urethrography (VCUG) when a periurethral mass is encountered on physical examination (PE) for ruling out urethral diverticula which is most commonly seen in periurethral masses.[5] Recent advances in ultrasound and magnetic resonance imaging (MRI) have dramatically improved evaluation of the urethra, clarifying findings at PE and allowing excellent depiction of urethral and periurethral abnormalities and providing an accurate road map to surgeons.[6]

The management of paraurethral cyst is controversial. Surgical excision, marsupialisation and needle aspiration are recommended for the treatment of the cyst.[3-5,7] Additionally, spontaneous resolution has also been reported.[8] Herein, we report our experience in 10 women who were found to have a paraurethral cyst and review previous relevant publications.

Materials and methods

Ten women were diagnosed with paraurethral cysts at two institutions between July 2001 and September 2007. Patients presented with sensation of a mass, dyspareunia and dysuria. PE revealed single, soft, mobile and non-tender anterior vaginal mass which was located at the introitus in the midline, or posterolateral to either side of the urethral meatus. No expressate could be obtained with anterior vaginal massage in all patients. All had routine blood tests, urine analysis, and culture, and

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abdomino-pelvic ultrasonography which were normal. None had any other associated abnormalities. Patients were scheduled for surgical excision as out patients procedure. Under sedoanalgesia, cysto-urethroscopy was performed on all patients to rule out urethral diverticulum just before surgery. Surgical excision was performed on all patients. Before excision, a Foley catheter was placed. The cyst was excised through an anterior vaginal wall incision. During excision of the cyst, no external communication with the urethra, bladder, or vagina was noted. The cyst was well encapsulated and completely separated from the muscular layer surrounding the urethra, Figure 1. After the complete surgical excision, the Foley was removed. Histological examination was performed on all patients.

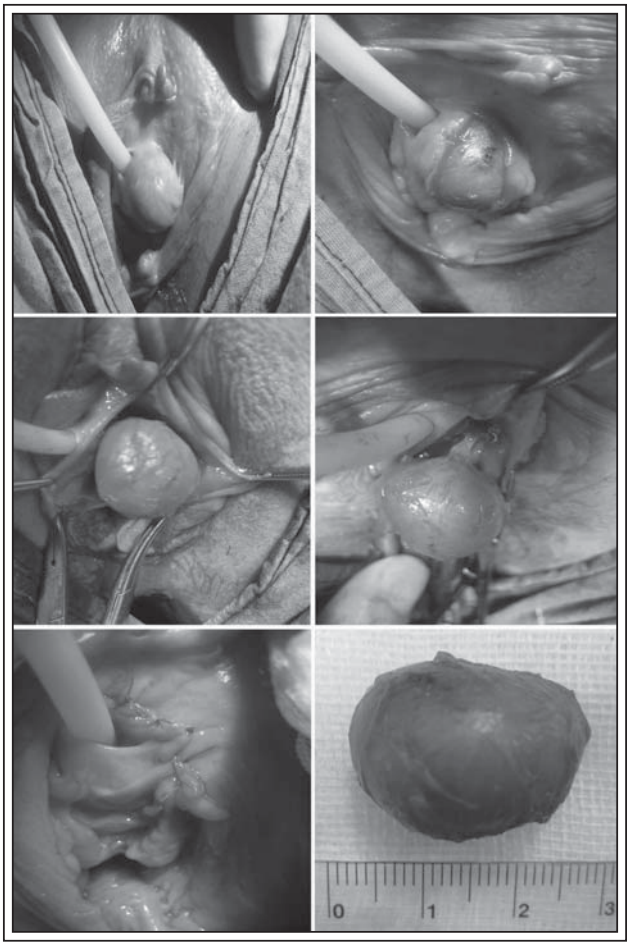

Figure 1. A Foley urethral catheter was placed. A vertical incision was made in the anterior vaginal wall over the cyst. The cyst was well encapsulated and completely separated from the anterior vaginal wall and muscular layer surrounding the urethra. The vertical incision was closed with 2/0 absorbable suture.

Results

Characteristics of patients are shown in Table 1. Mean age was 34 years (range 27-46), mean parity was 4 (range 3-6) and mean size of cysts was 2.8 cm (range 2.3-3.5). The presenting symptoms were sensation of a mass (all women), dyspareunia (7 women) and dysuria (5 women). Duration of the symptoms was 8.1 months (range 3-18). All of the patients were multipareous with vaginal delivery. All symptoms were resolved after surgery. The cysts were diagnosed by PE and cysto-urethroscopy in most of the patients. TVUS and MRI were performed in only one patient to confirm the presence of a paraurethral cyst, Figure 2. All patients healed without complication, and no sign of recurrent cyst formation was observed in any of our patients at follow-up. The mean follow-up was 12.1 months (range 1-22). Histological examination of the cysts wall showed stratified squamous epithelium in eight patients and stratified squamous epithelium with a limited area of transitional epithelium in two patients.

Discussion

There are a few reports in the literature describing evaluation and management of paraurethral cyst in adult women. Sharifi-Aghdas et al reported that paraurethral cysts were commonly seen in multipareous women and the most common symptoms associated with paraurethral cyst were sensation of vaginal mass, dyspareunia and dysuria.[9] Similarly, in our study, we found that the most common presenting symptoms were sensation of vaginal mass, dyspareunia and dysuria. Duration of symptoms was approximately 8 months and all symptoms were resolved after surgical procedure. All of our patients were multipareous with vaginal delivery. Pregnancy or vaginal delivery may appear to be as predisposing factors for development of paraurethral cyst.

Paraurethral masses are encountered in barely 4% of a patient sample population, and most masses were urethral diverticula. However, the differential diagnosis of paraurethral mass includes ectopic ureterocele, granuloma, vaginal cysts, leiomyoma and malignancy. Thus, urologists and gynecologists must keep these differential diagnosis in mind when evaluating women with lower urinary tract symptoms and an anterior vaginal mass.[5] Some authors reported that PE and cysto-urethroscopy were enough for diagnosis of paraurethral cyst.[4,9] In contrast, Blavias et al reported that more than half of the patients in their series had palpable masses, and most of the nonpalpable masses were urethral diverticula that were almost universally detected by

TABLE 1. **Patients' characteristics**

Patients	Age	Parity	Symptoms	Side	Size (cm)	Diagnosed	Follow-up (month)
1	28	3	A mass	Right	2.5	PE*, cysto-urethroscopy	15
2	34	4	A mass Dyspareunia	Right	2.3	PE, cysto-urethroscopy	9
3	27	3	A mass Dysuria, Dyspareunia	Midline	3.2	PE, cysto-urethroscopy	22
4	33	3	A mass Dysuria	Left	2.8	PE, cysto-urethroscopy	12
5	32	4	A mass Dysuria, Dyspareunia	Left	2.5	PE, TVUS, MRI, cysto-urethroscopy	6
6	42	6	A mass Dyspareunia	Right	3.0	PE, cysto-urethroscopy	18
7	46	6	A mass Dysuria	Left	2.8	PE, cysto-urethroscopy	16
8	32	3	A mass Dyspareunia	Right	3.2	PE, cysto-urethroscopy	8
9	38	4	A mass Dysuria, Dyspareunia	Right	2.8	PE, cysto-urethroscopy	1
10	28	4	A mass Dyspareunia	Left	3.5	PE, cysto-urethroscopy	14

*Physical examination

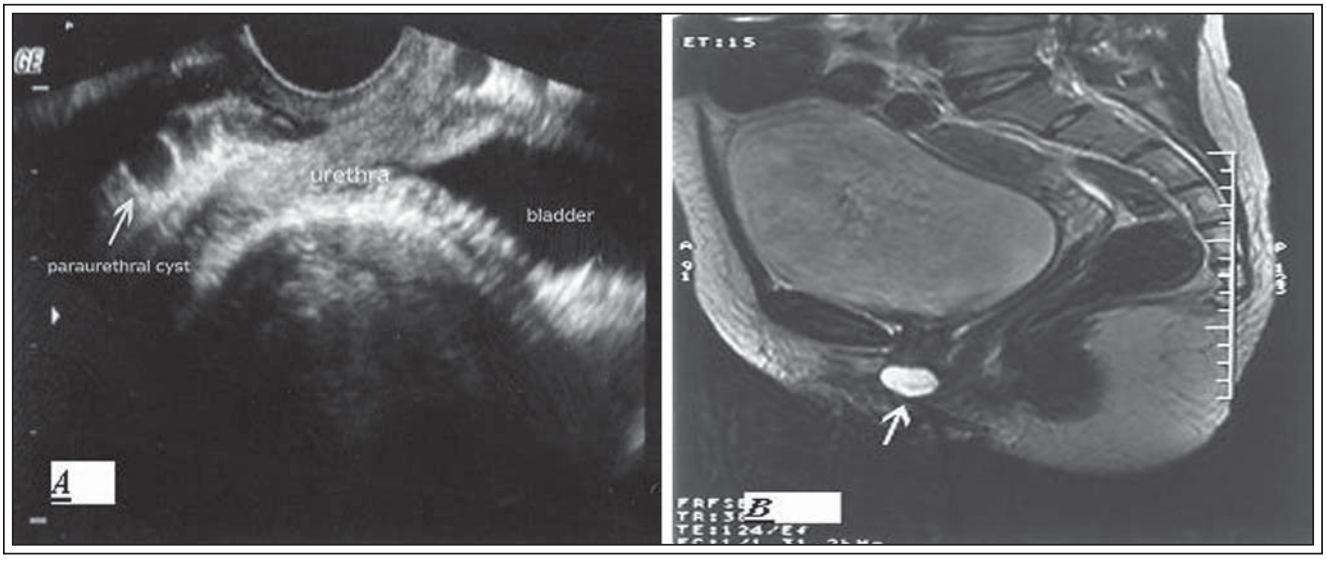

Figure 2A,B. TVUS and MRI are showing paraurethral cyst does not communicate with the urethra.

VCUG. For these reasons, they advocated VCUG as part of a videourodynamic study in the management of lower urinary tract dysfunction, and targeted imaging studies when a periurethral mass is encountered on PE.[5] VCUG often serves as the initial imaging test for evaluating female urethra. However, this test is relatively invasive and allows evaluation of only abnormalities that are connected to the urethral lumen. Paraurethral cyst does not communicate with the urethra and therefore can often be differentiated from urethral diverticula at TVUS and MRI.[6] In the present study, most of paraurethral cysts were diagnosed by PE and cysto-urethroscopy. TVUS and MRI were performed in only one patient to confirm the presence of a paraurethral cyst. We also advocate that PE and cysto-urethroscopy are enough for the diagnosis of paraurethral cyst, and non-invasive diagnostic tests such as TVUS or MRI can be used for ruling out urethral diverticula or other urogenital abnormalities if needed.

Treatment of paraurethral cysts is controversial. Several methods of managing paraurethral cyst have been recommended, including waiting for spontaneous rupture, needle aspiration, marsupialization and excision.[3-5,7,9] Conservative approach has been advocated by some authors. However, spontaneous rupture is rare in adult women and the duration of conservative management is not clear.[3] Some authors recommended marsupialisation. Sharifi-Aghdas et al treated their patients who had paraurethral cyst with marsupialisation. No recurrence was observed in their series.[9] However, the recurrence can be seen after marsupialisation. The recurrence rate after marsupialization is about 10%.[10] Vaginal delivery may be risk factors for recurrence of the cysts after marsupialisation. Furthermore, in women > 40, it is recommended that all cysts require exploration and biopsy because of the possibility of cancer.[10] In contrast, Luciani et al reported their experience in six women with paraurethral cyst and they recommended surgical excision because of no recurrence and no complication.[4] In this study, duration of symptoms was enough for conservative management, and no patients had experienced spontaneous resolution of the cyst during this period. Therefore, we preferred surgical management. Ten women with paraurethral cyst were treated with surgical excision, and we did not encounter any complication or recurrence. We believe that complete surgical excision provides effective treatment on paraurethral cyst and decreases the recurrence, and also gives an opportunity for a histological examination of the whole cyst wall.

Paraurethral cysts include Skene's duct cysts and vaginal cysts (Müllerian cyst, Gartner's duct cyst, epidermal inclusion cyst), however, Bartholin's gland cysts, and vulvo/vaginal endometriomas should be considered in differential diagnosis.[6,11] Classification of paraurethral cysts are based on histologic and histochemical features of cyst epithelum. Skene's ducts cysts are lined with stratified squamous epithelium or stratified squamous epithelium with a limited area of transitional epithelium,[1,12] Müllerian cysts are lined with mucinous stratified squamous epithelium,[13,14] Gartner's duct cysts are lined with low columnar, nonciliated and non-mucinous epithelium,[13] and epidermal inclusion cyst are lined by a stratified squamous epithelium and contain keratinous material.[4,11,13] However, Bartholin's duct cysts are lined by columnar, mucus secreting epithelium and ducts lined by transitional epithelium,[15] and two of the following three characteristics must be seen to make the diagnosis of vulvo/vaginal endometriomas: endometrial glands, stroma and hemosiderin laden macrophages.[16] In the study of Sharifi-Aghdas et al, they did not make differential diagnoses of histologic type of paraurethral cysts and only reported the cysts wall are lined with squamous or transitional epithelium, or both.[9] Similarly, in this study, we also did not make differential diagnoses of histologic type of paraurethral cysts. The cysts wall are lined stratified squamous epithelium in 80% of patients and stratified squamous epithelium with a limited area of transitional epithelium in 20% of patients. Histochemical features of cysts epithelium were not investigated because it needs specific histochemical staining. Differential diagnoses based on the histochemical findings of the cysts may be only necessary to determine the etiology. We think that determination of histological type of paraurethral cysts may be not necessary because it is not clinically significant as all cysts are managed in a similar fashion.

Vaginal cysts are most common in the third and fourth decades, however they are rarely found in postmenopausal women.[13] Similarly, in this study, no patient was in postmenopausal period. Proliferation and maturation of the vaginal epithelium and submucosal vascular plexus depends on adequate estrogen stimulation. In postmenopausal women, estrogen level is low and it leads to vaginal atrophy.[17] Recently, Tutku et al reported two female newborn cases with paraurethral cysts associated with vaginal bleeding and breast enlargement. These associations raise the question of whether estrogens play a role in the development of paraurethral cysts.[18] It is likely that estrogen might affect periurethral tissues and contribute to the development of paraurethral cysts, however, this issue needs to be investigated in the future studies.

Conclusion

Paraurethral cysts are rare lesions in adult women. Most of paraurethral cysts can be diagnosed by PE and cysto-urethroscopy. However, TVUS or MRI can be used for ruling out urethral diverticula which is the most common seen in periurethral masses, and other urogenital abnormalities if needed. Surgical excision provides effective treatment on paraurethral cysts and decreases recurrence. □

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