



# Large Cyst of Skene Gland: A Rare Perineum Mass

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## Abstract

**Objective** In this report we present a rare case of a large cyst of Skene gland in a female patient with a palpable vaginal mass persisting for at least 2 years.

**Case Report** A 67-year-old female admitted to the department of urology due to the presence of “a vaginal mass” for the past 2 years. A cyst of Skene’s duct was suspected based on clinical manifestation and findings of magnetic resonance imaging showing an extensive cyst formation in the upper vaginal area and anterior to the urethra. Based on these findings, a decision for surgical removal of the cyst was made. The cyst was incised, drained, and marsupialized. The postoperative recovery was uneventful, and the patient was discharged on the second postoperative day.

**Conclusion** High clinical suspicion is important to reach this rare diagnosis. Partial excision and marsupialization of the cyst is a simple procedure with low morbidity, without recurrence, and excellent results.

## Keywords

- ▶ cyst
- ▶ Skene’s gland
- ▶ paraurethral gland
- ▶ marsupialization

Dutch histologist Reinier de Graaf was the first to describe the presence of the female prostate formed by the glands and ducts located around the female urethra.<sup>1</sup> Two hundred years later gynecologist Alexander J.C. Skene described the glands bearing his name as consisting of two main paraurethral ducts that open on the sides of the urethral orifice.<sup>1</sup> Skene’s glands or paraurethral glands are located around the lower end of the female urethra.<sup>1</sup> Their function consists in producing, after sexual stimulation, a mucoid secretion (female ejaculation) which protects and lubricates the urethral opening.<sup>2</sup>

These glands are homologous to the male prostate that are developed from the same embryological tissues, being asso-

ciated with various pathologies.<sup>1</sup> Interestingly, in 1997 Cabello, reported different prostate-specific antigen (PSA) values in urine samples from women before and after orgasm.<sup>1</sup> These findings can be explained by the function of Skene’s glands secreting fluid containing PSA, acid phosphatase, and high concentrations of glucose and fructose.<sup>3</sup> The function of the female prostatic tissue is not entirely clear. O’Connell et al suggests that the distal urethra, vagina, and clitoris have common vascularity and innervation and constitute a tissue mass that is related to normal sexual function.<sup>4</sup>

Infections, cystic and solid, benign, or malignant tumors are typical disorders of these glands.<sup>1</sup> For tumors of Skene

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glands, surgical treatment remains the treatment of choice, to manage common symptoms of these diseases such as urinary incontinence, vaginal prolapse, or urethral and paraurethral pathologies that may interfere with female sexual function.<sup>1-4</sup>

In the present report, we aim to present an interesting case of a female patient with a large and symptomatic Skene's gland cyst, underlining the importance of high clinical suspicion to reach the rare diagnosis and present the current literature.

## Case Presentation

A 67-year-old female admitted to the department of urology due to the presence of "a vaginal mass" for the past 2 years. Her symptoms included dyspareunia, frequency and urgency of urination, interruption, and distortion of urinary flow as well as episodes of vaginal bleeding. Her past medical history was insignificant.

On vaginal examination, a cystic mass of 5 cm in diameter with ulceration covering the urethral meatus was observed (→Fig. 1). A cyst of Skene's duct was suspected based on clinical manifestation and findings of magnetic resonance imaging (MRI) showing an extensive cyst formation in the upper vaginal area and anterior to the urethra (→Fig. 2A, B). An urethroscopy without any findings was performed to exclude other pathologies.

Based on these findings, a decision for surgical removal of the cyst was made. The cyst was incised, drained, and marsupialized with interrupted 4-0 Vicryl sutures. The excised tissue was sent for histological examination while the posterior wall of the cyst remained in place avoiding the complete excision of the cyst to minimize the risk of urethral lesions. The postoperative recovery was uneventful, and the patient was discharged on the second postoperative day.

The histopathology examination confirmed the diagnosis by reporting a cyst covered with stratified squamous epithelium. Patient remained asymptomatic, with no signs of recurrence during the next 6 months.

## Discussion

Most common pathologies associated with Skene's glands are infections, such as gonorrhea, tuberculosis, and trichomoniasis, and can be present both in the glands and other parts of the



**Fig. 1** Large gland Skene cyst.

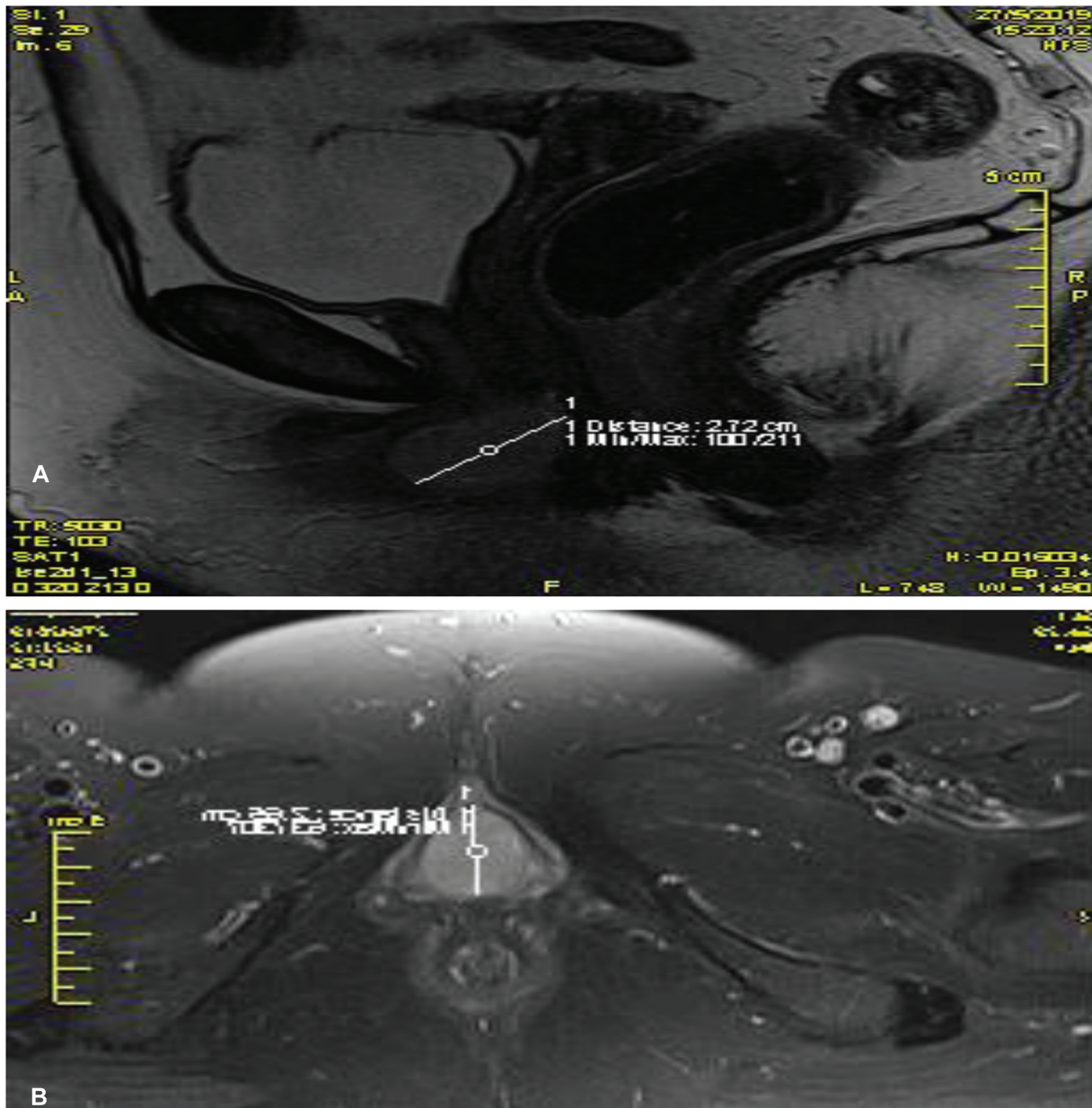
reproductive system.<sup>5</sup> Solid or cystic benign tumors (simple cysts, prostate antigen positive vaginal polyps) represent another related pathology and rare malignant tumors such as urethral adenocarcinoma which can induce an increase in PSA up to 5.9 ng/mL have been reported in the literature.<sup>1,6</sup>

Obstruction of the ducts of these glands leads to the formation of cysts that present as benign cystic masses inferolateral to the urethral meatus, typically affecting in women in the third or fourth decade of their life.<sup>7</sup> However, Skene's gland cyst has been observed in both female neonates and preadolescent girls.<sup>8</sup> Skene's gland cysts may be presented in newborns as a congenital anomaly, where cystic degeneration of embryonic remnants of the paraurethral glands has been considered as one of the causes. In female neonates, paraurethral cysts generally appear as an asymptomatic, small protruding yellow or whitish mass with superficial small vessels, located on either side of the urethral meatus. The location and the displacement of the urethral meatus by the mass are characteristic of paraurethral cysts.<sup>9</sup> On the other hand, in adolescence-onset cases, the reasons some cysts are increasing in measure remain unclear. Most cases are presumably related to partial obstruction mainly due to infection.<sup>8</sup>

According to Lucioni et al, Skene's gland is thought to be the female homologue of the male prostate.<sup>10</sup> In males, prostate cancer and benign prostatic hyperplasia, are related to male hormones. Based on our search in the current literature, there are no reports between direct relationship of Skene's gland cysts and such hormones. Recently though, Skene's adenocarcinoma, a very rare entity derived from Skene's gland, and its similarity with prostate cancer has been reported, describing the poorly formed glands of pattern 4 and positive staining for NKX3.1.<sup>11</sup> According to Pollen and Dreilinger and Tepper et al, Skene's glands not only histologically showed resemblance to prostate cancer but were expressing immunohistochemical staining for PSA.<sup>11,12</sup> In 2018, Tregnago and Epstein<sup>13</sup> presented the first series of four cases and certified that Skene's gland adenocarcinoma has similar microscopical features to high-grade prostatic adenocarcinoma with a cribriform predominant pattern as well as histology analogous to Gleason pattern 3 and solid sheets of cells correspond to Gleason pattern 5 staining for PSA.

Since Skene's ducts arise from the urogenital sinus, these cysts are usually lined with stratified squamous epithelium.<sup>14</sup> Symptoms include a visible or palpable interlabial vaginal mass, presenting with pain, dyspareunia, urinary disturbances, abscess formation, or may be completely asymptomatic discovered accidentally during a routine vaginal exam. Etiological factors of Skene's gland cysts include infections or mechanical trauma while the most important differential diagnosis is the urethral diverticulum which is usually located on the middle urethra.<sup>15</sup>

The history, physical examination, and urethroscopy are often sufficient to set the diagnosis of the simple cyst or Skene's gland abscess. Transperineal ultrasound and MRI can be useful tools for a more detailed examination with the use of MRI as the gold standard examination of female urethra.<sup>14,16</sup>



**Fig. 2** (A, B) Magnetic resonance imaging (MRI) imaging of cyst gland Skene.

When conservative treatments fail, surgical options include needle aspiration, partial excision, marsupialization, or complete excision of the cyst.<sup>17</sup> Partial excision of the cyst and marsupialization leaving the posterior wall of the cyst in place is considered an effective treatment avoiding the risk of further urethral lesions that can otherwise occur in an attempt of complete excision. However, despite reports of complete excision and marsupialization, to our knowledge there are no comparative studies evaluating outcomes of the two techniques.<sup>18</sup> Shah et al<sup>19</sup> in a case series of 34 patients, reported that after complete surgical excision, 30% of patients needed further treatment, with 85.3% overall success rate of surgical treatment after all treatments. Furthermore, two case series with a patient population of 10 women each, reported no recurrences of Skene's gland cyst excision at a mean follow-up of 46 and

8 months, respectively.<sup>8,20</sup> On the other hand, Sharifi-Aghdas and Ghaderian<sup>21</sup> in a case series of 25 patients, found no recurrence of Skene's gland cysts after partial excision with marsupialization.

## Conclusion

Large Skene's cysts are very rare benign lesions. History, clinical examination, and endoscopy are often sufficient for a definitive diagnosis. High clinical suspicion is important to reach this rare diagnosis. Partial excision and marsupialization of the cyst is a simple procedure with low morbidity, no recurrence, and excellent results.

## Patient's Informed Consent

The patient has signed an informed consent for publication.

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**Conflict of Interest**

The authors declare no conflict of interest.

**References**

- 1 Zaviacic M, Ablin RJ. The female prostate and prostate-specific antigen. Immunohistochemical localization, implications of this prostate marker in women and reasons for using the term "prostate" in the human female. (Review)*Histol Histopathol* 2000;15(01):131–142
- 2 Rodriguez FD, Camacho A, Bordes SJ, Gardner B, Levin RJ, Tubbs RS. Female ejaculation: an update on anatomy, history, and controversies. (Review)*Clin Anat* 2021;34(01):103–107
- 3 Pastor Z, Chmel R. Differential diagnostics of female "sexual" fluids: a narrative review. (Review)*Int Urogynecol J Pelvic Floor Dysfunct* 2018;29(05):621–629
- 4 O'Connell HE, Hutson JM, Anderson CR, Plenter RJ. Anatomical relationship between urethra and clitoris. *J Urol* 1998;159(06):1892–1897
- 5 Petrin D, Delgaty K, Bhatt R, Garber G. Clinical and microbiological aspects of *Trichomonas vaginalis*. (Review)*Clin Microbiol Rev* 1998;11(02):300–317
- 6 Stewart CJ. Tubulo-squamous vaginal polyp with basaloid epithelial differentiation. *Int J Gynecol Pathol* 2009;28(06):563–566
- 7 Nickles SW, Burgis JT, Menon S, Bacon JL. Prepubertal Skene's abscess. *J Pediatr Adolesc Gynecol* 2009;22(01):e21–e22
- 8 Foster J, Lemack G, Zimmern P. Skene's gland cyst excision. *Int Urogynecol J Pelvic Floor Dysfunct* 2016;27(05):817–820
- 9 Kusama Y, Ito K, Suzuki T. Skene's duct cyst. *J Gen Fam Med* 2017;18(05):299–300
- 10 Lucioni A, Rapp DE, Gong EM, Fedunok P, Bales GT. Diagnosis and management of periurethral cysts. *Urol Int* 2007;78(02):121–125
- 11 Pollen JJ, Dreilinger A. Immunohistochemical identification of prostatic acid phosphatase and prostate specific antigen in female periurethral glands. *Urology* 1984;23(03):303–304
- 12 Tepper SL, Jagirdar J, Heath D, Geller SA. Homology between the female paraurethral (Skene's) glands and the prostate. Immunohistochemical demonstration. *Arch Pathol Lab Med* 1984;108(05):423–425
- 13 Tregnago AC, Epstein JI. Skene's glands adenocarcinoma: a series of 4 cases. *Am J Surg Pathol* 2018;42(11):1513–1521
- 14 Chaudhari VV, Patel MK, Douek M, Raman SS. MR imaging and US of female urethral and periurethral disease. *Radiographics* 2010;30(07):1857–1874
- 15 Tamburrini S, Vascone C, Marrone V, et al. Skene's glands abscess an overlooked diagnosis in acute lower urinary symptoms. *Radiol Case Rep* 2021;16(12):3751–3756
- 16 Maetzold E, Takacs EB. Urethral Pathology in Women. *Curr Urol Rep* 2022;23(10):225–234
- 17 Sagar R, Shah MD, Victor W, Nitti M. Benign vaginal wall masses and paraurethral lesions. In: *Vaginal Surgery for the Urologist*. 1st ed. Philadelphia: Elsevier Saunders; 2012:127–135
- 18 Laura M, Neeraja C, Denise B, Lisa C, Willy DG. Skene's gland cyst: a simple marsupialization technique. *Int Urogynecol J Pelvic Floor Dysfunct* 2017;28(07):1101–1102
- 19 Shah SR, Biggs GY, Rosenblum N, Nitti VW. Surgical management of Skene's gland abscess/infection: a contemporary series. *Int Urogynecol J Pelvic Floor Dysfunct* 2012;23(02):159–164
- 20 Köse O, Aydemir H, Metin O, Budak S, Sonbahar A, Adsan O. Experiences with the management of paraurethral cysts in adult women. *Cent European J Urol* 2014;66(04):477–480
- 21 Sharifi-Aghdas F, Ghaderian N. Female paraurethral cysts: experience of 25 cases. *BJU Int* 2004;93(03):353–253. Doi: 10.1111/j.1464-410x.2003.04615.x. PMID: 14764136