FEMALE SEXUAL FUNCTION

Treatment of Urethral Intercourse and Impact on Female Sexual Function

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ABSTRACT

Background: Urethral intercourse is a very rare entity which usually presents as urinary incontinence during and after intercourse and is most commonly seen in patients with vaginal agenesis (Mayer–Rokitansky–Hauser Syndrome) or hypoplasia, or other rear vaginal anomalies.

Aim: To evaluate management and outcomes for vaginal and urethral consequences of urethral intercourse, including urinary incontinence.

Methods: Between February 2006 and March 2021, 8 women aged from 17 to 22 years underwent genital and urethral reconstruction due to consequences of urethral sexual intercourse. Vaginal reconstruction included sigmoid vaginoplasty and introitoplasty with division of the vaginal septum in cases of vaginal agenesis (5 cases) and vaginal duplication (3 cases), respectively. Incontinence was treated by sling procedures in 5 women with longer history of urethral coitus and evident bladder neck prolapse.

Outcomes: Sexual and psychosexual outcomes assessment was based on the Female Sexual Function Index and standardized questionnaires.

Results: Follow-up ranged from 9 to 188 months (mean 78 months). Good esthetical and functional results were achieved in all 8 women. All patients reported satisfactory sexual intercourse. All 5 incontinent women who had underwent sling procedure were continent. In one of 3 nontreated cases, additional sling treatment was indicated 6 months after vaginal reconstruction with satisfactory outcome. One patient with vaginal duplication reported a successful pregnancy with a Caesarean section delivery.

Clinical Implications: Urinary incontinence with megalourethra in young women, along with the presence of Mullerian anomalies should raise suspicion of urethral coitus. Surgical treatment includes correction of vaginal anomalies and management of consequences.

Strengths and Limitations: This study represents one of the largest series for urethral intercourse, with assessment of psychosexual outcome. The limitation is the lack of statistical analysis due to small sample size.

Conclusion: Urethral intercourse is very rare, but it can cause severe consequences. It is important to recognize this occurrence and treat it by well-known vaginal or urethral reconstructive procedures. **Djordjevic ML, Bizic M, Stojanovic B, et al. Treatment of Urethral Intercourse and Impact on Female Sexual Function. Sex Med 2022;10:100534.**

Key Words: Urethral Intercourse; Mullerian Ducts; Megalourethra; Incontinence; Vaginoplasty

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INTRODUCTION

Urethral intercourse is an extremely rare entity, with only 30 cases reported in literature.[1] Usually, it presents as urinary incontinence and severe urethral dilatation in cases with vaginal agenesis or hypoplasia, or other rare vaginal anomalies. However, there are few reports of urethral coitus in women with normally developed introitus and vagina and associated with other symptoms such as dyspareunia, and infection during and after sexual intercourse.[2,3] Since the condition is most commonly seen in patients with vaginal agenesis (Mayer−Rokitansky−Hauser Syndrome), these patients present with primary amenorrhea before sexual activity and undergo proper management. It is not surprising that most previous reports on the urethral coitus in this population were based on one or 2 cases.

In the present treatise, we report our experience in 8 cases who requested treatment of vaginal and urethral consequences of urethral intercourse, including urinary incontinence. It could be the largest study related to urethral intercourse according to literature. We reviewed the cases of these women with misdiagnosed vaginal anomalies, with the aim of describing surgical technique, postoperative results and complications, as well as estimating the impact of their treatment on psychological and psychosocial satisfaction.

MATERIAL AND METHODS

We retrospectively evaluated 8 women, aged from 17 to 22 years (mean 20), treated for urethral intercourse consequences in the period from February 2006 to March 2021. The study protocol was approved by the Ethics Committee of Belgrade Center for Urogenital Reconstructive Surgery (approval number: 2021/11), and appropriate informed consents were obtained. There were 5 cases with vaginal agenesis due to Mayer-Rokitansky syndrome and 3 with vaginal duplication. Severe urinary incontinence was observed in 5 cases, while in the remaining 3, continence was preserved with temporary urine leakage during daily physical activities. Reported duration of urethral coitus ranged from 7 to 37 months (mean 20.5 months). Primary amenorrhea and difficulty with sexual intercourse were revealed in the medical history of all 5 cases with Mayer-Rokitansky syndrome. In cases with vaginal duplication, longitudinal septum was confirmed by vaginal examination. Transvaginal ultrasound revealed that the septum extended into the cervix, separating it. In addition, anatomical contours of the uterus with 2 endometrial cavities were observed. Magnetic resonance imagining confirmed a single uterus with 2 separated cavities, as well cervical and vaginal duplication with longitudinal vaginal septum (Table 1).

Preoperative assessment included a review of all medical history, clinical examination, magnetic resonance imaging, hormonal analysis, chromosomal study, urodynamic study and urethrocystoscopy. Vaginal reconstruction included sigmoid vaginoplasty in cases of vaginal agenesis (5 cases) and introitoplasty with vaginal septum division in cases of vaginal duplication (3 cases). Incontinence was treated simultaneously by sling procedures in 5 women with longer history of urethral coitus and evident bladder neck prolapse. Additionally, candidates for sigmoid vaginoplasty underwent sigmoidoscopy, a barium enema, and full hormonal profile. They were admitted the day before the surgery for mechanical bowel preparation using a 2-L polyethylene glycol solution. In all patients, preoperative antibiotic prophylaxis (Metronidazole 500 mg and Ceftriaxone 1 g) was administrated with induction of anesthesia.

Vaginal reconstruction using sigmoid colon was previously reported in detail.[4] The patient is placed in an extended lithotomy position as for a simultaneous transabdominal and perineal approach. Abdominal approach is made through a Pfannenstiel incision, and sigmoid colon is maximally mobilized from its lateral retroperitoneal attachment. A well-mobilized segment of sigmoid colon is harvested with its blood supply originating from sigmoidal arteries and/or superior hemorrhoidal vessels. The length of the segment ranges from 8 to 12 cm, with the aim to minimize excessive postoperative mucus production. Usually, division of the sigmoid segment is performed distally in order to check its mobility and determine the correct site for its proximal division. After proximal division, the proximal portion of the isolated segment is closed in 2 layers with absorbable sutures creating the bottom of the neovagina. Bowel continuity is ensured using an intraluminal stapling device, followed by overstitching with polydioxanone suture (PDS) sutures (Fig. 1). Perineal cavity

Table 1. Patient's profiles and outcomes

Patient	Age (year)	Etiology	Urethral coitus duration (months)	Incontinence	Treatment	Follow-up (months)	Intercourse (months postop.)	FSFI
1	21	MRKH	17	yes	Sigmoid/sling	188	6	33.80
2	22	MRKH	22	yes	Sigmoid/sling	96	11	31.20
3	17	MRKH	7	no	Sigmoid	64	7	34.30
4	20	VD	14	yes	Vaginoplasty/sling	128	2	35
5	19	MRKH	34	yes	Sigmoid/sling	39	6	30.60
6	20	VD	19	no	Vaginoplasty	67	3	35.30
7	22	MRKH	37	yes	Sigmoid/sling	33	9	30
8	20	VD	14	no	Vaginoplasty	9	4	33.20

FSFI = Female Sexual Function Index; MRKH = Mayer-Rokitansky-Kuster-Hauser syndrome; VD = Vaginal duplication.

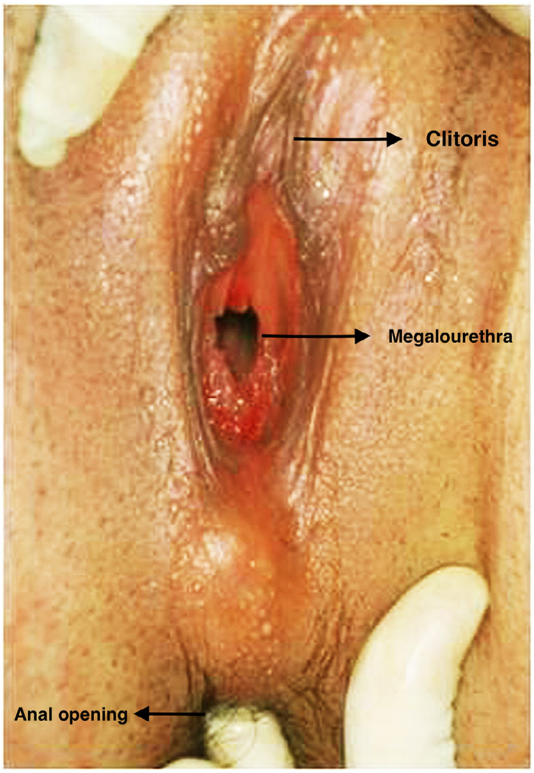


Figure 1. Vaginal atresia in case of Mayer-Rokitansky-Kuster-Hauser syndrome. Transrectal exam reveals complete vaginal absence. Megalourethra is a consequence of urethral coitus.

for vaginal replacement is created using a simultaneous approach through the abdomen and perineum. Typically, a "U"-shaped incision posterior to the urethra is made and completed with 2 lateral vascularized introital flaps (Fig. 2a). Vascularized flaps are completely mobilized to place the neo-introital opening as high as possible to preventing mucosal prolapse and postoperative purse-string scarring of the anastomotic site. The space for the neovagina is dissected very precisely to avoid injury to the rectum, bladder, and urethra. Finally, introital skin flaps are sutured to the sigmoid segment creating a colonic neovagina (Fig. 2b). Vaginal packing is left in place for next 3 days.

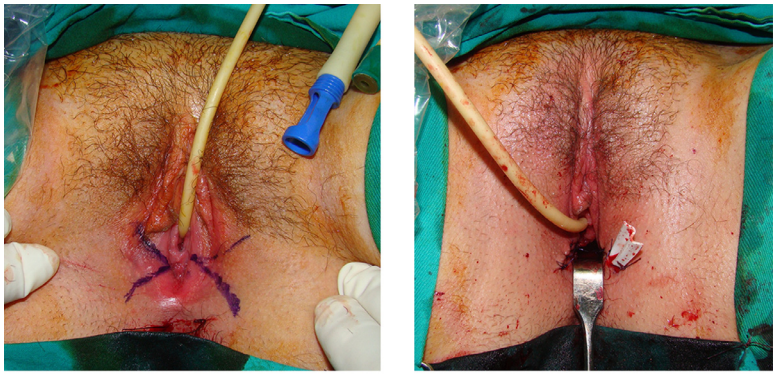
Three cases with longitudinal vaginal septum were treated by simple excision and creation of a single vaginal cavity (Fig. 3a–d). The cervical and uterine septum was also resected through hysteroscopy, unifying separated cavities. Incontinence was treated by tension-free vaginal and transobturator tape sling in 4 and 2 cases, respectively.

Postoperatively, broad-spectrum antibiotics were administrated to prevent infection after each of the stages. A vaginal tamponade was inserted in the cavity and changed every day for the first postoperative week. At discharge from hospital, patients were instructed to irrigate the neovagina once a day for 2 months and weekly thereafter. Vaginal dilators with adequate diameters were recommended for introital dilation for 3 months postoperatively. A retrospective evaluation of the type of anomaly, treatment options, outcomes and complications was performed. Sexual and psychosocial outcome was evaluated using Female Sexual Function Index and standardized questionnaire about social adaptation and surgical outcome. No statistical analysis was performed because of the small sample size.

RESULTS

A total of 8 patients who underwent vaginoplasty due to urethral coitus were retrospectively analyzed. Follow-up ranged from 9 to 188 months (mean 78 months). The vagina was checked by adequate vaginal dilators at 1, 3, 6, and 12 months postoperatively. Satisfactory esthetical and functional result was achieved in all 8 women. Good depth and width of the vagina with satisfactory sexual intercourse were reported in all cases. Continence was achieved in all five incontinent women who underwent the sling procedure. Additionally, one of 3 nontreated patients with mild incontinence underwent the sling procedure 6 months after vaginoplasty, with satisfactory outcome. Four patients are married and one of 3 patients with vaginal duplication reported a successful pregnancy with a Caesarean section delivery.

Sexual and psychosocial outcome was evaluated according to the Female Sexual Function Index (FSFI) and included all 6 domains of sexual function (sexual desire, arousal, lubrication,



(a) (b)

Figure 2. a) Design of introital flaps; b) Anastomosis of the flaps with the neovagina to create wide introitus.

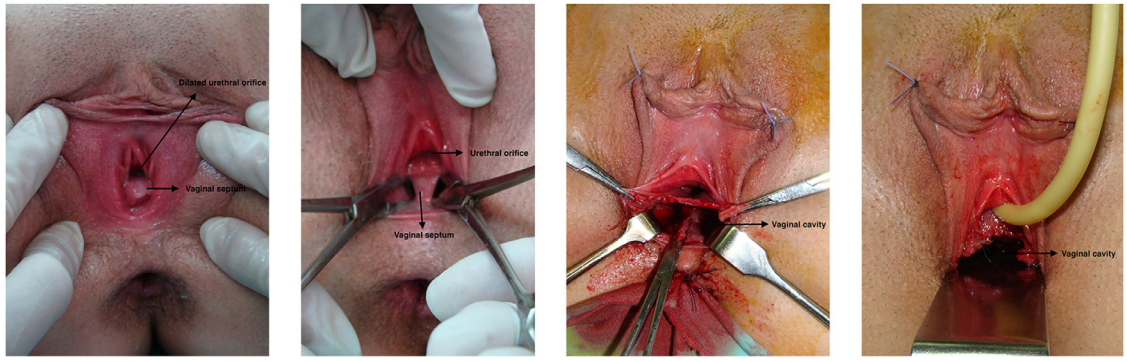


Figure 3. a) Dilated urethral orifice with duplicated vagina due to longitudinal vaginal septum; b) Longitudinal septum separated vaginal cavity in two parts with stenotic introitus; c) Resection of the vaginal septum enables joining of two separated parts of the vagina; d) Normal vaginal cavity is achieved at the end of resection and reconstruction.

orgasm, satisfaction, and pain; maximum score of 36, cut-off of 26.55).[5] It ranged from 30 to 35.30 (mean 33). According to standardized questionnaire on social adaptation and surgical outcome, all 8 patients were very satisfied and became sexually active during the follow-up period. The mean interval between surgery and first intercourse was 5.5 months (range 2–11 months). Regular sexual activity (at least once a week) was noticed in 7, while remaining one reported occasional activity (less than once per week) (Table 1).

There were no other surgical complications or injury of urethra, bladder, or rectum. Temporary bleeding from sigmoid neovagina occurred in 2 patients and disappeared after 6 months. There was no report of excessive mucous production.

DISCUSSION

Urethral intercourse represents a very rare type of sexual intercourse and only about 30 cases have been reported in literature.[1] Despite the fact that urethral coitus in women with normally developed genitalia has been described, majority of published cases presented with vaginal agenesis or vaginal and introital anomalies.[2,3] Vaginal agenesis or developmental vaginal anomalies usually occurred as a result of Mullerian ducts anomalies such as aplasia (Mayer–Rokitansky–Küstner–Hauser syndrome) or fusion (vaginal septum with septate uterus and cervical duplication).[6,7] Mayer–Rokitansky–Küster–Hauser syndrome is characterised by complete or partial absence of the vagina, uterus and proximal fallopian tubes. This form of Müllerian abnormality shows the female 46 XX karyotype with normal development of external female genitalia and good ovarian function.[8] It represents the most common congenital abnormality of the female genital tract, with the incidence estimated as 1 in 4,500 female births. Most of the cases present with primary amenorrhea which leads the young woman to the clinician. Although primary amenorrhea before first sexual intercourse represents a first sign of potential vaginal anomaly, some cases remain undiscovered and develop symptoms like urinary incontinence, dyspareunia or repeated urinary tract infections. However, these symptoms may occur as a part of various diseases and the clinical manifestations differ from case to case.[9] This raises a suspicion and indicates the need for additional examination, leading to a diagnosis of urethral coitus.

Surgical treatment in cases with urethral coitus includes management of sequels, as well as correction of vaginal anomalies. Urinary incontinence and megalourethra should be treated with urethral plication and well-known sling procedures, similar to stress incontinence treatment. Vaginal absence has a devastating impact on a young woman's life and creation of a functioning neovagina is an imperative. There are several surgical modalities in creation of a new vagina using skin flaps and grafts or intestinal flaps.[4]

In the past decade we've evaluated eight patients who were treated due to sequels of urethral coitus. The main reason for non vaginal coitus was vaginal absence due to vaginal agenesis, observed in 5 cases. Several procedures for vaginoplasty have been described in the literature, using different tissues, such as: split-thickness or full-thickness skin graft, labial flaps, peritoneum, myocutaneous flaps, bladder mucosa, buccal mucosa grafts, intestinal segments and surgical modification of Frank's dilation method.[4] The main goal is to create a neovagina with good diameter and depth, enabling appropriate sexual intercourse. In the past, the most common method of vaginal reconstruction was the split-thickness skin graft, first described by McIndoe.[10] In last decades, peritoneal pull-through vaginoplasty presents reasonable solution.[11] However, additional lubrication and periodic dilations are mandatory for patent neovaginal channel maintenance. Because of our personal experience in neovaginal reconstruction of over two decades, all of our cases with vaginal agenesis underwent sigmoid vaginoplasty. Use of a sigmoid colon represents a more favorable choice, due to anatomical proximity and good flap mobility. Additionally, short sigmoid segment offers a self-lubricating and good sized neovagina, which does not require postoperative dilatation for a long time. One of the disadvantages is excessive mucous

production but this can be decreased by using a short intestinal segment. In remaining 2 cases, urethral coitus was a consequence of longitudinal vaginal septum. The first case of vaginal septum with septate uterus and cervical duplication was reported in 1994 by McBean and Brumsted.[12] Since then, new reported cases suggest that the real incidence is more frequent than initially believed. Reconstruction includes simple excision of the septum with additional reconstruction of the duplicated cervix and septate uterus.[7]

Despite the fact that we reported one of the largest series for urethral intercourse, a limitation of our study is its lack of statistical analysis due to small sample size. We used Female Sexual Function Index (FSFI) and included all 6 domains of sexual function (sexual desire, arousal, lubrication, orgasm, satisfaction, and pain). The maximum score is 36, while the value of 26.55 is taken as a cut-off score. Higher score reflects better level of sexual functioning and were observed in all our patients. It is not completely clear why these results are better compared to the group of patients with vaginal agenesis that were treated by the same method and the same team.[4] The reason could be that women who had previously had urethral intercourse continued with sexual activities, achieving good sexual experiences. This is corroborated by very short interval between surgery and first intercourse and regular sexual activity in almost all women. Last but not least, lack of preoperative FSFI data could be another limitation of our study, since comparison between preoperative and postoperative FSFI would confirm success of surgical treatment. However, preoperative FSFI in cases of vaginal agenesis result in very low scores since there is no vaginal arousal, lubrication and orgasm.

CONCLUSIONS

Urethral intercourse is a very rare occurrence with severe consequences. Urinary incontinence with megalourethra in young women, as well as presence of Mullerian anomalies should raise suspicion of urethral intercourse. We believe that the proper treatment for vaginal replacement and urethral reconstructive procedures present the key for success, providing satisfactory sexual and psychosocial outcomes for these patients.

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STATEMENT OF AUTHORSHIP

MLD: Research design, Manuscript writing/editing, Data analysis and interpretation; MB: Data acquisition and analysis, Manuscript editing; BS: Data acquisition, Manuscript editing; OI: Data acquisition and analysis; RP: Data analysis and interpretation.

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