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Original Article

Is percutaneous cystostomy always necessary in transvaginal repair of benign vesicovaginal fistulae?

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Abstract: Purpose: To retrospectively evaluate benign, primary vesicovaginal fistulas (VVF), to determine the outcomes of using only a urethral catheter without cystostomy as a urinary diversion. Methods: Twenty-five women with VVF were treated between April 2008 and October 2014 and evaluated retrospectively. Only primary, benign fistulas were included in this study. Patients with a malignant etiology and/or prior irradiation were excluded, as they required a more complex repair. All included VVFs were treated without replacing a percutaneous cystostomy. All patients were called back on postoperative day 10 for urethral catheter removal. Cystography was not performed before catheter removal. Patients were followed in our clinic postoperatively for one year. Results: Twenty-five patients with VVF were treated using a transvaginal technique without percutaneous cystostomy. All patients, except for two, were discharged the day after surgery. There were no major complications, Clavien Class 2 or greater and no recurrent fistulas were detected. Conclusion: We used only a urethral catheter for 10 days postoperatively in transvaginal VVF repairs. The results show that transvaginal repair of benign VVFs only with urethral catheter is successful and cost effective. Cystography was not necessary before catheter removal.

Keywords: Vesicovaginal fistulas, percutaneous cystostomy, transvaginal repair

Introduction

Vesicovaginal fistulas (VVF) have been a problem recorded since 2050 BC; a large vesicovaginal fistula and laceration of the perineum are likely due to birth trauma [1]. These are the most frequent type of acquired fistulas causing both physical and psychosocial morbidity in patients. In underdeveloped countries, VVFs are mostly due to obstetric complications where there is limited access to prenatal and obstetric care. In industrialized countries, however, the VVF usually occurs as a complication of gynecological, urological or abdominal pelvic surgeries (>75%). Other causes include malignant diseases and radiotherapy of the pelvis [2]. The overall incidence of VVF due to gynecologic surgery has been estimated to be 1 in 1,200 of all hysterectomies and 1 in 455 laparoscopic hysterectomies [3]. There is an estimated 2 million women with untreated obstetric fistulas and an incidence of 50,000-100,000 new cases yearly [4].

VVF repair was described first by Hedrick in 1663; in 1852, Maram Sims carried out the first successful repair of a VVF [2]. However, there is still controversy over the type of treatment (conservative or surgical), optimum time of treatment (early or late), the surgical technique used (transvesical, transvaginal, laparoscopic, or robotic), tissue interposition (to do or not) and the type of urinary diversions used postoperatively (urethral catheter with or without cystostomy).

In this study, we retrospectively evaluated benign, primary vesicovaginal fistulas, to assess the outcomes of using only a urethral catheter without a cystostomy as a urinary diversion.

Materials and methods

Between September 2008 and October 2014, 25 patients with VVFs were treated in our clinic. Only primary, benign fistulas were included in this study. Recurrent VVFs and VVFs as a com-

Table 1. Patient and fistula characteristics

Number of patients (n)	25
Mean age [years (Mean ± SD)]	40.3±12.3
Number of deliveries [n (Mean ± SD)]	3.7±4.6
Fistula size [mm (Mean ± SD)]	14.01±13.20
Fistula localization	
Supratrigonal (n)	20
Trigonal/İnfra. Trigonal (n)	5
Etiology	
Total Abdominal Hysterectomy (n)	9
Normal delivery (n)	2
C-Section (n)	14
Once (n)	1
Twice (n)	5
More than twice (n)	8

Table 2. Results and complications of the patients

Hospitalization time (day) (mean ± SD)	1.12±0.43
Follow up time (month)	12
Recurrence (n)	0
Complications	
Major complications* (n)	0
Minor complications (n)	3
Fever >38^0 (n)	1
Hematuria (n)	1
Vaginal bleeding (n)	1

*Defined as Clavien Class 2 or greater.

plication of malignant diseases or radiotherapy were excluded.

In order to detect the location and size of the fistula, physical and vaginal examination as well as cystoscopy was performed under local anesthesia, in all patients with involuntary urine discharge from the vagina. In the patients where the fistula could not be visualized by cystoscopy, methylene blue via a urethral catheter was used to localize the fistula by vaginal examination. In all patients, the repair was performed 12 weeks after the fistula was observed. Patients were followed in our clinic postoperatively for one year.

Technique

Patients were operated on in the dorsal lithotomy position. First, we placed a guide wire through the fistula cystoscopically. Fistula catheterization was performed transvaginally in all patients with a 12-French or smaller Foley catheter over the guide wire depending on the fistula size. A 16-French urethral Foley catheter was used to drain the bladder. We did not use a suprapubic catheter. The fistulous orifice was carefully surrounded by a delicate dissection. The bladder and perivesical tissue were sutured using 3/0 and 2/0 vicryl. After closure of the second layer, the presence of leakage was assessed by filling the bladder with 300 cc of saline with methyl blue dye. If the sutures were secure and watertight, then we sutured the vaginal layer of the fistula tract using 2/0 vicryl. We replaced a polyvinylpyrolidon soaked sponge in the vagina and removed it the following day. The patient was discharged the following day on antibiotics and anticholinergics.

All patients returned for follow up 10 days after the surgery for removal of the urethral catheter. The patients were told to discontinue the anticholinergics one day before the catheter removal. Women were advised not to resume sexual activity for three months after catheter removal.

Results

The age of the 25 patients was between 24-68 years (mean 40.3±12). All of the included patients had a non-irradiated VVF with no underlying malignant disease, and the repair was the primary one for all patients. All repairs were done without tissue interposition. **Table 1** describes all of the patients and fistula characteristics. The size of the fistulas varied between 20 mm and 15 mm. The admission time ranged between three days and twenty one years, and generally it was longerfor the uneducated patients. All fistula repairs were performed 12 weeks after the fistula was noted; in patients who arrived later than 12 weeks, the repair was done immediately.

No recurring fistulas were detected. No patient required postoperative surgical, endoscopic, or radiological intervention or anesthesia. There were no major complications, Clavien Class 2 or greater (**Table 2**). Moreover, there were no bladders, bowel, ureteral, or nerve injuries. The minor complications, Clavien Class 1, are shown in **Table 2**. Hospitalization lasted more than one day in two patients because of high fever and hematuria.

Discussion

Incontinence as a result of a VVF is one of the most disturbing conditions present in some women. Even Sims carried out the first successful repair of a VVF in 1852, there are still many controversies regarding the type of treatment (conservative or surgical), the optimum time of treatment (early or late), surgical techniques (transvesical, transvaginal, laparoscopic, or robotic), tissue interposition (to do or not) and the type of postoperative urinary diversions (urethral catheter with or without cystostomy [2].

The aim of treatment is to quickly stop the involuntary discharge of urine and to enable complete urinary and genital function. Therefore, success after surgery is very important. It is generally accepted that the first repair has the highest chance of success and that anything that increases the success of the procedure should be done.

Successful vesicovaginal fistula repair requires not only good surgical technique,but also careful postoperative care. All centers would agree that the bladder should be continuously and completely drained for at least 10 days postoperatively, and up to two to three weeks [5]. Adequate postoperative drainage of the bladder via a urethral or suprapubic catheter, or both, can be performed.

For continuous drainage, different authors prefer different types of diversions. Carr and Webster prefer to use only a suprapubic cystostomy, in their transabdominal repair, suggesting that, if appropriately positioned, cystostomy reduces bladder spasms and patient discomfort, thus preventing premature catheter removal [6]. Pshak et al. [3], repaired all their patients transvaginally whether the VVFs were primary or recurrent, and they used a percutaneous cystostomy.

It is generally well accepted that replacing cystostomy with a urethral catheter increases the healing rate; however, cystostomy is not free of complications and in some cases with a history of pathology, such as previous lower abdominal or pelvic surgery, pelvic cancer, with or without a history of irradiation and coagulopathy, it is relatively contraindicated. There are also short-term complications such as damage to the bowel or other surrounding structures that might require a repeat procedure. There are short-term complications such as infection, bleeding, blood clots, and catheter migration into the ureteral orifice that can lead to hydronephrosis. In addition, there are long-term complications such as urinary infection, stones in the urinary bladder, renal calculi, hematuria, as well as neoplastic changes that can occur in the urinary bladder at the site of the cystostomy or in the suprapubic tract [7].

We know that nonirradiated, primary VVFs are different from complex fistulas. Therefore, is a cystostomy alone or together with a urethral catheter always needed because of complications that might develop.These complications might increase the stress of the patient and the surgeon.

Carr and Webster [6] have advocated suprapubic catheters to reduce bladder spasm, infection, and patient discomfort. However, Wong et al. [8], reported that there is no evidence to support this. Milicevic et al. [2], routinely used only a urethral catheter in all their cases as a urinary diversion; they did the repairs using either transabdominal or transvaginal technique. In addition, Sundaram et al. [9], in their robotic assisted transvesical VVF repairs, used only urethral catheters for 10 days, suggesting that when the cystostomy is quite small, and hemostasis and the repair are excellent, urethral catheters alone were adequate for postoperative drainage.

Mohammad et al. [10], did repairs on all of their patients using the transabdominal technique; they only used a urethral catheter for 10 days as a urinary diversion. They reported that this was recently shown, by Nardos R et al. [11], to have similar treatment outcomes, with a shorter duration of catheterization and a significant reduction in infection and cost. When reviewing the two meta-analyses, all authors pointed out that there was evidence that suprapubic catheters have advantages over indwelling catheters with respect to bacteriuria, re-catheterization and discomfort. The clinical significance of bacteriuria was uncertain, however, and there was no information about possible complications or adverse effects during catheter insertion. Therefore, according to these authors cystostomy appears to be more advantageous [12, 13]. Nevertheless, as we observed some of the

percutaneous cystostomy complications, in different groups of patientsand as the postoperative outpatient care of the cystostomy appeared to be difficult, especially in repairs done transvaginally, cystostomy was not replaced. In addition, preoperative discussion with patientsgenerally revealed discomfort with a cystostomy at discharge; however, discharge with a urethral catheter was acceptable to the patients.

Outpatient management of cystostomies can be difficult. Sometimes, the duration of the catheterization, as in our region, and the presence of a cystostomy defines the length of a hospital stay. If effective, a short duration of urethral catheterization without cystostomy can mean a shorter hospital stay. This has significant implications for cost.

Based on the results of this study, we are comfortable with our choices and methods of repair. For thetransvaginal approachwe never use a percutaneous cystostomy as a diversion. As Nardos et al. [11], suggested the catheter was kept in place for 10 days. We were able to repair all of our selected cases using this method.

The use of anticholinergics while the patient had a urethral catheter in place was necessary and increased the chance of recovery. Involuntary bladder contractions may have started, as a reaction to the catheter. These contractions are not only disturbing to the patients but may also decrease the success of recovery.

In their series, Waleed Mohammad [10] who reported a 95% success rate, repaired all 26 cases with the suprapubic, transvesical O'Connor technique; they drained the bladder continuously for 10 days, and a cystogram was performed before catheter removal to document healing.

We never performed cystography in our patients before catheter removal. We planned to keep the catheter in place longer in cases where there might be leakage after catheter removal; the catheter was inserted again for further drainage. In this way the morbidity and cost of cystography can be avoided and it is acceptable to patients.

In conclusion, if VVF repair performed transvaginally we used only a urethral catheter for 10 days postoperatively. Anticholinergics were recommended and cystography was not performed before catheter removal. All surgeons involved in fistula repair should be experienced in urogynecology, and should decide on the most appropriate procedures and treatment modalities for each individual patient.

Disclosure of conflict of interest

None.

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