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Original Article

Gynecological surgery caused vesicovaginal fistula managed by Latzko operation

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Abstract

Objective: In developed countries, vesicovaginal fistula (VVF) is a rare complication after gynecological surgery. In this report, the Latzko procedure was used to repair VVF to evaluate its safety and efficacy.
Materials and Methods: Between 1991 and 2009, cases in which VVF developed after various gynecological surgeries and repaired using the Latzko procedure were included. The cause of VVF and outcome after Latzko procedure were reported. The previous published reports regarding Latzko procedure were also listed and compared. The median follow-up period was 8 years.
Results: Six cases of VVF were documented in this period. All fistulas were simple type with a fistular size of less than 2 cm. In three of six cases, fistulas developed after a hysterectomy for carcinoma *in situ* of cervix. Of those remaining, one case developed after staging an operation for endometrial adenocarcinoma, while the other two cases occurred after hysterectomy for myoma. Five cases were repaired successfully. One case had postoperative complications such as fever and urinary tract infection. Intraoperative blood loss and hospital stay were minimal. There was no recurrence of VVF postoperatively among successful cases during the follow-up period.
Conclusion: Adequate exposure of the fistular site is a key point to a successful repair. The Latzko method is a minimal access procedure for VVF repair. This technique may be considered a first-line treatment of VV fistula.

Keywords: hysterectomy; Latzko operation; vesicovaginal fistula

Introduction

In developed countries, vesicovaginal fistula (VVF) is often caused by injury to the bladder at the time of pelvic surgery. The rate of iatrogenic bladder injury during abdominal hysterectomies is estimated to be between 0.5% and 1.0% [1]. Mathevet et al [2] reported the incidence of bladder injury during vaginal hysterectomy to be 1.7% in 3076 cases, with all injuries being recognized and repaired intraoperatively. Gynecologic surgery is the cause of VVF in 82% of fistulas [3]. Other causes of VVF in the industrialized world include malignant disease, pelvic irradiation, and obstetric trauma, including forceps lacerations and uterine rupture. The most common symptom in patients with VVF is constant urine drainage per vagina. The amount of urine leakage can vary considerably from patient to patient, and may be proportional to the size of the fistula track. In the supine position, when sleeping, the amount of leakage reported by the patient may be minimal; but upon rising to a seated or standing position, the amount of leakage may increase precipitously.

Most techniques for VV fistular management use a transabdominal, transvaginal, or laparoscopic approach. The abdominal route has a good success rate, and is mostly favored by urologists when dealing with complex fistular types. Urologists have developed laparoscopic or robotic laparoscopic approaches, but such methods are technically complex with a steep learning curve. The transvaginal approach is

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popularly favored because it has short operative time, brief inpatient stay, quick return to normal activities, and minimal postoperative pain. The Latzko repair method is an age-old technique with great popularity among reconstructive surgeons, and has a 90% success rate. Advantages of the Latzko procedure include minimal blood loss, zero need for ureteral reimplantation, and short convalescence. However, currently, there is no consensus as to which surgical procedure should be the first line of treatment.

We repaired six cases in our hospital using the Latzko procedure. In this paper, we present our experience with VVF repair using this technique and compare our results with those in previously published reports.

Materials and methods

Patients selection

Between 1991 and 2009, a total of six patients were admitted to the Mennonite Christian Hospital, Hualien, Taiwan, for the surgical treatment of post-hysterectomy VVF using the Latzko method.

Methods: Latzko procedure

The patient was placed in the lithotomy position. Cystoscopic inspection of the bilateral ureter orifice was carried out to identify if the ureter orifice was adjacent to the fistula; we catheterized the orifice to avoid unintentional injury. When possible, a pediatric Foley catheter size 10 or 12 was inserted into the fistular opening, and then a balloon was inflated within the bladder lumen. This makes the fistula more accessible.

Depending on fistular size, we then circumcised the vaginal mucosa inclusive of the fistular opening, with a 2- to 3-cm oval disk (Fig. 1A). The excised area was divided into four quadrants for ease of removal of vaginal epithelium. All exposed epithelial tissues in the disk were completely removed. Fistulectomy was not done in all cases. The epithelial layer around the fistular site on the vaginal wall was denuded and then plicated by interrupted 2–0 vicryl sutures (Fig. 1B). Foley catheter was removed during plication of this layer. The second layer of interrupted stitches tightens the denuded vesical musculature, and the vaginal wall is closed with further interrupted sutures (Fig. 1C).

Water seal of fistula site after repair was checked with approximately 300 mL of normal saline. Postoperatively, the bladder was decompressed by catheter drainage for 10 to 14 days. Patients took laxatives to avoid straining during defecation. The following data were recorded: postoperative complication, days of convalescence, recurrence rate, and resumption of satisfactory quality of life. All cases were operated on by the same surgeon (Dr Chi-Yuan Liao).

Results

Patients' characteristics are illustrated in Table 1. Patients in the reported sample were divided into two groups. Group 1 consisted of three patients who received conization of cervix

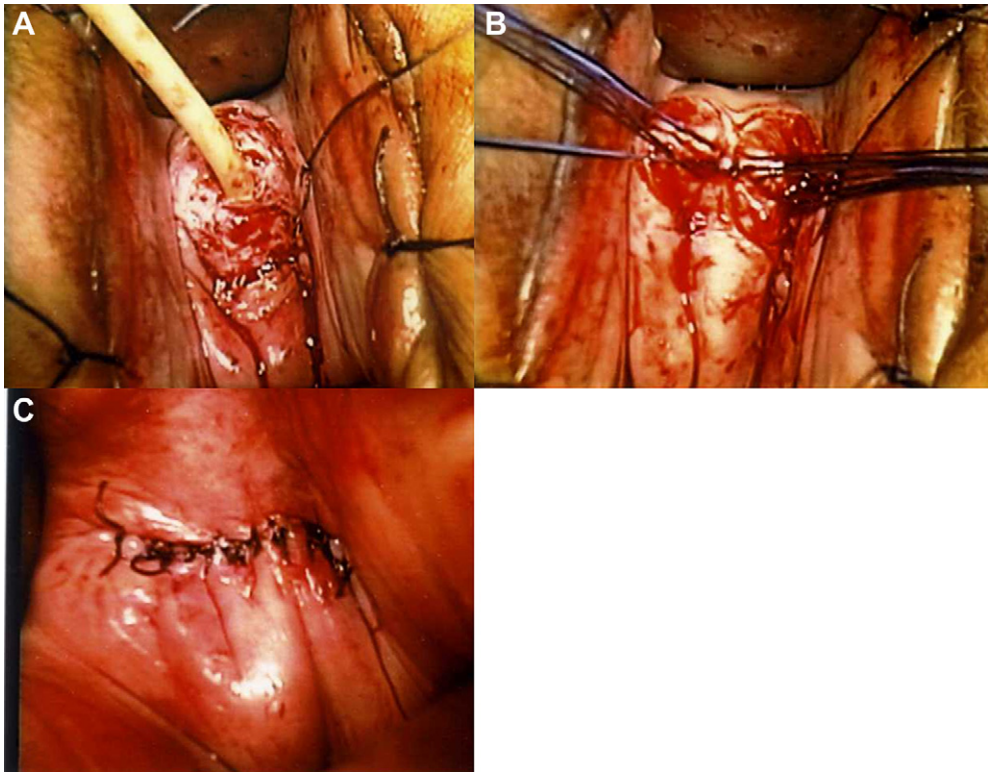

Fig. 1. The process of Latzko operation. (A) Circumferential de-epithelialization of the perifistulous area. (B) Closure of the fistula by approximating the denuded vaginal walls. (C) The vaginal fistular site after closure.

Table 1
Patients' characteristics ($n = 6$).

Characteristics	Values
Mean age ± SD, y (range)	48.83 ± 14.85 (34–77)
Cause of the fistula, *n* (%)	
Laparoscopic vaginal hysterectomy	3 (50%)
Abdominal hysterectomy	3 (50%)
Mean delay between initial surgery and fistula (d) ± SD (range)	11.80 ± 16.63 (0–41)
Mean size of the fistula ± SD (mm), (range)	10.50 ± 0.70 (10–11)
Previous surgical treatment of the fistula(times)	
≧2	1 (16.7%)
BMI <18.5	1
18.5–24	0
>24	5
Parity P1	1
P3	1
P4	3
P7	1

BMI = body mass index.

followed by hysterectomy. Out of these three patients, one patient received conization twice while the other two had the procedure done just once. The group 2 patients received hysterectomy without conization. Of the three cases in group 2, one patient developed fistula after undergoing an operation for endometrial adenocarcinoma, while for other two patients this occurred after hysterectomy for myoma.

All patients received preoperative evaluations: ultrasonography, cystoscopy, methylene blue test, tampon test, intravenous pyelogaphy, and cystourography. The mean age of the patients is 48.8 years, with a range of 40–80 years. The fistula type was simple with a size of less than 2 cm in diameter. The median follow-up time was 8 years. Most of our patients were obese (body mass index >24 kg/m^2, $n = 5$) and premenopausal ($n = 5$). History of previous cesarean section was noted in two patients. All patients delivered at least one baby.

The main results of this procedure are illustrated in Table 2. The procedure was successful in five cases without sequela. The only case that was unsuccessfully repaired had three previous abdominal surgeries including abdominal total hysterectomy. Other nonsurgical preexisting conditions that may have contributed to the difficulties of her surgery include obesity and a congenitally deep, narrow vagina vault.

Table 2
Latzko procedure ($n = 6$).

Characteristics	Values
Median delay between fistula diagnosis and Latzko operation (y) (range)	5.08 ± 9.80 (0.18–25)
Mean operative duration (min) ± SD (range)	175.67 ± 27.18 (150–215)
Intraoperative complications, *n* (%) fever	0 (0%)
Postoperative complications, *n* (%) fever	1 (16.7%)
Mean postoperative urinary drainage (d) ± SD (range)	13.33 ± 4.27 (7–20)
Mean postoperative hospital stay (d) ± SD (range)	9.00 ± 6.51 (4–20)
Success rate, *n* (%)	5 (83.3%)

No intraoperative complications regarding Latzko surgery were noted. One case developed a postoperative urinary tract infection with fever, which responded well to intravenous antibiotics. The mean hospital stay was 9 days. All patients were able to void postoperatively after the removal of the Foley catheter. No recurrence was noted in the five successfully repaired cases. These patients resumed normal vaginal intercourse after being discharged from the hospital. The one patient previously reported as a failed repaired case was subsequently lost to follow-up.

Table 3 compares the results of this study with those of previously published reports. The success rates of this kind of operation range from 83% to 100%. The complication rate and types are both rare. The most common complication of Latzko repair is urinary tract infection (16%) followed by bladder lithiasis (6%) [4]. Other reported complications are rare and can include hydroureter (0.9%), according to Tancer [5]. The rate of history of previous fistula surgery ranged from 4% to 28% (Table 3).

Discussion

VVF is an uncommon post-hysterectomy complication with a reported incidence of 0.1–0.2% [6]. Fistulas may be repaired through a transabdominal, transvaginal, or laparoscopic approach depending on the surgeon's preference and experience. In terms of morbidity, operative time, blood loss, and patient discomfort, Latzko repair is comparable with laparoscopic repair. The advantages of Latzko procedure compared to laparoscopy is the short learning curve and zero major operative complication(s) such as bowel injury or trocar-induced epigastric artery injury [5,7,8]. The timing of fistula repair is normally 2–3 months after fistula development. Some of our patients waited somewhere between 2 months and 25 years to seek surgical consultation. This is because the majority sought treatment elsewhere with failed results before coming to our hospital; only two were our own cases.

There are several advantages worth noting with the Latzko procedure. Although the repair does not follow the basic principles of fistula surgery—separation of all layers, excision of fistula tract, freshening of margins, nonoverlapping suture lines, and tissue interposition—it still provides excellent results because the vaginal subepithelial layer, which is inverted toward the bladder using a series of inverting sutures, helps to provide the necessary support [6,9,10]. We may therefore conclude that the Latzko procedure is a simple and easy procedure that can be elected as the first line of treatment for VVF repair.

Nonetheless, we achieved an 83.3% success rate after our attempts using the Latzko method (Table 3). The only failed case involved a patient whose anatomy and preexisting conditions such as obesity posed a great challenge to repair. The patient's fistular site was located near the apex of her vagina; a deep and narrow vagina also makes it difficult for the surgeon to access the fistular site via the transvaginal route. We tried the abdominal route as an alternative, but found severe adhesions of the bladder, colon, and fistula that

Table 3
Results of the Latzko procedure (English literature review).

Author, year	*N*	Previous fistula surgery, *n* (%)	Complications, *n* (%)	Success, *n* (%)
Latzko, 1942 [4]	31	—	2 (6%) (bladder lithiasis)	29 (94%)
Everett and Mattingly, 1956 [14]	46	—	0 (0%)	44 (96%)
Szendi, 1959 [15]	9	1 (11%)	0 (0%)	9 (100%)
Falk and Kurman, 1963 [16]	75	—	0 (0%)	71 (95%)
Rader, 1975 [17]	8	3 (4%)	0 (0%)	8 (100%)
Käser, 1977 [18]	38	—	0 (0%)	35 (92%)
Tancer, 1980 [5]	107	30 (28%)	1 (0.9%) grade 2 hydroureter	98 (92%)
Ansquer et al, 2006 [10]	11	2 (18%)	1 (9%) urinary tract infection	11 (100%)
Present study, 2010	6	1 (16%)	1 (16%) urinary tract infection	5 (83%)
Total	325	—	4 (1.2%)	305 (94%)

limited our maneuverability when freeing the fistula. We consulted a urologist who recommended transvesical approach to repair the fistula. However, her family did not accept this treatment proposal. As a result, we performed the Latzko procedure as our last treatment option. Unfortunately, her case resulted in failure. From this case, we learned that adequate exposure of the fistular site is a key point for successful repair. Although factors such as size, location, exposure, and use of radiation are also important factors for a successful repair, the most important factor is commonly the experience of the surgeon [11].

Other important points of surgical techniques include placing the patient in the exaggerated lithotomy position, making a Schuchardt incision [12,13], and stabilizing the opening with a Bookwalter retractor (Codman, Raynham, Slidell, MA, USA) instead of a Deaver retractor (CS Surgical Inc., LA, USA). Using a fiberoptic headlight is also recommended, if necessary.

Previously failed repair does not preclude patients from the success of a subsequent Latzko procedure. One woman had three attempts with regard to transvaginal repair before she was repaired again with the Latzko method. She was free from her symptoms 8 years after her surgery. In three out of six cases, patients who had a hysterectomy followed by a conization due to carcinoma *in situ* of cervix, easily developed scars and shortening of cervix, which could be the major cause of fistula formation.

Latzko procedure offers the advantage of not narrowing the bladder, and theoretically, it does not jeopardize the ureter. Dorairajan and coworkers [9] also reported excellent results with fistular repair using the same technique. However, Tancer [5] reported a case of hydroureter, which was diagnosed 16 weeks after the Latzko operation and was successfully managed with an intraureter stent for 6 weeks. In this study, there is no ureter injury.

In this study, the average time between the diagnoses of fistula to Latzko operation was 5 years, compared to the other series which are often treated within weeks to months [10]. The longest interval before a patient sought surgical treatment was 25 years. Factors such as personal inconvenience, physical discomfort, emotional distress, and the possible medicolegal issue between medical practitioners and patients are the reasons that delayed the VVF repair. Traditionally, fistula repair surgery is usually performed 8–12 weeks after the previous surgery [10]. There is no evidence that the failure of surgical repair is related to the time of surgery. In conclusion, the Latzko technique is a simple, effective procedure to treat VVF. Therefore, it may be considered the first line of the treatment for vaginal repair, unless otherwise contraindicated.

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