



## Characteristics of vesicovaginal fistula with operative measures at tertiary referral hospital

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### Abstract

**Introduction:** Vesicovaginal fistula (VVF) is an abnormality urinary bladder and vaginal organ. We evaluated the success rate of the surgery in VVF therapy.

**Methods:** Data were obtained from medical records of an urogynaecology outpatient clinic from 2016 to 2018.

**Results:** From 2016 to 2018, there were 35 patients with VVF. Nineteen from 35 patients were conservatively treated and 16 patients were operated. Then, 15 patients (93.75%) had transvaginally treatment, and 1 patient (12.5%) had transabdominally treatment. Fistula repair surgeries were conducted at 10 patients (62.5%) in more than 3 months after their complaint of urine leaking. Six patients (37.5%) had it in less than 3 months. Three patients got repair treatment (18.75%) due to obstetric management, 12 patients (75%) due to gynecological surgery, and 1 patient due to urological problem. Eleven out of the 16 cases (68.75%) got repair treatment in this hospital, then had success surgery.

**Conclusion:** The most common cause of VVF was gynecological surgery. The success rate of VVF repair was moderate.

**Keywords:** vesicovaginal fistula, transvaginal surgical, success therapy

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### INTRODUCTION

Vesicovaginal fistule (VVF) is an abnormality urinary bladder and vaginal organ. It makes urine leaking through vagina (Pranata 2007). VVF is the most common urogenital fistule type and makes a serious problem in medical, social, and psychology of the patients. However, this case is often neglected in developing countries (Stamatakos et al. 2014, WHO 2006).

VVF, which can cause urinary problems, is one of the complication of obstetry and gynaecology procedure, such as caesarean section (Chongsuvatwong et al. 2010). This illness is developed as a side effect from radium and x-ray surgery procedure of pelvis malignancy therapy. Also, this is caused from obstetric management which is suffered by around 50.000-10.000 woman every year (Abrams et al. 2010, Javed et al. 2015). The predisposition factors of VVF are preterm birth (Hilton et al. 2012), limited in obstetric access, malnutrition, poverty, social status, and low education level. Globally, the highest prevalences are Asians and Africans. WHO predicted that there are at least 2 millions woman with VVF and will arise 50.000-10.000 cases per

year (Garthwaite et al. 2010, Hancock 2005, Li et al. 2011).

VVF is not life-threatening but the major morbidity in urogynaecology. A continuous wet sense in genital and smell odor make an uncomfortable feeling. In addition, patients with this fistula may contribute for the development of urinary tract infections, which sometimes asymptomatic (Dahniar et al. 2019, Laily et al. 2018). Most of the patients neglect this complaint because of many factors, such as their education, the long distance from health facility, high cost, and stigma from her husband and community. Those factors make woman not complaint to the doctor and make us hard to get epidemiology data as similiar as other cases, ureteral injuries secondary after cesarean section (Lo et al. 2016, Spurlock 2019, Stamatakos et al. 2014).

VVF therapy is conservative and surgical. Previous study revealed some exercises had an effect to descent urinary incontinence postpartum that was caused by

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**Table 1.** Patients' characteristics from five failed surgery cases in VVF repair

Patients	VVF Classification		Etiology	Surgery Procedure				Fistule Duration				Comorbidity
	1st case	2nd case		1st surgery	2nd surgery	3rd surgery	4th surgery	1st surgery	2nd surgery	3rd surgery	4th surgery	
1/ 43 yo P2002	single, Ø 2-3 mm at anterior wall vagina, 1 cm from vaginal stump	single, Ø 2 mm at wound surgery, 1 cm from stump vagina	TAH	Transvaginal	Trans Vaginal	-	-	6 months	12 months	-	-	Diabetes mellitus
2/ 48 yo P2001	single, Ø 1 cm, 0,5 cm from vaginal stump	0,4 cm at wound surgery	TAH	Transvaginal	Not yet done	-	-	3 months	-	-	-	UTI
3/ 37 yo P2002	Ø 2 cm at dextrilatero-anterior wall vagina, 1 cm from Vaginal stump	urine leaking from the wound surgery	TAH + Post iatrogenic bladder rupture	Transvaginal Join Urology → Cystocopy	Not yet done	-	-	1 month	-	-	-	(-)
4/ 31 yo P4013	single, Ø 0,5 cm at anterior wall vagina, 8 cm from introitus vagina	Ø 0,5 cm 1 cm from stump vagina	TAH caused by accreta	Transvaginal	Trans vaginal Join Urology → Cystocopy	-	-	4 months	10 months	-	-	Twice post op SC+ accreta
5 / 44 yo P3003	single, Ø 0,75 cm, ± 1cm from muara urethra externus	Multiple, Ø 0,5 cm, ± 2 cm from muara urethra externus	TAH	Transvaginal	Trans Vaginal	Trans vaginal	Trans Abdominal	7 months	14 months	21 months	29 months	hypertension

VVF (Armini et al. 2017). Besides, another study showed animal model to develop VVF therapy and obtained no complications during the treatment period (Kurniawati et al. 2019). This study aimed to evaluate the success rate of the surgery in VVF therapy (Pathirage Kamal Perera 2019).

## METHODS

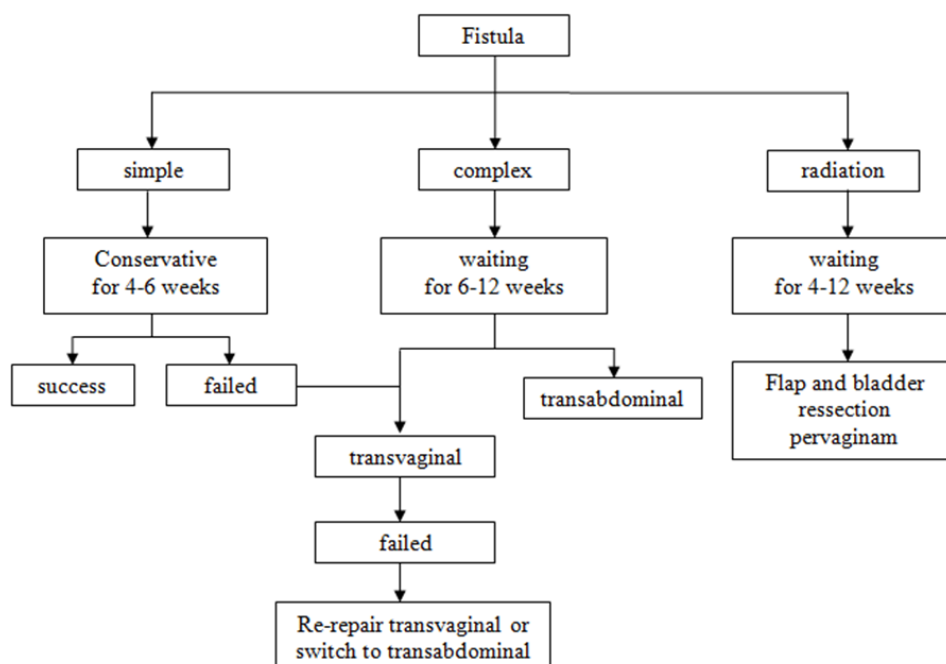
This was an observational study with total sampling. Data were taken from medical records in Urogynaecology Outpatient Clinic, Dr. Soetomo General Hospital, Surabaya, Indonesia from 2016 to 2018. The data assessed the rate of success surgery at VVF cases. There were 35 patients with VVF. Out of the 35 patients with the VVF, 19 patients had conservative management, and 16 patients had surgery management. Data were analyzed descriptively and presented in **Table 1**.

## RESULTS

From 2016 to 2018 there were 35 patients with VVF. 19 from 35 patients were conservatively treated, and 16 patients were operatively treated. Then, 15 patients (93.75%) had transvaginally treatment, and 1 (12.5%) had transabdominally treatment. Fistula repair surgery were conducted in 10 patients (62.5%) in more than 3 months after their complaint of urine leaking and in 6 patients (37.5%) who had it in less than 3 months. There were 3 patients (18.75%) obtaining repairing treatment due to obstetric management, 12 patients (75%) due to gynecological surgery, and 1 patient due to urological problem. There were 11 patients (68.75%) obtaining repair treatment in this hospital and having success

surgery. Out of the success surgeries, seven of them were the simple fistula type, the others were complete fistula type (the diameter >0.5 cm). Most of the success surgeries of VVF were primary fistula. Only one case was recurrent fistula which had repaired from another hospital and re-repaired in Dr. Soetomo General Hospital.

In this study, there were 5 patients of VVF with failed transvaginal surgery. Four patients needed re-repaired fistula surgery, and 1 patient had success repair after her fifth surgery (with transabdominal surgery). The characteristics of the patients with failed surgery are shown in **Table 1**. The first patient had failed at first and second surgeries because of her comorbidities. She had uncontrolled diabetes mellitus and hypertension. Patient number 2 had failed in the first surgery because of urinary tract infection (UTI) with *E. coli* ESBL infection from urine culture. At patient number 3, her first surgery failed because the medium size ( $\geq 2$  cm) of diameter and the complex type of the fistula. At patient number 4, the failed of first and second surgeries were caused by complication of accreta surgery. This patient had twice former caesarean section, and the accreta got adhesion with vesica urinaria and uterus, then got transabdominal hysterectomy. Patient number 5 had unknown reason in the first until third surgery. From anamnesis, she only had hypertention and no hystorical of infection. The fourth surgery had done with transbdominal procedure after 2 years from her first surgery, and no recurrence occurred after that. Out of five patients, two of them, which had failed surgery, did re-repair surgery. Eventhough, it is significantly escalate the number of recurrence around five times.



**Fig. 1.** VVF algorithm repair (Angioli et al. 2003)

## DISCUSSION

The rate of success VVF repair in Dr. Soetomo General Hospital was moderate. This means that it is still necessary to have a better preparation for the surgery related to the characteristic of patients, procedure, technique, and post-operative management. Many factors impact the success of VVF repair surgery, such as characteristics of the patients, intraoperative procedure, and post-operative management (**Fig. 1**), also nutrition status, optimisation patients condition before surgery, infection management, technic of surgery, wound management and post operative care, include early mobilisation, rehydration, vulvovaginal hygiene, and coitus absence for 3 months (Javed et al. 2015).

VVF managements are conservative and surgical. Surgery management is the only one definitive treatment of VVF with 85-95% rate of success at the first repair (Javed et al. 2015, Spurlock 2019). Transvaginal procedure is administered for almost all cases because of obstetric complication such as ruptura cervix and lower cervix dehiscence  $\pm$  2 cm, vesicovaginal fistula  $\varnothing$  0.5 cm at posterior bladder. Transvaginal procedure in this study was done by *Latzko* procedure. Repairing VVF can be done with transvaginal, transabdominal, or combination. However, the gynecologists prefer to choose transvaginal procedure because of minimal invasive and complication, short time to hospitalization, a little volume of blood loss, and minimal pain post surgery.

Success rate of both procedure is 91-96%. The absolute contraindication for transvaginal procedure at

VVF repair is fistula with abdominopelvic organ, such as ureter, small and large intestine, and multiple VVF (Angioli et al. 2003, Ledniowska et al. 2012). Other risk factors are needed to analyze for choosing the procedure of surgery based on the experience of the operator. Two common techniques in VVF repair are *Latzko* and multiple closing. These techniques can be done with or without fat layer or myocutaneous flap (Abrams et al. 2010, Angioli et al. 2003). *Latzko* is the old style procedure of VVF repair, but it has success rate around 90%. *Latzko* procedure results are minimal blood loss, brief time of recovery, not narrowing of the bladder, and no damage ureter (Angioli et al. 2003).

In this study, there were 5 patients with recurrent fistula. They got their illness caused of transabdominal hysterectomy (TAH) for many kind of indications. Some complications such bladder stones can may occur in women with previous hysterectomy (Palinrunji et al. 2020). The most indication of TAH procedure is tumor surgery that has risk of fistula reformation 1:540 (Hilton et al. 2012, Mangera et al. 2016). The success rate of primary fistule surgery is high (85-95%), and the best definitive therapy of VVF is surgery management (Javed et al. 2015). However, the VVF repair from radiation has a success rate less than 90% (Hancock 2005, Vasavada 2019). Some studies said that age, etiology, parity, and surgery technique have no significant correlation with the success rate of VVF repair surgery (Javed et al. 2015).

Many references showed that the success rate of surgery reduce is in line with the number of repair. As many as 2484 patients have 83% success rate in primary surgery then down to 65% at second surgery.

This is due to trauma surgery not only alters the local anatomy but also ischemia and devitalization of tissue that makes fibrosis and adhesions, so the healing process of second surgery becomes difficult (Barone et al. 2013). The literature said that secondary repair should be done by professional surgeon, and flap should be used for it (Creanga et al. 2007, Javed et al. 2015).

Rate of success of VVF repair is almost 90% at the first surgery. Some of fistula cases are difficult. Around of 95 % fistula cases have done by the most professional surgeon, which is 10% of them have done by second or third surgery. The secondary surgery is usually harder than before. It needs additional procedure, changes technique of surgery, even uses flap and combination for the repair.

Ideal timing of repair VVF is still a controversy. Most of the surgeries prefer to repair it as soon as tissue cleaned. However, the conservatives wait it around 2-4 months after bladder drainage, and this procedure has spontaneous closure 15-20% for simple VVF (Angioli et al. 2003, Qadir et al. 2014). Some of studies show that

early treatment of small VVF with no infection is better than delayed surgery. Also, early treatment cures the patients life quality (Javed et al. 2015). VVF repair principle is no inflammation and no infection at local tissues (Vasavada 2019). A study recommended a year interval for fistula caused by radiation before doing the surgery (Eilber et al. 2003, Spurlock 2019).

The key for VVF repair success rate is based on classic principle from Couvelaire in 1953, including good visualization, good dissection, good assessment of edge of the fistula, and well-drained urine. This principle is well applied in transabdominal and transvaginal procedure.

## CONCLUSION

The rate of success of VVF repair in Dr. Soetomo General Hospital was moderate, suggesting still that it is necessary to have a better preparation for the surgery related to the characteristic of patients, procedure, technique, and post-operative management.

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