

# Case Based Urology Learning Program

## Resident's Corner: *UROLOGY*

### Case Number 19

# Case Based Urology Learning Program

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A 56-year-old woman presents 2 months s/p TAH for Stage 1 cervical cancer with progressively worsening incontinence which began on POD #2 after foley catheter removal. The patient reports both daytime and nighttime leakage that is not associated with urgency or provocative maneuvers.

What is the differential diagnosis of incontinence in this setting?

# What is the differential diagnosis of incontinence in this setting?

In a patient with new onset continuous or total incontinence after a TAH vesicovaginal fistula (VVF) and ureterovaginal fistulas (UVF) must be at the top of the differential diagnosis.

Although less common a peritoneovaginal fistula should also be considered.

If the incontinence is not continuous a detailed history will help differentiate stress urinary incontinence, urge incontinence and mixed incontinence.

What would you look for on physical exam?

# What would you look for on physical exam?

## Abdominal Incision

Infection, seroma

## Abdominal Exam

Signs of distension or peritonitis

## Vaginal examination

Urine pooling in the vaginal vault

Urethral hypermobility

Supine stress test demonstrating incontinence

Evidence of vesicovaginal fistula, which can be subtle (e.g. inflamed area near the vaginal apex)

Physical exam findings in this patient revealed:

AVSS

Abdomen:

Healed pfannenstiel incision, non-tender and non-distended

Urine pooling in vaginal vault

4mm area of erythema at R vaginal apex

No POP

No SUI with valsalva or cough

What labs would you order?

# What labs would you order?

UA and urine culture

BMP

If sufficient fluid can be obtained from pooling in vagina, send creatine level on this as well



Laboratory analysis in this case revealed:

UA C&S negative

Cr 0.7 mg/dL

Vaginal fluid Cr 20mg/dL

What additional work-up can be done in the office, which can help sort out whether there is a fistula and what the source is?

# What additional work-up can be done in the office, which can help sort out whether there is a fistula and what the source is?

Double dye test, which is performed and interpreted in the following manner:

Place a tampon in the vagina and give the patient oral pyridium (orange) and instill indigo carmine (blue) in the bladder

Blue on the tampon = Vesicovaginal fistula (VVF)

Orange on the tampon = Ureterovaginal fistula (UVJ)

Blue and orange = both VVF & UVF

Clear fluid top tampon = peritoneovaginal fistula

What additional work-up can be done  
as an outpatient?

# What additional work-up can be done as an outpatient?

Cystoscopy to determine location of the VVF

CT urogram to assess the patency of both ureters, confirm the UVF and determine the location of the ureteral injury

Your evaluation reveals:

Double dye test:

Blue and orange staining on the tampon

Cystoscopy:

Fistula 1.5 cm posterior to L ureteral orifice

CT urogram:

L hydronephrosis; distal ureter not well visualized, extravasation at the distal L ureter near ureterovesical junction

R no hydronephrosis, radiographically normal

What is your diagnosis?

What is your diagnosis?

Concomitant vesicovaginal and L ureterovaginal fistulas

What percentage of patients with a  
VVF after hysterectomy will also have  
a UVF?

What percentage of patients with a VVF after hysterectomy will also have a UVF?

Ten percent, so this must always be considered and evaluated for.



What are the most common etiologies  
of VVF in North America vs.  
developing countries?

# What are the most common etiologies of VVF in North American vs. developing countries?

In North America:

90% occur after obstetric or gynecologic procedure

75% occur s/p hysterectomy (TAH > TVH) for benign disease

Overall incidence of VVF after hysterectomy 0.5- 1%

6% related to radiation

4% related to trauma/foreign bodies (e.g. neglected pessaries)

Others can be related to malignancy (cervical, endometrial, vaginal cancer)

In developing countries the most common cause is obstetric trauma

Prevalence in sub-Saharan Africa over 2 million

Annual incidence is 50,000 – 100,000

How would you manage the ureterovaginal fistula in the short-term?

# How would you manage the ureterovaginal fistula in the short-term?

Cystoscopy, retrograde pyelogram and L ureteral stent placement.

If this is not possible a nephrostomy tube can be placed with conversion to an internal stent or nephroureteral tube.

The patient undergoes nephrostomy and stent placement but 3 weeks later a nephrostogram shows persistent extravasation from the UVF. The patient thus needs a combined ureteral re-implant and VVF repair.

What should you take into consideration when planning your operative approach?

# What should you take into consideration when planning your operative approach?

Time of presentation (early vs late)

History of radiation

Level of ureteral injury & appropriate type of ureteral construction

Location and size of the VVF, particularly in pts with isolated VVF

What are the main considerations  
with respect to early vs. late repair of  
UVF or VVF?

# What are the main considerations with respect to early vs. late repair of UVF or VVF?

## Time of presentation and Hx of XRT

In general:

If early presentation (7 days or less) and no history of XRT, immediate repair is appropriate.

If the patient has been irradiated delayed repair (3-6 months post-op) is more appropriate.

If the patient presents 2-3 weeks post-op delayed repair (3-6 months post-op) is appropriate.

In this case the patient presented 2 months post-op and has no history of XRT, therefore you can proceed with surgery in the next month or 2.

One basic principle is to avoid surgery between approximately 2 weeks to 3 months to allow for inflammation and adhesions to partially resolve and thereby reduce the difficulty and potential morbidity of the procedure.



What are your operations for repair of the UVF and what is the most important factor to consider?

# What are your operations for repair of the UVF and what is the most important factor to consider?

The determinant factor is the location of the injury:

Distal injury, which is most common, will be managed with ureteroneocytostomy

More proximal site of injury can be managed with a psoas hitch, although other options might include boari flap, transureteralureterostomy (TUU), and ileal ureter. TUU has several contraindications but this is one circumstance, i.e. trauma related, where a TUU is a reasonable choice

What are the surgical approaches for a VVF and how do you decide which approach is appropriate?

# What are the surgical approaches for a VVF and how do you decide which approach is appropriate?

Transvaginal approach is less morbid, but is only appropriate when the VVF is infratrigoanal and there is no ureteral involvement.

Transabdominal approach typically required if the VVF is supratrigoanal, when there is excessive vaginal depth/length making a vaginal approach difficult, in redo cases where excessive adhesions may be encountered, or when there is a need for concomitant ureteral reconstruction.

In this case, a transabdominal VVF repair should be performed along with an omental flap and a L ureteral ureteroneocystostomy.

When are interposition flaps particularly important?

# When are interposition flaps particularly important?

Flaps are important in complex repairs, including the following circumstances:

VVF size > 2cm

Patients with a history of radiation

Patients with failed previous repair

Neobladder fistulas

What are the possible choices for an interposition flap for VVF repair?

# What are the possible choices for an interposition flap for VVF repair?

Vaginal flaps

Fibro-fatty labial flaps (Martius)

Rotational labial flap (skin & fibro-fatty)

Gluteal rotational flaps

Myo-cutaneous (gracilis)

Peritoneal flaps

Omentum or bowel interposition



## Selected Reading

Cohen BL, Gousse AE. Current Techniques for Vesicovaginal Fistula Repair: Surgical Pearls to Optimize Cure Rate. *Current Urol Reports* 2007;8:413-8.

Huang WC, Zinman LN, Bihrlle W. Surgical repair of vesicovaginal fistulas. *Urol Clin N Am* 2002;29; 709–23.

# Topic:

Female Urology/Neurourology

# Subtopics:

Vesicovaginal Fistula