

IMPROVING SURGICAL MALE CIRCUMCISION PRACTICE – URETHRAL FISTULA: DIAGNOSIS, FIRST MANAGEMENT AND PREVENTION

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Key points:

- Client safety is paramount in voluntary medical male circumcision (VMMC) and more important than achieving large numbers of procedures each day.
- There is a particular risk of urethral fistula in a younger adolescent client (10-14 years) due to a small penis which is normal in the early stages of puberty. It is easier to injure the thinner tissues where the urethra is close to the surface at the frenulum.
- To minimize risk:
 - Make sure the operative field is well-lit.
 - Do not place sutures too deep in the frenulum.
 - Never use diathermy to control bleeding in the frenulum.
 - Do not rush the procedure.
- Diagnosis of urethral fistula is made when the client complains that urine is coming out through the wound or through a hole, typically in the frenular area, and the clinic staff confirm this complaint by observation.
- If a fistula is identified, surgical repair is NOT urgent. The best results are obtained if repair is delayed until after inflammation has reduced. This will be at least three months after the circumcision procedure.

What is urethral fistula?

Urethral fistula is an abnormal hole between the urinary passage (urethra) and the surface of the skin, such that the urine stream passes either partially or entirely through that hole rather than through the normal urethral opening (meatus) at the tip of the penis. Urethral fistulae observed in VMMC programmes occur on the underside of the penis (6 o'clock position) (see Fig. 1). This is where the urethra is nearest to the skin and most vulnerable to damage during the procedure, particularly in young or immature adolescents.

Diagnosis

Diagnosis is usually easy. If the fistula is large, most or all of the urine comes out through the fistula instead of the urethral meatus at the tip of the penis. Sometimes, however, when the fistula is very small, there may only be slight dampness; such a "pinhole" fistula can be hard to see. (If the client complains of dampness, even if examination shows nothing obvious, there is probably

a fistula, and he should be referred to an expert in urethral fistula repair.) Very occasionally, urine may track around from the 6 o'clock position and appear from other parts of the wound. Examine the client, including observation of voiding if possible. Photographs and video of voiding, taken with permission, are valuable when discussing the case with the referral specialist.

First management

As soon as a clinic provider suspects a fistula, he or she should call a colleague and jointly assess the client. This **team approach** helps to:

- reduce the client's and provider's stress
- ensure that the client and his family receive consistent advice
- make good decisions
- support the logistics of referral.

Table 1 details the steps in first management of fistula. One of the steps for the VMMC site level team is to contact the designated urethral fistula referral consultant (typically a urologist) to discuss the case and arrange for the client to be seen. If the fistula is small and most of the urine flows out in the normal way, the referral expert may try a period of management with a catheter. Even if the fistula is unlikely to heal on its own, **any corrective surgery should be delayed at least three months**. Attempts at earlier surgery usually fail and make subsequent repair operations harder.

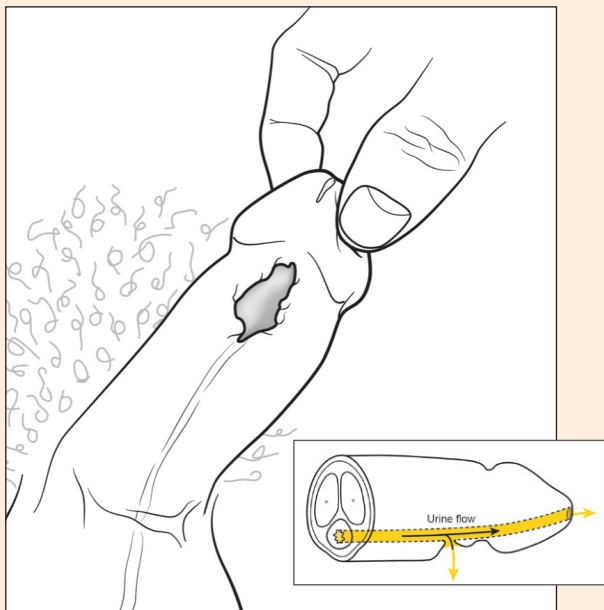
After the provider has consulted with the designated referral expert, the team needs to inform the client and his family about the clinical management plan.

Also each clinic should make arrangements to identify a qualified psychosocial provider who can provide other information and psychological support for the client and his family throughout the treatment journey.

Essential early information for the client and his family

Urethral fistula is likely to be frightening for the client, his relatives and those who have provided his care. Everyone needs to understand that there is **no need for urgent surgical treatment** and that any attempt to perform surgery urgently or do anything else urgently may make the situation worse and reduce the chance of a successful repair. Clear and consistent messaging is important to calm the client and discourage his seeking treatment from another provider other than the designated referral expert.

Fig. 1. Drawing of a large urethral fistula



Urethral fistula are almost always at the 6 o'clock frenular position.

Risk factors of urethral fistula

Young age and genitalia not yet physically developed

Between 2015 and 2019, 37 cases of post-circumcision urethral fistula were reported to WHO from among the approximately 23 million VMMC procedures conducted in 15 countries of East and Southern Africa. Nearly all of these fistulae were in younger adolescents, under the age of 15 years, and particularly those with small, immature genitalia. The development of the penis to full adult size occurs during the adolescent years of 10-19 years. When the penis is small, the risk of surgical injury is much greater because tissue layers are thinner and more delicate. There is particular risk of damage in the frenulum area because the tissues between the skin surface and the urethra are very thin. The provider should take care not to cut or place any stitches through the deep fascia.

Situations that can lead to fistula

The following situations can increase the risk of a fistula:

- Stitches placed too deeply. This can occur when:
 - suture ligation is used to stop frenular artery bleeding
 - when placing the 6 o'clock horizontal mattress suture.
- An inappropriately large needle or suture size is used, especially for a client with a small penis. This makes it more likely that the suture will be placed too deeply.
- A cut is made into deeper tissues or into the urethra. This could occur when the foreskin is cut away or when sharp instruments are used to divide adhesions.
- There is damage to delicate tissues in the frenulum from the use of rough or imprecise surgical technique. This could result if the provider uses heavy and large instruments intended for adults with a client who has a small penis.

- The use of diathermy in the frenular area increases the risk of deep burns that damage the urethra. Diathermy should never be used at the frenulum.
- Poor lighting may lead to inaccurate suture placement because the provider cannot see well what he or she is doing.
- Hurrying to complete surgery or attempting too many cases in a day increases the risk of surgical errors when cutting or handling tissue or placing sutures.
- Inadequate anaesthesia or a client who is unable to hold still can lead to a "moving target" when attempting to place stitches in an operative field that provides little room for error.

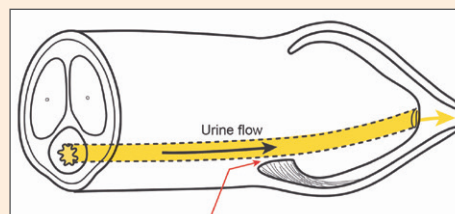
Preventing fistula

Providers and programmes can take the following actions to reduce the risk of fistulas. This is not an exhaustive list.

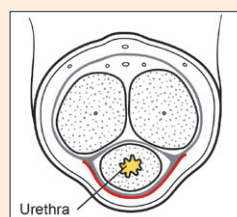
Programme/infrastructure actions

- Providers should be given special training on the causes and prevention of fistula.
- Providers should educate clients and parents to defer until boy is older
 - If performed providers should become competent in the performance of male circumcision on men over 14 years old with fully developed penis size before undertaking circumcisions on young adolescents who are in the early stages of puberty or any other client with small, immature genitalia.
- Clinics should have appropriate-size surgical instruments for clients with a small penis and, for these clients, sutures of no greater size than 4.0 on a 3/8 circle 19 mm reverse cutting needle.
- Clinic managers should ensure that the environment supports safe surgery, including adequate surgical lighting and avoidance of overburdensome scheduling.

Fig. 2. Risk area for urethral fistula during surgical male circumcision



The tissue between the base of the frenulum and the underlying urethra (red arrow) is very thin and more prone to damage than other areas.



Injury to the urethra is likely if there is damage to tissue interior to the deep fascia (red line).

Technique

Careful surgical technique, as follows, minimizes the risk of fistula (see Fig. 3):

- When undertaking dorsal slit circumcision, take particular care in the final stages of cutting away the foreskin in the frenular area (6 o'clock position) (see *Manual for male circumcision under local anaesthesia and HIV prevention services for adolescent boys and men*, Chapter 9, Fig 9.25b; citation given at the end of this brief). The path of the scissors or knife should follow a V-shape that has been previously marked so that the cut does not come close to the base of the frenulum (see Fig. 3a). Avoid excess traction as this increases the risk of cutting too close to the base of the frenulum and increases the chance of urethral injury. If the cut in the frenular area is taken close to the base of the frenulum, bleeding from the frenular artery may be more difficult to control. There is also a risk that the cut will be too deep and into the urethra.
- Take particular care when stopping bleeding in the frenular area. If it is necessary to place a suture to stop bleeding, remain calm and do not panic. Take time to accurately locate the bleeding vessel and use fine (e.g. 4.0 or 5.0) absorbable suture material for a hemostatic stitch. Take care not to catch deeper layers of tissue in the suture. Grasping the tissue to suture and then gently tenting it up and away from deeper tissues may help with proper placement of the stitch.
- Take particular care when placing the horizontal mattress suture to close the circumcision wound in the 6 o'clock position. This suture should not catch deeper layers of tissue (see Fig. 3b). Remember that the sutures at 9, 12 and 3 o'clock are vertical mattress sutures, while the 6 o'clock suture is horizontal.
- Diathermy should not be used to control bleeding in the frenular area.

What to do if your client develops fistula

Once a fistula is suspected, the primary concern should be proper clinical management, as summarized below (Table 1).

Keeping accurate records

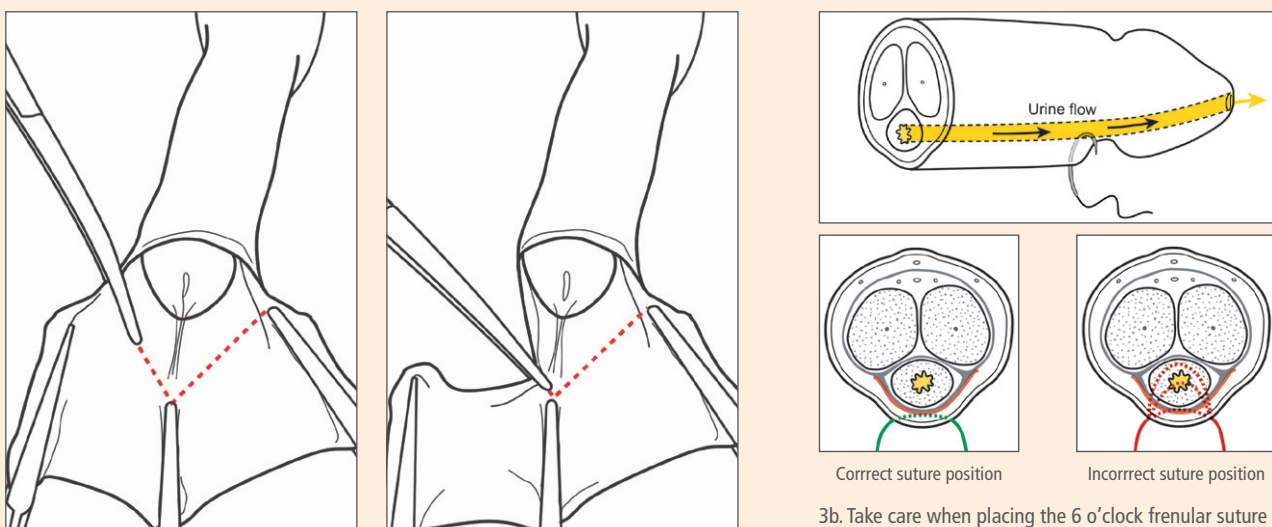
Once initial clinical care is underway, documentation and reporting should be completed. Accurate and complete documentation is helpful to better understand why problems occur and to improve instruction. Documentation should cover the following:

- the experience of the person who did the circumcision (duration of service as a VMMC provider and approximate number of VMMC procedures completed to date)
- date of procedure
- the method of circumcision used
- whether diathermy was used
- the suture material and needle size used
- note of any complications such as difficult frenular bleeding or infection
- the date that the client first noticed urine coming out the wrong way
- whether antibiotics were given, and if yes, when they were taken.

Reporting also is important. This brief is based on the information currently available, but information is needed about every future case. The following reporting should be required by providers and programme managers where VMMC for HIV prevention is included as an intervention:

- applicable ministry of health reporting
- PEPFAR notifiable adverse events (NAE) reporting form
- WHO supplemental urethral fistula investigation form with the patient's (or guardian's) consent, photographs and video of voiding.

Fig. 3. Points of technique to lessen the chance of urethral fistula formation



3a. Angulate the cut away from the base of the frenulum

3b. Take care when placing the 6 o'clock frenular suture

Table 1. Responses when a fistula is identified

✓ Do	✗ Do not
<ol style="list-style-type: none"> 1. Have colleagues help you assess the patient, make decisions and assist with the logistics of a referral. A team approach is best. 2. Take history, examine client including observation of voiding if possible; with permission, take photographs and video of voiding to share with the designated referral provider. 3. Assess for other adverse effects, such as wound infections, and treat per national guidance as indicated. 4. Contact the designated urethral fistula referral specialist within 24 hours. It is ideal for the client to be referred directly from the VMMC clinic to the referral specialist without being required to see other interim providers. However, if national guidelines require a series of escalated referrals, <i>the patient should continue up the referral chain, without intervention, until he reaches a surgical specialist capable of urethral reconstruction.</i> 5. Instruct the patient to gently wash the area with soap and clean water and then dry and cover with clean gauze changed as needed. Provide the patient with the necessary supplies to do this. 6. Communicate clearly and consistently with the patient and his family about the diagnosis and next steps in management. Emphasize that this is not an emergency, that best results are achieved by waiting for a few months before intervening, and that the referral physician will provide details on treatment and prognosis. 7. Contact a designated client/family support person. 8. Assist with the details and logistics of getting the client to his appointments with the specialist. 9. Keep in contact with the client until the fistula is resolved (which could take many months to more than a year). 	<ul style="list-style-type: none"> • panic • ignore • debride tissue or place any sutures • place a catheter (unless directed by the referral urologist)

How should the clinic prepare for urethral fistula and other rare events?

Adverse events such as urethral fistulas, glans injuries and keloids are rare and may never be seen in a particular clinic. Nonetheless, **every clinic where male circumcisions are performed should have regular briefing sessions** with clinic staff to discuss both common and rare adverse events, and what can be done to prevent these events. When a severe adverse event occurs, the case should be used for learning and preventing recurrence. Periodic review of this briefing note will remind all staff members of the principles of patient safety and adverse event prevention and ensure that any new team members have received this information.

A management plan should be discussed. Before a fistula, or any serious post-VMMC adverse event, is ever diagnosed, a designated referral specialist needs to be identified who is capable of surgically managing these issues (typically a urologist). Also, clinics should identify a designated person who can provide psychological support to the client and his family throughout the treatment journey. Referral providers' names and contact information, frequently validated, should be readily available at every VMMC site. The referral specialist who will deal with fistula may not be

the same specialist who deals with emergency problems such as uncontrolled bleeding or severe infection. This is why it is important for clinics to identify, in advance, referral pathways for specific problems.

REFERENCES

Manual for male circumcision under local anaesthesia and HIV prevention services for adolescent boys and men. Geneva: World Health Organization and Jhpiego, 2018 (<http://www.who.int/hiv/pub/malecircumcision/male-circumcision-guide-2018/en/>). See Chapter 8 for correct surgical and diathermy technique and Chapter 9 for step-by-step guide to correct surgical procedure.

Project IQ presentation: Prevention and Management of Fistulae after Male Circumcision: Emerging Lessons from the VMMC program (Hargreave) <https://project-iq-resources.jhpiego.org/resource/project-iq-webinar-emerging-issues-vmmc-safety/>

Adverse Event Action Guide for VMMC by Surgery or Device, 2018. <https://www.malecircumcision.org/resource-bundle/adverse-event-action-guide-vmmc-surgery-or-device>

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For more information, contact:

World Health Organization
Department of HIV/AIDS
20, Avenue Appia
1211 Geneva 27
Switzerland
E-mail: hiv-aids@who.int
www.who.int/hiv

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TECHNICAL BRIEF

MALE CIRCUMCISION FOR HIV PREVENTION