Rectovaginal Fistula:- Presence of duct communicate between the rectum and  
vagina.  
This is seen in female, rarely in males , a rectourethral fistula may be present.  
Clinical signs:-  
1. Feces may be passed from the vagina.  
2. In those rare cases of rectourethral fistula in the male, feces stained urine  
will be passed.  
Surgical treatment:-After making a perineal midline incision, the communicating tract between  
rectum and vagina is identified by dissection. The two structures are then  
separated, and the roof of the vagina is closed in a linear fashion.  
Rectal prolapse:-This refers to eversion of the caudal portion of the rectum through the anus, it  
most commonly occurs in young ages.  
Causes of rectal prolapse:-1. Heavily parasitized animals, parasites irritating the intestine which cause  
diarrhea, tenesmus, and subsequent prolapse.  
Dr. Montaser Helal Surgery 5th stage  
2. Rectal prolapse may accompany intestinal foreign bodies or Neoplasia.  
3. Rectal prolapse may occur during or following parturition or as a  
complication of prostatic disease.  
4. Congenital weakness of the perineum.  
Clinical sings:-1. A cylindrical mass of varying length protrudes from the anus.  
2. The exposed rectal mucosa may be ulcerated or necrotic if the prolapse  
has been present for some time.  
3. The protruding mass often seems to be insensitive, and its manipulation  
causes no discomfort.  
4. True rectal prolapse can be differentiated from an intussusception of small  
intestine, colon or cranial portion of rectum that has passed through the anus by  
gently inserting a probe between the prolapsed anus and anal sphincter. The  
probe can be passed if an intussusception has occurred, but not if a prolapse is  
present  
Treatment:-1. The initiating lesion must be corrected to provide permanent relief.  
2. When the prolapse is small, the tissues may be replaced following  
application of 5% alum or a saturated solution of sugar.  
3. A purse-string suture around the anus may be sufficient to prevent  
recurrence. The suture must be loosened periodically for defecation.  
4. If the operation is performed under epidural anesthesia, straining  
following reduction of the prolapse will be avoided for several hours.  
5. The periodic application of a local anesthetic ointment further reduces the  
stimulus to strain

Pneumovagina

**Synonym(s):**vagina air-sucking poor vulva conformation

**Introduction**

* Vulva lips cease to act as a seal, therefore air +/- feces becomes aspirated into the vagina, resulting in the dilation of the vagina, and possibly uterus, with concomitant bacterial contamination.
* **Causes:** aging, vulva conformation, weight, trauma (especially multiple calvings +/- injuries).
* **Signs:** see below.
* **Diagnosis:** predisposing external conformation of vulva, anus and perineum, vaginal and/or rectal palpation, vaginoscopy, cytology, bacteriology.
* **Treatment:**
  + None may be necessary in mild cases.
  + Subfertility affects may be subverted by artificial insemination.
  + Dependent upon economics and cause of condition, surgery may be considered - vulvoplasty / Caslick's operation [Caslick's operation](https://www.vetlexicon.com/bovis/respiratory/articles/caslick-operation/).
  + Address predisposing factors, such as body condition.
* **Prognosis:** depends on cause and predisposing factors.
  + Mild cases carry a good prognosis for future breeding success.
  + Severe cases are unlikely to breed successfully.

**Cost considerations**

* Decreased fertility.
* May require repeated surgery each pregnancy.
* Conformational predisposition influences breeding replacement animals from those affected.

**Pathogenesis**

**Etiology**

* Poor vulvar conformation.
* Trauma.

**Predisposing factors**

**General**

* Advancing age.
* Poor body condition.
* Multiparity.
* Trauma to vulva, vestibule or perineal body during calving, and to a lesser extent mating .
* External trauma to vulvar labia.
* Poor tail-head, perineal fossa conformation.

**Pathophysiology**

* Vulvar lips cease to act as a seal   →   air, bacteria and other contaminated material (feces) enters   →   vaginitis   →   Endometritis  →   infertility.
* Poor vulvar conformation, eg vulva high in relation to pelvic brim and/or cranially sloping vulva, combined with other predisposing factors, especially age and multiparity   →   vulval lips cease to act as a seal   →   air aspirated into vagina and/or fecal contamination of vagina   →   vaginitis    →   ascending infection   →   endometritis →   subfertility or infertility.
* Some cases develop urinary tract infection (rare).
* Urovagina may develop in some cases, particularly when vulvar lips sutured ventrally so low as to obstruct exit of urine.
* Cows in poor Body condition [Body condition](https://www.vetlexicon.com/bovis/husbandry-&-welfare/articles/body-condition-scoring/)  →   thin-lipped, toneless muscled vulva, absence of pelvic fat pads allows dorsal vaginal commissure to slope cranially.
* Vulvar defects often more apparent during estrus.
* Repeated trauma during calving, eg repeated stretching or laceration of vulva, vestibule or perineal body, Episiotomy [Episiotomy](https://www.vetlexicon.com/bovis/respiratory/articles/episiotomy/)  →   disrupt vulvar barrier by damaging underlying musculature.
* Older multiparous cattle   →   abdominal enlargement and stretching of mesometrium   →   splanchnoptosis   →   anus pulled cranially   →   distortion of perineum   →   vulva becomes stretched and tilted dorsocranially.
* Thin cattle, particularly heifers, may have vulval lips drawn forwards and decreased substance to labia and weak musculature.

**Timecourse**

* Chronic; conformational defect usually excabated by age.
* Traumatic cause - acute.
* Synonym(s): vagina air-sucking poor vulva conformation
* Introduction
* Vulva lips cease to act as a seal, therefore air +/- feces becomes aspirated into the vagina, resulting in the dilation of the vagina, and possibly uterus, with concomitant bacterial contamination.
* Causes: aging, vulva conformation, weight, trauma (especially multiple calvings +/- injuries).
* Signs: see below.
* Diagnosis: predisposing external conformation of vulva, anus and perineum, vaginal and/or rectal palpation, vaginoscopy, cytology, bacteriology.
* Treatment:
* None may be necessary in mild cases.
* Subfertility affects may be subverted by artificial insemination.
* Dependent upon economics and cause of condition, surgery may be considered - vulvoplasty / Caslick's operation Caslick's operation.
* Address predisposing factors, such as body condition.
* Prognosis: depends on cause and predisposing factors.
* Mild cases carry a good prognosis for future breeding success.
* Severe cases are unlikely to breed successfully.
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* Decreased fertility.
* May require repeated surgery each pregnancy.
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* Pathogenesis
* Etiology
* Poor vulvar conformation.
* Trauma.
* Predisposing factors
* General
* Advancing age.
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* Vulvar lips cease to act as a seal → air, bacteria and other contaminated material (feces) enters → vaginitis → Endometritis → infertility.
* Poor vulvar conformation, eg vulva high in relation to pelvic brim and/or cranially sloping vulva, combined with other predisposing factors, especially age and multiparity → vulval lips cease to act as a seal → air aspirated into vagina and/or fecal contamination of vagina → vaginitis → ascending infection → endometritis → subfertility or infertility.
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* Timecourse
* Chronic; conformational defect usually excabated by age.
* Traumatic cause - acute.

# Pneumovagina - Horses

[Pneumovagina - Horses](https://en.wikivet.net/Pneumovagina_-_Horses)

[Jump to navigation](https://en.wikivet.net/Pneumovagina_-_Horses#mw-head)[Jump to search](https://en.wikivet.net/Pneumovagina_-_Horses#searchInput)

Also Known As: ***Wind-sucking — Windsuckers***

***Sequelae***: **Placentitis — Endometritis — Vaginitis — Abortion**



## Contents

* [1Introduction](https://en.wikivet.net/Pneumovagina_-_Horses#Introduction)
* [2Signalment](https://en.wikivet.net/Pneumovagina_-_Horses#Signalment)
* [3Pathogenesis](https://en.wikivet.net/Pneumovagina_-_Horses#Pathogenesis)
* [4Clinical Signs](https://en.wikivet.net/Pneumovagina_-_Horses#Clinical_Signs)
* [5Diagnosis](https://en.wikivet.net/Pneumovagina_-_Horses#Diagnosis)
* [6Treatment](https://en.wikivet.net/Pneumovagina_-_Horses#Treatment)
* [7Control](https://en.wikivet.net/Pneumovagina_-_Horses#Control)
* [8References](https://en.wikivet.net/Pneumovagina_-_Horses#References)
* [9Webinars](https://en.wikivet.net/Pneumovagina_-_Horses#Webinars)

## Introduction

Pneumovagina is usually a result of **poor vulvar conformation** in mares. It can be a significant contributor to **ascending infection** which can prevent **establishment and survival of pregnancies.**

## Signalment

A **vulval angle of 80⁰ to the horizontal is ideal, with 80% above the pelvic brim**. Those with **angles below 50⁰ are likely to lead to clinical windsucking** and associated complications.[[1]](https://en.wikivet.net/Pneumovagina_-_Horses#cite_note-Samper-1)

All breeds of horse can be affected but those with **poor perineal muscling** are at greater risk. The same applies to horses in poor body condition. Conformation often **deteriorates with age**.

**Multiparous mares** are more likely to suffer from the condition due to the stretching and trauma/scar related changes to the tissues.

A small proportion of horses affected are due to **traumatic injury, most commonly caused by parturition**, due to positioning or posture of the foal at delivery.

## Pathogenesis

When the **vulvar commissure is below the pelvic brim**, often due to poor body condition and lack of fat\muscle around the hindquarters, the vulval lips often **slope anteriorly and/or lie partially open with a poor seal** and thus air enters. The **negative pressure within the reproductive tract** then aids movement of the air into the [vestibule, vagina](https://en.wikivet.net/Vagina_and_Vestibule_-_Anatomy_%26_Physiology) and eventually [cervix](https://en.wikivet.net/Cervix_-_Anatomy_%26_Physiology) and [uterus](https://en.wikivet.net/Uterus_-_Anatomy_%26_Physiology). This often makes a **wind-sucking sound**. A different, **expulsory sound is often generated during movement**, as the air is expelled under force.

**Faeces can also enter and contaminate** a vulva that is sloped anteriorly in a similar way. This is an important source of infection which can then ascend the tract all the way to the uterus where it may prevent or terminate a pregnancy.

## Clinical Signs

Chronic pneumovagina causes **vaginal flatus, erythema of the vaginal mucosa** and air within the tract which is palpable on rectal examination and visible upon ultrasound examination.

Ascending infection if left unchecked can lead to **placentitis which is an important cause of abortion in the horse**. Commonly implicated organisms include [*Streptococcus zooepidemicus*](https://en.wikivet.net/Streptococcus_zooepidemicus)*,*[*Escherichia coli*](https://en.wikivet.net/Escherichia_coli)*, [Klebsiella](https://en.wikivet.net/Klebsiella" \o "Klebsiella) pneumoniae,*[*Pseudomonas aeruginosa*](https://en.wikivet.net/Pseudomonas_aeruginosa)*,*[*Staphylococcus aureus*](https://en.wikivet.net/Staphylococcus_aureus)*, [Rhodococcus equi](https://en.wikivet.net/Rhodococcus_equi" \o "Rhodococcus equi)* , and *[Actinobacillus equuli](https://en.wikivet.net/Actinobacillus_equuli" \o "Actinobacillus equuli).*

Abortion may be the first sign in a mare that has not been previously examined or had a history of reproductive problems.

## Diagnosis

**Clinical signs** are sufficient to diagnose pneumovagina.

Vulva can be physically assessed in terms of **position, slope and seal quality**, which aids in determination of risk. The **Caslick index** can be calculated by **multiplying length of the vulva by angle of declination** and values **below 100 are favourable** and those more than 150 are classed as high risk for pneumovagina and infection[[1]](https://en.wikivet.net/Pneumovagina_-_Horses#cite_note-Samper-1). Procedures can then be instigated to lower the risk to a developing pregnancy as discussed below in treatment.

**Examination of aborted foetuses** will confirm presence of placentitis.

Many affected mares will have a history of subfertility, infertility or failed pregnancies.

## Treatment

There is little point or justification for treatment of uterine/vaginal infection and inflammation if the vulvar conformation is not corrected as recurrence is otherwise inevitable.

**Caslick’s operation or vulvoplasty** are often the first line of treatment, **closing the vulvar commissure partially** to prevent contamination and air entry. The procedure is **performed as soon as ovulation and breeding have been confirmed and sutures must be removed 5-10 days prior to parturition**.

**Pouret’s operation** is a more **invasive** procedure which separates the reproductive tract from the caudal gastrointestinal tract and is usually reserved for **very severe cases or where the Caslick’s has been unsuccessful**.

Intrauterine or systemic antibiotics and anti-inflammatory therapy are also usually indicated for any existing infection/inflammation and post-operative care.

## Control

Mares with poor vulvar conformation **should not be bred from** as there is a hereditary component to abnormalities.

The **operations** listed above can be **used prophylactically** in mares that have a history of infections/abortions/infertilit

**Preparation of Teaser Bulls**

Historically, a key to a successful artificial insemination (AI) program has been accurate detection of estrus. Even with the utilization of currently available estrus synchronization programs and timed AI, estrus detection is important as a tool to evaluate the efficacy of the protocol, to troubleshoot problems in real time, and identify outliers that can be bred outside the prescribed “AI window.”

Several estrus detection methods exist, including tailhead paint, mount detectors, self-adhesive heat detection patches, and visual observation. All these methods depend on female cattle standing for mounting during estrus. Thus these methods might miss females with weak or short estrus behavior.1 By far the most efficient estrus detector is the bull, with the caveat that there is the benefit of male presence.2 Therefore, utilization of a teaser bull (intact sterilized male) is the most reliable method of estrus detection in the utilization of an AI program.

Several factors need to be considered when choosing a teaser bull procedure and each producer will have different needs and expectations. Besides the obvious need to render the bull sterile, other considerations would include herd status (open or closed herd). If an open herd, then venereal disease transmission is an important factor to consider and prevention of intromission during mounting will be an important factor when choosing a teaser bull surgical procedure. Additionally, expected longevity needs to be discussed with the producer. On average, teaser bulls will last 1–3 years within a herd.1 Decreased libido is the most common reason for culling, with excessive size and aggression being the next most common culling reasons.3 To summarize, the main goals of surgical preparation of teaser bulls are to render him sterile, prevent intromission and therefore the transmission of venereal disease, and avoid excessive libido reduction.4,5

Proper bull selection is also an important aspect of teaser bull preparation. The ideal bull needs to be moderately sized, of mild temperament, and easily handled. This bull also needs to be free of transmissible diseases. Of course, the bull also needs strong libido, but this can be difficult to assess in yearling bulls.4 Teaser bull surgery needs to be performed well before the breeding season to allot time for healing and recovery from surgery. Ideally, the procedure should be performed on bulls less than 272 kg, primarily for ease of handling and decreased hemorrhage during surgery.4

Teaser bull procedures can be divided into two categories: those that block semen flow and deliver sterility (vasectomy, epididymectomy) and those that prevent penile penetration (penile–prepuce translocation, penopexy, preputial pouch). Depending on the needs and expectations of the producer, any one or combination of these procedures can be used for preparation of a teaser bull.

**Vasectomy**

As previously mentioned, vasectomy will render a bull sterile but does not prevent normal mating and copulation behavior. This procedure can be performed with the bull in standing restraint, recumbency, or a tilt chute if available. The typical surgical approach is an anterior approach on the neck of the scrotum. However, if standing restraint is chosen, then the approach would be the posterior aspect of the neck of the scrotum.

The neck of the scrotum should be clipped and aseptically prepared for surgery. Lidocaine 2% should be infused over the proposed incision site over each spermatic cord. A 3-cm incision should be made through the skin and tunica dartos over each spermatic cord. Then the spermatic cord is isolated by placing a hemostat underneath the entire spermatic cord. The ductus deferens is then identified via palpation. The ductus deferens is a firm structure that runs medially along the spermatic cord and is approximately 2–3 mm in diameter. Once identified, the tunica vaginalis is carefully incised, utilizing extreme caution so as not to damage the cremaster muscle or pampiniform plexus resulting in excessive hemorrhage. After the tunica vaginalis is incised, the ductus deferens is isolated with another hemostat .

Two ligatures are placed approximately 3–5 mm apart using #0 absorbable suture.4,5 The ductus deferens is removed between the two ligatures. The skin is closed with a cruciate pattern using nonabsorbable suture. Antibiotics can be administered to prevent any postoperative infection, especially if surgical contamination has occurred. It is recommended to wait 30 days prior to using the bull as a teaser animal, since sperm can be present in the reproductive tract up to 30 days postoperatively.4,5 Additionally, it is recommended to perform yearly evaluations of the teaser animal’s ejaculate to ensure sterility of the animal.

**Epididymectomy**

An epididymectomy is similar to a vasectomy with regard to restraint options and copulation behavior.6 For this procedure, the base of the scrotum is clipped and aseptically prepared. Lidocaine 2% is infused over the tail of the epididymis. Once prepared, the surgeon grasps the neck of the scrotum and pushes the testicle ventrally. A 3-cm incision is made over the tail of the epididymis through the skin and common vaginal tunic until the epididymis is exteriorized. The tail of the epididymis is carefully dissected from the testicle and towel clamps or Allis tissue forceps can be used to assist in handling and manipulation of the epididymis. Then a hemostat is placed on the ductus deferens and the body of the epididymis. Ligatures with #0 absorbable suture are placed proximal to the hemostats. The tail of the epididymis is removed by transection distal to the hemostats .

[**Figure 20.2**](https://veteriankey.com/preparation-of-teaser-bulls/#R_c20-fig-0002)Procedure for epididymectomy. Illustration by Mal Hoover.

The common vaginal tunic is closed using #0 absorbable suture. The skin can be closed with nonabsorbable cruciate sutures or the incisions can be left open to allow ventral drainage. Antibiotics can be administered to prevent postoperative infections. Postoperative resting recommendations and yearly ejaculate examinations are the same as previously stated for vasectomy aftercare.

**Penile–prepuce translocation**

Penile–prepuce translocation (“sidewinder”) is the surgical transposition of the penis and prepuce from ventral midline to the right or left flank of a bull. This procedure allows normal protrusion and erection, but does not permit intromission. In general, “sidewinders” are preferred by producers due to longevity and herd retention of the teaser animal. Bulls with a penile–prepuce translocation maintain better and longer libido since this procedure allows normal protrusion and does not cause pain during erection. Some bulls are able to compensate and learn how to breed females despite the translocation of the penis and prepuce. Therefore it is recommended that a vasectomy or epididymectomy is performed to ensure sterility of the bull.

Penile–prepuce translocation is performed in lateral recumbency, so general anesthesia is the preferred method of restraint. If general anesthesia is not possible, then heavy sedation with rope restraints and local infiltration of 2% lidocaine can be used. Ideally, food should be withheld for 24 hours and water for 12 hours prior to performing the procedure.

Prior to placing the bull in recumbency, the translocation site for the preputial orifice should be identified. The translocation site should

Teaser animals

Teaser animals are useful to improve herd reproduction (see the ram effect). Having males with testosterone around improves cycling, fertility and heat detection. Teaser animals should be amenable to handling, not so large that they injure the females, and must be interested in their jobs.

Malone ppt review- youtube

In bulls, we typically recommend two procedures.

Prevent pregnancy

Teaser animals are not destined to sire offspring

If offspring are needed, no need to create a teaser animal

Prevent intromission

This is to minimize disease transmission

Pregnancy prevention

We have two main options. For both, the goal is removal of a portion of the sperm pathway. Both affect the same path, just different parts.

Vasectomy

Vasectomy can be more challenging. Depending upon the age of the animal, the vas can be very thin, hard to find and can resemble the nerve. Transecting the nerve does not prevent pregnancy. However, vasectomy may be easier than epididymectomy if the procedure is performed laparoscopically (camelids) or in adult sheep (due to the restraint position of cradling them on their hindquarters). A centimeter or longer chunk of the vas deferens should be removed to minimize the risk of recanalization.

Epididymectomy

Epididymectomy is typically easier once the surgeon has performed the first one. The epididymis is hard to miss. The only challenge to the surgery is figuring out where to ligate since there isn’t a discrete structure. However, due to the larger tissue volume being removed, hemorrhage is more likely. If uncontrolled, hemorrhage can lead to healing complications. Most of the tail of the epididymis should be removed. Recanalization is possible but not common.

Prevent intromission

Particularly in open herds (herds with new animals coming in), teaser animals should not actually breed the females as this can increase the risk of venereal disease transmission. In order to prevent this, several options exist with varying success rates and healing times.

Penile translocation – aka Sidewinders

The preputial opening is moved to the flank of the bull. The penis is left untouched. When the bull gets an erection, the penis is extruded out his flank and he usually misses the target. Since there is no pain involved, most of these bulls maintain their libido.

This procedure requires general anesthesia. It is typically performed in hospitals rather than in the field.

Healing time is 2 months (plan ahead).

Preputial pouch

The preputial opening is sutured closed and another opening created ventrally for urine flow. The penis is left untouched. As long as the urine hole is small enough, the penis cannot be extruded. Since there is no pain involved, most of these bulls maintain their libido.

This procedure requires general anesthesia; however, it is simpler to perform than the penile translocation.

Urine collects in the sheath requiring periodic flushing (higher maintenance).

Healing time is 2 months (plan ahead)

Penectomy

The penis is shortened to prevent intromission.

Hemorrhage is a risk with this procedure. Careful closure of the corpus cavernosum is required.

Bulls do not maintain their libido due to apparent discomfort.

Healing time is 2 months.

Artificial thrombus model

Methylmethacrylate (mixture of powder and liquid which cures into a solid form) is injected into the corpus cavernosum to prevent erection due to blockage of blood flow.

The procedure can be performed in the standing animal and is relatively straight forward

If the urethra is injected instead of the corpus cavernosum, the resultant urinary obstruction can be fatal.

Healing time is 2 weeks.

Penis tie-down

Adhesions are created between the penis and the internal sheath, preventing exteriorization of the penis.

The procedure is relatively quick and straight forward

Adhesions may break down if the bull gets an erection prior to strong scar tissue formation

Healing time is 2 months.

Iatrogenic preputial stenosis

The internal prepuce is wrapped with a K wire (Kirschner wire) to prevent exteriorization of the penis while still permitting urine flow

Creating the appropriate diameter to keep the penis in place is a bit of an art

The procedure is quick and straight forward

Urethrostomy

**Urethrostomy** is a surgical procedure that creates a permanent opening in the [urethra](https://en.wikipedia.org/wiki/Urethra), commonly to remove obstructions to urine flow. The procedure is most often performed in male cats, where the opening is made in the [perineum](https://en.wikipedia.org/wiki/Perineum).[[1]](https://en.wikipedia.org/wiki/Urethrostomy#cite_note-1)

**History**

For many years perineal urethrostomy has been used in cattle, sheep and goats, especially young males that have been [castrated](https://en.wikipedia.org/wiki/Castration) at a young age, for obstruction by [uroliths](https://en.wikipedia.org/wiki/Urolith" \o "Urolith). However, the anatomy of the male cat is quite different and the urethra is very small in diameter.

Perineal urethrostomy in the male cat was developed in 1962 and published in the [*Journal of the American Veterinary Medical Association*](https://en.wikipedia.org/wiki/Journal_of_the_American_Veterinary_Medical_Association) in 1963.[[2]](https://en.wikipedia.org/wiki/Urethrostomy#cite_note-2) It was modified in 1967,[[3]](https://en.wikipedia.org/wiki/Urethrostomy#cite_note-3) and further modified in 1971.[[4]](https://en.wikipedia.org/wiki/Urethrostomy#cite_note-4)

**Pre-surgical considerations**

Since animals are potentially suffering from severe metabolic derangements at the time of initial presentation, animals need to be stabilized prior to surgery. Common physiologic derangements noted on bloodwork are elevated kidneys values (azotemia) and elevated potassium levels (hyperkalemia). The presence of profound sedation, low body temperature, and/or a slow heart rate (bradycardia) are usually associated with more severe blood derangements.

Ideally, the urethral obstruction is removed or temporarily bypassed with urethral flushing (urohydropulsion) and the placement of an in-dwelling urinary catheter prior to surgery. This catheter allows urine to be removed from the body, and, along with fluid therapy, help normalize blood derangements to resolve prior to [anesthesia](https://en.wikipedia.org/wiki/Anesthesia). There are many types of catheters commonly used, including common red rubber catheters, stiff Tomcat catheters, soft and flexible Cook catheters or semi-rigid "Slippery Sam" catheters.

Sedation is usually required for urohydropulsion and the placement of a urinary catheter due to the associated pain with the procedure. A combination of injectable [ketamine](https://en.wikipedia.org/wiki/Ketamine) and [diazepam](https://en.wikipedia.org/wiki/Diazepam) is a safer option for sedation considering its reduced cardiopulmary depression effects compared to other anesthetics. A combination of [etomidate](https://en.wikipedia.org/wiki/Etomidate" \o "Etomidate) and diazepam would be an even safer anesthetic consideration, but etomidate is not commonly carried by general veterinary practitioners due to its cost.

Fluid therapy is equally essential for correcting derangements. Commonly, a fluid low in potassium, such as 0.9% NaCl, is selected. If 0.9% NaCl is not available, any other crystalloid fluid is realistic even if it contains some level of potassium. Insulin is sometimes used intravenously to temporarily reduce high potassium levels. [Calcium gluconate](https://en.wikipedia.org/wiki/Calcium_gluconate) can also be used to protect the myocardium (heart muscle) from the negative effects of hyperkalemia.

Rarely, an urethral obstruction cannot not be removed on initial presentation and emergency surgery must be performed immediately to return urethral patency and save the animal's life. These animals are at a much higher risk under anesthesia.

**Surgical technique**

The cat can be placed in either dorsal or ventral recumbency. An elliptical incision is made around the base of the [cat's penis](https://en.wikipedia.org/wiki/Cat%27s_penis) and scrotum. If the cat has not been neutered previously, it must be neutered before the perineal urethrostomy can be performed. A combination of sharp and blunt dissection is started ventrally (the underside of the penis) to expose the penis' muscular and soft tissue attachments to the pelvis. After removing these soft tissue attachments to the pelvis, dissection is continued dorsally (on top of the penis) to remove the [dorsal retractor penile muscle](https://en.wikipedia.org/w/index.php?title=Dorsal_retractor_penile_muscle&action=edit&redlink=1) and other soft tissue covering the site of the required urethral incision.

All of these dissection steps are necessary to free the penis from the pelvis, allowing the veterinarian to move the significantly wider pelvic urethra caudally (or rearward) so it can be attached to the skin.

After the penile body is freed, a dorsal incision is started at the tip of the penis using either a small scalpel blade or fine ophthalmic scissors. This incision is extended to a level at or above the bulbourethral glands. At this level, the urethra is considered wide enough to create an adequate [stoma](https://en.wikipedia.org/wiki/Stoma_(medicine)), or urethral opening. The urethra is sutured to the skin for approximately 2 cm using a fine suture on a taper needle (i.e. 4-0 PDS). The remainder of the penis is amputated and any remaining skin defect is closed.

As the surgery site heals, the urethral mucosa and skin will heal together creating a permanent stoma. This stoma (opening) is much larger than the original penile urethra making it unlikely for the animal to obstruct in the future.

A urinary catheter may be placed following surgery for the initial 12–24 hours of recovery. This catheter should not be left in longer than this though, as it will increase the likelihood of stricture formation at the surgery site. Animals should wear an e-collar until sutures are removed in 10–14 days.

**Post-operative complications**

Initial post-operative complications include wound infection and excessive pain or bleeding. These can be controlled commonly with appropriate prescription medications or ice packs if the animal will tolerate them. A more concerning, though not common, complication is stricture, or narrowing, of the surgery site. The formation of a stricture will require additional procedures to either try and salvage the initial surgery site or create a new urethral opening (or stoma) under the floor of the pelvis (subpelvic urethrostomy) or immediately in front of the pubic bone (prepubic urethrostomy).

The most common long term complication associated with this surgery is an increased incidence of [urinary tract infections](https://en.wikipedia.org/wiki/Urinary_tract_infection).