

## 4. Complications of Fistula Surgery

As with any type of surgery, there are several complications to consider intraoperatively during the different stages of fistula surgery, as well as during the immediate and late postoperative periods. Outlined below is an overview of the key complications, divided into intraoperative, immediate postoperative and late postoperative periods, listed in alphabetical order.

### 4.1. Intraoperative Complications

**Anaesthetic complications:** Hypotension is usually transient and can be corrected with intravenous fluids or vasopressors. Rarely, the patient will develop an ascending spinal block. If the patient does have a respiratory arrest, ventilation is needed until breathing starts.

**Bleeding:** Haemorrhage is a potential risk in any operation but can be minimised by infiltrating the operative site with a mixture of adrenaline and lignocaine before the operation starts. If available, tranexamic acid can also be used. It is important to pay attention to any arterial bleeding points by tying them off. When operating in the vagina, a figure-of-8 suture is the most secure, and firm packing of the vagina is sometimes needed to reduce bleeding. The pack is usually made of gauze and soaked in iodine or petroleum jelly and, in some instances, adrenaline. It should not stick and should be firm enough to reduce bleeding, but not too firm to cause pain or tissue damage.

**Contamination by bowel contents:** This is reasonably common and can be prevented with adequate bowel preparation. Most surgeons prefer to keep patients nil by mouth from midnight the night before the operation. There are varying options for bowel preparation for rectovaginal fistulas and perineal tears.<sup>94</sup> Most commonly, the patient is kept on a fluid only diet the day before the operation, with water enemas the morning and night of the day before surgery. Despite this preparation, there may still be faecal contamination. It is sometimes necessary to stop the operation and perform an enema to clean the bowel. If this is the case, the operative field must be thoroughly irrigated and washed with antiseptic solution. In some cases, the surgery may need to be postponed to ensure suitable preparation of the bowel.

**Iatrogenic injury:** As it is quite easy to injure the adjacent organs, surgeons should always be aware of their operative location, in particular relating to the ureters, bowel and bladder. Accidental injury may occur to the ureter and bladder during dissection. It is extremely important to recognise when an injury occurs and to repair it promptly during the procedure, where possible.

### 4.2. Immediate Postoperative Complications

**Anaesthetic complications:** Spinal headaches are common and can be treated by lying the patient flat, administering analgesia, an epidural blood patch and caffeine – many patients feel better after drinking a cup of tea. Rarely, with spinal anaesthesia, the patient can sustain nerve damage to her lower limbs. If this occurs it is important to identify the cause, e.g. haematoma, abscess of the spinal

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<sup>94</sup> M. Breen. *Manual of Obstetric Fistula Surgery*. Carlisle: The Foundation for the Global Library of Women's Medicine (2019).

canal or direct injury to the spinal cord, in which case the patient should be rapidly referred to a neurosurgical specialist, if available.

**Anuria:** To prevent anuria, ensure the ureters are identified at the time of the operation. Ligation or inclusion of the ureter in the suture line may lead to ureteric obstruction. If the ureteric orifices are less than 2 cm from the fistula margin, they should be catheterised with ureteric catheters during the operation to reduce the risk of injury. If no urine is draining via the Foley catheter and the ureters were not catheterised (and the patient is not shocked), administer furosemide and increase intravenous fluids. If there is still no sign of urine, the patient should be rapidly returned to theatre for the surgeon to undo the repair, after which, urine should start leaking again and the patient can be considered out of danger. A decision should then be taken either not to continue with the operation at that time, in which case the patient can be sent back to the ward, or to continue the operation after catheterising the ureters.

It is most important to check that the patient is not in shock. This should be the first potential cause of anuria to exclude when a patient is reviewed and, if present, should be corrected urgently through conventional measures.

The patient should also be given adequate fluids intra- and postoperatively to ensure adequate urine output. It is critical to check that the catheters are not blocked. This is less important for the ureteric catheters, as the urine often passes around them along the ureter, but it is very important to make sure that the Foley catheter is not blocked. This not only causes great discomfort from a full bladder, but the pressure can break the fistula repair.

**Blocked bladder catheter:** This is an emergency as the bladder can fill quickly, over-distend and, as a result, burst the fistula repair. Regularly check that the urethral catheter is draining well, that the tubing is not kinked and that the urine bag/collection bucket is below the level of the bladder so that the catheter can drain correctly. If any signs of blockage occur, irrigate the catheter immediately with 10–20 mL of sterile fluid to flush out any blockage. Great care should be taken not to over-distend the bladder while doing this. Alternatively, replace the catheter immediately.

**Deep vein thrombosis and pulmonary embolism:** These are rare conditions but need preventive strategies like good hydration, physiotherapy whilst in bed and early postoperative mobilisation. If the patient is at high risk then consider anticoagulants and compression stockings if they are available.

**Haematuria:** This is perhaps the most common complication and can be prevented by meticulously closing the detrusor muscle, leaving no exposed bleeding points from the muscle opening into the bladder. If haematuria occurs it can be treated with good irrigation of the bladder and a high oral fluid intake, intravenously if needed. Flush the catheter with a syringe of saline (see **Blocked bladder catheter** above) and draw back to retrieve any clots. Tranexamic acid can help reduce bleeding.

**Haematoma:** Haematomas can occur anywhere in the operative site and can be prevented by meticulous haemostasis during the operation. Despite this they can still occur. Most haematomas are self-limiting and will resolve in time. If they are large, and certainly if they are getting larger, then haematoma need draining and any active bleeding points ligated or coagulated.

**Haemorrhage:** To prevent haemorrhage, pay meticulous care to haemostasis during the operation.

- If haemorrhage is mild and the patient is haemodynamically stable, she should be observed closely.
- If haemorrhage is moderate and the patient is haemodynamically stable, examine the source of bleeding under good lighting.
- If general oozing of blood from the vagina occurs, pack the vagina with/without adrenaline on the pack.
- If there is active bleeding, take the patient back to theatre rapidly to investigate and address the source of bleeding.
- If bleeding is heavy and the patient is or is not haemodynamically stable, begin resuscitative measures and take the patient back to theatre immediately, to evacuate clots and suture any active bleeding points.

Secondary haemorrhage can occur more than 24 hours and up to 7 days after surgery, which can be due to infection eroding into blood vessels. This is usually managed conservatively, by packing the vagina and treating the infection, and in rare circumstances requires ligation of affected blood vessels in theatre.

**Infection:** To avoid infections use an aseptic technique, administer prophylactic antibiotics with induction of anaesthesia and operate only on healthy tissues during surgery. To manage any infections, swab and culture any wound discharges, culture urine, carry out fever workup (blood count, swabs and cultures as appropriate), treat with appropriate antibiotics and clean operation wounds aseptically. *See also Contamination by bowel contents in 4.1 Intraoperative Complications (see page 221).*

**Leakage (faecal):** When repairing a vesicovaginal fistula there is a risk of missing a concurrent high rectovaginal fistula. If in doubt, a rectal dye test should always be performed in theatre. If bubbles of gas are seen coming into the vagina at operation, the presence of a high rectovaginal fistula is likely.

**Leakage (urinary):** This can stem from a breakdown of repair, from around the Foley catheter, a ureter outside the bladder or a missed fistula. A gentle dye test will reveal if there is a breakdown of the fistula or if the urine is coming around the catheter. Appropriate treatment depends on the cause. If a repair breakdown occurs, leave the Foley catheter in place for a longer period of time (i.e. for longer than the usual 10–14 days postoperatively). To keep the urine away from the repair site in the bladder, some healthcare professionals prefer to nurse the patient prone in the immediate postoperative days. If urinary leakage occurs from around the Foley catheter, place under observation, as this is likely to indicate that the patient will have stress incontinence after removal of the catheter. Other causes will mean that the patient has to undergo further surgery. *See also*

**Urethral incontinence after catheter removal** below and refer to 5.2. *Assessment of Surgical Outcomes (see page 227).*

### 4.3. Late Postoperative Complications

**Apareunia:** Occurs when the vagina is completely occluded with scar tissue. This can be prevented by performing vaginal reconstruction at the first operation. However, in the most severe cases, creating a complete neovagina from peritoneum or colon at a secondary operation might be the best option.

**Bladder stones:** Stones may form on a suture inside the bladder. To prevent postoperative stone formation, use dissolvable sutures such as polyglycolic acid 2-0, place the sutures extramucosal and encourage high fluid intake. To treat bladder stones, crush and remove cystoscopically if available and if not, perform a cystotomy.

**Dyspareunia:** Prevention includes cutting or excising scar tissue from the vagina and good mucosal coverage, vaginal dilatation and artificial lubrication. The use of Martius graft to prevent dyspareunia is debated.

**Haematometra:** This can occur if the outflow tract of the menses is occluded by scar. To avoid haematometra, surgically open the vagina/cervix at operation, ensuring good epithelial coverage and stenting the cervical os using a Foley catheter or an intrauterine device with strings in the cervical canal. Remove the stent after approximately 2–4 weeks. If the patient is not planning a pregnancy then menstruation can be temporarily, if not permanently, halted with the use of different contraceptive methods such as continuous contraceptive pill, injectable progesterone or even a hysterectomy if requested.

**Repair breakdown:** Can be prevented with meticulous operative techniques and attentive nursing care. If suspected, perform a dye test to confirm breakdown and to rule out stress incontinence, which can be so severe that the patient feels as if the fistula is still present. If a breakdown is diagnosed soon after catheter removal, consider reinserting the catheter and leaving it on prolonged drainage, if this has not already been done. Observe over the next 7 days whether urinary leaking is decreasing through the vagina and increasing through the Foley catheter. If so, the indwelling catheter should remain in place until no further leaking through the vagina occurs. Once there is no more leaking through the vagina, the indwelling catheter should stay in place for 7 additional days. Perform another dye test to confirm repair closure. If, throughout the initial 7 days, wetness is increasing or staying the same through the vagina and decreasing through the Foley catheter, then remove the Foley catheter and conclude that the repair has broken down. Consider repeat operation in 3 months' time and counsel the patient, offering ongoing hygiene and emotional support.

**Secondary infertility/amenorrhoea:** This can have multiple causes. To prevent cryptomenorrhoea ensure that the vagina is kept patent with vaginal reconstructive techniques if needed. Other causes, such as Sheehan's syndrome, resulting from prolonged shock during the long labour can be prevented with early access to emergency obstetric care, otherwise, lifelong hormone replacement therapy is required. Asherman's syndrome can result from either the presence of urine in the uterine cavity and or repeated infections of the endometrium. It can be treated using an operative hysteroscopy to remove uterine adhesions and sequential hormonal therapy with high-dose oestrogen to prevent reformation of adhesions and to nourish the fragile endometrial crypts. Infertility/amenorrhoea can also be caused by low body mass index and, if so, the patient should be encouraged and supported to increase her body weight.

### Urethral Incontinence after Removal of Foley Catheter

Urethral incontinence should be investigated and the cause identified. Causes include:

- **Detrusor overactivity:** Unfortunately, there are no known preventative methods. Recommended treatment includes anticholinergics with bladder training, although anticholinergics have not been shown to be effective for detrusor overactivity after fistula repair. If there are no anticholinergics available, the patient should be taught bladder training (see Bladder and Fluid Schedule; page 232).
- **Stress incontinence:** This can be prevented by maintaining the length and width of the urethra during the fistula repair, supporting the damaged urethra with a sling, by refixation of the pubocervical fascia to the arcus tendineus on both sides of the urethra and ensuring the vagina is repaired tension free. Urethral incontinence is more common if the bladder neck and urethra are affected by the fistulous injury. Pelvic floor exercises should be taught to all patients, with particular attention to those with stress incontinence. If urinary incontinence is ongoing, further reconstructive procedures may be required.
- **Urinary retention with overflow:** Urinary retention with overflow is more common after stress incontinence operations than after fistula repairs<sup>95</sup> and there are no known preventative methods. If urinary retention with overflow is not treated it can lead to urinary stasis, bladder stones, urinary tract infections and overflow incontinence. To treat, teach clean intermittent self-catheterisation three times a day until the patient is emptying her bladder completely or the residual volume is less than 100 mL and less than 50% of the voided amount.<sup>96</sup>

**Urethral strictures:** Meticulous repair of urethral fistulas will reduce the chance of a patient developing urethral strictures. If they occur they can be treated with excision/dilatation. Strictures tend to reoccur, but reoccurrence can be prevented by teaching the patient to perform clean self-catheterisation, through which she can self-dilate the stricture 2–3 times a week. If the urinary incontinence persists, a urethral plug (if available) will make the patient continent for short intervals and prevent the stricture from reforming.

**Vaginal strictures:** These can be prevented with excision of scar tissue during the operation and good epithelial coverage of the injury with vaginal flaps and sometimes with labial, groin crease and/or gluteal flaps (see Vaginal Reconstruction, page 140). Treat vaginal strictures by surgically opening the vagina with excision of scar tissue as well as vaginal dilatation after the operation.

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<sup>95</sup> Browning. Risk Factors for Developing Residual Urinary Incontinence after Obstetric Fistula Repair.

<sup>96</sup> Some surgeons also treat initially by reinserting the Foley catheter and instigating bladder training with the Foley catheter and spigot. The catheter is blocked and released every 2 hours for 2 days (usually left on free drainage overnight). The catheter is then removed and the trial of void repeated. It is necessary to be strict with this procedure, as it is important not to over-distend the bladder and thereby risk rupturing the repair. There is little documented evidence, but anecdotal experience shows that this technique can be beneficial for patients with urinary retention with overflow.