# THE ABDOMINAL APPROACH

## When is an abdominal repair appropriate?

Several full-time fistula surgeons, including Andrew Browning, claim that they can repair all fistulae by the vaginal route, however high the fistulae might be. With increasing experience, I have found that I can close the majority of high juxta-cervical, intra-cervical or vault fistulae from below.

I do, however, still find some cases extremely difficult to close from below, and in early days had some bad experiences where, having persisted from below, I had been unable to complete the closure. I strongly believe that there are some cases that are much more easily closed electively by the abdominal route. These are always patients who have sustained their fistula after a caesarean delivery.

It should be noted that an abdominal trans-vesical approach is not an easy opt-out for a fistula that an inexperienced surgeon might find difficult from below. It is essential to realize that *any fistula that is below or likely to be close to the ureteric orifices should not be attempted from above*, except by a very experienced surgeon – this approach needs good abdominal relaxation, proper retractors, good light, an ability to catheterize the ureters from inside the bladder and, above all, good suction. These ideal circumstances may not be met in many resource-poor hospitals.

The final decision on approach is usually made on the operating table, with or without an anaesthetic. The factors to consider are the visibility of the fistula and the mobility of the uterus and cervix as assessed on bi-manual examination.

One group that are often easier from above can be selected from the history.

### Post-caesarean iatrogenic intra-cervical fistulae

A post-caesarean iatrogenic intra-cervical fistula can be suspected when the patient gives the story that she was delivered of a live baby, and yet is shown to have a leak through the cervix. The fistula is almost always caused by accidental suture of the bladder into the lower uterine segment.

My criteria for an abdominal approach are as follows:

(a) those that are intra-cervical with a cervix that cannot be pulled down easily (this is more likely in primipara than multipara)

(b) post-hysterectomy vault fistulae that will not come down easily.

Before selecting any patient for an abdominal repair, it is essential to be absolutely certain by dye test and vaginal inspection under anaesthesia that the leak is coming through the cervix and not through an occult hole in the vagina. It is quite possible for a small vaginal fistula to coexist with an intracervical or post-ruptured uterus vault fistula.

## A trans-vesical repair illustrated: the O'Connor technique of bladder bisection

Most urologists would prefer an extra-peritoneal approach to the bladder. While this has the advantage of minimal disturbance to the abdominal contents, most general/fistula surgeons, myself included, prefer a general laparotomy. This allows much better exposure. I always put a large suture through the fundus of the uterus to use as a retractor (Figure 6.52). Strong traction on this towards the head end greatly helps to bring the adherent bladder and cervix into view.

The adhesions between the bladder and lower segment are dissected a short distance. If the fistula is not soon found, there should be no hesitation about opening the fundus of the bladder, inspecting the interior and splitting the bladder vertically downwards until the fistula is reached and circumscribed (the O'Connor technique) (Figure 6.53). This, of course, has the added advantage of allowing identification and, if necessary, catheterization of the ureteric orifices. The procedure is illustrated further in Figures 6.54 and 6.55.

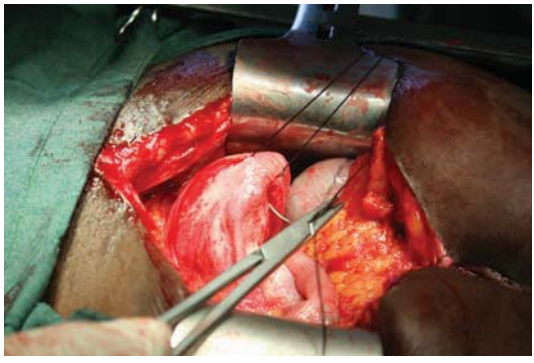

**Figure 6.52** A strong suture is placed through the uterine fundus. Strong headward traction makes access to the bladder and fistula much easier.

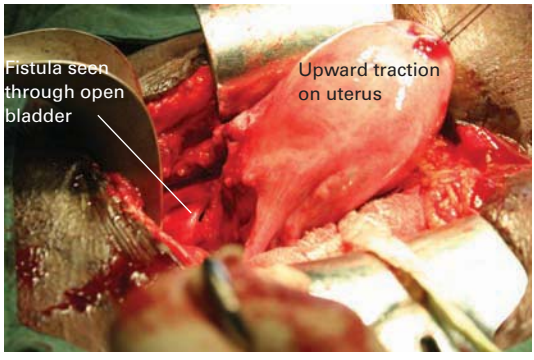


**Figure 6.53** An iatrogenic intra-cervical fistula at the level of the old lower segment incision is seen. The bladder has been opened wide through the fundus, and the interior is exposed with a Sims speculum. Note the strong traction applied to the uterus to bring the fistula into view. The ureteric orifices are well below and can easily be demonstrated by giving intravenous furosemide. If at risk, the patient is catheterized.

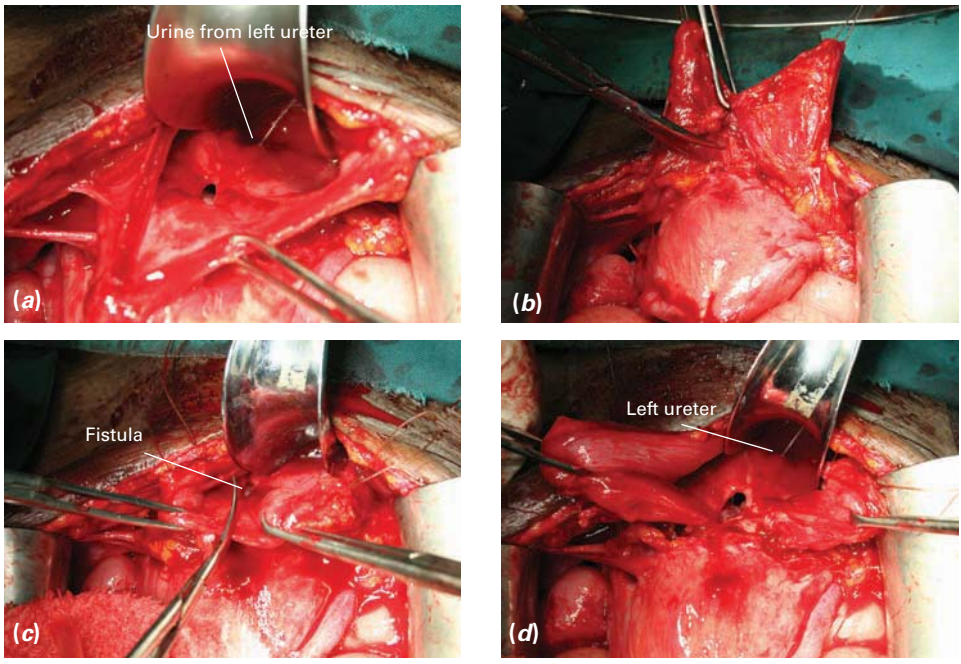


**Figure 6.54** (*a*) A view into the opened bladder seen from the head end. There is a post-caesarean fistula between the bladder and an open cervical canal. The bladder has been opened through the vault; on inspecting the interior, the fistula is easily seen and the left ureteric orifice, shown squirting urine, is well below the fistula. Initially, a vaginal approach was considered here, but the distal margin of the fistula could not be seen through the open anterior cervix, so this approach was abandoned. Clearly, it was much easier to close with a trans-vesical approach. (*b*) The bladder is dissected off the lower segment before cutting down into the fistula. (*c*) The bladder is split vertically into the fistula. Strong upward traction on the uterus aids exposure. (*d*) The fistula is opened and the left ureteric orifice is seen well below. The bladder margins will be dissected off the open anterior cervical canal. The cervical defect is closed with two sutures and the bisected bladder is closed with one layer of continuous sutures, beginning with a good bite of bladder at the bottom of the incision. A 5/8-circle needle is ideal. Sutures used to close the cervix should be left long and used to secure a small omental pedicle that will lie behind the bladder repair.

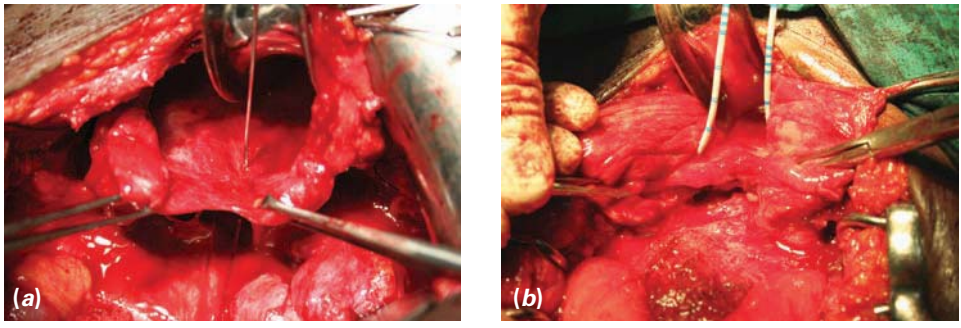


**Figure 6.55** (*a, b*) In this example of a post-hysterectomy vault fistula, it has been marked with a probe, and the bladder has then been cut down into it. The ureteric orifices were close, and were catheterized. The fistula has been detached from the vagina, and the bladder is ready for a vertical closure in one layer.

## URETHRAL RECONSTRUCTION

About 2% of cases present with complete loss of the urethra. This results from very low obstructed labour in which all the urethra is crushed and sloughs away. It may be a localized injury with a normal-sized bladder, but more commonly occurs with a vesico-vaginal component as well. These defects can be repaired, but it is difficult to achieve a satisfactory functional result. Currently, two methods are available to help restore these patients:

- creation of a new urethra from existing tissue
- construction of a new urethra from the anterior wall of the bladder.

### Creation of a new urethra from existing tissue

A new urethra is made from remaining vaginal and para-urethral tissue. However, if all urethral tissue has gone, the prospect is more or less hopeless (Figure 6.56).

If a strip of normal urethral tissue remains, there is a chance of making a reasonable tube. The repair is done by making a U-shaped incision, with the arms of the 'U' extending to where the external urethral meatus should be and about 3 cm apart (Figure 6.57). It is better to make the arms wider than appears necessary, as it is easy to end up with too little tissue to make a tube. The base of the 'U' lies over the

**Figure 6.56** Complete destruction of the urethra together with a large vesico-vaginal fistula. The original intention was to make a new urethra out of the anterior bladder wall, but this proved impossible because of the lack of tissue. The patient later had a Mainz pouch.

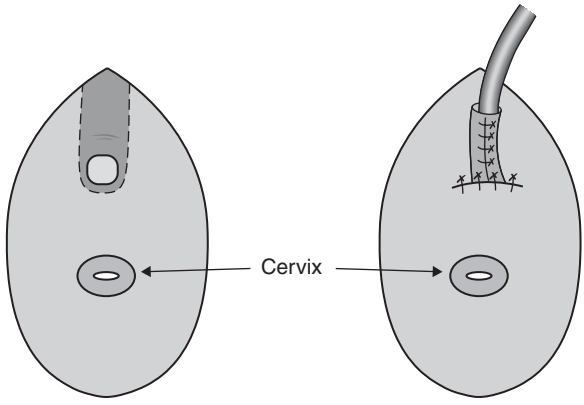


**Figure 6.57** Incisions for construction of a new urethra from skin. The gap between the two limbs of the U-shaped incision should be 3 cm.

entrance to the bladder. The sides of the 'U' are undermined a little from either side towards the midline. Care has to be taken, as the tissue is often fragile. The vagina lateral to the U-shaped incision is also dissected to create flaps to cover the new urethra, and the bladder is mobilized as much as necessary to enable it to be attached to the new urethra. The medial flaps are sewn over a Foley catheter. An alternative is to suture the flaps without an indwelling catheter but just to check the diameter of the new urethra after each stitch with a medium Hegar dilator. When completed, a 14 or 16 FG Foley catheter is passed. The catheter must not be tight within the new urethra. The new urethra is then anastomosed to the bladder. We prefer to support the structure with a sling of fibro-muscular tissue from the lateral pelvis, and we sometimes also use a Martius graft as an extra support to the often fragile repair. Occasionally there is insufficient skin either side of the new urethra to cover it. A better alternative is to extend two incisions down the vaginal wall in the direction of the cervix and, having mobilized a flap off the bladder, advance it distally to cover the new urethra.

The results of this operation are not encouraging, with the majority of patients still remaining with urethral incontinence, and later stricture formation is quite common. In effect, it merely makes a tube in which the insertion of a urethral plug might make the patient dry.

The case illustrated in Figure 6.58 shows the principle of repair, and has an excellent prognosis as it is not a childbirth injury. It is a case of traumatic urethral injury from a Gishiri cutting injury in which the superficial urethra has been cut as far as the bladder neck (this is a form of genital mutilation still sometimes practised in Northern Nigeria). As there is no ischaemic tissue loss this is the most favourable type to repair. Figure 6.59 illustrates a case where there is a small bridge of urethra superficially but good urethra on the deep aspect.


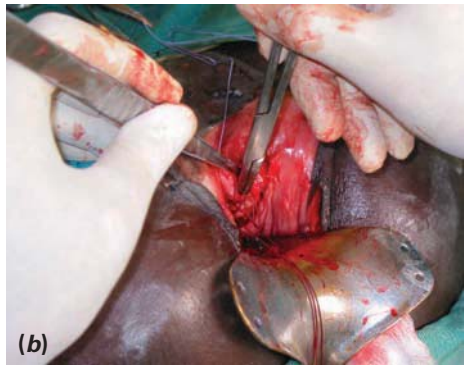


**Figure 6.58** (*a*) A metal catheter lies in the wide-open urethra. (*b*) After making the U-shaped incision, the urethra is undermined medially and the vagina laterally. Repair of the urethra is commenced over forceps or a dilator intermittently introduced.

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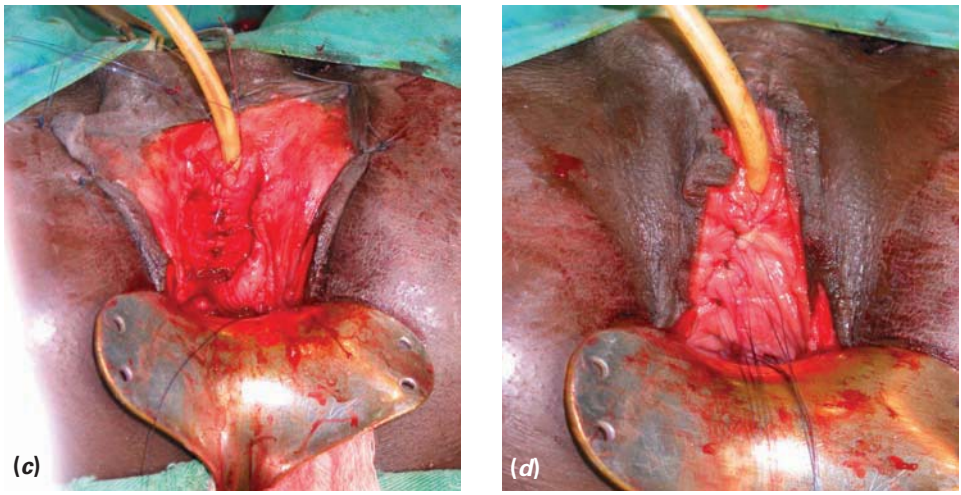



**Figure 6.58** (*continued*) (*c*) The urethra has been repaired. (*d*) The mobilized vagina has been closed over the repair. (Photographs taken at Katsina, courtesy of Kees Waaldijk.)

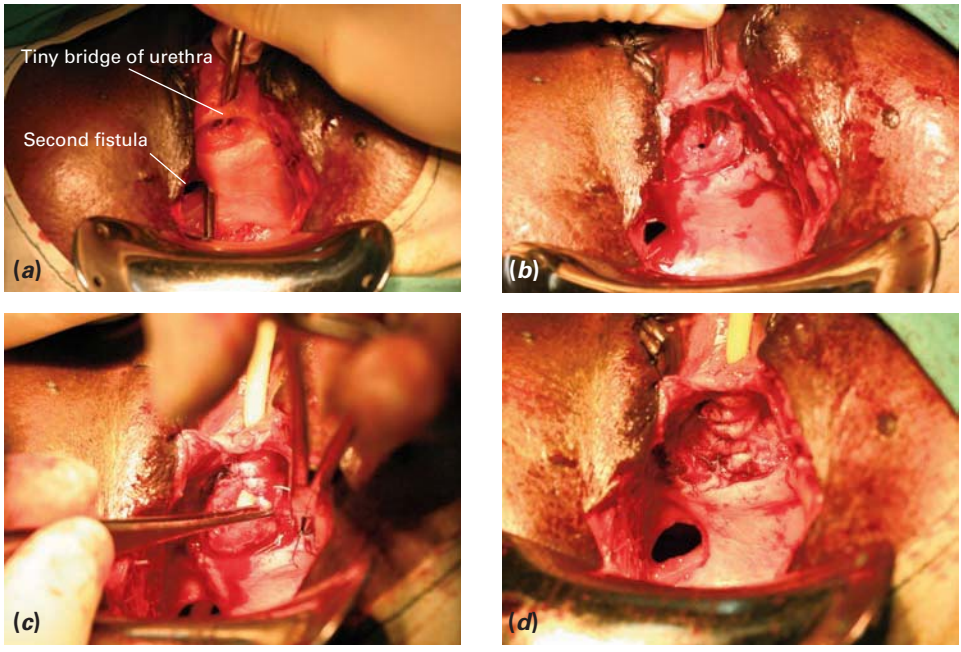



**Figure 6.59** (*a*) A tiny bridge of urethra remains. Note a second proximal fistula. (*b*) The para-urethral space has been opened on both sides through a U-shaped incision. (*c*) A new proximal urethra is made over a Foley catheter. (*d*) The repair of the urethral fistula is completed before repairing the second fistula.

## Construction of a new urethra from the anterior wall of the bladder

An alternative operation when there is little remaining urethral tissue is to make a new urethra from a flap of anterior bladder wall (Figures 6.60 and 6.61).[4] The results are a little better, and the stricture rates less, but the procedure is technically more difficult and the bladder must be of almost normal size for it to be feasible. This approach is recommended only for advanced fistula surgeons.

For this operation, the bladder has to be mobilized circumferentially and quite widely to bring the anterior wall of the bladder down to where the external urethral meatus should be. When this has been achieved, two incisions are made in the anterior bladder about 3 cm apart and about 2–3 cm long. This flap will become the new urethra. First, the bed of the old urethra over the symphysis pubis needs to have the epithelia removed to create a raw area where the new urethra will lie. The vagina needs to be reflected laterally from where the urethra will lie to cover it later.

The flap is attached in the midline where the external urinary meatus should lie, and is then sewn from side to side over a Foley catheter. A size 12 may be needed if the flap is small. It is sometime easier to attach the bladder to the site of the external meatus before cutting the flap, and then start to sew the bladder from side to side over the catheter, making the incisions in the bladder on proceeding down the length of the urethra. This prevents the serious error of cutting the flap short or narrow.

When the urethra is made over the catheter, the remaining defect in the bladder is repaired either vertically or horizontally, a dye test is performed and a fibro-muscular sling is placed beneath the urethra. A Martius graft is optional.

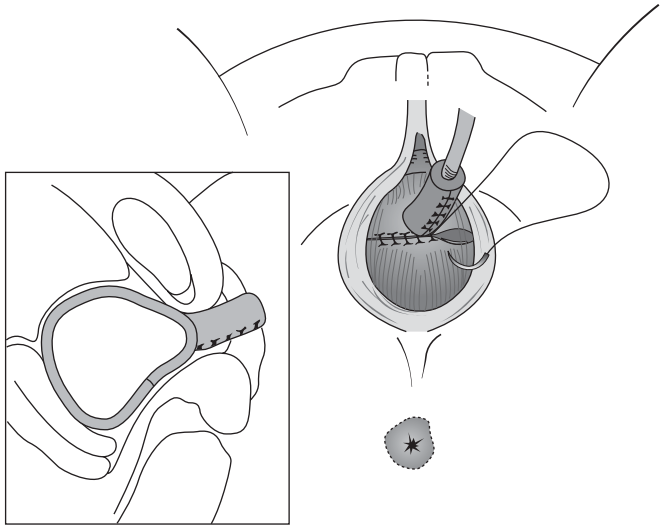


**Figure 6.60** Constructing a new urethra from anterior bladder wall.

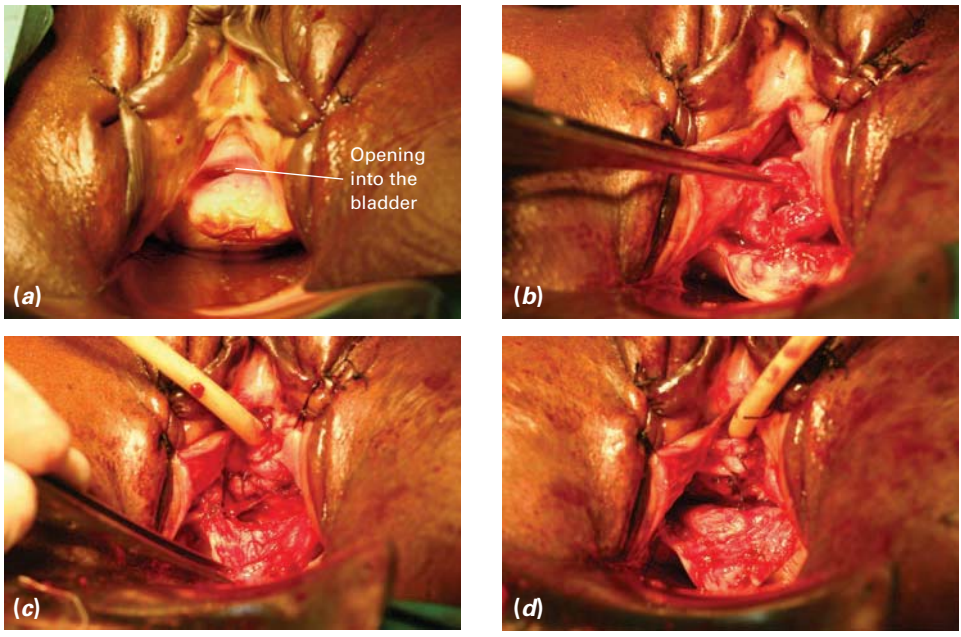



**Figure 6.61** (*a*) There is no urethra. (*b*) The bladder is completely mobilized and its anterior wall is held in forceps. Fortunately, there is little loss of bladder tissue. (*c*) A tube made from anterior bladder wall. (*d*) The urethra is supported by a fibro-muscular sling.

Of a small series of ten operations carried out by Andrew Browning, two were completely cured and voiding normally and three had urinary retention but were dry self-catheterizing. The remaining five were still incontinent, although four were able to use a urethral plug and be continent; one was not able to, as her urethra was made too wide and, even with the plug, urine leaked out via the urethra.

This tube of anterior bladder wall can also be used to anastomose to a short urethra. This is technically demanding, and is not often possible because patients who might benefit usually have small bladders, effectively ruling out this step. Browning has used this technique a few times, with modest success.

## VAGINAL SKIN DEFECTS

Sometimes, there is no vaginal skin to cover a successful bladder repair. In such cases, there are four options, three of which are simple:

1. Leave it as it is (Figure 6.62).
2. Cover the bladder repair with a fat graft and leave a vaginal defect (Figure 6.63).
3. Use a labial pedicle (Figure 6.64).
4. Use more complicated flaps, e.g. medial thigh or buttock flaps.

**Figure 6.62** A short stenosed vagina with an anterior vaginal defect after repair.

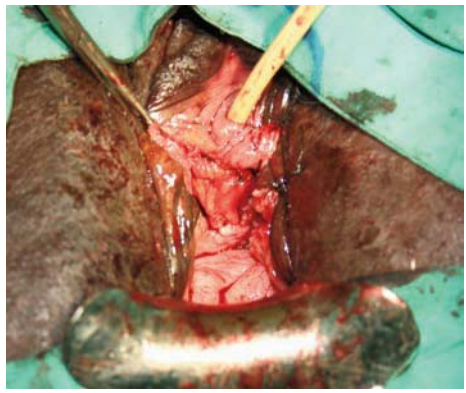
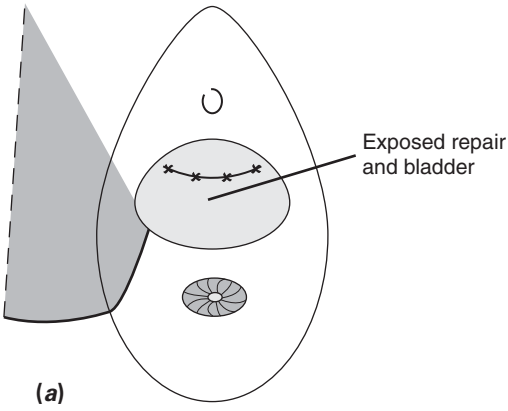
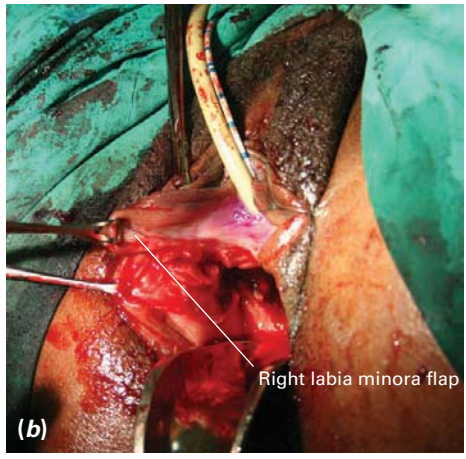
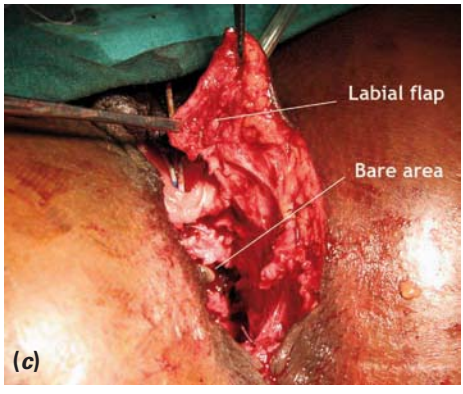


**Figure 6.63** This defect is similar to that in Figure 6.62, but has been covered by a fat graft, leaving the vaginal skin to grow over it.



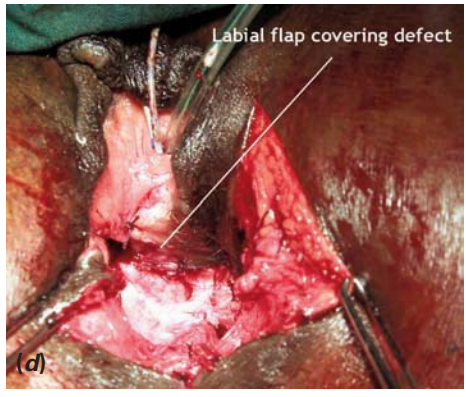




**Figure 6.64** (*a*) The labial flap. A vertical incision is made from the existing episiotomy. This can be up the labia majora as for a fat graft or in the grove between labia majora and minora. The shaded area is undermined and rotated as required to cover the defect. (*b*) A flap of labia minora has been raised ready to swing into the defect. (*c*) A labia majora flap is raised. (*d*) The defect is covered.

My present preferred option is to use method 1 or 2. Andrew Browning prefers the third option, usually employing a flap consisting of labia minora.

The cases where this is necessary invariably have significant vaginal stenosis both before and after the repair – the question at stake is whether these different options have any influence on the success of the repair and subsequent continence. We do not know.

If a fat graft is used, a larger skin pedicle can be taken by extending the labial incision down and then into the vagina to meet either the episiotomy incision or the reflection of the vaginal skin that has been made during dissection. An objection to this is that it may bring hair-bearing skin into the vagina. The same objection applies to the apparently attractive option of bringing in an island of labial skin with a fat graft. A better option is just to use labia minora, which do not bear any hair.

Some surgeons use more radical flaps taken from the medial thigh or buttock. The hope is that these will increase vaginal capacity and possibly help in improving closure and continence rates. However, this approach adds to the morbidity of the operation. We have little experience with these flaps, and remain to be convinced of their value.

## THE MARTIUS FAT GRAFT

### To graft or not to graft?

For 30 years, a Martius fat graft (in reality a pedicle) has been the mainstay of completing a repair for all but the simplest fistulae at the Addis Ababa Fistula Hospital. When introduced, it appeared to result in significantly improved results. However, in recent years, many experienced fistula surgeons have used it less and less, until it has been all but abandoned, without compromising results.

The idea of the Martius fat graft is to bring good tissue with its blood supply into the area of the repair. The graft appears quite vascular, as it is raised from its bed, but, when pulled into the vagina, there is rarely any sign of bleeding; if an old fat graft is found at a re-repair, it shows little sign of vascularity and resembles a lipoma.

Its proponents claimed that it improved closure rates, and still claim that it fills dead space. It has also been suggested that a pad of fat between the bladder and vagina may offer some protection should the patient be forced by circumstances beyond her control into a vaginal delivery again.

The downside of a fat graft is the extra time and extra use of sutures and the slight increased risk of a haematoma.

We rarely use fat grafts. Our possible indications are:

- Sometimes to cover a repair where there is lack of vaginal skin.

- As a last-ditch attempt to close a defect that has failed several times. We know of two cases successfully closed at a fifth attempt using a fat graft on the last repair. (Both repairs had been performed on the last occasion by a very experienced surgeon, which could be the reason for the success.)
- On those few occasions where it has been impossible to achieve a watertight closure.
- To support a urethral repair.

As there may still be a place for the use of the Martius fat graft in selected cases, a description will be given here. We currently use a graft in about 1 in 50 repairs.

## The Martius graft

After completing the bladder repair, five anchor sutures are placed (Figure 6.65):

- Two sutures above the fistula – one on each side, high and laterally, usually using the corner sutures (1 and 2), which have been left long.
- Three sutures proximal to the repair – two in the side wall of the vagina (3 and 4) and one on the midline (5) either into the cervix, if the dissection has extended this far, or at the top of the reflected vaginal wall.

Note that anchor sutures are not put in the bladder. The sutures are left long, and will be threaded onto eyed needles to pass through the graft.

The operating table is taken out of the Trendelenburg position to bring the labia into comfortable view. The right labia is traditionally used. The sutures that were used to retract the distal vaginal skin on this side are cut.

The landmark for the incision is on the most prominent bulge of the labia majora beginning lateral to the base of the clitoris, down the prominence of the labia for at least 6 cm. It helps to make a clean incision if these landmarks are grasped with the stronger Littlewoods tissue forceps and tension is applied between these points (Figure 6.66a).

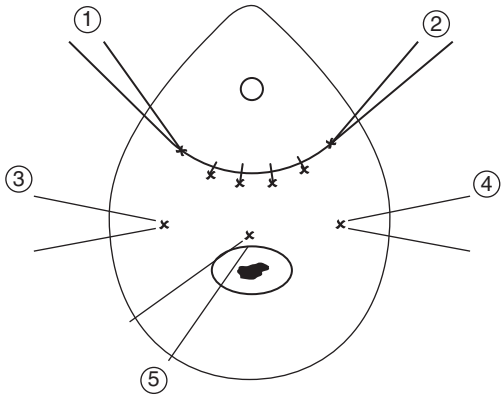



**Figure 6.65** Placement of five anchor sutures in preparation for a Martius fat graft.

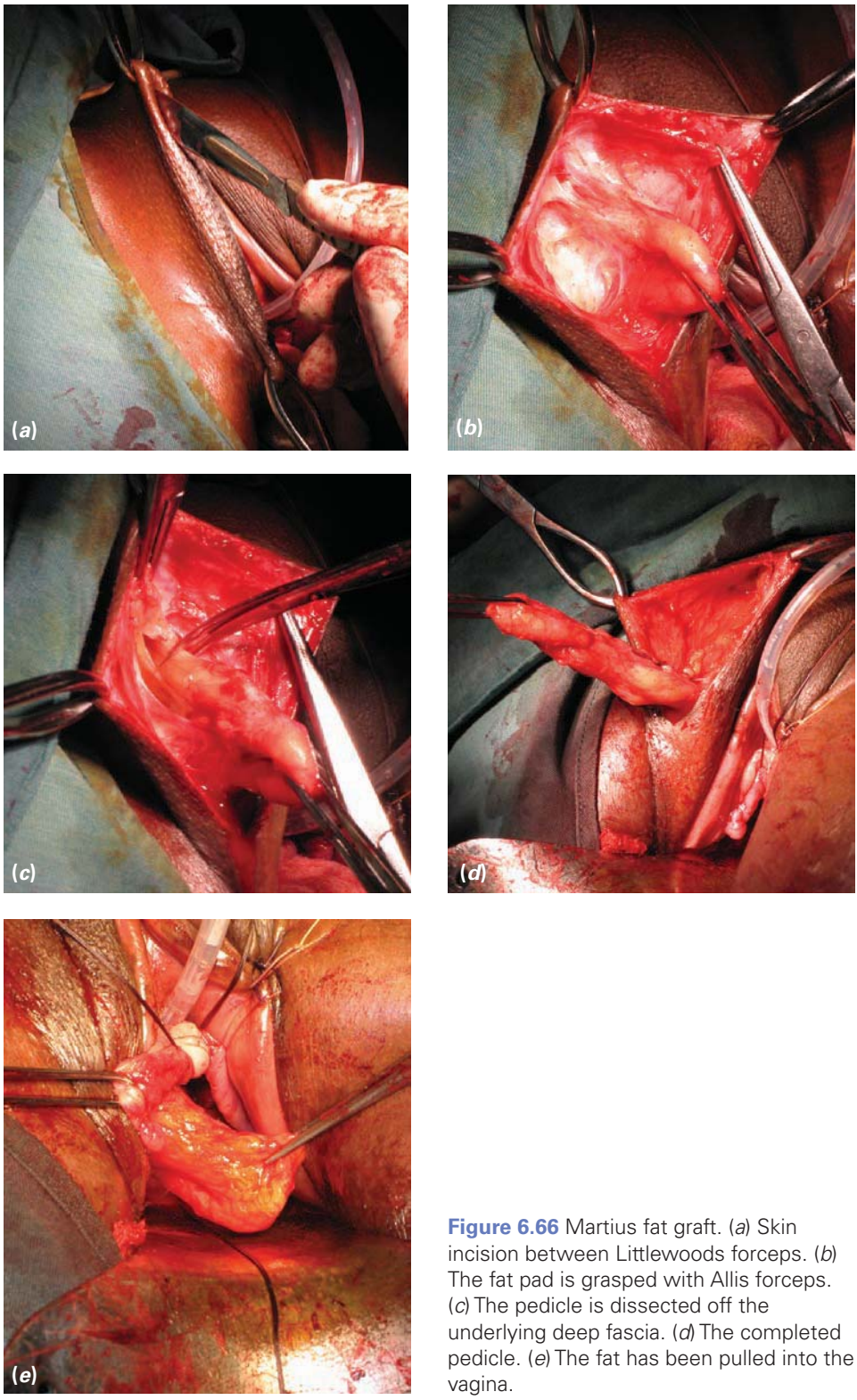



**Figure 6.66** Martius fat graft. (*a*) Skin incision between Littlewoods forceps. (*b*) The fat pad is grasped with Allis forceps. (*c*) The pedicle is dissected off the underlying deep fascia. (*d*) The completed pedicle. (*e*) The fat has been pulled into the vagina.

The skin and subcutaneous tissue are incised and the fat pad beneath is exposed. The fat pad is grasped with an Allis forceps (Figure 6.66b), and reflected off the underlying skin laterally and medially. This is area is vascular, especially its medial edge, so attention must be paid to securing haemostasis.

The pedicle of fat is cut level with the top of the incision and dissected downwards off the underlying deep fascia (Figure 6.66c). The dissection continues until the medial margin of the inferior pubic ramus is reached and a tunnel can be formed into the vagina. The raised pedicle is attached inferiorly to maintain its blood supply (Figure 6.66d).

Haemostasis is obtained and then the graft is introduced into the vagina by making a tunnel with the dissecting scissors between the labia and the inferior pubic ramus. It may be necessary to extend the vaginal incision further distally. The vaginal flap is lifted up. The scissors are introduced and the blades are opened a little to enlarge the hole; they are then withdrawn and a finger is pushed through the tunnel. The tunnel must be large enough to accommodate the fat pedicle so that it will not strangulate.

The fat pedicle is introduced into the vagina through this tunnel with the aid of an Allis forceps and is sutured into place using the five anchor sutures placed previously (Figure 6.66e). The free ends of the sutures are threaded onto a blank needle and both are brought through the fat and tied. The graft should be spread out and lie neatly over the whole of the repair.

The graft site on the labia must be repaired carefully. The area is prone to haematoma formation. The closure is done is three layers, beginning superiorly by taking a large bite with a 0 chromic or Vicryl suture through the previously cut labial fat. The suture is taken continuously down and then back up, closing all potential dead space. The final layer is of interrupted skin sutures.

## BLADDER STONES

Bladder calculi are found in only about 2% of new cases, but their correct management is very important.

### Causes

Bladder stones may be caused by:

- foreign material pushed up the vagina into the bladder in an attempt to stop the leak
- crystals forming in concentrated urine and growing over time
- non-absorbable sutures used in bladder repair (e.g. damage during caesarean section) (Figure 6.67).

**Figure 6.67** This residual fistula has a stone around a non-absorbable suture that was mistakenly used in the repair.

## Detection

Bladder calculi almost always occur with small fistulae, although exceptionally a large calculus may be found half in, half out of a large fistula.

Bladder calculi may cause an enormous amount of discomfort, and can often be suspected preoperatively when there is tenderness on vaginal examination. A complaint or an observation of haematuria is another sign. The urine is usually infected and smelly.

A large stone can be felt on gentle bimanual examination, and any stone can be detected by sounding inside the bladder with a metal probe (Figure 6.68).

Small stones may be missed on clinical assessment. It is vital to detect and remove all stones before embarking on a repair. A missed stone is a disaster. We have seen patients return some time after a successful repair in great distress from a large stone. It is probable that a small one was missed at the repair.

**Figure 6.68** Sounding for bladder stones.

## Management

Repair of a fistula should be delayed until after removal of a stone. In the presence of a stone, the bladder is thick-walled and hyperaemic, and there is almost certainly urinary infection. These conditions are not conducive for a successful repair. The interval between removal and safe repair may only be about 2 weeks, but each case should be assessed on its merits and local circumstances.

We prefer to remove stones by a suprapubic extra-peritoneal approach (Figure 6.69).

Exceptionally, the stone may protrude though the fistula into the vagina, and it may be easy to remove it this way without having to enlarge the fistula too much (Figure 6.70). To remove most calculi through the vagina would require an enormous enlargement of the fistula that does not seem justified.

Infection is usual, and it is essential to give perioperative antibiotic cover. We use intravenous gentamicin 160 mg for the operation, followed by 80 mg, 8-hourly for 48 hours. Exceptionally, septicaemia has occurred after stone extraction.

Exposure should be through a generous lower midline incision, with a large cut into the bladder to extract the stone with sponge forceps. It is useful have an assistant exerting upward pressure from the vagina. Fortunately, most stones are solitary and firm, and do not crumble on extraction. If the stone does break into fragments, it is vital that they all be washed out and removed. Even one small residue will lead to another stone.

The bladder can be closed and drained through a urethral catheter, although we usually prefer to close the bladder loosely around a suprapubic catheter. The urethra is often gaping in patients with calculi, so it may be best to rest the urethra in the pre-repair period.

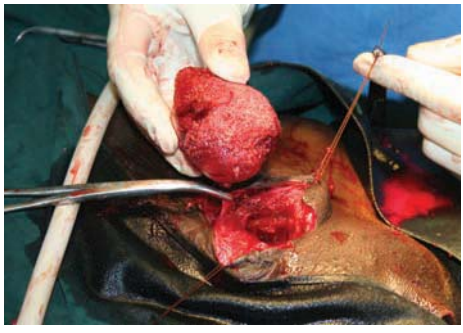


**Figure 6.69** A large stone removed by suprapubic incision.

**Figure 6.70** This stone was protruding into the vagina, and was removed easily. Note the waist indicating the fistula margins. The fistula was successfully repaired 2 weeks later.

## FAILED REPAIR AND RE-OPERATION

Breakdown of a repair is a major disappointment. It may be because the operation was not done well, because of neglectful postoperative care (catheter blockage) or occasionally because of postoperative infection. The usual reason for failure is that the damage was so severe as to preclude an adequate repair. Identifiable risk factors for breakdown are previous operation, severe scarring, destruction of the urethra, a small bladder, ureteric orifices outside the bladder and concurrent recto-vaginal fistula.

We find that about 15% of new patients presenting to us have had a previous repair elsewhere. Many of these cases are still quite easy to cure, as they were simple ones inexpertly done, but of course we also have to operate on some of our own failures.

The rare occurrence of wetness on the day following a repair deserves a dye test in theatre. The most likely explanation is the presence of an overlooked ureteric fistula as well as the vesico-vaginal fistula. If this is confirmed, a ureteric implant can be performed electively in the postoperative period. This has occurred four times in my series. If, however, the dye test is positive and the repair was thought to be sound, it is tempting to take the patient back to try and stop the leak with additional sutures. Provided that the re-operation is performed within 48 hours, the bladder will hold additional sutures well, and, on the two occasions when this has been tried, the leak was stopped. After 48 hours, the tissues become oedematous and further suturing is unlikely to be successful. Breakdowns occurring in the second or third week after repair have a better prognosis, and some will close with prolonged bladder drainage. Their management is described in Chapter 11.

The principles of a re-repair are no different to those for a new case. There will, however, be less healthy tissue available, more scar and distorted anatomy. This is particularly so when a repair has been attempted by an inexperienced surgeon. Clearly, the patient needs to be carefully assessed prior to the operation, noting the presence of any of the risk factors, and the surgeon needs to decide if he or she is confident enough to operate. We advise waiting at least 3 months before attempting a re-repair.

A few breakdowns will be in the middle of the old repair and therefore easily accessible, but the majority are small and inaccessible at the lateral margins of the repair or at the corners of a circumferential anastomosis (Figure 6.71). There are a number of tips for repairing these. First, exposure must be optimal, with episiotomies if necessary. Small corner defects that are are high in the anterior vaginal fornix can often be approached directly, but better access may be obtained by mobilizing the bladder off the cervix and advancing up the side wall of the bladder to the defect. Elevation of the vaginal skin off the defect is greatly helped by Thorek scissors. It is impossible to find the ureteric orifice through small holes, and we simply close the defect with two or three sutures. As the lateral margin is often close to bone, it is important to take strong bites and the insert all the sutures before tying them. A small J or 5/8-circle needle is a great help here. Wherever possible, we swing a small flap of fibro-muscular tissue from under the pubic arch as a reinforcement.

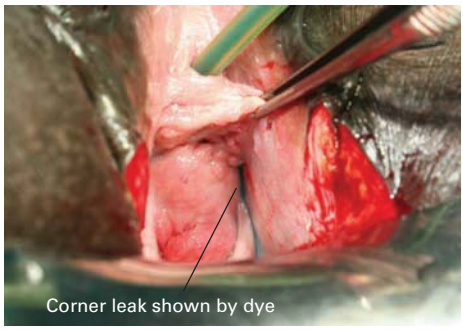
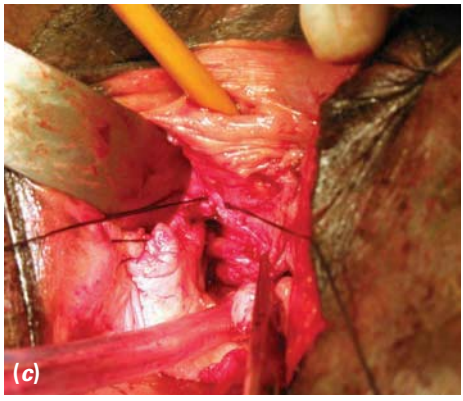



**Figure 6.71** A dye test has shown a small leak from the corner of a previous repair. Note that the anterior vaginal wall is very short. The cervix is close to the old repair site.

In the case of slightly larger defects, we rarely enlarge them to see inside the bladder, but just check that the ureteric orifice it is not on the margin of the defect by probing or with the help of intravenous furosemide. Using this minimalist approach, we have not knowingly had any problems with ligated ureters.

Residual fistulae high in the region of the cervix following a failed intra-cervical repair provide a special challenge that depends largely on how much the cervix can be pulled down. I have recently had two patients both of whom had two failures by the vaginal approach. They were quite easily cured on their third operation through a trans-vesical approach.

Figures 6.72–6.74 show some examples of re-repairs.

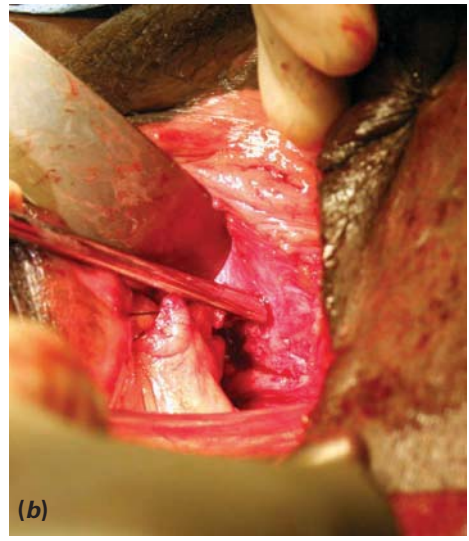




**Figure 6.72** (*a*) A high corner residual fistula. (*b*) The space between the cervix and bladder has been opened and the small defect exposed, as indicated by the metal catheter. (*c*) This defect will be closed by two sutures. The first has been inserted.

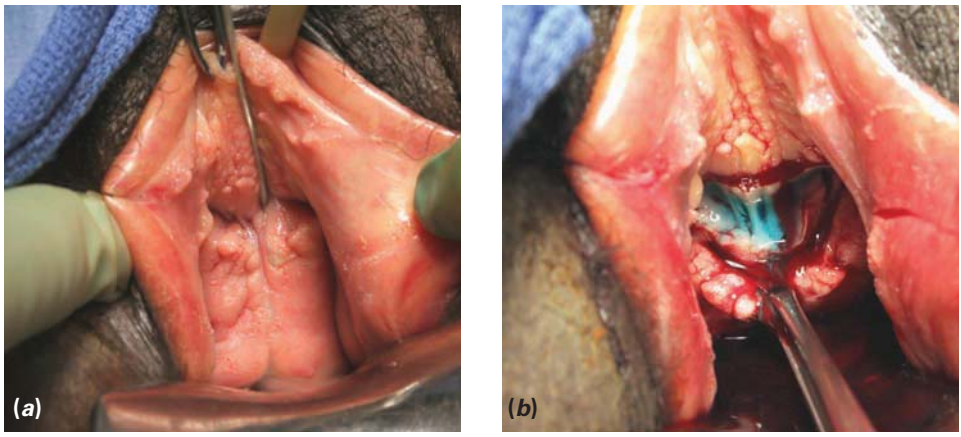



**Figure 6.73** (*a*) Multiple residual holes can be seen at an old repair site. (*b*) A dye test showed multiple leaks. The whole area is re-excised, followed by adequate mobilization and repair.

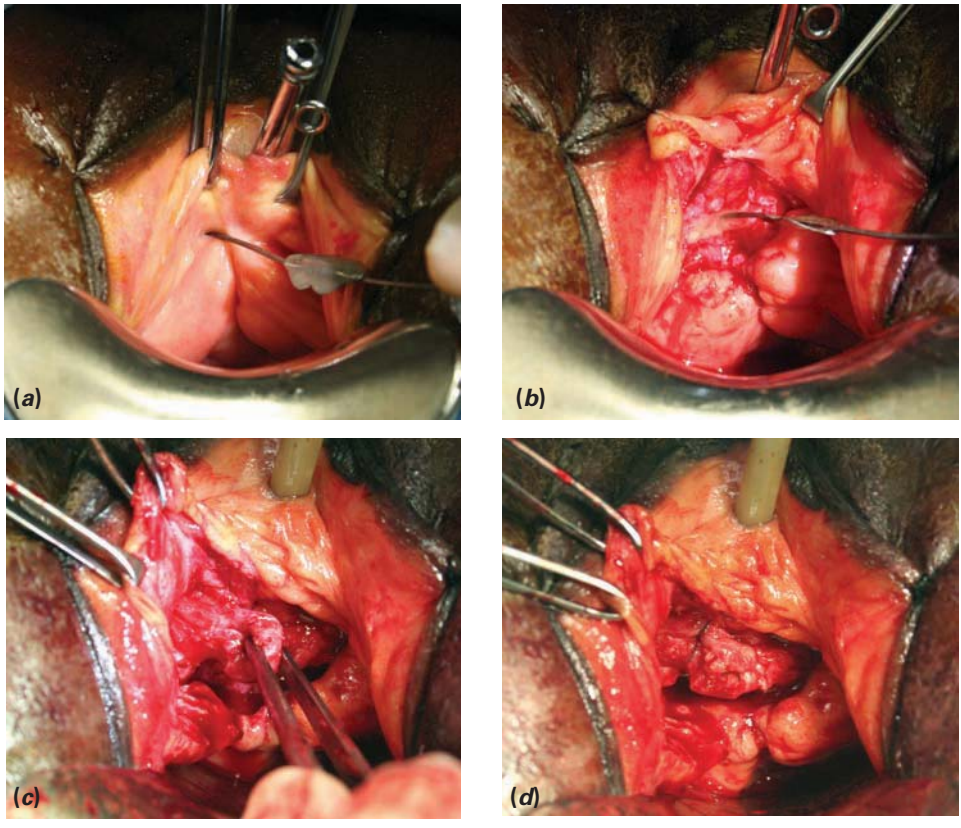



**Figure 6.74** (*a*) A tiny accessible corner breakdown. (*b*) The probe is kept in place while the surrounding vagina is elevated. The margins are excised and inverted with two sutures. (*c–d*) A flap of fibro-muscular tissue has been raised (as for a fibro-muscular sling), and is sutured over the repair.

### How many times can one go on attempting a repair?

The chance of successful repair diminishes with each attempt, but, as long as there is some reasonable tissue and enough bladder and urethra to function, it is worth going on. We have occasionally seen a repair succeed after up to five attempts. In many patients, however, it will unfortunately be obvious from the degree of scarring, size of bladder and poor urethra that multiple attempts are not appropriate.

### Does HIV status affect success?

This is a big unanswered question. Clearly, it would not be sensible to operate on someone who was sick with AIDS, but one sometimes wonders if an unexpected breakdown might be due to a reduced immune status. I have had four patients who had repeated unexplained breakdowns after relatively simple repairs. Two were HIV positive and two were not. To further our understanding of this problem, we do recommend HIV testing with consent for repeated unexpected breakdown. At present, we do not let our knowledge of HIV status influence our decision to operate if other conditions are right.

### Results of re-repair

Our results for re-repairs in Uganda and Ethiopia are similar. About 60% of cases with a first time re-repair go home dry. With each successive repair, the results become worse.

## URETERIC FISTULAE

Iatrogenic injuries to the ureter are unfortunately quite common. In Uganda, they account for 5% of patients with urinary incontinence following childbirth. About half follow a caesarean section; a history of a live birth increases suspicion of this type of injury. Most commonly, the ureter is caught up while stitching the corners of the lower segment. In some cases, there is silent atrophy of the kidney; in others, the ureter may slough and urine can escape into the cervical canal through the lower-segment incision.

Other cases of ureteric fistula occur after emergency hysterectomy for a ruptured uterus. Considering the difficult conditions and the inexperience of many doctors called upon to treat a ruptured uterus in rural areas, these injuries are understandable. Any urine leaking into the pelvis will soon find its way out between the sutured vaginal vault and cervical remnant.

The third cause of ureteric fistula is unrecognized injury to a ureter at the time of a vesico-vaginal fistula repair. In this situation, it may be possible at a later date to catheterize the ureter and implant it into the bladder transvaginally.

If the patient has several living children, and an abdominal operation is planned, the option of tubal ligation should be discussed. It is easy to do this at the same time as the fistula repair.

Diagnosis of ureteric fistula is discussed in Chapter 2. An ultrasound scan showing a distended ureter on one side is helpful confirmation. However, it is essential to confirm again on the table that the dye test is really negative and that urine appears in the vagina after giving furosemide. In partial injuries, the leak can be very small.

The affected ureter must be identified in the pelvic side wall and traced down to the point of injury. Four times out of five the affected ureter is found to be dilated, and thickening can usually be felt at the site of injury. If the ureter is draining very freely into the vagina, it will not be dilated. The most reliable method of confirming the site of injury is to open the bladder and look inside at the ureteric orifices. Intravenous furosemide 20 mg should be given and the non-functioning side identified. Exceptionally, a partial ureteric injury (e.g. after a previous repair) may still produce urine into the bladder – but not nearly so much as the uninjured side.

If the diagnosis and side of the fistula are certain, some surgeons prefer an extraperitoneal approach, but I prefer a midline incision. The abdominal approach is usually quite easy, and the results are uniformly successful.

In my 44 cases, I have never had a problem making the ureter reach the bladder. The ureter must be divided as low down as possible, and it helps to mobilize the contralateral side of the bladder. If the ureter will not reach the bladder, the possibilities are, in order of preference:

1. Fully mobilize the contralateral side of the bladder and support the anastomosis with a psoas hitch stitch.
2. Make a tube out of the dome of the bladder (Boari's flap).
3. Anastomose the cut ureter end to side to the uninjured ureter.

The steps of the operation are shown in Figure 6.75. I do not splint or drain the anastomosis as a routine when the ureter comes into the bladder without tension. If

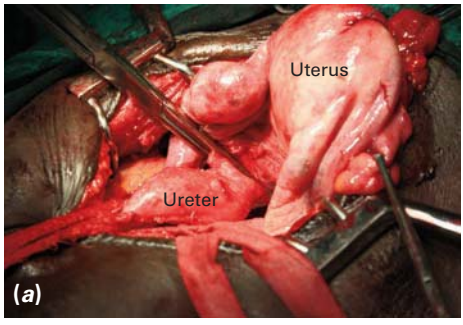



**Figure 6.75** (*a*) A very dilated ureter has been clamped at the level of the cervix.

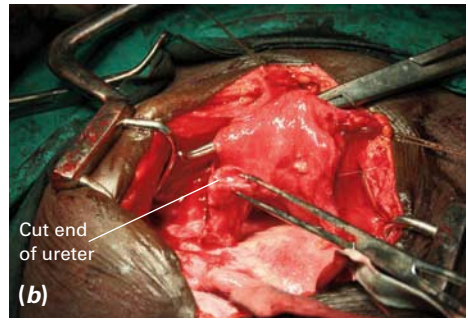



**Figure 6.75** (*b*) The bladder has been opened through the fundus and forceps have been pushed through the lateral bladder wall ready to grasp the cut ureter.

*Continued*

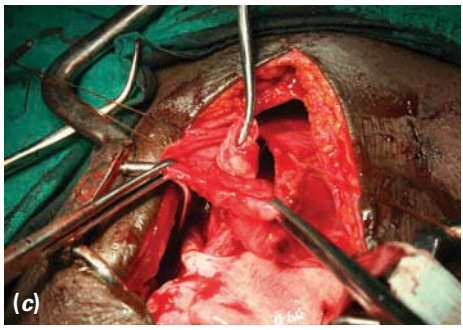



**Figure 6.75** (*c*) The ureter is pulled into the bladder.

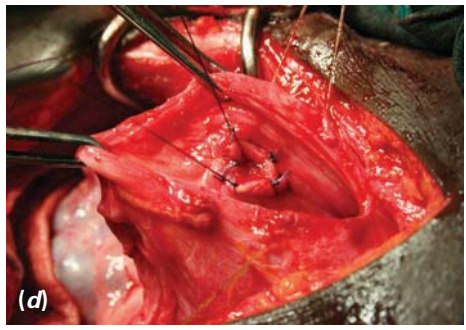



**Figure 6.75** (*d*) The ureter is sutured to the bladder mucosa. If not very dilated, it should be spatulated slightly. The sutures just pick up the underlying bladder muscle.

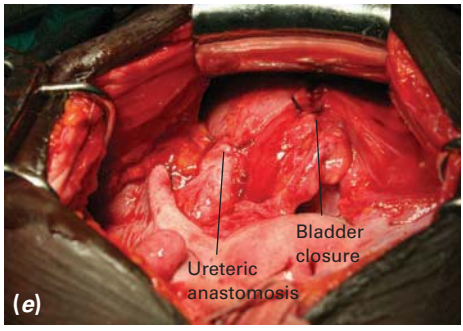



**Figure 6.75** (*e*) The adventitia of the ureter is sutured to the bladder muscle with a few interrupted sutures on the outside, and the bladder incision is closed.

in doubt, I would advise that a ureteric catheter be passed through the anastomosis. It will decompress the ureter should there be any hold-up at the anastomosis. The distal end can be brought out alongside a urethral catheter or through a separate stab incision in the anterior bladder wall. The ureteric catheter, if used, can be removed on day 7 and the urinary catheter removed on day 10.

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