

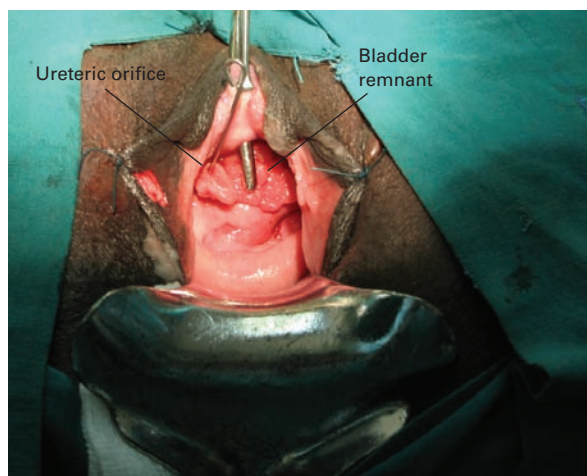
## 10 MANAGEMENT OF THE INOPERABLE CASE

Inevitably, there are cases where the injuries are so extreme that no surgeon, however skilful, can make the patient continent. The most common of these situations is virtually complete loss of bladder tissue (Figure 10.1). Another is stenosis of the vagina so severe as to preclude any assessment or attempt at cure. A rare case is a patient so obese that it is impossible to see or access the fistula. Occasionally, a patient presents with severe generalized illness (e.g. a low immune state) that makes repair futile.

In the majority of cases, inoperability is caused by multiple factors, the most important being failed previous repair in combination with a damaged urethra, a small bladder and severe fibrosis. Other patients have total incontinence following a failed operation for stress.

What can be offered to these patients? If urethral plugs are available, they must be tried if the problem is stress, but, failing that, there are only two options: do nothing or perform some form of urinary diversion.

Before considering any of the possible procedures, there are some serious questions to be considered. Any form of diversion is a major procedure, with significant immediate and long-term morbidity. It is also irreversible. There may be enormous pressure on a fistula surgeon to 'do something for the poor woman' – not only from the patient herself, but also from the other members of the team who hate having to turn away a patient and say that nothing more can be done. There may be



**Figure 10.1** A tiny remnant of bladder, with a probe in the right ureteric orifice.

well-intentioned visiting surgeons who are skilled in pelvic surgery in their home setting and who believe that they can contribute their technical skill to perform complex operations. It must be said here that, for all their good intentions, they may do more harm than good.<sup>1</sup>

Before a diversion is performed, many criteria have to be satisfied:

- Is the case truly inoperable? Only a skilled fistula surgeon working regularly in Africa can make that judgement. Of course, there are so few of these that it may be impossible for the patient to be so assessed.
- Do the patient and her family understand what is proposed, and have the possible benefits and risks been understood? Often, the surgeon and patient are separated by culture, skin colour and language, and their social conditions, beliefs, customs and knowledge of the functioning of the human body may be incomprehensible to each other.
- If these hurdles are overcome and the patient consents, are the conditions in the theatre and for aftercare sufficient to conduct major surgery safely? Who will care for the few patients who will inevitably develop some life-threatening complications if a surgeon is not available? Who will be responsible for long-term follow-up?

We believe that there are circumstances where diversion procedures are appropriate, but they should be performed only by surgeons who are working long term in a developing country and who can be responsible for aftercare and follow-up. We believe that they have an obligation to obtain follow-up and report their results honestly, as we know so little about the quality of life after diversion procedures. It is very tempting for surgeons to report only their successes – but those working with fistula patients need to know about the failures as well.

The possibilities for diversion are briefly discussed here.

## The ileal conduit

This involves wearing a urostomy bag for life. This may be the procedure of choice in the developed world, where the diversion can be performed with low morbidity and where urostomy bags are freely available. In the developing world, this is really out of the question. The exception is in the Addis Ababa Fistula Hospital, which has had the services of a skilled visiting urologist for many years. Many ileal conduits have been constructed, with a very low morbidity. The patients are completely dry, but because bags can be provided only from the hospital, these patients cannot return to their homes in remote areas. This problem has been partly overcome by providing a separate village not far from the hospital where they can live. Whether they are entirely happy with this situation is an open question. Now that a series of outreach centres have been set up, it may be possible for some patients to return home and obtain supplies of bags locally.

## The continent ileal bladder

This is major 5- to 6-hour operation requiring a high degree of skill. The attractiveness is the prospect that a continent pouch of small intestine is emptied by intermittent self-catheterization. This may have an acceptable place in the developed world, but it is out of the question in Africa in view of its complexity and very significant morbidity, which would require highly skilled surgical attention.

## The Mitrofanoff procedure

This involves diverting the ureters into a pouch made of isolated caecum and ascending colon. The appendix is reversed and implanted into the pouch, and is brought out in the right iliac fossa or through the umbilicus. The patient empties the pouch by self-catheterization through the appendix.

An alternative approach may be possible if the urethra is irreparable but the bladder is of good size. The bladder neck is closed and the reversed appendix is implanted into the bladder vault.

We know of patients who have had a good quality of life after these procedures, but there is a significant incidence of problems of stenosis and difficult catheterization.<sup>2</sup> If the patient is far away from skilled help, this is a disaster.

## The Mainz pouch II

Diversion of urine into the large intestine has some merits. It is the most frequently performed diversion procedure, but there are only anecdotal reports of even short-term follow-up in Africa to guide us as to the quality of life. The operation can make the patient dry by day and often at night – but at the price of significant morbidity and risk to life expectancy.

Traditionally, the procedure involved anastomosing the ureters to the sigmoid colon. Over the last two decades, this has been modified by creating a pouch of sigmoid colon by anastomosing two loops together (the Mainz pouch II). This has the effect of creating a low-pressure reservoir, thus decreasing the frequency of passing urine per rectum and probably reducing the amount of reflux up the ureters.

Clearly, the patient is going to pass urine though the rectum for the rest of her life, and must have a near-perfect ano-rectal continence mechanism.

Four components are necessary for complete anal continence: two motor and two sensory.

On the motor side, there must be an intact internal sphincter. Its function is to keep the anal canal closed at rest. More important is a functioning external sphincter complex. It is well known in developed countries that occult injury (detected by ultrasound and electromyographic studies) occurs quite often after normal delivery,

and this may be related to the length of the second stage and the size of the baby. This is usually asymptomatic, although in later life it may predispose to faecal incontinence or rectal prolapse. It is not known if this occurs in the African setting. More obvious are overt sphincter tears and, even after skilled repair, there are symptomatic defects in continence in about 20% of patients. A previous repair may preclude this diversion option.

On the sensory side, somatic sensation from the epithelium of the lower two-thirds of the anal canal provides fine discrimination of the nature of rectal contents (gas, liquid or solid), while stretch receptors in the levator ani complex provide information about the extent of distension in the rectum. Both components can be damaged by prolonged labour, either from a traction neuropathy of the pudendal nerve or ischaemia to the sacral plexus and fibrosis in the levator complex.

A degree of saddle anaesthesia and absent anal reflex may be found more often than expected if specifically looked for soon after a prolonged labour in fistula patients.<sup>3</sup> There has been one report of defects in anal continence that were detected unexpectedly during a study of postoperative urinary incontinence.<sup>3</sup>

This subject needs more objective study.

In practice, it is possible to assess the quality of sphincter function by assessing the resting anal tone (mostly contributed by the internal sphincter) and the squeeze pressure (contributed by the external anal sphincter) on digital rectal examination. An additional test is to fill the rectum with about 300 cm<sup>3</sup> of saline to make sure that the patient can hold it for some hours.

To perform a colonic diversion in a patient with a missed recto-vaginal fistula or defective continence mechanism is a disaster (Figure 10.2).



**Figure 10.2** This patient had an unreparable vesico-vaginal fistula. A rectal dye test as part of a pre-pouch work-up revealed a completely unsuspected tiny recto-vaginal fistula in some posterior scar. This is an absolute contraindication to a Mainz pouch until it has been repaired.

At best, a patient having a diversion should be continent at least by day, although she may have to empty her bowel four or five times. A few patients report regular leakage at night and need to wear a pad.

The best long-term review of results from developed countries highlights a number of downsides, which may not be amenable to detection or treatment in Africa:<sup>4</sup>

- This is *major surgery*, with a small but significant immediate morbidity and mortality.
- *Acid–base disturbances*. Chloride and hydrogen ions destined for excretion in the urine are reabsorbed to some extent by the colonic mucosa. Provided that renal function is normal, the patient may come to no harm, although some will develop a hyperchloraemic acidosis, which may be asymptomatic for a time, but ultimately leads to thinning of bones and renal failure. Any pre-existing renal failure or repeated renal infection will speed up this deterioration. Early detection of electrolyte imbalance is important, as further deterioration can be mitigated by regular taking of sodium bicarbonate. This means measurement of acid–base balance, as changes in sodium and potassium are late indicators of the problem. Facilities for measurement of bicarbonate levels are rare in Africa. From studies in the developed world, it is thought that at least 50% of patients have evidence of mild acidosis on testing 1 year after operation, and these patients are advised to take regular alkalizing agents (sodium bicarbonate). In a few patients, there may be pre-existing renal impairment due to chronic ureteric obstruction. A raised creatinine or bilateral hydronephrosis would be a contraindication to diversion.
- *Renal infection*. Recurrent urinary infection is possible. Its incidence seems reduced by creation of a low-pressure pouch, but it is predisposed to by any stenosis at the uretero-colonic anastomosis. Thus, a good technique at surgery is critical to the subsequent outcome. Yet stenosis bad enough to require revision surgery may occur in up to 5% of cases, even in expert hands (detected by dilatation of the renal tract on ultrasound scanning).
- Diversion of urine to the colon predisposes to *development of carcinoma of the colon*. This reaches significant levels (around 20%) only if the patient should survive for more than 20 years after a conventional uretero-sigmoidostomy. It is not known if making a pouch will reduce the risk. In developed countries, a patient would have a regular colonoscopy after 10 years.

There are several surgeons working full-time in Africa who perform the Mainz diversion for selected patients (Michael Breen, Monze Hospital, Zambia, and Sunday Lengmans, Jos Evangel Hospital, Nigeria, personal communications). They are available to deal with any complications and follow-up, and are satisfied that quality of life has been improved at least in the short term. Two encouraging reports of the use of the Mainz diversion have come from Tanzania.<sup>5,6</sup>

We recommend a cautious approach to diversion, giving full weight to the complete physical evaluation as to suitability and a thorough discussion of all the benefits and

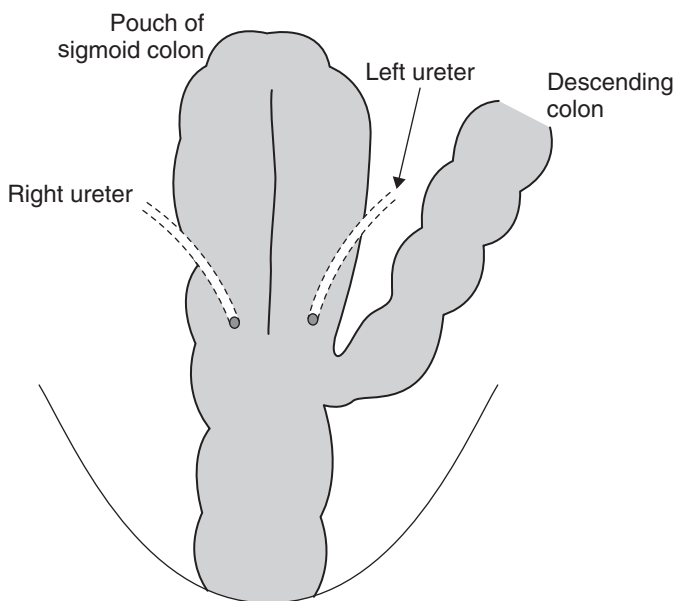
risks. The patient must never be pressured into an operation – she must make an informed decision and her decision be respected. The operation may be acceptable to the surgeon, but is it acceptable to the patient?

It is my experience that some patients choose to remain as they are after full discussion of the situation. Others may prefer to take a chance of a better quality of life at the price of later morbidity and reduced life expectancy. I have seen several patients who on short-term follow-up are very pleased that they accepted the diversion, but, in my limited experience, the rate of return for follow-up has been disappointing. We badly need more information about the medium-term quality of life and complications so that we can help patients make a responsible choice.

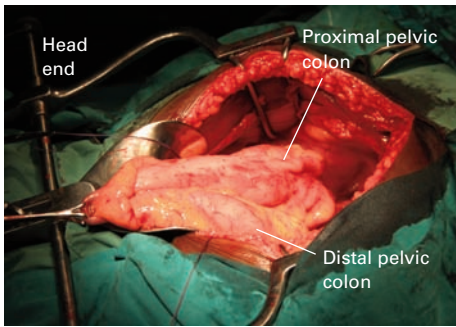
Permanent incontinence is not a happy situation, but perhaps the picture has been coloured by reports of the total rejection that occurs in some communities. In others, we are aware that the incontinent patient is not invariably treated as an outcast – many are cared for by loving families and even their husbands, and they can still live with some dignity.

### The Mainz pouch II procedure

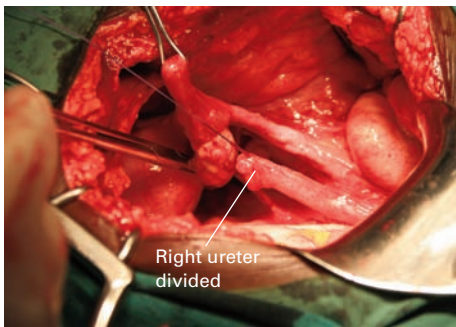
The procedure as performed by the surgeons in Mainz<sup>5</sup> involves anastomosis of three limbs of sigmoid colon in an ‘S’ fashion, but most surgeons in Africa have opted for a simpler two-limb anastomosis (Figure 10.3). The Mainz pouch II as performed by Professor Gordon Williams at the Addis Ababa Fistula Hospital is now described and illustrated in Figure 10.4. We recommend that anyone contemplating this procedure should first assist a regular pouch surgeon.



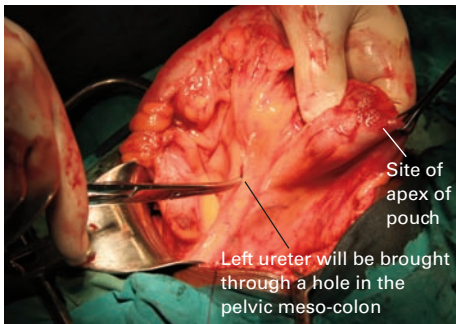
**Figure 10.3** In the Mainz pouch II procedure, as practised in Africa, the ureters are usually brought through a small submucosal tunnel low in the back wall of the pouch made from two adjacent loops of sigmoid colon.



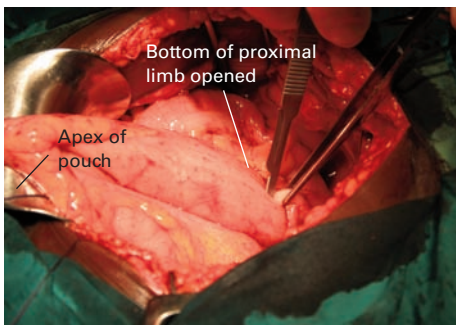
**Figure 10.4a** The first step is for the abdomen to be opened and for the pelvic colon to be mobilized enough so that it can be lifted out of the abdomen. Using the lower sigmoid the two limbs of the colon are laid side by side and the apex of the pouch is marked with a Babcocks forceps.



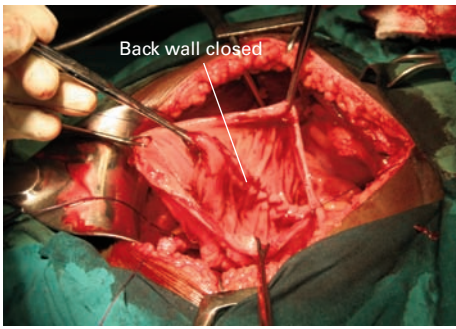
**Figure 10.4b** Both ureters are mobilized and divided just below the pelvic brim.



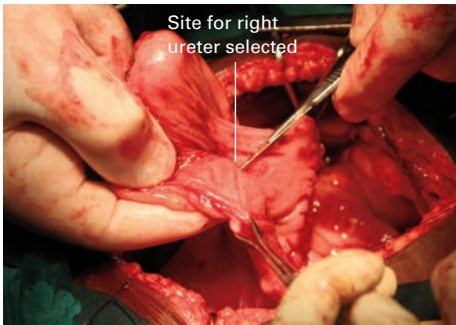
**Figure 10.4c** The left ureter is drawn through the pelvic meso-colon so that it will reach the pouch without becoming kinked.



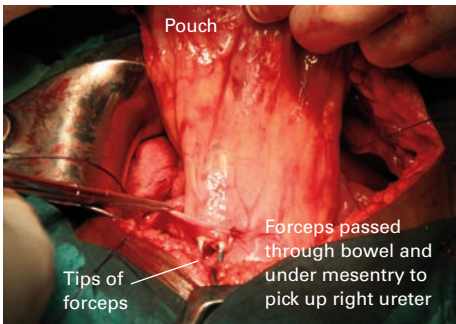
**Figure 10.4d** The two limbs of the pouch are opened by making a stab incision low in the proximal limb and by then cutting up around the apex and down the second limb.



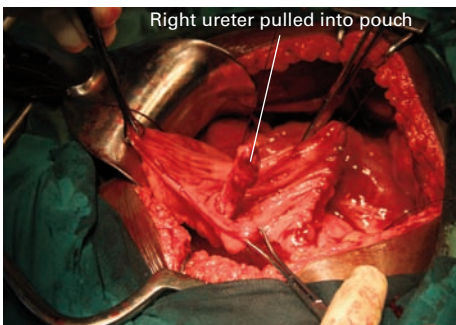
**Figure 10.4e** After the pouch has been opened, the back wall is closed in one layer.



**Figure 10.4f** A site is then selected in the mid pouch through which to bring the right ureter. A stab incision is made through the mucosa and bowel wall.

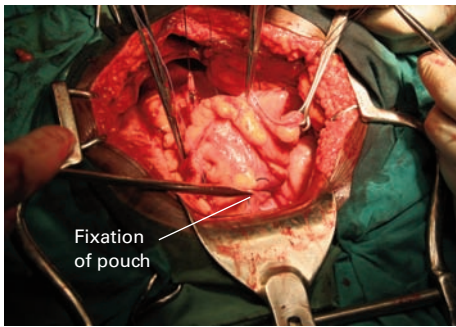


**Figure 10.4g** Forceps are passed through this incision just under the peritoneum of the meso-colon to reach the right ureter, previously marked with a suture.

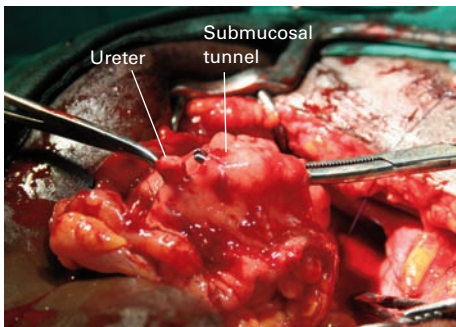


**Figure 10.4h** The right ureter is grasped by its suture and pulled up into the pouch.

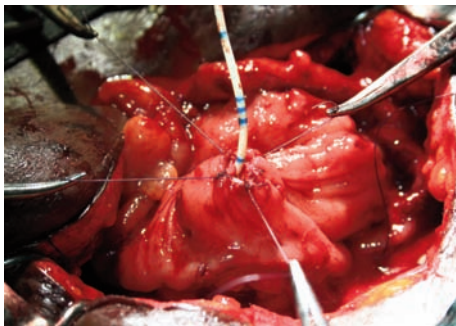




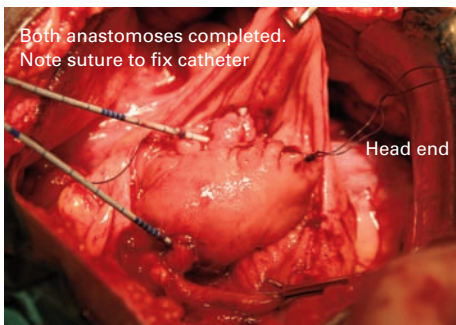
**Figure 10.4i** After both ureters have been drawn into the pouch it is then a convenient time to insert external sutures to stabilize the pouch. Approximately three sutures near the apex of the pouch are inserted into the base of the pelvic meso-colon. Fixing the pouch to the sacral promontory is described in some accounts but seems quite impractical to us.



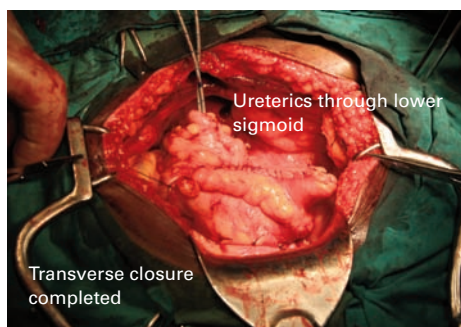
**Figure 10.4j** A submucosal tunnel is then made to bring the ureter out approximately 2 cm distal in the pouch. A site for the anastomosis is selected and infiltration of the submucosa with saline makes an easier passage for the forceps to pull the ureter through. The first mucosal incision is closed by picking up the adventitia of the ureter at the same time.



**Figure 10.4k** After spatulating the ureter, it is accurately anastomosed to the colonic mucosa and sub-mucosa only.



**Figure 10.4l** The same steps are then repeated with the left ureter. This will also be brought into the pouch under the leaves of the pelvic meso-colon. This ensures that both ureters are entirely under the peritoneum. Both anastomoses are now completed.



**Figure 10.4m** The ureteric stents are brought out through the recto-sigmoid about 5 cm below the pouch. A little sero-muscular tunnel is made to bury the catheters for about one cm and they will be brought out through the lower end of the midline incision. The pouch is closed transversely with a continuous suture reinforced by a second layer of interrupted sutures.

The patient must come to theatre with an empty colon. This is achieved by preoperative fluid diet, enemas or, best of all, an osmotic laxative such as sodium picosulphate (Picolax) or mannitol. Single doses of gentamicin 160 mg and metronidazole 500 mg are given intravenously at the start of the operation.

Some surgeons prefer to bring the ureteric catheters out of the anus though a previously inserted rectal tube. We prefer just to use a Foley catheter in the rectum for a few days until the patient is ambulant and can pass urine herself per rectum. Most of the urine drains through the ureteric catheters until they are removed from around the seventh postoperative day.

## References

1. Wall LL, Arrowsmith SD, Lassey AT, Danso K. Humanitarian ventures or 'fistula tourism?': the ethical perils of pelvic surgery in the developing world. *Int Urogynecol J Pelvic Floor Dysfunct* 2006; **17**: 559–62.
2. Hodges AM. The Mitrofanoff urinary diversion for complex vesicovaginal fistulae: experience from Uganda. *BJU Int* 1999; **106**: 1227–8.
3. Kees Waaldijk, personal communication.
4. Murray C, Goh J, Fynes M, Carey MP. Urinary and faecal incontinence following delayed primary repair of obstetric fistula. *Br J Obstet Gynaecol* 2002; **109**: 828–32.
5. D'elia G, Pahernik S, Fisch M, Hohenfellner R, Thuroff JW. Mainz Pouch II technique: 10 years' experience. *BJU Int* 2004; **93**: 1037–42.
6. Michael Breen (Monze Hospital, Zambia), personal communication.
7. Sunday Lengmaus (Jos Evangel Hospital, Nigeria), personal communication.
8. Aboud MM. Early outcome of Mainz Pouch 2 urinary diversion. *East Central Afr J Surg* 2001; **6**(2): 15–19.
9. Aboud MM, Eshleman JL, Mteta KA, Mbwambo JS, Oyieko W. An 18-year review of types of continent urinary diversion applicable to the lesser developed regions of Africa. *East Central Afr J Surg* 2000; **5**(1): 17–20.