10 Management of the Inoperable Case

Inevitably, there are cases where the injuries are so extreme that no surgeon, however skillful, can make the patient continent. The most common of these situations is virtually complete loss of bladder tissue. (Figure 10.1) Occasionally, a patient presents with severe generalised illness (e.g. a low immune state) that makes repair futile. In recent times we've seen more fistulae due to radiotherapy which creates a different set of problems.

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 repeated failed operations for stress.

What can be offered to these patients? 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. Visiting surgeons who are skilled in pelvic surgery in their home setting may believe that they can contribute their technical skill to perform complex operations. For all their good intentions, some have done more harm than good. I have seen multiple patients around Africa upon whom well meaning surgeons from the West who have done ileal conduits, not realising that there are no ileal conduit bags available in the patient's country and in effect the surgeon has just moved the fistula from the vagina to the abdomen. The patients are often even more unhappy and desperate. A urological colleague and I have reduced these conduits to the Mainz II pouch, making the patients happy and dry. Clearly the operation wasn't discussed with the patients adequately beforehand nor the supply of bags properly researched and secured.

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

- Is the case truly inoperable? Only a skilled fistula surgeon working regularly with fistula patients can make that judgment. Of course, there are so few of these that it may be impossible for the patient to be assessed by one. Unfortunately I have seen many patients with a diversion who really had a simple very curable fistula.
- 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 and language. Their social conditions, beliefs, customs and knowledge of the functioning of the human body may be incomprehensible to each other. The best counsellor is a patient who has had a

diversion operation done before. She can explain what it is to live with a diversion within the patients' context.

- 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?

Brian Hancock and I 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 fistula affected country and who can be responsible for aftercare and follow up. We believe that they have an obligation to maintain 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.

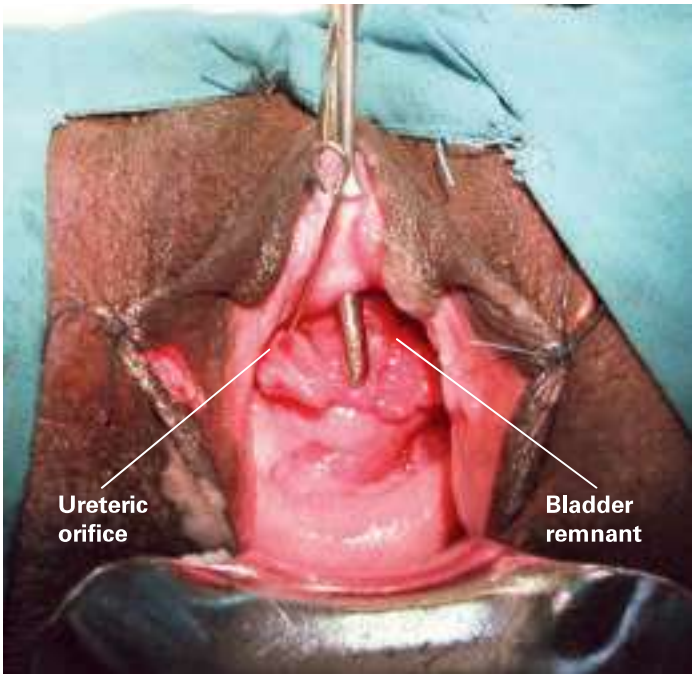


Figure 10.1
An incurable patient. There is only a small stiff plate of bladder tissue remaining. Even if you were able to close the fistula she would never be dry and her bladder capacity would be close to zero. She would never be continent.

The Ileal Conduit

This involves wearing a urostomy bag for life. This may be the procedure of choice in Western countries, where the diversion can be performed with low morbidity and where urostomy bags are freely available. In the less resourced countries this is really out of the question. The exception is in the Addis Ababa Fistula Hospital, which has had the services of several skilled visiting urologists 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. This is not ideal and there are still some social problems to address. Some patients have been able to go home with a supply of bags but they still need to return to the hospital to renew their supply. Even when they are in their villages they are unable to dispose of the bags for fear of them being seen and the stigma of being 'abnormal'.

The Continent Ileal Bladder

This is a 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 catheterisation via a small tube of appendix or bowel brought out to the skin. This may have an acceptable place in the Western 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. As one urologist said, even with these continent bladders you still have a patient for life due to the complications that can occur in the future, especially strictures in the tube to the skin.

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 catheterisation 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 catheterisation. If the patient is far away from skilled help, this is a disaster. Again, you still have a patient for life with this operation.

The Mainz II Pouch

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 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 it's not without risks of morbidity and even mortality.

Traditionally, the procedure involved anastomosing the ureters to the sigmoid colon. Over the last two to three decades, this has been modified by creating a pouch of sigmoid colon by anastomosing two loops together (the Mainz II pouch). 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. It also seems to decrease the complication of

adeno-carcinoma that we used to see in the direct uretero-sigmoidostomy. Superseded now by the Mainz II pouch, the direct implantation should no longer be done.

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. She should also have reasonably functioning kidneys. Check her urea and creatinine prior to the operation to make sure they are normal. To check the ano-rectal continence mechanisms, you need to ascertain 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 but it would be reasonable to assume that it does. 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. There has been one report of defects in anal continence that were detected unexpectedly during a study of post-operative urinary incontinence.

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. But in practice it is best to test its function before doing a diversion operation. You can test the anal sphincter by filling the rectum with about 300cm^3 of saline with dye to make sure that the patient can hold it for some hours. Don't just use saline with no dye as the patient will be wet from the fistula or urethra and you won't know if the wetness on her pad or clothes is from her bladder or from the fluid in her rectum. Get her to walk about for two hours whilst wearing a pad. She should be dry for at least 2 hours with this test. If not and she leaks some blue dye on the pad, it is likely she will leak through her anus once the operation has been performed. In that case she is not a candidate for the operation. Even if she passes this test, she should be warned that she might leak through her anus at night when the sphincter relaxes. It should also be noted that we have several patients returning some 10–20 years after a Mainz II pouch now wet through the anus at night and sometimes during the day as well. As age creeps up, so does

tissue laxity and weakness. Patients should be warned about this, but often their comprehension of something that might happen in 20 years' time is poor.

To perform a colonic diversion in a patient with a missed recto-vaginal fistula or defective continence mechanism is a disaster (Figure 10.2), making her now leak urine and faeces together. Always check for a rectal fistula before considering this operation.

The best long-term review of results from Europe and America highlights a number of downsides, which may not be amenable to detection or treatment in Africa:

- 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 Europe and America, 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 alkalising 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. Hence it is important to screen the patient's renal function before considering a diversion operation. She must have a normal renal function. Hydronephrosis in itself isn't a contraindication as long as the renal function is normal.
- ***Renal infection.*** Recurrent urinary infection is possible. Its incidence was higher in the direct implantation of the ureters into the sigmoid, but it is 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 progressive dilatation of the renal tract on ultrasound scanning, note that dilation might have been present at the time of the diversion operation. It is useful to get a baseline ultrasound before the operation measuring any hydroureter and/ or hydronephrosis).
- Diversion of urine to the colon predisposes to ***development of carcinoma of the colon.*** This reaches significant levels (around 20%) at 20 years after a conventional direct uretero-sigmoidostomy. It is thought that a Mainz II pouch reduces 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. 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.

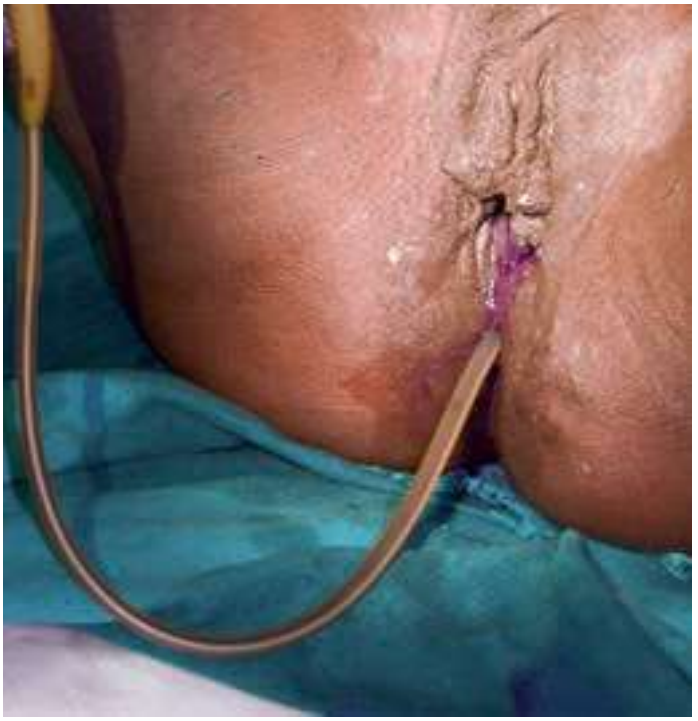


Figure 10.2
This patient was being prepared for a Mainz II pouch diversion operation as she had an incurable fistula. The rectal dye test revealed an unsuspected small recto-vaginal fistula in some scar. This is an absolute contraindication to a Mainz II Pouch. You must repair and cure an RVF first before considering a diversion.

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 respected. The operation may be acceptable to the surgeon, but is it acceptable to the patient? Interestingly in Tanzania I have only done five Mainz II diversions in the last eight years, although more have been suitable. When the operation has been explained to the potential candidates many replied 'I don't want to be like a chicken passing urine and faeces together!' and refused to have the operation. Good point!

So 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. I see some patients in Uganda who have lived with the Mainz II pouch for 10 to 15 years and are still happy, although as they age, the amount of leakage they experience at night has increased. I have performed a simple anal sphincter plication which has helped them for some years, but then it recurs.

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 always 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 II Pouch Procedure

The procedure as performed by the surgeons in Mainz[5] 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 simpler Mainz II pouch version is now described and illustrated in Figure 10.4. We recommend that anyone contemplating this procedure should first assist a regular pouch surgeon.

The patient must come to theatre with an empty colon. This is achieved by pre-operative fluid diet, enemas or, best of all, an osmotic laxative such as sodium picosulphate (Picolax) or mannitol. Single doses of gentamicin 160mg and metronidazole 500mg 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 large Foley catheter placed in the rectum at the beginning of the operation and to thread the ureteric catheters through it during the operation, making sure the ureteric catheters are seen outside the anus before closing the pouch. To do this someone needs to go under the drapes during the operation to pull the Foley out with the ureterics, then replace the Foley through the anus and rectum and into the pouch so the ureterics are both now in place all the way from the kidney to outside the anus. The Foley remains 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 at around the seventh postoperative day.

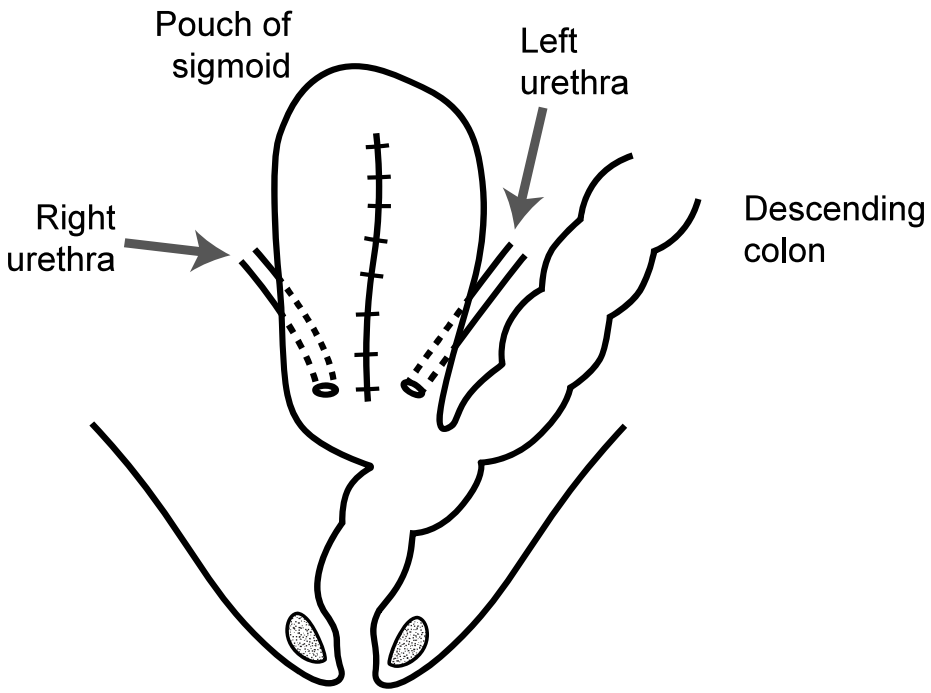


Figure 10.3
The concept of the Mainz II pouch is to create a pouch of sigmoid and introduce the ureters into the pouch. She will pass urine through her anus.

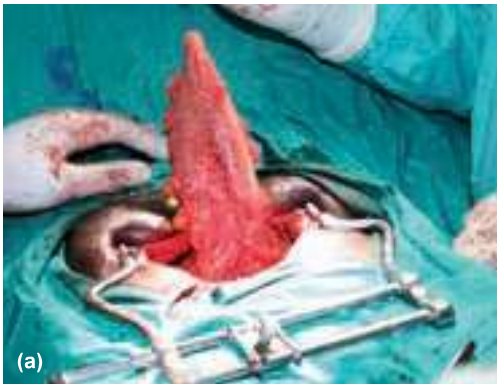
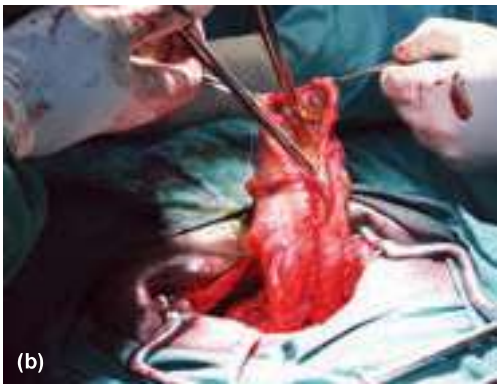
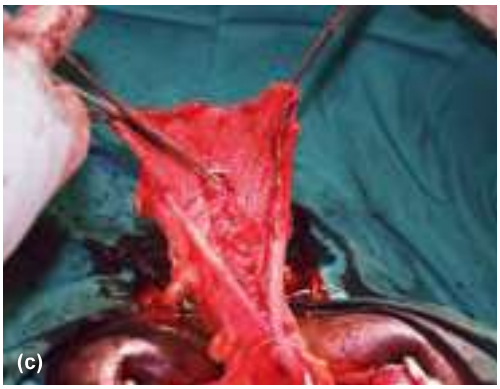


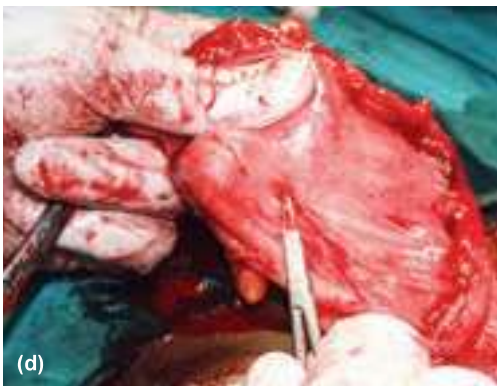
Figure 10.4
Mainz II pouch. a) The first step is to locate the ureters and ensure that you can identify and mobilise them. Before you cut the ureters, make sure you can develop an adequate sigmoid pouch. The loop is formed and a 10cm strip is sutured along the taeniae coli on either side. This will make the posterior wall of the pouch. Make sure you suture on the edge of the taeniae, as you will need to cut along the middle of it.



b) Cut along the middle of the taeniae each side of the suture line, around the top and down to where the suture line starts. Leave enough bowel wall to put a second layer into the suture line you've just made. Clearly this patient's bowel wasn't prepared well.



c) The second suture layer is now complete on the posterior wall of the pouch.



d) A hole is made in the posterior wall to introduce the right ureter.

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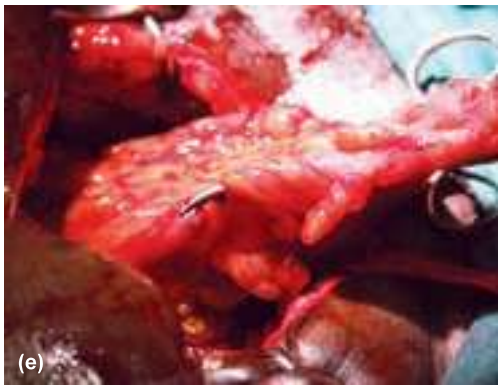
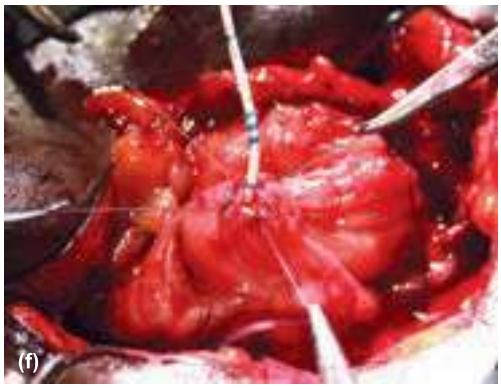
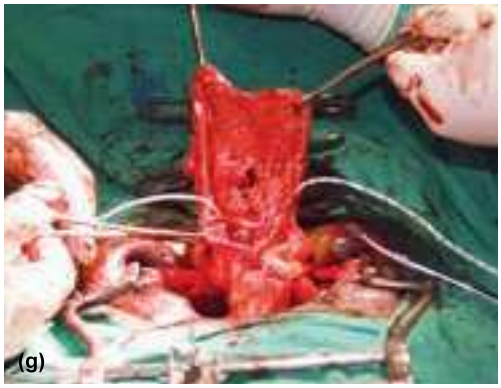


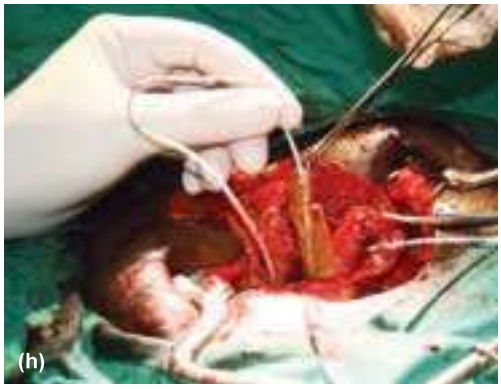
Figure 10.4 *(continued)*
e) Introducing the right ureter into the pouch (I prefer not to grasp and crush the end of the ureter like this, but rather place a fine suture through the wall of the ureter and manipulate the ureter by grasping the suture).



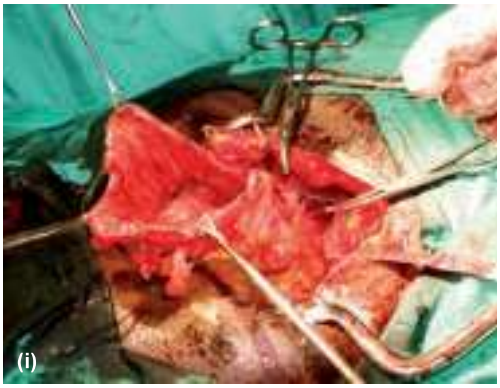
f) The ureter is spatulated and secured inside the pouch.



g) The same is done for the left ureter. Make sure the ureter lies on the medial side of the sigmoid mesocolon before implanting it. It may need to be tunnelled through.



h) Thread the ureteric catheters through the rectal tube that was introduced into the high rectum/sigmoid before the operation started. Take the ureterics out through the anus before you suture the rest of the pouch. Make sure they are not dislodged.



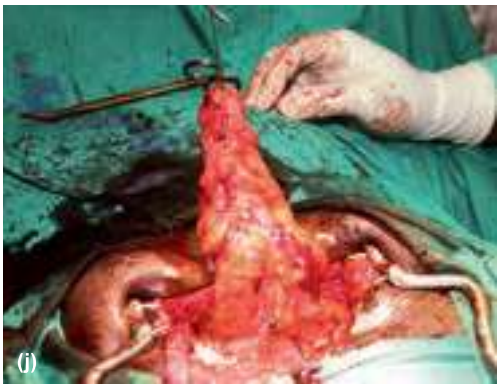


Figure 10.4 *(continued)*
i) The anterior wall of the pouch is now ready to suture.

j) It is repaired in two layers.

Further Reading

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