

# The surgical management of faecal incontinence

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**The surgical management of faecal incontinence is complex and technically demanding. Surgery should only be offered once the aetiology has been correctly identified and the patient has been counselled regarding outcomes of success. This may only approach 80%, with long-term results declining with time.**

**F**aecal incontinence is an embarrassing and distressing condition. Continence is the normal state and is defined as the ability to retain solid or liquid stools or flatus, not only in various positions but also during physical exercise, coughing and sneezing.

The operative management of faecal incontinence is complex and technically demanding. Thus patient selection is crucial for a successful

outcome. All patients need counselling before surgery and must understand that an operation will only improve not cure their symptoms. Patients should be assessed in a dedicated pelvic floor clinic with appropriate access to ancillary staff and radiophysiological investigations. Most series in the literature report an improvement in symptoms approaching 80% (Parks, 1975; Motson, 1985; Sultan et al, 1994; Osterberg et al, 2000).

Preoperative assessment of patients involves history, examination, barium enema, anorectal physiology and endoanal ultrasound sphincter visualization. These are mandatory to characterize the nature of incontinence, to exclude co-existing pathology and to plan appropriate management.

Surgery is directed to the cause of incontinence, and intervention may be broadly classified as shown in *Table 1*.

**TABLE 1.**  
**Classification of surgical intervention**

Correction of underlying pathology
Sphincter repair
Pelvic floor procedures
Sphincter augmentation
Artificial sphincter
Stoma formation

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**TABLE 2.**  
**Surgical correction of underlying pathology**

Condition	Surgical management
Carcinoma	Resection
Stricture	Dilatation, resection or stent
Radiation	
Inflammatory	Inflammatory bowel disease
Diverticular	
Iatrogenic	
Prolapse	Repair
	Abdominal (laparoscopic or open)
	Perineal (Delormes' procedure)
Rectocele	Partial Delormes' procedure or posterior repair
Fistula	Lay open, seton, tissue glue

## **CORRECTING UNDERLYING PATHOLOGY**

Most cases of faecal incontinence respond to medical manipulation and do not require surgical intervention. The most common cause of faecal incontinence is faecal impaction with overflow diarrhoea. The incidence of this type of incontinence in nursing homes has been reported as 33% (Denis et al, 1992), hence the term nursing home incontinence. This is treated medically with laxatives, enemas and disimpaction.

Surgically correctable causes of underlying pathology that result in faecal incontinence are listed in *Table 2*. The surgery of these conditions is outside the scope of this discussion.

Following exclusion or correction of any underlying pathology that will contribute to faecal incontinence, surgical management of the rest of the sub-classifications of faecal incontinence is direct repair procedures, e.g. sphincter damage after childbirth trauma, or plication procedures

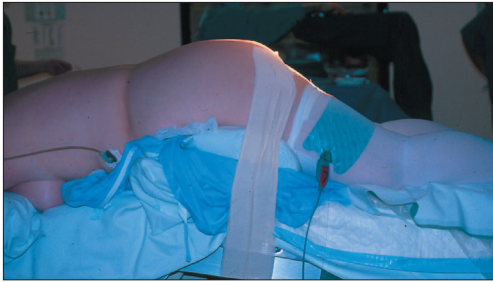


Figure 1. The prone jackknife position.

when the sphincter is intact but poorly or non-functioning as a result of neurological damage.

### SPHINCTER REPAIR

Most sphincter injuries are secondary to obstetric trauma. Other direct sphincter injuries are usually the result of anal surgery, e.g. haemorrhoidectomy, treatment of fistulae-in-ano or trauma.

Obstetric anal sphincter injuries occur in 0.5–5% of vaginal deliveries (Ctercteko et al, 1988; Sultan et al, 1993, 1994). Most are recognized at the time of injury and should be repaired immediately, preferably using an overlap technique of the mobilized sphincter. Occult injuries occur in approximately 35% of vaginal deliveries and up to 80% of forceps deliveries (Sultan et al, 1993). Only 50% of those women with occult injuries develop symptoms, the majority of which complain only of flatus incontinence. However, 5% will complain of faecal incontinence.

#### Technique of sphincter repair

Direct sphincter repair is performed using an overlapping technique of a fully mobilized external anal sphincter. If the defect in the sphincter is greater than a third of its circumference, then a covering defunctioning stoma is recommended. This may be created laparoscopically or through a trephined incision in a premarked site. A defunctioning stoma will divert faecal flow and facilitate healing of the repair. The stoma is reversed when the repair is completely healed. Patients should have full bowel preparation. The authors advise that Picolax (Nordic, Langley, Berks) is given the day before surgery to ensure a clear effluent.

All patients receive deep venous thrombosis prophylaxis. Intravenous cefuroxime 750 mg and metronidazole 500 mg are administered on induction. Anaesthetized patients are placed in either the lithotomy or prone jackknife position (Figure 1) and catheterized. A curved incision is made in the perineum between vulva and anus. Dissection proceeds cranially in the intersphincteric plane. The internal and external sphincters are carefully dissected (Figure 2). The scar tissue in the external

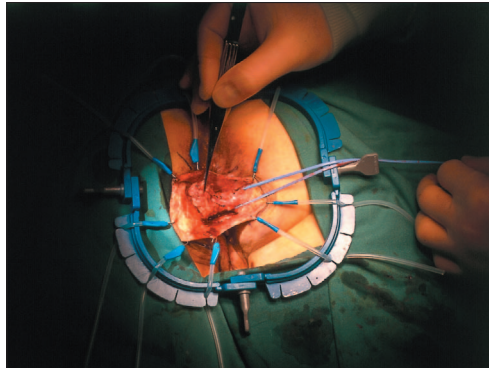


Figure 2. The blue sloop defines the external anal sphincter. The defect in the sphincter is demonstrated by the forceps.

sphincter is identified and the sphincter is mobilized laterally. Great care is taken to avoid inadvertent vaginal or rectal puncture. The scar tissue may be excised if so bulky as to prevent adequate overlapping of the sphincter by 2.5 cm. A two-layered overlap is performed using absorbable sutures (Figure 3). The authors routinely use 2/0 polydioxanone (PDS). An anterior levatorplasty is performed if necessary (discussed in next section).

Perineal skin is closed with 3/0 polyglactin-interrupted sutures, leaving a small defect in the centre of the wound to facilitate drainage. The wound usually lies vertical at the end of the procedure. A Z-plasty may be performed if there is a scarred perineum (Figure 4). This is a plastic surgical technique for excision of scarred tissue, which prevents recurrence of the contracture by lengthening the original axis of the scar and creates a new axis across the contracture.

Fybogel (Brittania Pharmaceuticals, Redhill, UK) and lactulose are commenced on day 1 post-repair. The catheter is removed on day 2. Patients are discharged home with pelvic floor exercises when the healing of the wound is satisfactory.

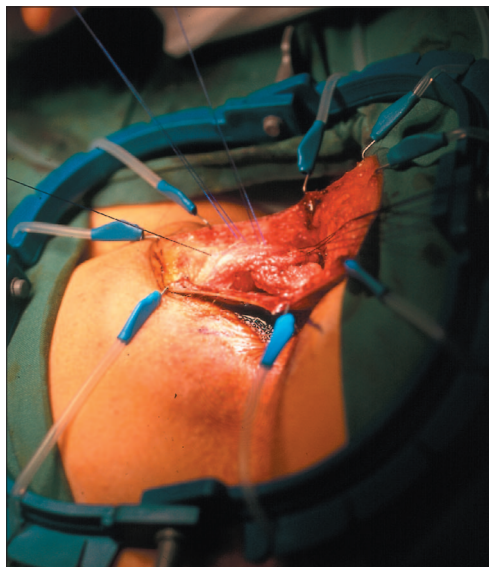


Figure 3. The two-layered overlap repair of the external anal sphincter using 2/0 polydioxanone (PDS).

Anterior sphincter repair has been shown to produce a good clinical result in 80% of patients (Engel et al, 1994). A review of the long-term results of sphincter repairs noted a significant decline in late continence rates (Malouf, 2000).

Of women submitted to repeat anal sphincter repair, 58% reported an improvement of continence of 50% or more. The success of repeat surgery is not great as the initial repair but should nevertheless be considered (Pinedo et al, 1999).

Late breakdown of the wound is common and patients should be warned of this. Overt infection should be treated with antibiotics and irrigation. A clean wound may be secondarily sutured.

### PELVIC FLOOR PROCEDURES

Pelvic floor procedures include anterior levatorplasty, post-anal repair and total pelvic floor repair.

#### Anterior levatorplasty

An anterior levatorplasty may be performed as a primary procedure or more frequently in combination with direct sphincter repair.

**Technique:** Patients are prepared and positioned as above for an external anal sphincter repair. Via a curvilinear perineal incision, the dissection proceeds through the intersphincteric plane until the two sides of the levators are demonstrated. The levators are then overlapped with 2/0 PDS. The skin is closed with interrupted 3/0 polyglactin.

Postoperative care is identical to sphincter repair patients.

#### Post-anal repair

Parks devised this operation in 1975. Post-anal repair is recommended for patients in whom incontinence is demonstrated in the presence of a morphologically intact but poorly or non-functioning sphincter. Parks (1975) stated that in these patients the normal anorectal angle responsible for the maintenance of continence was too obtuse with too short an anal canal. The operation was devised to reconstitute the anorectal angle and lengthen the anal canal by direct plication of the puborectalis levator muscle. Perianal

skin is brought into the anal canal at the end of the procedure and will increase anal sensation and sampling. It also has an indirect but beneficial effect of causing a mild degree of anal stenosis. Good or excellent results have been seen in 86% of patients (Browning and Parks, 1983).

**Technique:** Preoperative and postoperative preparation is similar to that described for sphincter repair. Patients are placed in either lithotomy or prone jackknife position. The patient should be intubated if the prone jackknife position is used. A curvilinear incision is made approximately 5 cm posterior to the anus. The intersphincteric plane is identified and developed in a cranial direction. The rectum angles posteriorly and great care is required to prevent inadvertent rectal puncture.

As the dissection proceeds, the anal canal and rectum are retracted anteriorly. Waldeyer's fascia is incised, the rectum is swept forward with gentle finger dissection until the ischial spines are easily palpated and the levator muscle sling identified. The levator muscle group comprises ischiococcygeus, pubococcygeus and puborectalis. These muscles are either plicated or overlapped using 2/0 PDS. Sutures are inserted in a posterior to anterior direction and tied after all sutures have been inserted. It may be necessary to perform a two-layered overlapping procedure if the defect is great or tone is poor.

#### Total pelvic floor repair

Total pelvic floor repair is a major undertaking. It combines a post-anal repair with anterior levatorplasty and sphincter plication. It is recommended for patients who have multifactorial incontinence, often incorporating neurological damage with sphincter damage and pelvic floor defects.

**Technique:** Patients are prepared as for a sphincter repair. The prone jackknife position is recommended. Post-anal repair is performed first followed by anterior levatorplasty and sphincter repair. Suction drains are inserted and left for approximately 48 hours. Skin is closed with interrupted 3/0 polyglactin. Postoperative care is similar to that described for sphincter repair.

### SPHINCTER AUGMENTATION

A morphologically normal but non-functioning sphincter is difficult to treat. This occurs in congenital disorders, neurological injuries or previous failed repairs of the sphincter. Procedures that augment the sphincter may be considered. Various muscles have been used over the years, but it is the gracilis muscle that has found most favour and stood the test of time (Corman, 1978). Other muscle groups have been used and include the gluteus maximus, adductor longus and sartorius.



Figure 4. Z-plasty of perineal skin.

The physiology of transposed muscle is different to the external anal sphincter. The external anal sphincter has a high resting pressure (65–85 mmHg). It can generate a squeeze pressure twice its resting pressure, largely as a result of slow-twitch fibres. Muscles used for sphincter augmentation are unable to generate sustained pressure as they contain mainly fast-twitch fibres. Cavina et al (1990) reported the result of an electrically stimulated gracilis neosphincter. An implanted stimulator achieves continuous electrical stimulation of the muscle and theoretically increases the proportion of slow-twitch fibres.

Sphincter augmentation is only recommended for young, highly motivated patients.

### Technique of gracilis muscle transposition

Preoperative preparation is as for sphincter repair. The patient is placed in a Lloyd–Davies position with the legs slightly more abducted. The gracilis muscle is then mobilized through a series of longitudinal incisions in the thigh. The neurovascular bundle enters the muscle proximally, hence the muscle is detached distally. A tunnel is fashioned in the extrasphincteric plane around the anal canal through which the muscle is passed. The gracilis muscle is then attached to the contralateral ischial tuberosity.

The electrically stimulated gracilis neosphincter is similar to the above. It is a more major undertaking, so a stoma is required to decrease infection and ultimate removal of the implant. It is important to clearly identify and preserve the neurovascular bundle in order to prevent necrosis of the muscle and allow appropriate attachment of the electrode. The stimulator is placed in a subcutaneous pocket overlying the lower ribs.

Electrical stimulation is commenced during the second postoperative week once the wounds have healed. The stimulator is activated and deactivated by the patient using a magnet over the stimulator. The stoma is closed once the patient has learnt to cope with the neosphincter.

### ARTIFICIAL ANAL SPHINCTER

An artificial anal sphincter is considered for patients in whom the above techniques have failed. This is a relatively new innovation, and long-term results are still awaited. Its use is discussed more fully in the article by Carter et al in this issue (p. 546).

### STOMA FORMATION

A stoma must not be considered as failure of treatment. It is recommended in frail patients or the elderly who will not tolerate major surgery. It may be used to cover major anal reconstructive proce-

dures and when surgery has failed. Patients need counselling by a dedicated stoma therapist before formation. Meeting other patients with a stoma is often helpful. The stoma is premarked and is fashioned under general anaesthetic either laparoscopically or through a small trephined incision. Patients are usually discharged 4 days after surgery when they can confidently manage the stoma.

### CONCLUSION

The surgical management of faecal incontinence requires a multidisciplinary team approach. It is crucial to correctly diagnose the type of incontinence so that appropriate surgical intervention can be offered. The patient must be aware of outcomes and long-term results of treatment. Most of these procedures are performed in specialized units. **HM**

*The authors would like to thank Mr Paul Rooney, Consultant Colorectal Surgeon, Royal Liverpool Hospital for operative slides and Miss Rachel Page, M.A.S.T.E.R. Unit for processing slides to disk.*

*Conflict of interest: none.*

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### KEY POINTS

- The anatomical and physiological defects resulting in incontinence must be correctly identified.
- The nature of surgical intervention, morbidity and long-term results should be discussed with the patient.
- Surgery is often complex and technically challenging.
- Artificial sphincters are currently under evaluation.
- Formation of a stoma should not be considered as failure of treatment.