CHAPTER 71 | THE RECTUM

LEARNING OBJECTIVES

- To understand the anatomy of the rectum and its relationship to surgical disease and its treatment
- To understand the pathology, clinical presentation, investigation, differential diagnosis and treatment of diseases that affect the rectum
- To appreciate that carcinoma of the rectum is common and its symptoms are similar to benign disease, and hence patients with such symptoms must be carefully evaluated

ANATOMY

Surgical anatomy (Box 71.1)
The rectum has an ill-defined anatomical beginning, but surgically the rectosigmoid junction lies opposite the sacral promontory. From here the rectum follows the curve of the sacrum, to end at the anorectal junction. At this point, the puborectalis muscle encircles the posterior and lateral aspects of the junction, creating the anorectal angle (normally 120°). The rectum has three lateral curvatures: the upper and lower are convex to the right, and the middle convex to the left. On the mucosal (lumen) aspect, these three curves are marked by semicircular folds (Houston’s valves) (Fig. 71.1). That part of the rectum that lies below the middle valve has a much wider diameter than the upper third and is known as the ampulla of the rectum.

The adult rectum is approximately 18–20 cm in length and is conveniently divided into three equal parts: the upper third, which is mobile and has a peritoneal coat except near to the middle third where the peritoneum covers only the anterior and part of the lateral surfaces; the middle third, which is the widest part of the rectum and is confined within the diameter of the bony pelvis; and the lowest third, which lies within the muscular floor of the pelvis and has important relations to fascial layers.

The lowest part of the rectum is separated by a fascial condensation – Denovilliers’ fascia – from the prostate in front, and behind by another fascial layer – Waldeyer’s fascia – from the coccyx and last two sacral vertebrae (Table 71.1). These fascial layers are surgically important as they are a barrier to malignant penetration, and are valuable guides at operation.

Blood supply
The superior rectal artery is the direct continuation of the inferior mesenteric artery and is the main arterial supply of the rectum. Opposite the third sacral vertebra, the artery divides again behind the lower third of the rectum into an anterior and a posterior branch. The arteries and their accompanying lymphatics are kept applied to the back of the rectum by dense connective tissue (the mesorectum or ‘rectal fascia’).

The middle rectal artery arises on each side from the internal iliac artery (Fig. 71.2) and passes to the rectum in the lateral ligaments. It is usually small and breaks up into several terminal branches.


Heinrich Wilhelm Gottfried Waldeyer-Hartz | 1836–1921. Professor of Pathological Anatomy, Berlin, Germany.
The inferior rectal artery arises on each side from the internal pudendal artery as it enters Alcock's canal. It hugs the inferior surface of the levator ani muscle as it crosses the roof of the ischiorectal fossa to enter the anal muscles (Fig. 71.2).

Venous drainage
The superior haemorrhoidal veins draining the upper half of the anal canal above the dentate line pass upwards to become the rectal veins: these unite to form the superior rectal vein, which later becomes the inferior mesenteric vein. This forms part of the portal venous system, and ultimately drains into the splenic vein. Middle rectal veins exist but are small, unimportant channels unless the normal paths are blocked.

Lymphatic drainage
The lymphatics of the mucosal lining of the rectum interchange freely with those of the muscular layers. The usual drainage flow is upwards, and only to a limited extent laterally and downwards. For this reason, surgical ablation of malignant disease concentrates mainly on achieving wide clearance of proximal lymph nodes. However, if the usual upwards routes are blocked (e.g. by carcinoma), flow can reverse, and it is then possible to find metastatic lymph nodes on the side walls of the pelvis (along the middle rectal vessels) or even in the inguinal region (along the inferior rectal artery).

Superior rectal nodes
These are an important group of nodes on the back of the rectal ampulla above the levator ani muscle (Fig. 71.3), also known as the pararectal lymph glands of Gerota.

Middle rectal nodes
These lie close to the middle rectal arteries and pass to lymph nodes around the internal arteries. The Japanese have stressed the importance of removing these lymph glands when operating on rectal cancer.

Clinical features of rectal disease

Symptoms (Box 71.2)
Rectal diseases are common and serious, and can occur at any age. The symptoms of many of them overlap. In general, the inflammations affect younger age groups, while the tumours occur in the middle-aged and elderly. But no age is exempt from any of the diseases, however young: ulcerative colitis has been

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Figure 71.2 The rectum lying in the pelvis (coronal view). Note the curvatures corresponding to Houston’s valves.

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Figure 71.2 The rectum lying in the pelvis (coronal view). Note the curvatures corresponding to Houston’s valves.

Valves of Houston

Figure 71.2 The rectum lying in the pelvis (coronal view). Note the curvatures corresponding to Houston’s valves.
Clinical features of rectal disease

Reported in the newborn and rectal cancer is not rare in young people. The common symptoms of rectal disease are the following.

**Bleeding**
This is often bright red in colour but may be darker, and demands careful investigation at any age.

**Altered bowel habit**
Early-morning stool frequency (‘spurious diarrhoea’) is a symptom of rectal carcinoma, while blood-stained frequent loose stools characterise the inflammatory diseases.

**Discharge**
Mucus and pus are associated with rectal pathology.

**Tenesmus**
Often described by the patient as ‘I feel I want to go but nothing happens’, this is normally an ominous symptom of rectal cancer but can occur with any rectal pathology.

**Prolapse**
This usually indicates either mucosal (partial) or full-thickness (complete) rectal wall descent.

**Pruritus**
This may be secondary to a rectal discharge.

**Loss of weight**
This usually indicates serious or advanced disease, e.g. hepatic metastases.

**Signs (Box 71.3)**
Because the rectum is accessible via the anal orifice, these can be elicited by systematic examination. The patient is either positioned in the left lateral (Sims) position or examined in the knee–elbow position (Fig. 71.4).

**Inspection**
Visual examination of the anus precedes rectal examination to exclude the presence of anal disease, e.g. fissure, haemorrhoids or fistula.

**Digital examination**
The index finger used with gentleness and precision remains a most valuable test for rectal disease (Fig. 71.5). Tumours in the lower and middle thirds of the rectum can be felt and assessed; by asking the patient to strain, even some tumours in the upper third can be ‘tipped’ with the finger. After it is removed, the finger

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**Box 71.3**
**Examination of the rectum must include**
- Visual inspection of the perineum
- Digital examination
- Proctoscopy
- Sigmoidoscopy — rigid or flexible

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**Figure 71.4** Positions for digital rectal examination. (a) Left lateral (Sims). (b) Knee–elbow. [Redrawn with permission from Corman, M.L. (1992) Colon and Rectal Surgery, 3rd edn, J.B. Lippincott Co., London, England.]

**Figure 71.5** Illustration showing how the various methods of examining the rectum reach different levels. Note that even cancers in the upper part of the rectum can be felt with the index finger, especially if the patient is asked to ‘strain down’ (courtesy of C.V. Mann).
should be examined for tell-tale traces of mucus, pus or blood. It is always useful to note the normal as well as the abnormal findings on digital examination, e.g. the prostate in the male. Digital findings can be recorded as intraluminal (e.g. blood, pus), intramural (e.g. tumours, granular areas, strictures) or extramural (e.g. enlarged prostate, uterine fibroids).

Proctoscopy
This can be used to inspect the anus, anorectal junction and lower rectum (up to 10 cm) (Fig. 71.6). Biopsy can be performed of any suspicious areas.

Sigmoidoscopy
The sigmoidoscope was in the past a rigid stainless-steel instrument of variable diameter and was normally 25 cm in length (Fig. 71.6). This has in the main been replaced by a disposable Perspex® instrument, which has major advantages when considering transmittable disease. The rectum must be empty for proper inspection with a sigmoidoscope. Gentleness and skill are required for its use, and perforations can occur if care is not exercised.

Flexible sigmoidoscope
The ‘flexiscope’ can be used to supplement or replace rigid sigmoidoscopy (Fig. 71.7). It requires special skill and experience, and the lower bowel should be cleaned out with preliminary enemas. In addition to the rectum, the whole sigmoid colon is within visual reach of this instrument. The instrument is expensive and requires careful maintenance.

INJURIES
The rectum or anal canal may be injured in a number of ways, all uncommon:
• By falling in a sitting posture on to a spiked or blunt-pointed object. The upturned leg of a chair, handle of a broom, floor-mop, pitchfork or a broken shooting stick have all resulted in rectal impalement.
• By the fetal head during childbirth, especially forceps-assisted.
• By serious sexual assault.

Diagnosis
When there is a history of penetrating rectal injury, the first question should be: ‘Has the patient passed urine since the accident?’ The anus having been inspected, the abdomen should be palpated. If rigidity or tenderness is present, early laparotomy is imperative. Prior to the operation, a urethral catheter is passed. If the urine is blood-stained and/or the quantity recovered is unexpectedly small, it is wise to suspect ruptured bladder or urethra (see Chapters 76 and 78).

Treatment
After the patient has been anaesthetised, the rectum is examined with a finger and a speculum, particular attention being directed to the anterior wall. A lower laparotomy is then performed. If an intraperitoneal rupture of the rectum is found, the perforation is closed with sutures. Should blood be present beneath the pelvic peritoneum, it is necessary to mobilise the rectosigmoid, which allows the rectum to be drawn upwards, thus permitting the perforation below the pelvic diaphragm to be closed securely. A perforation in the bladder can also be sutured via this avenue. After closing the laparotomy wound, a defunctioning colostomy is usually required, constructed in the left iliac fossa. In cases where the bladder has been injured, a self-retaining urethral catheter is placed in position. If the rectal

Figure 71.6 (a) A metal proctoscope and two different-sized metal Lloyd-Davies rigid sigmoidoscopes – small (diameter 20 mm). Since the greater awareness of transmittable infection, disposable proctoscopes and sigmoidoscopes (b) have replaced the reusable metal types.

Figure 71.7 The flexible (60-cm) endoscope (‘flexiscope’).
injury is below the pelvic floor, wide drainage from below is indicated. A ‘protective’ colostomy is advisable. If the defect in the rectum is very large, resection may have to be contemplated. In such circumstances, a Hartmann’s procedure is indicated. Care must be taken to preserve sphincter function during debridement of the perineal wounds. Antibiotic cover must be provided against both aerobic and anaerobic organisms.

**FOREIGN BODIES IN THE RECTUM**

The variety of foreign bodies which have found their way into the rectum is hardly less remarkable than the ingenuity displayed in their removal (Fig. 71.8). A turnip has been delivered per anum by the use of obstetric forceps. A stick firmly impacted has been withdrawn by inserting a gimlet into its lower end. A tumble, mouth looking downwards, has been extracted by filling the interior with a wet plaster of Paris bandage, leaving the end of the bandage protruding, and allowing the plaster to set.

If insurmountable difficulty is experienced in grasping any foreign body in the rectum, a laparotomy is usually necessary, which allows that object to be pushed from above into the assistant’s finger in the rectum. If there is considerable laceration of the mucosa, a temporary colostomy is advisable (Box 71.4).

**Figure 71.8** (a) Pepper pot in the rectum. On removal it was found to be inscribed ‘A present from Margate’ (courtesy of Dr L.S. Carstairs, Royal Northern Hospital, London). (b) A screwdriver with a plastic handle (courtesy of Dr A.K. Sharma, Agra, India). (c) A live shell, which needed careful handling. (d) A large vibrator which had pierced the lateral intraperitoneal rectal wall and caused peritonitis.

PROLAPSE (Box 71.5)

Partial prolapse
The mucous membrane and submucosa of the rectum protrude outside the anus for approximately 1–4 cm. When the prolapsed mucosa is palpated between the finger and thumb, it is evident that it is composed of no more than a double layer of mucous membrane (cf. complete prolapse). There is some confusion as to its exact nature. However, most observers believe that partial rectal prolapse represents the head of a rectal intussusception, and is the early manifestation of a complete rectal prolapse. A minority still consider that it is a separate entity. The condition occurs most often at the extremes of life – in children between 1 and 3 years of age, and in elderly people. However, in recent years it seems to have become a problem in middle-aged women as well.

In infants
The direct downward course of the rectum, due to the as yet undeveloped sacral curve (Fig. 71.9), predisposes to this condition, as does the reduced resting anal tone which offers diminished support to the mucosal lining of the anal canal (Mann).

In children
Partial prolapse often commences after an attack of diarrhoea, as a result of severe whooping cough, or from loss of weight and consequent diminution in the amount of fat in the ischiorectal fossae. It may also be associated with fibrocystic disease, neurological causes and maldevelopment of the pelvis.

In adults
The condition in adults is usually associated with third-degree haemorrhoids. In the female, a torn perineum predisposes to prolapse, and in the male straining from urethral obstruction. In old age, both partial and complete prolapse are associated with atony of the sphincter mechanism, but whether this is the cause of the problem or secondary to it is unknown.

Partial prolapse may follow an operation for fistula in ano where a large portion of muscle has been divided. Here the prolapse is usually localised to the damaged quadrant and is seldom progressive.

Prolapsed mucous membrane is pink; prolapsed internal haemorrhoids are plum coloured and more pedunculated.

Treatment
In infants and young children
Digital reposition The parent must be taught to replace the protrusion. The distal two-thirds of the index finger is wrapped in tissue paper. The finger is inserted into the protrusion and the mass is eased into place. Gently, the finger is withdrawn, leaving the tissue paper to disintegrate. In cases of malnutrition, dietetic adjustments are necessary.

Submucous injections If digital reposition fails after 6 weeks’ trial, injections of 5% phenol in almond oil are carried out under general anaesthesia. As a result of the aseptic inflammation following these injections, the mucous membrane becomes tethered to the muscle coat.

Technique The submucosa at the apex of the prolapse is injected circularly, so as to form a raised ring, up to 10 ml of the solution being injected. A similar injection is made at the base of the prolapse. Alternatively, if the prolapse cannot be brought down, the injections are given through a proctoscope.

Surgery Occasionally, surgery is required, and in such cases the child is placed in the prone jack-knife position, the retrorectal space is entered and the rectum is sutured to the sacrum.

In adults
Submucous injections Submucous injections of phenol in almond oil occasionally are successful in cases of early partial prolapse.

Excision of the prolapsed mucosa When the prolapse is unilateral, the redundant mucosa can be excised after inserting and tying
Goodsall’s ligature (Fig. 71.10), which, after the needles have been cut off, permits the base of the prolapsed mucous membrane to be ligated in three portions lying in juxtaposition. When necessary, the operation is combined with haemorrhoidectomy and, if the pedicle of one or more of the haemorrhoids is broad, Goodsall’s ligature is applied. Alternatively, an endoluminal stapling technique can now be used.

**Complete prolapse**

Complete prolapse (synonym: procidentia) is less common than the partial variety. The protrusion consists of all layers of the rectal wall and is usually associated with a weak pelvic floor. The prolapse is thought to commence as an intussusception of the rectum, which gradually descends to protrude outside of the anus. The process starts with the anterior wall of the rectum, where the supporting tissues are weakest, especially in women. It is more than 4 cm and commonly as much as 10–15 cm in length. On palpation between the finger and the thumb, the prolapse feels much thicker than a partial prolapse, and obviously consists of a double thickness of the entire wall of the rectum. Any prolapse over 5 cm in length contains anteriorly between its layers a pouch of peritoneum (Fig. 71.11). When large, the peritoneal pouch contains small intestine, which returns to the general peritoneal cavity with a characteristic gurgle when the prolapse is reduced. The prolapsed mucous membrane (Fig. 71.12) is often arranged in a series of circular folds. The anal sphincter is characteristically patent and gapes widely on straining to allow the rectum to prolapse. Complete prolapse is uncommon in children. In adults, it can occur at any age, but it is more common in the elderly. Women are six times more often affected than men. In women, prolapse of the rectum is commonly associated with prolapse of the uterus, or a past history of a gynaecological operation, e.g. hysterectomy. In the Middle East and Asia, complete rectal prolapse is not uncommon in young males. In approximately 50% of adults, faecal incontinence is also a feature.

**Differential diagnosis**

In the case of a child with abdominal pain, prolapse of the rectum must be distinguished from ileocaecal intussusception protruding from the anus. Figures 71.13 and 71.14 make the differential diagnosis clear. In rectosigmoid intussusception in the adult, there is a deep groove (5 cm or more) between the emerging protruding mass and margin of the anus, into which the finger can be entered.

**Treatment**

Surgery is required and the operation can be performed via the perineal or the abdominal approaches. An abdominal rectopexy is often recommended, but when the patient is elderly and very frail, or is suffering from injury or disease of the spinal cord, or in very early life, a perineal operation is indicated. Since an abdominal procedure risks damage to the pelvic autonomic nerves, resulting in possible impotence, a perineal approach is also usually preferred in young men.

**Perineal approach**

Two procedures have been used most commonly.

Delorme’s operation (Fig. 71.15) In this procedure, the rectal mucosa is removed circumferentially from the prolapsed rectum over its length, apart from 0.5-cm strips at its proximal end and at...
its tip. The underlying muscle is then imbricated with a series of chromic catgut sutures, such that, when these are tied, the rectal muscle is concertinaed towards the anal canal. The anal canal mucosa is then sutured circumferentially to the rectal mucosa remaining at the tip of the prolapse. This manoeuvre has the effect of reducing the prolapse and creating a ring of muscle within the anal canal, which narrows the orifice and prevents recurrence.

Thiersch operation  This procedure, which aimed to place a steel wire or, more commonly, a silastic or nylon suture around the anal canal, has become obsolete. The reasons for its lack of popularity were that the suture would often break or cause chronic perineal sepsis, or both, or the anal stenosis so created would produce severe functional problems. Delorme’s operation is now the preferred perineal operation.

Altemeir’s procedure  consists of excision of the prolapsed rectum and associated sigmoid colon from below, and a coloanal anastomosis is then constructed. It can be combined with other procedures designed to strengthen the anal sphincters and pelvic floor. It is popular in the USA but less so in Europe.

Abdominal approach  The principle of all abdominal operations for rectal prolapse is to replace and hold the rectum in its proper position. Of the many operations described, the following are relatively simple. They are recommended in patients with complete prolapse who are otherwise in good health.

Wells’ operation  In this operation the rectum is fixed firmly to the sacrum by inserting a sheet of polypropylene mesh between them (Fig. 71.16). The rectum is separated from the sacrum and mobilised in the usual way. The mesh is fixed by a series of sutures to the periosteum over the midline of the sacrum and is then wrapped loosely about the rectum covering all except the anterior wall. The free margins of the mesh are sutured to the lateral margins of the anterior wall of the rectum, after exerting upward tension on it. The peritoneal floor is resutured so that the mesh is excluded from the peritoneal cavity. The mesh does not give rise to a foreign body reaction, but it does produce very marked fibrous tissue formation. Recently, the technique has been performed laparoscopically, thus reducing the operative trauma and limiting the time in hospital.

Ripstein’s operation  In this operation, the rectosigmoid junction is hitched up by a Teflon® sling to the front of the sacrum just below the sacral promontory. The operation is very safe and simple, and the recurrence rate is low. Instead of using a Teflon® sling, many surgeons merely suture the mobilised rectum to the sacrum using 4–6 interrupted non-absorbable sutures – so-called sutured rectopexy. Since an abdominal rectopexy may lead to severe constipation, some surgeons recommend combining this procedure with resection of the sigmoid colon (Goldberg), so-called resection rectopexy.

It should be noted that approximately 50% of adult patients with a complete rectal prolapse are incontinent, and rectopexy cures only about one-third. Consequently, it may be necessary to perform a subsequent procedure to correct the incontinence.

PROCTITIS  (Box 71.6)

Inflammation is sometimes limited to the rectal mucosa; in other cases, it is associated with a similar condition in the colon

Box 71.6

**Proctitis**

- May be non-specific or related to a specific infective agent
- Non-specific proctitis usually remains confined to the distal bowel but can spread to the proximal colon
- Considered to be a variant of ulcerative colitis
- Causes bleeding, diarrhoea and tenesmus
- Treatment is usually conservative

Karl Thiersch  | 1822–1895. Professor of Surgery, Leipzig, Germany.

Charles Benjamin Ripstein  | Surgeon, Brookdale Hospital Center, New York, NY, USA.
Stanley Morton Goldberg  | Professor of Colo-Rectal Surgery, University of Minneapolis, MN, USA.
The inflammation can be acute or chronic. The symptoms are tenesmus and the passage of blood and mucus and, in severe cases, of pus also. Although the patient has a frequent intense desire to defecate, the amount of faeces passed at a time is small. Acute proctitis is usually accompanied by malaise and pyrexia. On rectal examination, the mucosa feels swollen and is often exceedingly tender. Proctoscopy is seldom sufficient, and sigmoidoscopy is the more valuable method of examination. If the diagnosis is confirmed, colonoscopy with multiple biopsies is mandatory, so as to determine the extent of the inflammatory process. Skilled pathological assistance is required to establish or exclude the diagnosis of specific infection by bacteriological examination and culture of the stools, examination or scrapings or swabs from ulcers, and serological tests. When early carcinoma cannot be excluded, biopsy is necessary.

Non-specific proctitis is an inflammatory condition affecting the mucosa and, to a lesser extent, the submucosa, confined to the terminal rectum and anal canal. It is the most common variety. In 10% of cases the condition extends to involve the whole colon (total ulcerative colitis).

Aetiopathology
This is unknown. The concept that the condition is a mild and limited form of ulcerative colitis (although actual ulceration is often not present) is the most acceptable hypothesis.

Clinical features
The patient is usually middle-aged, and complains of slight loss of blood in the motions. Often, the complaint is one of diarrhoea, but on closer questioning it transpires that usually one relatively normal action of the bowels occurs each day, although it is accompanied by some blood. During the day the patient attempts to defecate, with the passage of flatus and a little blood-stained faecal matter, which is mistaken for diarrhoea. On rectal examination, the mucosa feels warm and smooth. Often there is some blood on the examining finger. Proctoscopic and sigmoidoscopic examination shows inflamed mucous membrane of the rectum, but usually no ulceration. The inflammation usually extends for only 12.5–15 cm from the anus, the mucosa above this level being quite normal.

Treatment
Although, fortunately, the condition is usually self-limiting, much relief may be obtained from the use of 5-aminosalicylic acid compounds (5-ASA) (Asacol®, Penasa), acetarsol suppositories or prednisolone retention enemas. Milk is best excluded from the diet as it is thought to be implicated in 10% of cases. In very severe resistant cases, oral steroids may have to be used to obtain remission. Rarely, surgical treatment is used as a last resort when the patient is desperate for relief of symptoms.

Ulcerative proctocolitis
Proctitis is present in a high percentage of cases of ulcerative colitis, and the degree of severity of the rectal involvement may influence the type of operative procedure (see Chapter 68).

Proctitis due to Crohn’s disease
Crohn's disease can occasionally affect the rectum, although classically it is spared. Sigmoidoscopic characteristics differ from those in non-specific proctitis. The inflammatory process tends to be patchy rather than confluent, and there may be fissuring, ulceration and even a cobblestone appearance. Rectal Crohn’s disease is often associated with severe perineal disease characterised by fistulation. Skip lesions are also often present in the rest of the colon or small bowel, or both.

Proctitis due to specific infections

Clostridium difficile
An acute form of proctocolitis by infection with C. difficile can follow broad-spectrum antibiotic administration. A ‘membrane’ can sometimes be seen on proctoscopy (‘pseudomembranous enterocolitis’).

Bacillary dysentery
The appearance is that of an acute purulent proctitis with multiple small, shallow ulcers. The examination of a swab taken from the ulcerated mucous membrane is more certainly diagnostic than is a microscopy examination of the stools. Proctological examination is painful; agglutination tests may render it unnecessary.

Amoebic dysentery
This presents as a soft mass, usually in the rectosigmoid region. This lesion is frequently mistaken for a carcinoma. Sigmoidoscopy shows an ulcerated surface, but the mass is less friable than a carcinoma. A scraping should be taken, preferably with a small, sharp spoon on a long handle, and the material sent for immediate microscopic examination.

Amoebic granuloma
This presents as a soft mass, usually in the rectosigmoid region. This lesion is frequently mistaken for a carcinoma. Sigmoidoscopy shows an ulcerated surface, but the mass is less friable than a carcinoma. A scraping should be taken, preferably with a small, sharp spoon on a long handle, and the material sent for immediate microscopic examination.

Tuberculous proctitis
This is nearly always associated with active pulmonary tuberculosis ulceration of the anus. Submucous rectal abscesses burst and leave ulcers with an undermined edge. A hypertrophic type of tuberculous proctitis occurs in association with tuberculosis peritonitis, or tuberculous proctitis occurs in association with tuberculous peritonitis or tuberculous salpingitis. This type of tuberculous proctitis requires biopsy for confirmation of the diagnosis.

Gonococcal proctitis
Gonococcal proctitis occurs in both sexes as the result of rectal coitus, and in the female from direct spread from the vulva. In the acute stage, the mucous membrane is hyperaemic and thick pus can be expressed as the proctoscope is withdrawn. In the earliest stage, the lesion is mistaken for an acute proctitis, often with a false sense of security. A scraping should be taken, preferably with a small, sharp spoon on a long handle, and the material sent for immediate microscopic examination.
stages, the diagnosis can be readily established by bacteriological examination, but later, when the infection is mixed, it is more difficult to recognise. Specific treatment is so effective that local treatment is unnecessary.

**Lymphogranuloma inguinale**
The modes of infection are similar to those of gonococcal proctitis, but in the female, infection spreading from the cervix uteri via lymphatics to the pararectal lymph nodes is common. The pathological findings are similar to those of gonococcal proctitis. The diagnosis of lymphogranuloma inguinale should be suspected when the inguinal lymph nodes are greatly enlarged, although the enlargement may be subsiding by the time proctitis commences (Chapter 78).

**Primary syphilis**
A primary chancre may occur inside the anus (Chapter 75) – a paradox – ‘a painless anal fissure’.

**Acquired immunodeficiency syndrome (AIDS)**
AIDS may present with a particularly florid type of proctitis. In such patients unusual organisms such as cytomegalovirus (CMV) are often found on culture.

**‘Strawberry’ lesion of the rectosigmoid**
This is due to an infection by *Spirochaeta vincenti* and *Bacillus fusiformis*. The leading symptom is diarrhoea, often scantily blood stained. Occasionally, the diagnosis can be made by the demonstration of the specific organisms in the stools. More often, sigmoidoscopy is required. The characteristic lesion is thickened, somewhat raised mucosa with superficial ulceration in the region of the rectosigmoid. The inflamed mucous membrane ooze blood at numerous pin-points, giving the appearance of an over-ripe strawberry. A swab should be taken from the lesion and examined for Vincent’s and fusiform organisms. Swabs from the gums and the throat are also advisable.

**Treatment**
Acetarsol suppositories together with vitamin C are almost specific.

**Rectal bilharziasis**
Rectal bilharziasis is caused by *Schistosoma mansoni*, which is endemic in many tropical and subtropical countries, and particularly in the delta of the Nile.

In stage 1, a cutaneous lesion develops at the site of entrance of the cercariae (parasites of freshwater snails). Stage 2 is characterised by pyrexia, urticaria and a high eosinophilia. Both of these stages are frequently overlooked. Stage 3 is due to deposition of the ova in the rectum (much more rarely in the bladder; Chapter 76) and is manifested by bilharzial dysentery. On examination in the later stages, papillomas are frequently present. The papillomas, which are sessile or pedunculated, contain the ova of the trematode, the life cycle of which resembles that of *Schistosoma haematobium*.

Untreated, the rectum becomes festooned, and prolapse of the diseased mucous membrane is usual. Multiple fistulae in ano are prone to develop.

**General treatment of bilharziasis mansoni**
Compounds not containing antimony include niridazole (Ambilhar) in cases of infestation with *S. haematobium* or *S. mansoni* (not *S. japonicum* or in those with heart, mental or liver disease). The recommended dose is 25 mg kg\(^{-1}\) body weight daily in two divided doses for 5–7 days. Hycanthone, lucanthone and oxamniquine are other compounds with weight-related single doses given by deep intramuscular (i.m.) injection, and all have toxic side-effects. Metrizaphone is an organophosphorous compound effective against *S. haematobium* only and must be handled with care. Praziquantel (Biltricide) has proved a major advance in drug therapy, and is highly effective against all schistosome species. It is generally given as a single oral dose of 40 mg kg\(^{-1}\) for *S. haematobium* and *S. mansoni*, and for *S. japonicum* a higher dose of 60 mg kg\(^{-1}\) is given as two or three divided doses throughout 1 day.

Compounds containing antimony, either as the salts, tartar emetic (antimony potassium tartrate) and sodium salt given intravenously (i.v.), or antimony lithium thiomalate, sodium antimonoglucurate, stibogluconate and stibocaprate (Astiban) may still be required.

**Local treatment**
When the papillomas persist in spite of general treatment, they must be treated in the same manner as other papillomas, by local destruction.

**Proctitis due to herbal enemas**
This is a well-known clinical entity to those practising in tropical Africa. Following an enema consisting of a concoction of ginger, pepper and bark, administered by a witch doctor, a most virulent proctitis sets in. Pelvic peritonitis frequently supervenes. Not infrequently, a complete gelatinous cast of the mucous membrane of the rectum is extruded. Very large doses of morphine, together with streptomycin, often prevent a fatal issue if commenced early (Bowesman). Temporary colostomy is often advisable.

**Treatment**
General treatments should include bed rest in extreme cases. The stools should be kept soft with Isogel®. Suppositories of 5-ASA are often beneficial. The specific treatments for the dysenteries, tuberculosis, gonorrhoea, lymphogranuloma inguinale and syphilis are described in the appropriate sections of this book.

**SOLITARY RECTAL ULCER**
This is becoming a more commonly diagnosed problem. Classically, it takes the form of an ulcer on the anterior wall of the rectum. In this form it must be differentiated from a rectal carcinoma or inflammatory bowel disease, particularly Crohn’s disease. In recent years, it has been appreciated that the ulceration may

Jean Hyacinthe Vincent | 1862–1950. Professor of Epidemiology, Val-de-Grace Military Hospital, Paris, France.

Theodor Maximilian Bilharz | 1825–1862. Professor of Zoology, Cairo, Egypt.

Patrick Manson | 1844–1922. Practiced in Formosa (now Taiwan) and Hong Kong. Later physician, Dreadnought Hospital, Greenwich, London, England. He is regarded as the ‘father of tropical medicine’.

heal, leaving a polypoid appearance. A variety of explanations as to its cause has been suggested, including persistent trauma by sexual malpractices. However, recent proctographic studies indicate that the cause may be due to a combination of internal intussusception or anterior rectal wall prolapse, and an increase in intrarectal pressure. This combination of factors is usually due to chronic straining as a result of constipation. The histological appearances confirm the diagnosis (Morson) and they are similar to the appearances of biopsies from a full-thickness overt rectal prolapse. The condition, although benign, is difficult to treat. Symptomatic relief from bleeding and discharge may sometimes be achieved by preventing the internal prolapse by an abdominal rectopexy. In rare cases, rectal excision may be required.

**BENIGN TUMOURS**

The rectum, along with the sigmoid colon, is the most frequent site of polyps (and cancers) in the gastrointestinal tract. All neoplastic adenomatous polyps of the colon and rectum (with rare exceptions) have a tendency to become malignant. This tendency is greatly enhanced if the polyp is more than 1 cm in diameter, shows obvious signs of increasing size and has a sessile rather than a penduculated shape. For these reasons, removal of all polyps is recommended, and total removal is mandatory. Only total removal will give complete histological examination and exclude (or confirm) localised carcinoma in situ, and also prevent local recurrence. For these reasons, destruction of anorectal tumours by fulguration is not the best treatment and should be used for only the tiniest polyps. If one or more rectal polyps are discovered on sigmoidoscopic examination, a colonoscopy must be performed, as further polyps are frequently found in the colon and treatment may be influenced. No rectal tumour should be removed until the possibility of a proximal carcinoma has been ruled out, otherwise local implantation of cancer cells may occur in the distally situated rectal wound.

The rectum shares substantially the same spectrum of polyps as the colon. Polyps are described chiefly in terms of their tissue organisation. For further clinical details the reader is referred to Chapter 78. Certain polyps which have features relevant to the rectum are now described.

**Polyps relevant to the rectum (Box 71.7)**

**Juvenile polyp**

This is a bright-red glistening pedunculated sphere ('cherry tumour') which is found in infants and children. Occasionally, it persists into adult life. It can cause bleeding, or pain if it prolapses during defecation. It often separates itself, but can be removed easily with forceps or a snare. It has virtually no tendency to malignant change but should be treated if it is causing symptoms. It has a unique histological structure of large mucus-filled spaces covered by a smooth surface of thin rectal cuboidal epithelium (Fig. 71.17).

**Metaplastic polyps**

These are small, pinkish, sessile polyps, 2–4 mm in diameter and frequently multiple. They are harmless.

**Inflammatory polyps or pseudopolyps**

These are oedematous bosses of mucous membrane. They are usually associated with colitis in the UK, but most inflammatory diseases (including tropical diseases) can cause them. They are more likely to cause radiological difficulty as the sigmoidoscopic appearances are usually associated with obvious signs of the inflammatory cause.

**Villous adenomas**

These have a characteristic frond-like appearance. They are often of very large size, and occasionally fill the entire rectum. The large tumours have an enhanced tendency to become malignant – a change that can sometimes be detected by palpation with the finger; any hard area should be assumed to be malignant and should be biopsied.

Rarely, the profuse mucous discharge from these tumours, which is high in potassium, causes dangerous electrolyte and fluid losses (Fig. 71.18).

Provided cancerous change has been excluded, these tumours can be removed either by submucous dissection per anum or by sleeve resection from above. Only very occasionally is rectal excision required, and then only when malignant change has occurred. A recent technique known as transanal endoscopic...
microsurgery (TEM) has been developed (Buess), which has improved the endoanal approach for the local removal of villous adenomas. The method requires the insertion of a very large operating sigmoidoscope. The rectum is distended by carbon dioxide insufflation, the operative field is magnified by a camera inserted via the sigmoidoscope, and the image is displayed on a monitor (Fig. 71.19). The lesion is excised using specially designed instruments with the surgeon observing the monitor screen. The technique is highly specialised and takes a considerable amount of time to master.

All neoplastic polyps can be solitary or multiple. Small colonic polyps (under 5 cm in size) can now be snared through the colonoscope. This instrument has revolutionised the treatment of multiple polyps.

**Familial adenomatous polyposis**

(formerly known as familial polyposis coli)

This disease usually manifests itself by the development of multiple rectal and colonic polyps around puberty. A colonoscopy and biopsy will confirm the presence of multiple colonic adenomatous polyps. Recently, the adenomatous polyposis cell (APC) gene responsible for the disease has been isolated on chromosome 5 (Bodmer) and its sequence has been determined. This discovery makes screening of affected families far more cost-effective. As this condition is premalignant, a total colectomy must be performed, but sometimes the rectum can be preserved by regular fulguration of polyps before they develop carcinoma. The operation of restorative proctocolectomy with pouch–anal anastomosis is now being used in most centres of coloproctology: the rectum is replaced by a ‘pouch’ of folded ileum (Chapter 68).

A pan-proctocolectomy with permanent ileostomy is necessary in some instances, especially when patient follow-up may be impractical.
**Differential diagnosis**

**Bilharzia**

In patients who have lived in Egypt, or any country where bilharzial infestation is rife, bilharzial papilloma must be excluded.

**Treatment**

Diathermy coagulation is satisfactory in the case of a small papilloma, but the patient must be examined at regular intervals as recurrence is common, as in the case of the bladder. For large papillomas, especially the sessile variety, excision of the rectum may be the only curative treatment. Some cases (not, as a rule, those invading the anal canal) are suitable for conservative resection of the rectum. In a few cases, intestinal continuity can be restored by a low coloanal 'sleeve' anastomosis or one achieved by the circular stapling gun.

**Benign lymphoma**

This occurs as a circumscribed movable nodule, firm but not hard, greyish-white to pink in colour, and essentially submucosal. This neoplasm, which occurs at all ages and in both sexes, has no definite capsule. Notwithstanding, complete local excision is curative.

**Endometrioma**

Endometrioma is rare, and as a rule is misdiagnosed as a carcinoma. This neoplasm produces either a constricting lesion of the rectosigmoid or a tumour invading the rectum from the rectovaginal septum. The latter variety gives rise to a very tender submucous elevation of the rectal wall. Endometrioma occurs usually between 20 and 40 years of age, less often at the menopause. Dysmenorrhoea and rectal bleeding are the main symptoms. On sigmoidoscopy, endometriosis involving the rectosigmoid junction usually presents as a stricture, with the mucous membrane intact. Bilateral oophorectomy may be followed by regression of the tumour, rendering resection unnecessary. The contraceptive pill is also effective as it inhibits ovulation.

**Haemangioma**

Haemangioma of the rectum, which is an uncommon tumour, is a cause of serious and, if the neoplasm is large, sometimes fatal haemorrhage. When localised in the lower part of the rectum or anal canal, a haemangioma can be excised after applying Goodall's ligature. When the neoplasm is diffuse, or lying in the upper part of the rectum, the symptoms simulate ulcerative colitis, and often the diagnosis is missed for a long period. At other times, the neoplasm is mistaken for a vascular carcinoma, an error which, fortunately, is not often a cause for serious regret because the correct treatment of an extensive haemangioma is excision of that portion of the anorectum bearing the neoplasm. Lesser procedures are nearly always followed by recurrence and renewed loss of blood.

**Gastrointestinal stromal tumour [GIST (formerly leiomyoma)]**

Benign smooth muscle tumours of the rectum are rare. They consist of spindle cells. It is often difficult to predict how they will behave. If the mitotic rate is high, and if there is variation in number, size and shape, hyperchromasia and frequent bizarre cells, these tumours are likely to metastasise. In these circumstances, they should be classified as malignant gastrointestinal stromal tumours (formerly leiomyosarcomas). This uncertainty in their behaviour means that treatment should, whenever possible, be by radical excision.

**CARCINOMAS**

Colorectal carcinoma is the fourth most common variety of malignant tumour found in women, and its frequency in men is surpassed only by carcinoma of the bronchus. Overall, it is the second most common carcinoma in Western countries, with approximately 18,000 patients in the UK dying per annum. The rectum is the most frequent site involved.

**Origin**

In many cases, operation specimens show that in some part of the bowel that has been removed, in addition to the carcinoma, there are one or more synchronous adenomas or papillomas, proof indeed that adenoma and papilloma of the rectum are precarcinomatous conditions. In approximately 5% of cases, there is more than one carcinoma present. It is now believed that most rectal cancers start as an adenoma and this is due to a series of genetic changes which progressively change the adenoma from one that is not dysplastic to one that shows severe dysplasia and finally becomes a carcinoma (the adenoma–carcinoma sequence) (Vogelstein) (Chapter 78).

**Pathological histology**

Three types are recognised:

- well-differentiated adenocarcinoma;
- averagely differentiated adenocarcinoma;
- anaplastic, highly undifferentiated adenocarcinoma.

The more malignant varieties frequently contain large numbers of mucin-producing cells. The prognosis after treatment tends to be influenced by the histological grading of the tumour (see below).

Usually these carcinomas present as an ulcer, but papilliferous and infiltrating types are common.

**Types of carcinoma spread**

**Local spread**

Local spread occurs circumferentially rather than in a longitudinal direction. Usually, a period of 6 months is required for involvement of a quarter of the circumference, and 18 months to 2 years for complete encirclement, the annular variety being common at the rectosigmoid junction. After the muscular coat has been penetrated, the growth spreads into the surrounding mesorectum, but is still limited by the fascia propria (perirectal fascia). Eventually, the fascia propria is penetrated, but this occurrence is rare before 18 months from the commencement of the disease. If penetration occurs anteriorly, the prostate, seminal vesicles or the bladder become involved in the male; in the female, the vagina or the uterus is invaded. In either sex, if the penetration is lateral, a ureter may become implicated, while posterior penetration involves the sacrum and the sacral plexus. Downward spread for more than a few centimetres is rare except in anaplasic tumours.

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Lymphatic spread

Enlargement of lymph nodes from bacterial infection is more frequent than enlargement from metastasis, and microscopic examination is required to detect carcinomatous involvement of the nodes.

Lymphatic spread from a carcinoma of the rectum above the peritoneal reflection occurs almost exclusively in an upward direction; below that level to within 1–2 cm of the anal orifice the lymphatic spread is still upwards, but the first halting place is in the pararectal lymph nodes of Gerota. The exception to this rule is when the neoplasm lies within the field of the middle rectal artery, i.e. between 4 and 8 cm from the anus, in which case primary lateral spread along the lymphatics that accompany the middle rectal vein is not infrequent.

Downward spread is exceptional, drainage along the subcutaneous lymphatics to the groins being confined, for practical purposes, to the lymph nodes draining the perianal rosette and the epithelium lining the distal 1–2 cm of the anal canal.

Metastasis at a higher level than the main trunk of the superior rectal artery occurs only late in the disease. A radical operation should ensure that the high-lying lymph nodes are removed by ligating the inferior mesenteric artery and vein at the highest possible level.

Atypical and widespread lymphatic permeation can occur in highly undifferentiated neoplasms.

Venous spread

As a rule, spread via the venous system occurs late, except in that portion of the anal canal where the anoderm is firmly adherent to deeper structures. Anaplastic and rapidly growing tumours in younger patients are much more liable to spread in this way than tumours of relatively low malignancy. The principal sites for blood-borne metastases are liver (34%), lungs (22%) and adrenals (11%). The remaining 33% is divided among the many other locations where secondary carcinomatous deposits are wont to lodge, including the brain.

Peritoneal dissemination

This may follow penetration of the peritoneal coat by a high-lying rectal carcinoma.

Stages of progression

As a rule, carcinoma of the rectum does not metastasise early. Dukes classified carcinoma of the rectum into three stages (Fig. 71.20).

Dukes staging

A The growth is limited to the rectal wall (15%). Prognosis excellent.

B The growth is extended to the extrarectal tissues, but no metastasis to the regional lymph nodes (35%). Prognosis reasonable.

C There are secondary deposits in the regional lymph nodes (50%). These are subdivided into C1, in which the local pararectal lymph nodes alone are involved, and C2, in which the nodes accompanying the supplying blood vessels are implicated up to the point of division. This does not take into account cases that have metastasised beyond the regional lymph nodes or by way of the venous system. Prognosis is poor.

A stage D is often included which was not described by Dukes. This stage signifies the presence of widespread metastases, usually hepatic.

Other staging systems have been developed (e.g. Astler–Coller, TNM) to improve prognostic accuracy, but the TNM classification is now recognised internationally as the optimum classification of staging.

TNM staging

T represents the extent of local spread and there are four grades – T1, T2, T3 and T4 – depending on whether the tumour (T) is confined to the mucosa or has penetrated the rectal wall. N describes nodal involvement and M indicates the presence of distant metastases.

Histological grading

In the great majority of cases, carcinoma of the rectum is a columnar-celled adenocarcinoma. The more nearly the tumour cells approach normal shape and arrangement, the less malignant is the tumour. Conversely, the greater the percentage of cells of an embryonic or undifferentiated type, the more malignant is the tumour:

Low grade = well-differentiated 11% Prognosis good
Average grade 64% Prognosis fair
High grade = anaplastic tumours 25% Prognosis poor

Colloid carcinoma

This type of carcinoma is present in approximately 12% of cases. There are two forms: primary and secondary. Much the more frequent is secondary mucoid degeneration of an adenocarcinoma. Histologically, the glandular arrangement is preserved and mucus fills the acini. This type is of average malignancy. In a small number of cases the tumour is a primary mucoid carcinoma. The mucus lies within the cells, displacing the nucleus to the periphery, like the seal of a signet ring. Primary mucoid carcinoma gives rise to a rapidly growing bulky growth that metastasises very early and the prognosis of which is very poor (Box 71.8).
Clinical features

Carcinoma of the rectum can occur early in life, and when the disease commences in youth, in spite of radical treatment, death usually results within a year. However, the adult age of presentation is usually above 55 years. Often, the early symptoms are so insignificant that the patient does not seek advice for 6 months or more (Box 71.9).

Bleeding

Bleeding is the earliest and most common symptom. There is nothing characteristic about the time at which it occurs; nor is the colour or the amount of blood distinctive; often the bleeding is slight in amount and occurs at the end of defecation, or is noticed because it has stained underclothing. Indeed, more often than not, the bleeding in every respect simulates that of internal haemorrhoids (haemorrhoids and carcinoma sometimes coexist) and it is lamentable that, in spite of oft-repeated exhortations, the patient’s doctor sometimes fails to examine the rectum but prescribes a saline while the growth advances to inoperability.

Sense of incomplete defecation

The patient’s bowels open but there is the sensation that there are more faeces to be passed (tenesmus, a painful straining to empty the bowels without resultant evacuation). This is a very important early symptom and is almost invariably present in tumours of the lower half of the rectum. The patient may endeavour to empty the rectum several times a day (spurious diarrhoea), often with the passage of flatus and a little blood-stained mucus (‘bloody slime’).

Alteration in bowel habit

This is the next most frequent symptom. The patient may find it necessary to start taking an aperient, or to supplement the usual dose, and as a result a tendency towards diarrhoea ensues. A patient who has to get up before the accustomed hour in order to defecate, or one who passes blood and mucus in addition to faeces (‘early-morning bloody diarrhoea’), is usually found to be suffering from carcinoma of the rectum. Often, it is the patient with an annular carcinoma at the pelvi-rectal junction who suffers with increasing constipation, and the one with a growth in the ampulla of the rectum with early-morning diarrhoea (Bruce).

Pain

Pain is a late symptom, but pain of a colicky character may accompany advanced growths of the rectosigmoid, and is due to some degree of intestinal obstruction. When a deep carcinomatous ulcer of the rectum erodes the prostate or bladder, there is severe pain. Pain in the back, or sciatica, occurs when the growth invades the sacral plexus. Weight loss is suggestive of hepatic metastases.

Investigation

Abdominal examination

Abdominal examination is negative in early cases. Occasionally, when an advanced annular growth is situated at the rectosigmoid junction, signs of obstruction to the large intestine are likely to be present. By the time the patient seeks advice, metastases in the liver may be palpable. When the peritoneum has become studded with secondary deposits, ascites results.

Rectal examination

In approximately 90% of cases, the neoplasm can be felt digitally: in early cases as a plateau or as a nodule with an indurated base. When the centre ulcerates, a shallow depression will be found, the edges of which are raised and everted; this, combined with induration of the base of the ulcer, is a frequent and unmistakable finding. On bimanual examination, it may be possible to feel the lower extremity of a carcinoma situated in the rectosigmoid junction. After the finger has been withdrawn, if it has been in direct contact with a carcinoma, it is smeared with blood or mucopurulent material tinged with blood. When a carcinomatous ulcer is situated in the lower third of the rectum, involved lymph nodes can sometimes be felt as one or more hard, oval swelling in the extrarectal tissues posteriorly or posterolaterally above the tumour. In females, a vaginal examination should be performed, and when the neoplasm is situated on the anterior wall of the rectum, with one finger in the vagina and another in the rectum, very accurate palpation can be carried out.

Proctosigmoidoscopy

Proctosigmoidoscopy will always show a carcinoma, if present – provided that the rectum is emptied of faeces beforehand.

Biopsy

Employing biopsy forceps (Fig. 71.21) by way of a sigmoidoscope, a portion of the edge of the tumour can be removed. If possible,
another specimen from the more central part of the growth should also be obtained. Expert histological examination will not only enable the diagnosis of carcinoma to be confirmed, but the tumour can be graded as to its relative malignancy, although not always with complete accuracy.

**Colonoscopy**
A colonoscopy is required if possible in all patients to exclude a synchronous tumour, be it an adenoma or a carcinoma. If an adenoma is found, it can be conveniently snared and removed via the colonoscope. If a synchronous carcinoma is present, the operative strategy will need changing. If a full colonoscopy is not possible, a barium enema should be performed.

When a stenosing carcinoma is present, it may not be possible using these investigations, especially colonoscopy, to visualise the proximal colon. However, in view of the high incidence of synchronous tumours, it is imperative that a colonoscopy is always performed either before or after surgical resection.

**Differential diagnosis**
When a seemingly benign adenoma shows evidence of induration or unusual friability, it is almost certain that malignancy has occurred, even in spite of biopsy findings to the contrary. On the other hand, biopsy is invaluable in distinguishing carcinoma from an inflammatory stricture or an amoebic granuloma, which simulates a carcinoma very closely. The possibility of a neoplasm being an endometrioma should always be entertained in patients with dysmenorrhoea. The possibility of a carcinoid tumour in atypical cases must be remembered. In the last four instances, biopsy should establish the correct diagnosis. The solitary ulcer syndrome has already been alluded to above (Box 71.10).

**Treatment**
Some form of excision of the rectum is essential, if at all possible, because of the extreme suffering entailed if the neoplasm remains. However, before surgery is embarked upon, it is necessary to assess:

- the fitness of the patient for operation;
- the extent of spread of the tumour.

The findings will affect the surgical approach.

Assessment of spread should include ultrasonography or computed tomography (CT) of the liver, and a chest radiograph and/or CT scan of the chest to exclude distant metastases (Fig. 71.22).

Endoluminal ultrasound, whereby a probe is placed in the rectal lumen, can be used to assess the local spread of the tumour (Fig. 71.23), as can CT and, more recently, magnetic resonance imaging (MRI) (Fig. 71.24).

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**Box 71.10**
**Diagnosis and assessment of rectal cancer**

All patients with suspected rectal cancer should undergo:
- Digital rectal examination
- Sigmoidoscopy and biopsy
- Colonoscopy if possible or barium enema

All patients with proven rectal cancer require staging by:
- Imaging of the liver and chest preferably by CT
- Local pelvic imaging by endoluminal ultrasound, CT or MRI

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**Figure 71.22** Computerised tomography scan of the liver in a patient with a rectal cancer showing multiple liver metastases.

**Figure 71.23** Endoluminal ultrasound. The probe is in the rectal lumen and shows a rectal tumour invading through the rectal wall.

**Figure 71.24** MRI scan of pelvis showing extensive T3 rectal carcinoma invading left side of mesorectum.
Principles of surgical treatment

Radical excision of the rectum, together with the mesorectum and associated lymph nodes, should be the aim. Even in the presence of widespread metastases, a rectal excision should be considered, as this is often the best means of palliation. The presence of a solitary liver metastasis does not necessarily rule out the feasibility of a radical excision. There are many reports of a presumed solitary liver metastasis being resected either at the time of excision of the rectum or subsequently, with long-term survival being achieved.

When a tumour appears to be locally advanced, the administration of a course of preoperative radiotherapy may reduce its size and make it more amenable to radical excision. Indeed, recent evidence suggests that the administration of preoperative adjuvant radiotherapy in all rectal cancer cases reduces the incidence of local recurrence significantly (Pahlman).

For patients who are unfit for radical surgery or who have widespread metastases, a local procedure such as transanal excision, laser destruction or interstitial radiation should be considered.

When a rectal excision is possible, whenever feasible, the aim should be to restore gastrointestinal continuity and continence by preserving the anal sphincter. A sphincter-saving operation (anterior resection) is usually possible for tumours of the upper two-thirds of the rectum. Although removal of the rectum with a permanent colostomy (abdominoperineal excision) is often required for tumours of the lower third of the rectum, the introduction of the stapling gun has enabled many more of these patients to be treated by a sphincter-saving procedure. Provided a minimum distal margin of clearance of 2 cm can be secured, it is safe to restore gastrointestinal continuity (Williams). Because of the much wider degree of local spread by anaplastic tumours and the high risk of local recurrence, it has been customary not to perform restorative operations when these carcinomas are in the lower third of the rectum. However, with the realisation that a preoperative biopsy is often inaccurate with respect to the degree of histological differentiation, coupled with the more widespread use of preoperative and postoperative radiotherapy, many more anaplastic lesions are being treated by sphincter-saving procedures. Anterior resection is now applied to at least two-thirds of patients presenting with carcinoma of the rectum. The principles of the operation involve radical excision of the neoplasm, with at least a 2-cm margin of normal bowel below the lower edge of the tumour, removal of all the mesorectum, i.e. total mesorectal excision (TME) (Heald) and high proximal ligation of the inferior mesenteric lymphovascular pedicle. Once the rectum has been mobilised adequately, it is removed, and the remaining bowel and rectal stump are washed out proximally and distally. Restoration of continuity by direct end-to-end anastomosis (manually or by laser destruction or interstitial radiation should be considered. When the patient comes to surgery with a loaded colon, peroperative irrigation on-table can be performed provided the rest of the wound is scrupulously protected. Detergent preparations are available for this.

All patients should see a stoma care nurse preoperatively and be sited for a temporary or permanent ileostomy or colostomy. They must also be counselled as to the complications of the procedure, and particularly about the risks of pelvic autonomic nerve damage causing bladder and sexual disturbance, especially impotence.

Blood and electrolyte deficiencies are corrected. Before commencing the operation, an indwelling catheter is inserted into the bladder.

Combined (abdominal and perineal) excision of the rectum

This operation is still required for large extensive tumours of the lower third of the rectum, which are unsuitable for a sphincter-saving procedure. It has the advantage for difficult tumours of the lower rectum of two surgeons operating from the abdominal and perineal procedures simultaneously. This considerably reduces the time expended in performing the operation, and obviates turning the patient. A large catheter is passed and, with the patient in Trendelenburg lithotomy position, the legs being supported in special crutches (Lloyd-Davies–Allen), access is afforded to the abdomen and the perineum at the same time.

The abdominal surgeon makes a midline incision, extending it well above the umbilicus. The liver and the peritoneum are examined for metastases and the degree of fixity of the growth is established. The small intestine is packed away from the pelvis. A self-retaining retractor is placed in the wound and the pelvic colon freed by dividing any congenital adhesions on the left side. The peritoneum overlying the pelvic floor is divided with a knife by an incision that runs from the colon at the proposed site of division over the mesocolon and across the base of the bladder or near the cervix on the pelvic floor and then upwards on the right side of the mesocolon. The peritoneum is now raised, using the points of the scissors to expose the ureters and testicular or ovarian artery. The mesocolon is then divided at the site of the

Preoperative preparation (Box 71.11)

The bowel is prepared by mechanical cleansing using a combination of diet and purgatives (senna, Picolax®). Prophylactic systemic antibiotics are given peroperatively. The antibiotic regimen must be active against both aerobic and anaerobic organisms. At present, a suitable prescription would be cefuroxime 750 mg plus metronidazole 500 mg 1 hour before surgery, plus another two doses of each drug at 6 and 12 hours after the operation. If a patient comes to surgery with a loaded colon, peroperative irrigation on-table can be performed provided the rest of the wound is scrupulously protected. Detergent preparations are available for this.

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This operation is still required for large extensive tumours of the lower third of the rectum, which are unsuitable for a sphincter-saving procedure. It has the advantage for difficult tumours of the lower rectum of two surgeons operating from the abdominal and perineal procedures simultaneously. This considerably reduces the time expended in performing the operation, and obviates turning the patient. A large catheter is passed and, with the patient in Trendelenburg lithotomy position, the legs being supported in special crutches (Lloyd-Davies–Allen), access is afforded to the abdomen and the perineum at the same time.

The abdominal surgeon makes a midline incision, extending it well above the umbilicus. The liver and the peritoneum are examined for metastases and the degree of fixity of the growth is established. The small intestine is packed away from the pelvis. A self-retaining retractor is placed in the wound and the pelvic colon freed by dividing any congenital adhesions on the left side. The peritoneum overlying the pelvic floor is divided with a knife by an incision that runs from the colon at the proposed site of division over the mesocolon and across the base of the bladder or near the cervix on the pelvic floor and then upwards on the right side of the mesocolon. The peritoneum is now raised, using the points of the scissors to expose the ureters and testicular or ovarian artery. The mesocolon is then divided at the site of the
proposed division of the colon and the trunk of the inferior mesenteric artery (Fig. 71.25), is ligated and divided distal to the first branch. (Some surgeons emphasise ‘flush ligation’ of the artery at its origin from the aorta.) Most surgeons prefer to divide the sigmoid colon at this point and this is invariably done with a linear stapling cutting instrument. The rectosigmoid mesentery is further divided and separated from the sacrum by sharp dissection with scissors or, more usually, diathermy. Great care is exercised to ensure that the hypogastric nerves are identified and preserved. It is essential that, as the distal dissection proceeds, the surgeon remains outside the posterior margin of the rectal mesorectum and stays within the bloodless plane between the mesorectum and the sacrum, i.e. ‘the holy plane’ (Heald). In this way, the sacrum is cleared almost down to the coccyx. The peritoneal incision anterior to the rectum is now deepened and the seminal vesicles or the vaginal wall are identified so that Denonvilliers’ fascia behind them is cleared by a dissection leading down to the prostate or perineal body. The condensations of fascia that attach the rectum to the pelvic side walls and are known as the lateral ligaments are next dissected by diathermy. This tissue contains the middle rectal vessels, which sometimes require separate ligation and division.

By this time, the perineal surgeon working from below has mobilised the anus and the lower rectum so that the whole of the bowel can be passed through the perineal wound made by the abdominal surgeon. Haemostasis over the sacrum may be difficult, but it is invariably achieved by diathermy and a hot saline pack left in position for a few minutes. The pelvic peritoneum may sometimes be united by a continuous non-absorbable suture from the bladder right back over the promontory of the sacrum (Fig. 71.26), although because of the extent of the lateral dissection this is often not possible.

The site in the left iliac fossa for the colostomy should have been marked preoperatively by the stoma care nurse in consultation with the patient. If this has not been possible it should be sited equidistant from the umbilicus and the left anterior superior iliac spine at the linea semilunaris, about 2.5 cm above the spinoumbilical line. A circular piece of skin and fascia, about 3 cm in diameter, is excised and this hole deepened to excise similar layers of fascia and peritoneum. The stapled end of the colon is now passed through this incision and the colostomy performed by suturing the colon to the peritoneum and the mucosa directly to the skin. The paracolic gutter may be closed with sutures – this will close the 'lateral space'. The abdomen is closed and the layers of the incision are protected from the colostomy. An adherent plastic colostomy bag is then fitted in position and the dressings are placed on the abdominal wound.

When the abdominal surgeon has made certain that the condition is operable, the perineal surgeon closes the anus with purse-string sutures of stout silk or nylon. An elliptical incision between the tip of the coccyx and the central perineal point is made around the anus and deepened. The left forefinger is insinuated into the levator ani, which is divided lateral to the finger first on one side and then on the other. The dissection is deepened posteriorly by incising Waldeyer’s fascia, which is a thick condensation of pelvic fascia lying between the rectum and the sacrum. Contact is made with the abdominal surgeon. The apex of skin anterior to the anus is grasped in a haemostat, which serves as a retractor, and by scissors or diathermy and gauze dissection the wound is deepened, when the catheter within the membranous urethra will be felt. A plane of cleavage will be found between the rectum and the prostate in the male or between the rectum and the vagina in the female. This plane having been carefully determined, Denonvilliers’ fascia is divided, after which the rectum can be stripped from the prostate or the vagina. The posterior wall of the vagina is frequently excised with the rectum. When the abdominal surgeon has cleared the rectum laterally, the whole of the anus and rectum can be drawn downwards and removed. Haemostasis must be secured and the perineal wound closed anteriorly and posteriorly in layers around a large drainage tube or closed entirely around suction drains. Large dressings of gauze and wool are applied over the area and a triangular bandage is...
used to keep the dressing in place. It is usual to employ primary closure of the perineal wound, and to use laterally situated suction drains brought out through each ischiorectal fossa to keep the large perineal cavity from filling up with blood and serous exudate. These drains can be removed after several days.

Aftertreatment
The patient is returned to bed, blood transfusion being continued as necessary. The catheter is connected to a closed drainage system and left in for 5 days. It may have to be reinserted if voluntary micturation is not re-established.

Reactionary haemorrhage from the perineal wound may demand return to theatre to open and pack the wound with gauze. The colour of the colostomy must be watched to make sure that the blood supply is adequate. Small bowel obstruction may occur by herniation through the lateral space of the colostomy or through the pelvic peritoneal closure line. Discharge of urine from the perineal wound demands immediate investigation for bladder, ureteric or urethral damage.

Care of the colostomy
This is much the same as the care of an ileostomy (Chapter 68). Within a very short time, the colostomy acts once or twice a day. The patient soon learns which foods cause diarrhoea and therefore avoids them. Many patients are now taught to empty their lower colon by irrigations through the colostomy; this has many advantages for the patient who requires an inactive colostomy while at work. Occlusive caps are also available which fit in the end of the stoma and allow some degree of continence.

Stenosis of colostomy is usually avoided by the removal of a circle of skin and subcutaneous tissues at the colostomy site. Dilators may be necessary if there is any tendency for stenosis to occur.

Laparoscopic abdominoperineal excision
Recently, it has been demonstrated that the operation can be carried out laparoscopically. The rectum is mobilised completely from above, using the laparoscope. A small circular perineal incision is made around the anal canal, and via a limited perineal dissection the rectum and anal canal are completely mobilised. After transecting the sigmoid colon with an Endo GIA instrument, the specimen containing the carcinoma is delivered through the perineal wound. A trephine incision is made in the left iliac fossa and the sigmoid colon is brought out as an end-colostomy. Although the operative technique has been shown to be quite feasible and reduces postoperative pain and time in hospital, there is concern that it may not be as curative as the standard ‘open’ technique. The concern surrounds the degree of clearance that can be achieved via the laparoscope, and the risk of free cancer cells being disseminated around the peritoneal cavity and implanting, particularly at the ‘port’ sites. Controlled trials will be needed to determine whether the laparoscopic approach is safe and as effective as the open technique, and these are in progress.

Anterior resection
In cases of carcinoma of the rectum situated above the peritoneal reflection, lymphatic spread is virtually confined to the upward path. Here a wide resection of the bowel with its lymphatic field, followed by end-to-end anastomosis and preservation of the sphincter mechanism, is both justifiable and highly desirable.
As discussed previously, in the last two decades there has been a move to extend sphincter-saving operations to treat most tumours of the middle third of the rectum, and indeed many of the lower third. The introduction of the circular stapling instruments, with their detachable heads, has made such procedures far more feasible.

The operation of low anterior resection proceeds in the same manner as the abdominal part of abdominoperineal excision. The rectum is mobilised to such an extent that a right-angled clamp can be placed at least 2 cm below the tumour. The rectal stump can then be stapled transversely, using an appropriate instrument. After the rectum and sigmoid colon have been excised, continuity is re-established by the method depicted in Fig. 71.27. Although a single loop of colon is often used for the anastomosis, a short J-shaped colonic pouch may be constructed with the aim of increasing neorectal capacity and thus reducing postoperative bowel frequency and urgency (Parc). Some surgeons are concerned that the anastomotic leakage rate will be increased if the technique of cross-stapling of the rectal stump is used. They prefer to place a purse-string suture in the rectal stump lumen, as well as in the proximal colon. After the stapling gun is fired and removed, it is essential that the head of the instrument is detached and the 'doughnuts' are examined. A break in the circumference of one or both 'doughnuts' signifies a defect in the anastomosis, and the latter should be sought and repaired with interrupted sutures. In these circumstances, a covering stoma will also be required to allow safe healing of the anastomosis. Some surgeons believe that such a stoma is required for all colorectal and coloanal anastomoses which are constructed below the peritoneal reflection.

Occasionally, although the rectum, together with its tumour, can be removed adequately, continuity cannot be restored by a stapling technique. In such cases, it may still be possible to restore continuity by bringing the colon down to the anal canal and constructing a coloanal anastomosis via the transanal route (Fig. 71.28) (the so-called abdominotransanal–coloanal operation first described by Parks).

In each of the procedures, it is essential to ensure that any free tumour cells released by mobilisation of the rectum are destroyed by irrigation of the colonic and rectal lumens with a cancercidal solution such as 1% centrimide. By so doing, the implantation of such cells and subsequent local recurrence is prevented. However, it should be realised that, although a small percentage of local recurrences are due to implantation of shed cells, the majority are due to inadequate removal of the tumour at the time of the initial operation. Although it is usual for the surgeon to remove all macroscopic tumour, he or she is often unable to remove all microscopic tumour. Particular interest has recently focused on local microscopic spread. It is now known that micrometastases are present in the mesorectum, and these are the most likely cause of local recurrence after rectal excision (Quirke). Heald has emphasised how important it is to remove all the mesorectum during anterior resection or abdominoperineal excision, a procedure known as TME (total mesorectal excision). TME is now being practised worldwide and appears to reduce the risks of local recurrence substantially (Fig. 71.29). However, it is unlikely that surgery alone will deal adequately with all the micrometastases in the pelvis. Consequently, adjuvant radiotherapy may have added benefit (see below).

**Laparoscopic anterior resection**

It is now possible to perform a high anterior resection using the laparoscope, the anastomosis being performed intraperitoneally using a slightly modified circular stapling gun. Laparoscopic anastomoses below the peritoneal reflection are feasible but are much more difficult. However, with improvements in technology such procedures may become more commonplace. Nevertheless, like laparoscopic abdominoperineal excision, there is concern that these operations may be less curative than the standard operations.

**Hartmann’s operation**

This is an excellent procedure in an old and feeble patient who would not stand a lengthy anterior resection or an abdomino-
Carcinomas

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perineal procedure. Through an abdominal incision, the rectum is excised, if possible, to within 2.5 cm of the anus, the anorectal stump is transected usually with a stapler, a colostomy is performed and the peritoneum oversewn to cover the pelvic defect in the usual way. In an old patient, in whom the neoplasm is usually slow growing and spread is late, this is a most useful operation.

**Palliative colostomy**

This is indicated only in cases giving rise to intestinal obstruction, or where there is gross infection of the neoplasm. It is often possible to resect the growth later, and in some cases cure, rather than palliation, is achieved.

**Local operations**

For small, low-grade mobile lesions, which are often Dukes’ A (T1) tumours, local removal should be curative. For these tumours, especially in the unfit or patients who will not accept a colostomy, local removal has been used. Such operations are only suitable for lesions within 10 cm of the anal verge. Turnbull advocated local diathermy removal, while York-Mason developed a trans-sphincteric approach, but a peranal approach is usually possible, with full-thickness excision of the lesion. More recently, the transanal endoscopic microscopic (TEM) technique has been used for these tumours. This involves inserting a large-calibre operating sigmoidoscope transanally, through which carbon dioxide is infused to produce rectal distension. Using specially designed instruments and an endoluminal camera inserted through the sigmoidoscope, the rectal carcinoma can be excised and the defect closed under direct vision by magnification of the image on a video monitor.

There is considerable doubt, however, as to whether such local techniques should be used for potential curable lesions as they do not deal with the mesorectal or lymphatic spread of the tumour.

Moves are afoot to combine local excision with chemotherapy and radiotherapy as a curative treatment for T1 and T2 tumours.

**More extensive operations**

When the carcinoma of the rectum has spread to contiguous organs, the radical operation can often be extended to remove these structures. Thus, in the male, in whom spread is usually to the bladder, a cystectomy and resection of the rectum can be effected. In the female, the uterus acts as a barrier, preventing spread from the rectum to the bladder. Accordingly, a hysterectomy should be undertaken in addition to excision of the rectum. Should the bladder base be involved, then pelvic exenteration must include that structure. Pelvic evisceration for carcinoma of the rectum is justifiable only when the surgeon is reasonably confident that the growth can be removed in toto.

**Pelvic exenteration (Brunschwig’s operation)**

The aim is to remove all of the pelvic organs, together with the internal iliac and the obturator groups of lymph nodes (Fig. 71.30). The Trendelenburg lithotomy position facilitates the procedure, and ligation of both internal iliac arteries diminishes the blood loss. The small intestine fills the empty pelvis. Special care must therefore be taken to suture accurately the perineal skin, and to avoid pressure necrosis of the perineal incision by nursing the patient on alternate sides. Some form of urinary diversion is necessary (Chapter 76), usually an ileal conduit.

**Liver resection**

Single or several well-localised liver metastases can now be resected with relatively low mortality and morbidity. Provided the patients are carefully selected, a reasonable survival rate can be achieved (approximately 40% in some series). Such surgery is usu-
ally carried out in a specialised liver unit and it is generally advised that it takes place after the primary lesion has been dealt with (Box 71.12).

**Radiotherapy**
With modern techniques (megavolt cobalt therapy or neutron beam irradiation), some adenocarcinomas now respond to radiotherapy. Various controlled trials have been performed to investigate the effect of adjuvant radiotherapy given either pre- or postoperatively. The overall results of these trials suggest that, provided an adequate dose is given (4000–5000 Gy), adjuvant radiotherapy can reduce the incidence of local recurrence; however, long-term survival is not affected. Surprisingly, with modern techniques, morbidity from the radiation is not a major problem. Another advantage of preoperative radiotherapy is often its ability to reduce the size of a large tumour and make its subsequent removal easier. Recent studies have combined radiotherapy with chemotherapy in an attempt to shrink an extensive tumour prior to surgical excision. In some cases, using this combined therapy the results can be spectacular.

Palliative irradiation can be given for inoperable primary tumours or local recurrence, especially when painful. Papillon perfected a technique of intracavity radiation that applies the treatment direct to the tumour from the rectal lumen. In a selected series of early cases, the results were good (5-year survival rates of more than 70%). Intraoperative irradiation is also being evaluated as an adjuvant therapy.

**Chemotherapy and immunotherapy**
A variety of drugs has been tried both as an adjuvant therapy and for the treatment of disseminated disease. The most frequently used drug is 5-fluorouracil (5-FU). Up until recently, the results of various trials using 5-FU either alone or in combination were disappointing. However, there is now good evidence that the combination of systemic 5-FU and folic acid (leucovorin) has a small, yet significant effect on survival when combined with surgery in node-positive disease. Similarly, studies in which 5-FU has been infused into the portal vein during and immediately after the primary operation (Taylor) have shown a small benefit. Such intraportal adjuvant therapy is thought to kill malignant cells which are released into the circulation during operative manipulation of tumour, and thus prevent the formation of metastases.

Some exciting new drugs have become available recently, the most notable being irinotecan and oxaliplatin. Both agents have been shown to have a moderate but beneficial effect in disseminated disease, but it remains to be seen whether they will be effective in an adjuvant setting.

There is considerable interest at present in immunotherapy for the treatment of disseminated colorectal cancer. Various monoclonal antibodies to carcinoembryonic antigen have been developed, which theoretically can be targeted to malignant deposits. When these antibodies are conjugated to cancericidal agents, they have the ability to destroy the cancerous cells. Unfortunately, the antibodies are not sufficiently specific and, therefore, normal tissue is likely to be damaged. Nevertheless, the search continues for more selective antibodies.

**Results of surgery for rectal cancer**
In specialised centres, the resectability rate may be as high as 95%, with an operative mortality of less than 5%. Overall, 5-year survival rates in these centres is about 50%, but the rate falls to approximately 25% when the results of non-specialised centres are included. The most likely reason for this difference is the higher proportion of advanced and emergency cases treated in non-specialised hospitals. However, another contributing reason is that in specialised centres there is a concentration of expertise that is not readily available in district hospitals. Survival rates are influenced by Dukes’ stage, with stage C patients doing worse than those with A and B lesions (Fig. 71.31). The degree of mobility also influences survival, with fixed lesions having a worse prognosis than mobile lesions. The lower the tumour is in the rectum, the worse the outlook. Histological grade also influences outcome, anaplastic lesions having the worse prognosis. Interestingly, despite the more frequent use of sphincter-saving resection compared with abdomino-perineal excision, survival has not been affected.

**Box 71.12**
**Surgery for rectal cancer**

- Surgery is the mainstay of curative therapy
- The primary resection consists of rectal excision with total mesorectal excision (TME)
- Most cases can be treated by anterior resection with the colorectal anastomosis being achieved with a circular stapling gun
- A smaller group of low, extensive tumours require an abdomino-perineal excision with a permanent colostomy
- Adjuvant preoperative radiotherapy can reduce local recurrence
- Adjuvant chemotherapy can improve survival in node-positive disease
- Liver resection in carefully selected patients offers the best chance of cure for single or well-localised liver metastases

![Figure 71.31](image-url)  
Local recurrence

Local recurrence after rectal excision is a major problem. The patient often presents with persistent pelvic pain, which radiates down the legs if sacral roots have been involved. Bladder problems may occur. If recurrence develops after abdominoperineal excision, a swelling or induration may be present in the perineum, or an abscess or discharging sinus may develop. Occasionally, the presence of a large recurrence in the pelvis may lead to bilateral leg oedema caused by pressure or invasion of lymphatics or veins.

After sphincter-saving resection, local recurrence may produce a change in bowel habit or the passage of blood per rectum. Sigmoidoscopic examination after sphincter-saving resection may reveal friable tissue at the anastomosis which, when biopsied, confirms the diagnosis. However, usually the recurrence is situated extrarectally, and is detected either as induration on digital examination or by endoluminal ultrasonography, CT or MRI. These investigations can also detect recurrence before it causes symptoms. Local recurrence rates vary between 2% and 25% and seem to occur with equal frequency after sphincter-saving resection and abdominoperineal excision. The most common cause is inadequate removal of all the tumour at the initial operation. This is due to the presence of microscopic tumour deposits in the tissues surrounding the rectum. Heald has shown that, if the mesorectum is removed in its entirety, the local recurrence rate can be reduced to less than 5%.

Other possible causes of local recurrence include implantation of viable cells on the suture line and the development of a new primary tumour. Although both mechanisms may occur, inadequate removal of the tumour is far and away the most important reason for recurrence. Eighty per cent of all local recurrences develop within 2 years following surgery, and they are very difficult to treat. The best prospect of salvage is by surgical resection. However, it is possible to achieve apparent complete removal in only a minority of cases. It was hoped that serial measurements of carcinoembryonic antigen might identify those patients who might benefit by early radical surgery, but this has been found not to be the case (Northover). The mainstay of therapy for local recurrence is radiotherapy, which is invariably palliative.

Occasionally, a neodymium:yttrium–aluminium–garnet (Nd: YAG) laser can be used to deal with an obstructing or bleeding lesion. Intraluminal stents can also be inserted endoscopically in high, stenosing rectal cancers to palliate a tumour that is causing obstruction.

Carcinoid tumour

Carcinoid tumour of the rectum, as far as its lethal properties are concerned, can be looked upon as a gradation between a benign tumour and a carcinoma. A latter-day aphorism is ‘keep carcinoid in mind when an atypical neoplasm (ulcer) of the rectum is encountered’. Like benign lymphoma, carcinoid tumour originates in the submucosa, the mucous membrane over it being intact. Consequently, it seldom produces evidence of its presence in the early stages, when it presents as a small plaque-like elevation. The incidence of clinical malignancy, i.e. the occurrence of metastases, is 10%. This is much less than that for carcinoid tumour of the small intestine, but it is greater than that of carcinoid tumour of the vermiform appendix. Multiple primary carcinoid tumours of the rectum are not infrequent. The neoplasm is of slow progression, and usually metastasises late. Large carcinoids (over 2 cm) are almost always malignant.

Treatment

Local excision is sufficient treatment. Resection of the rectum is advisable if the growth is more than 2.5 cm in diameter, if recurrence follows local excision or if the growth is fixed to the perirectal tissues. Even when metastases are present, resection may prolong life.

FURTHER READING