

Surgery for colorectal cancer

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Abstract

Surgery remains the mainstay of treatment for colorectal cancer for curative outcomes. This article outlines the preoperative, perioperative, intraoperative and postoperative management of patients who undergo colorectal surgery. The first section discusses preoperative planning, including the role of the multidisciplinary team (MDT) in decision-making and preoperative patient optimization. The second section discusses the principles of oncological resection and outlines surgical techniques for common colorectal cancer procedures, aiming to achieve R0 resection and minimize complications. The final section touches on relevant topics such as postoperative follow-up and surveillance, cytoreductive surgery, pelvic exenteration, and the management of colorectal liver metastases.

Keywords Colorectal cancer; minimally invasive surgery; colon resection; rectal resection

Introduction

Colorectal cancer is the fourth most common cancer and the second leading cause of cancer-related death. In the UK, approximately 44,100 new cases are diagnosed each year.¹ Risk factors for colorectal cancer include a family history of colorectal cancer, long-standing inflammatory bowel disease, type 2 diabetes, obesity, alcohol consumption, and cigarette smoking.

The majority of colorectal cancer occurs sporadically, however in approximately 10% of cases it arises from an inherited genetic mutation. Lynch syndrome is the commonest hereditary colorectal syndrome, caused by mutations in mismatch repair genes (MMR) leading to microsatellite instability (MSI), but the diagnosis is often missed with the result that at risk family members miss out on genetic testing and potentially life-saving screening. The presence of microsatellite instability when identified in histological analysis should therefore prompt further genetic analysis to identify families with Lynch syndrome. Other familial colorectal cancer syndromes include

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familial adenomatosis polyposis (FAP), caused by a genetic mutation of the APC gene which results in the development of hundreds to thousands of polyps and the inevitable development of colorectal cancer unless prophylactic proctocolectomy is performed.

As with all cancer, the key to optimal prognosis is early detection. Unfortunately the symptoms of bowel cancer often present late, or are not recognized as being significant and ignored due to their ubiquity (change in bowel habit or rectal bleeding). Approximately 20% of cases still present on the emergency intake and are associated with poorer outcomes. Bowel screening has been introduced in many counties in an effort to counteract the previously mentioned facts. Its premise is to detect dysplastic polyps prior to them undergoing malignant change or detect cancer at an early asymptomatic phase. In the UK, all individuals aged 50–74 are invited to complete a faecal immunochemical test (FIT) every 2 years which detects occult blood in stool. Patients with a positive result are subsequently invited to undergo colonoscopy.

Minimally invasive surgery remains the preferred option by most colorectal surgeons where facilities are available. Laparoscopic surgery has been increasingly replaced by robotic-assisted surgery. Robotic systems provide better visualization, improved dexterity and more precise dissection. However, these benefits come with higher financial and resource costs. However performed, colorectal surgery remains the mainstay of treatment for curing colorectal cancer and often useful in the palliation of non-curative setting.

Staging

Colonoscopy is the gold standard index investigation for patients presenting with symptoms which are suspicious of an underlying malignancy. Not only does it allow visualization of the tumour, but enables biopsies to be taken for histology and identification of synchronous polyps or tumours. Once a suspected cancer has been identified further imaging is completed to both stage the disease and identify any distant metastatic disease.

For patients in whom colon cancer has been identified, CT of the thorax, abdomen and pelvis (CT TAP) usually sufficient in identifying locoregional or distant metastatic disease. An MRI of the liver may be required when either the CT is non-diagnostic, or when liver metastases are being considered for surgical resection.

In addition to CT TAP, patients with rectal cancer require local staging in the form of an MRI pelvis. MRI provides detailed information on the size and depth of invasion of the tumour, its proximity to the circumferential resection margin (CRM), nodal status as well as presence of other poor prognostic features such as extramural vascular invasion (EMVI).

Positron emission tomography (PET-CT) may be indicated to exclude disseminated disease in cases being considered for either resection of distant metastatic disease or for pelvic exenteration. Once all investigations have been completed, the results are reviewed in the multidisciplinary team (MDT) meeting. Following careful review and discussion, radiological staging is recorded using the tumour/node/metastasis (TNM) classification, where T indicates the invasiveness of the tumour (T1-4b) N indicates the nodal status (N0-2b) and M indicates the presence or absence of distant metastatic disease (M0-1b).

Neoadjuvant treatment

Patients with early localized disease usually proceed straight to surgical resection. However for cases of more advanced disease, or in the presence of limited resectable metastases, consideration should be given to neoadjuvant treatment. In cases of advanced colon cancer (T4 disease), the FOxTROT trial showed that neoadjuvant therapy reduces the risk of incomplete resection and can be carried out safely without increasing peri-operative risk leading to improved survival.² For rectal cancer, the UK National Institute for Health and Care Excellence (NICE) guidance recommends neoadjuvant treatment in the form of radiotherapy ± chemoradiotherapy in cases of T3/4 disease or where there is nodal involvement in order to reduce the risk of local recurrence.³ Total neoadjuvant treatment (TNT) where a complete course of chemotherapy is given up front together with radiotherapy is increasingly used for more locally advanced disease offering improved outcomes and an increased likelihood of complete pathological response with the potential for patients to undergo an organ preservation approach.

Prehabilitation

Patients who are well optimized prior to major surgery are more likely to have improved postoperative outcomes. The Enhanced Recovery After Surgery (ERAS) protocol is a multimodal programme that aims to improve recovery surgery by optimizing patient pre, intra and post operatively. Its adoption is proven to reduce hospital stay, postoperative complications and improve patient satisfaction.⁴ The preoperative aspect of the ERAS protocol seeks to address modifiable risk factors including cardiopulmonary fitness (via cardiopulmonary exercise testing (CPET)), nutrition, co-morbidities (diabetes, chronic obstructive pulmonary disease (COPD)/asthma, ischemic heart disease etc.) and anaemia.

Bowel preparation

The use of mechanical bowel preparation (MBP) prior to surgery varies between hospitals but is usually used in patients who are undergoing a low anterior resection with a defunctioning loop ileostomy. MBP is associated with dehydration and electrolyte disturbance. A recent Cochrane review (2022) shows that MBP alone offers no benefit in patient outcomes; however, when combined with oral antibiotics, it can reduce the risk of surgical site infection and anastomotic leak.⁵

Principles of oncological resection

The fundamental principle of curative colorectal surgery involves en bloc resection of the primary tumour along with its locoregional lymphatics, which may contain micrometastases, with adequate margins. Lymphatic spread occurs sequentially, beginning in the epicolic and paracolic nodes and extending along the vessels to the apical node at the origin of the main supplying artery.

For colonic cancer, a 5 cm margin both proximally and distally is required while for rectal cancer, a minimum of 1 cm margin distal to the tumour is necessary to ensure adequate curative surgery.

The extent of colorectal resection is defined by the distribution of the supplying arteries, along which the corresponding lymphatic drainage runs. A minimum of 12 lymph nodes yield is required to provide accurate pathologic staging.

The total mesorectal excision (TME) technique introduced by Heald et al. is the standard of care for rectal cancer resection. It involves dissection along the mesorectal fascia to remove the rectum with its mesentery en bloc, significantly reducing local recurrence.⁶ Conversely, the role of Complete mesocolic excision (CME) for colonic cancer, as advocated by Hohenberger, remains controversial due to potential morbidity associated with extensive central vascular dissection. CME, mostly performed in right colonic cancer resection, involves dissection along embryological planes to remove the colon along with its mesentery intact including all the lymph nodes up to the central vascular ligation point (i.e. where ileocolic/right colic/middle colic branch off the superior mesenteric artery and vein) resulting in higher lymph node yield and reduced rate of local recurrence. The recently published European Association for Endoscopic Surgery (EAES) guideline provides conditional recommendation favouring CME for right-sided colon cancer when appropriate surgical expertise is available.⁷

Laparoscopy remains the most common approach for colorectal cancer resection, with increasing adoption of robotic-assisted surgery in UK.

Surgery for colon cancer

Right hemicolectomy

Performed for tumours of caecum, ascending colon and proximal transverse colon. Key vessels are ileocolic artery and vein, right colic artery as well as branch of right middle colic artery. The lymphatics follow the artery.

Dissection: the patient is positioned supine. There are various approaches for right colonic mobilization but the medial to lateral or lateral to medial approaches are most commonly performed.

Lateral to medial – this is the traditional approach for open resections. The lateral peritoneal attachment of the right side of the colon is incised along the white line of Toldt. Further mobilization is carried out medially in the avascular plane to lift the right colon and its mesentery off the retroperitoneum, paying attention to right gonadal vessel, ureter (not normally seen) as well as duodenum (seen medially). Dissection is also carried cranially towards hepatic flexure and caudally to mobilize the terminal ileum. The hepatic flexure is then mobilized fully by incising the gastrocolic ligament. The key vessels can then be ligated with the mesentery divided to the planned point of division on the transverse colon and ileum. The ileocolic artery and vein are always present while the right colic and middle colic branches can be highly variable.

Medial to lateral – this is often performed during a minimally invasive approach. An incision is made on the peritoneum below the ileocolic vessels to enter the avascular plane between the mesentery and retroperitoneum. Dissection is carried out over the duodenum superiorly towards the hepatic flexure and laterally towards the lateral peritoneal attachment. The ileocolic pedicle is ligated once it limits progress of the dissection. Lateral dissection along the white line of Toldt is then carried out to meet the medial dissection plane. The hepatic flexure is then fully mobilized by incising the gastrocolic ligament. The mesentery is then divided to the planned point of division on bowel.

Other approaches include cranial to caudal (from hepatic flexure), caudal to cranial (from ileocaecal junction) or subileal.

For transverse colon tumours, the greater omentum may need to be dissected off the transverse colon up to the resection margin to ensure clear margins in more advanced disease.

Resection and anastomosis: this can be performed intracorporeally or extracorporeally in the laparoscopic approach. Ileo-transverse colonic anastomosis is mostly performed using an end to end or side to side technique, stapled or sutured.

Left hemicolectomy/sigmoid colectomy

This is performed for descending colon and distal transverse colon tumours. Key vessels are the inferior mesenteric artery (IMA) and vein (IMV), and the lymphatics follow the artery. It is important to note that IMA branches into left colic artery, sigmoid arteries, and superior rectal artery. The splenic flexure is supplied by marginal artery of Drummond, which is formed by anastomoses of branches from SMA and IMA, which plays a crucial role in supplying collateral circulation.

Dissection: the patient is placed in a lithotomy position. Again, there are various approaches for left colonic mobilization but the medial to lateral or lateral to medial approaches are most commonly performed.

Medial to lateral – identifying the IMA is the first step. The peritoneum of the mesocolon is incised from the level of right iliac artery, extending cranially past the IMA. Once the IMA is identified and elevated, the avascular plane anterior to Toldt's fascia is developed. Beneath Toldt's fascia are the left ureter, hypogastric nerve and the gonadal vessels, which should be preserved. The IMA is skeletonized and ligated close to the origin for oncologic clearance (commonly known as a high tie). The inferior mesenteric vein (IMV) typically encountered beneath the inferior margin of the pancreas, can be dissected and transected with an energy device or ligated with sutures.

The lateral peritoneal attachment of the left colon along the white line of Toldt is divided from the pelvic brim upward, which releases the descending and sigmoid colon. To ensure adequate length of colon for the anastomosis, the splenic flexure is mobilized and omental attachments divided. Careful attention needs to be made to ensure there is no excessive traction on the splenic flexure as this can lead to splenic laceration or omental bleeding.

Lateral to medial – an incision is made along the lateral peritoneal attachment of sigmoid and descending colon. Dissection is then carried out medially in the avascular plane anterior to Toldt's fascia. Close attention need to be made not to injure the left ureter, gonadal vessels and hypogastric nerve. Once the left colon is sufficiently mobilized, the IMA and IMV are identified medially, skeletonized and ligated. Splenic flexure mobilization is then carried out as per the medial to lateral approach.

Other approaches include splenic flexure mobilization first which can be carried out with an inferomedial (via sub-IMV plane), anterior (via gastrocolic ligament) or lateral approach.

Resection and anastomosis: the proximal and distal margins for resection need to be a minimum of 5 cm from the tumour in a

well vascularized region, free from diverticulosis. The colon is transected either intracorporeally using a laparoscopic stapler or exteriorized via a Pfannenstiel incision. Prior to making the anastomosis, the length of the colonic conduit is assessed ensuring it is tension free with no twisting of mesentery. A circular stapler is used to create the anastomosis via the rectum. An air leak test is then performed by insufflating air per rectum while holding the anastomosis under water.

Surgery for rectal cancer

Anterior resection

Anterior resection is performed for rectal tumours. For tumours in the upper third of the rectum or rectosigmoid junction, a high anterior resection with partial mesorectal excision may suffice. For lesions in the lower two-thirds, a low anterior resection with TME is indicated.

TME involves removing the entire rectum en bloc with its mesorectum with sharp dissection along the embryologic tissue plane. Particular attention needs to be given to preserve the autonomic nerves to minimize urinary and sexual dysfunction, which is achieved by ensuring the plane of dissection is on the mesorectal fascia. Other structures to look out for anteriorly whilst performing TME dissection are the seminal vesicles and prostate in men, which are separated anteriorly by Denonvillier's fascia. In women, the vagina will be separated anteriorly via rectovaginal septum. Distal pelvic dissection can be technically demanding due to confinement within the bony pelvis. Other factors which make for a challenging dissection include obesity, a narrow male pelvis and previous radiotherapy.

Dissection: similar steps are carried out as for left hemicolectomy to mobilize the sigmoid and descending colon. The splenic flexure often requires mobilization to gain sufficient length for a tension-free anastomosis. If completed via an open technique, the descending colon is transected at an appropriate level using a stapler. The presacral fascia and the fascia propria of the rectum are subsequently identified, the plane of dissection being between the two, ensuring both fascial layers remain intact. Breaching the pre-sacral fascia may lead to catastrophic bleeding from the sacral vessels, whereas breaching the fascia propria will result in oncological compromise. The dissection is continued caudally to the level of rectosacral (Waldeyer's fascia). This is divided with sharp dissection, allowing deeper dissection towards the pelvic floor. The dissection is continued laterally, keeping immediately outside of mesorectal fascia. Dissection is completed anteriorly, protecting the prostate/seminal vesicles in men and the vagina in women.

Resection and anastomosis: the rectum is transected with a stapler at the planned level, making sure the staple line is complete. The specimen is delivered via either a mini lower midline or Pfannentstiel incision. A colorectal or coloanal anastomosis is performed using a circular stapler. Attention should be given to the orientation of the mesentery, ensuring it is not twisted. The anastomosis should be tension-free and well perfused. An air leak test is performed and consideration should be given as to whether a covering loop ileostomy is required in cases where there is a low anastomosis or when there is an increased risk of

anastomotic failure due to co-morbidities such as diabetes, arteriopathy or a patient who smokes.

Abdomino-perineal excision of the rectum (APER)

APER is performed for low rectal tumours when sphincter preservation is not feasible whilst achieving distal margin. It is carried out via two incisions, through the anterior abdominal wall and the perineum. Splenic flexure mobilization is usually not required as a permanent colostomy is formed in the left iliac fossa.

The sigmoid colon and rectum with their respective mesocolon and mesorectum are mobilized in the same fashion as for anterior resection. Dissection is carried out as low as possible to reach the level of the pelvic floor. The procedure then carries on into the perineal phase where a wide elliptical incision is made around the anus and deepened in the extrasphincteric plane. Optimal dissection order is usually posterior – lateral – anterior where the safe posterior avascular plane is deepened until the dissection plane from above has been reached with the delicate anterior plane dissected last due to proximity of the prostate and urethra in men and the posterior vaginal wall in women. Once the specimen is fully mobile, it can be delivered through the perineal wound. The perineal defect is then closed in layers and the colostomy is matured usually in the left iliac fossa. Depending on the size of the perineal defect as well as patient factors that affect wound healing (e.g. radiotherapy), VRAM (vertical rectus abdominis myocutaneous) flap or biological mesh can be used to reconstruct the perineum.

Transanal excision

Transanal surgery in the form of TAMIS (transanal minimally invasive surgery) or TEMS (transanal endoscopic microsurgery) can play a useful role in local excision of early rectal cancers (T1-2, N0, M0) and benign rectal lesions. While the gold standard approach for rectal cancer remains proctectomy with TME, transanal surgery allows for organ thus functional preservation, avoiding morbidity associated with rectal resection and potential stoma. It is important to discuss the risks and benefits to patients who may be candidates for TEMS or TAMIS ensuring they understand the risks of potential oncological compromise versus the potential benefits of taking a more minimally invasive approach.

In TEMS, the patient is placed in the Lloyd-Davies position. A 4 cm reusable rigid rectoscope is placed trans-anally and carbon dioxide used to achieve pneumorectum. Specialized instruments are then introduced through the ports within the rectoscope. Full thickness excision of the lesion is performed followed by closure of the defect with suturing. TEMS has now been increasingly replaced with TAMIS which was introduced in 2010. While the resection techniques are similar, TAMIS employs a disposable flexible access device (e.g. GelPOINT mobile platform) instead of a rectoscope, laparoscopic ports are inserted into the device and standard laparoscopic instruments are used to perform the operation, making it more cost effective and easier to perform given familiar instruments are used.

Recovery

Following surgery, as part of the ERAS protocol, patients should undergo mobilization, recommence oral nutrition, and removal of

any necessary drains and urinary catheter as promptly as possible, to both reduce the risk of postoperative complications such as pneumonia and deep vein thrombosis and reduce the length of their hospital stay. This is aided by the use of minimally invasive surgery whenever possible and effective multimodal analgesia.

Other topics

Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC)

Index presentation of colorectal cancer with limited and resectable peritoneal metastasis and mucinous appendiceal tumours (usually diagnosed after emergency/elective appendicectomy) should be referred to the regional peritoneal centre. A staging laparoscopy can be carried out to further assess disease progression if there is uncertainty of the extent of disease based on imaging alone. Depending on the patient’s performance status and the extent of disease, CRS with HIPEC may be indicated (Figure 1).

Cytoreductive surgery starts with a midline laparotomy (with excision of umbilicus) followed by systematic examination of the abdomen. All visible lesions within the abdomen are surgically removed, and this can take place in the form of small bowel resection, colectomy, omentectomy and peritonectomy. Once the surgeon is confident that all visible lesions are excised, a heated chemotherapy solution is circulated directly inside the abdominal cavity for a period (usually 60 minutes) before closure. The aim is to eradicate the non-visible microscopic disease while minimizing systemic toxicity. Commonly used chemotherapy solution includes mitomycin, oxaliplatin or cisplatin, depending on the tumour type.

A recent systematic review reported a morbidity rate of 12–60% and mortality up to 5.8% for patient underwent CRS and HIPEC.⁸ Hence, strict patient selection, centralization of service and protocol standardization are necessary to improve outcome.

Pelvic exenteration

Pelvic exenteration involves an en-bloc multi-visceral resection for locally advanced rectal tumours or in case of pelvic recurrence. The aim is to achieve R0 resection.

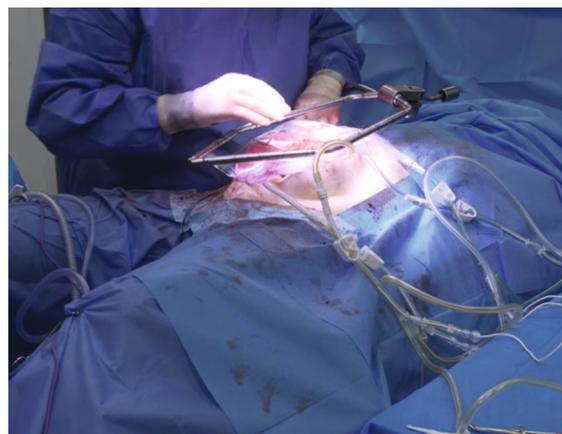


Figure 1 Photograph of patient receiving hyperthermic intraperitoneal chemotherapy (HIPEC) (with permission of Ms Jody Parker, Consultant Colorectal and Peritoneal Surgeon, University Hospital of Wales).

Pelvic exenteration can be categorized into anterior exenteration, posterior exenteration, total exenteration or modified/extended exenteration. Anterior exenteration is carried out to resect bladder, urethra, reproductive organs, and preserve rectum. Posterior exenteration involves removal of rectum, anus and reproductive organs, and preserves the bladder. Total exenteration is a combination of anterior and posterior exenteration (Figure 2). Modified/extended exenteration involves excision of lateral pelvic sidewall or sacrectomy. Exenterative surgery by its nature creates a large defect, which requires reconstruction often performed by a plastic surgeon.

It requires a multidisciplinary evaluation from colorectal surgery, urology, gynaecology, plastic surgery, radiology and oncology. Stoma nurses should be closely involved as patients will usually have colostomy, ileal conduit or both as part of the procedure.

Robotic-assisted surgery

The challenge of ensuring a meticulous dissection within the confines of a bony pelvis has led to increasing use of robotic-assisted surgery for rectal cancer surgery. Robotic surgery provides superior visualization of the operative field and allows articulation of the instruments beyond the limits of laparoscopy. These characteristics enable a more precise dissection in a narrow and deep pelvis. Moreover, surgeons can sit comfortably at the console, reducing physical exhaustion from a long operation.

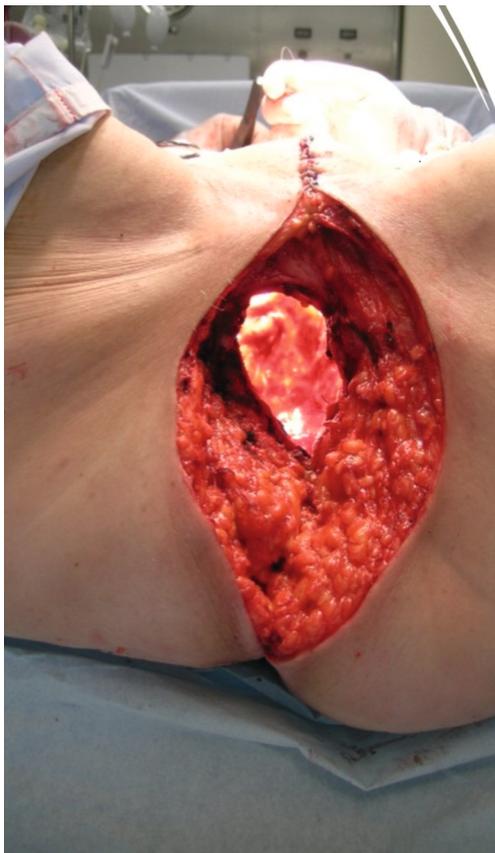


Figure 2 Photograph of patient who has had a full pelvic exenteration (with permission of Mr Martyn Evans, Consultant Colorectal Surgeon, Morrision Hospital).

The ROLARR trial (2017)⁹ is one of many trials that compared outcomes of robotic versus laparoscopic surgery. The trial had shown that conversion rate to open is lower in robotic-assisted surgery, blood loss is less, and patients have better functional outcomes (urinary and sexual). The disadvantages of robotic-assisted surgery include longer operative time, higher cost, and the absence of tactile feedback. Moreover, it requires substantial simulation and training before a surgeon can perform robot-assisted surgery. The learning curve is steep but is structured and simulator based.

In the UK, an increasing number of hospitals now offer robotic-assisted surgery as the standard approach in place of laparoscopy. In 2023/2024, it was reported that colorectal surgery accounted for 25% of all robotic-assisted surgery (10,160) in England.¹⁰ This trend is likely to continue as more hospitals adopt the robotic system and a greater proportion of colorectal surgeons undergo the required training.



Figure 3 CT image demonstrating a hypodense colorectal liver metastasis (with permission from Dunne et al., *Colorectal Liver Metastases, Hepatobiliary and Pancreatic Surgery*, pp. 109–131, Elsevier, 2014).

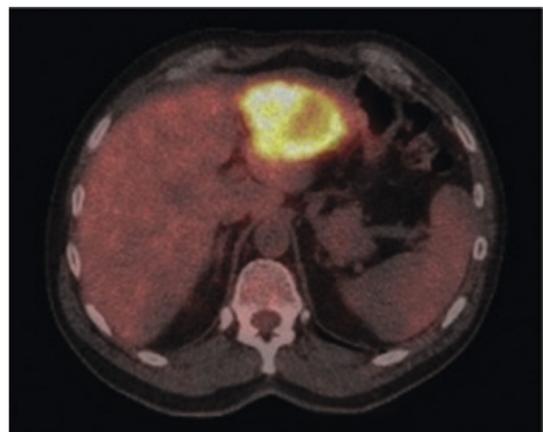


Figure 4 Positron emission tomography–computed tomography image of the hypodense colorectal liver metastasis from Figure 3, demonstrating high uptake of fluorodeoxyglucose (with permission from Dunne et al., *Colorectal Liver Metastases, Hepatobiliary and Pancreatic Surgery*, pp. 109–131, Elsevier, 2014).

Colorectal liver metastases

The liver is the most common site for colorectal metastases, due to the venous drainage of the colon and upper rectum entering the portal vein, leading directly to the liver (Figures 3 and 4). The potential resectability of liver metastases depends on their size, location and proportion of liver involved. Unfavourable factors include bilobar lesions, more than 4 metastases, elevated CEA and concomitant lung or peritoneal disease. The goal is to achieve complete (R0) resection of all hepatic metastases whilst preserving >30% of functional liver remnant (FLR). If adequate FLR cannot be achieved after R0 resection, a portal vein embolization can be considered to induce hypertrophy of contralateral lobe. A two-stage hepatectomy may also be considered whereby one affected lobe is resected in the first instance, time is then given to induce hypertrophy of the other lobe before completing the resection.

R0 hepatic resection has a 5-year survival rate of approximately 50%.¹¹ Liver metastasis resection is often combined with systemic therapy in the form of neoadjuvant (to downsize) or adjuvant (after resection, in high-risk disease). Systemic therapy in combination of a R0 hepatic resection has been shown to improve progression-free survival compared to surgery alone.¹² Hepatic resection for liver metastases is associated with a recurrence rate of approximately 60%, with the liver being the most common site of recurrence.¹³ Morbidity of liver metastasis resection can be high, hence patients require careful selection. Key things to look for in a candidate include limited hepatic disease, good performance status and a resectable primary tumour.

Postoperative surveillance

The aim of surveillance following surgery for colorectal cancer is to detect recurrent and metachronous disease at an early stage when it can be treated with curative intent. Most recurrences occur within 3 years, and the risk declines over time.

Follow-up schedule and intensity vary geographically depending on local protocol and resources. Evidence for the optimal protocol is lacking however NICE guidelines recommend that carcinoembryonic antigen (CEA) monitoring and CT TAP should be included. A rising CEA should prompt further investigation in the form of CT and colonoscopy. It has a sensitivity of 70–80% in detecting recurrent disease.¹⁴

Surveillance should also include colonoscopy to detect metachronous tumours. The British Society of Gastroenterology guidelines recommend colonoscopy at years 1 and 4.

Some units vary their surveillance depending on level of risk, with high risk features including node-positive disease, positive margins (R1 resection), poorly differentiated histology, synchronous liver metastases undergoing more intensive follow up.

Summary

The management of colorectal cancer evolves with time, but surgery continues to be the mainstay of curative treatment. Patient outcomes have improved with minimally invasive techniques including laparoscopic and robotic-assisted procedures, improved patient selection, prehabilitation and enhanced recovery after surgery (ERAS) protocols.

Progress has also been made in the management of advanced disease due to the combination of improved neoadjuvant oncological treatment, and a more aggressive surgical approach with techniques such as cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC), pelvic exenteration, and resection of colorectal metastases. ◆

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Practice points

- Colorectal cancer is common in the UK
- Thorough staging is required to identify distant disease and determine resectability of disease
- Neoadjuvant therapy is increasingly used for both locally advanced colon and rectal carcinomas
- Minimally invasive surgery, either in the form of laparoscopic or robotic is now the standard care
- Limited metastatic disease is often treated with curative intent
- Follow-up after surgery helps detect recurrence and metachronous lesions