Understanding colon cancer

MARCELLE RUTH
CANCER CENTRE & SPECIALIST HOSPITAL

The Marcelle Ruth Cancer Centre & Specialist Hospital is the first comprehensive healthcare centre of its kind in Nigeria and indeed West Africa.

> Our promise

In everything we do, we believe that compassion and care make all the difference.

With vast experience and understanding, our specialist team uses the very latest technology and treatments to deliver the best outcomes possible.

From screening and diagnosis to treatment and ongoing support, we are committed to providing outstanding care to those in need.

About this booklet

We understand it can be overwhelming for anyone to undergo cancer care, but we are here to provide you with help and support.

The focus of this leaflet is to help you and your family understand more about colon cancer.

Colon cancer

Colon cancer occurs when the cells that line the colon become abnormal and grow out of control. Left untreated, the cells can grow into surrounding tissues or organs, and may spread to other areas of the body. Worldwide, it is a major public health hazard with over 750,000 deaths each year, making it the third commonest cause of cancer deaths after lung and breast. In the Western world the peak age incidence of this disease is about 67 years old and because of widespread screening about 75% of cases present with early-stage disease (stage 1 & 2). However, in Nigeria the peak age incidence is about 45 years of age and unfortunately only 25% of patients present with early-stage curable disease. This is primarily due to very little awareness of the condition and the absence of mass screening programmes for colon cancer.

What causes colon cancer?

The exact cause of colon cancer is unknown. However, there are broadly two types;

Sporadic

Approximately 90% of all large bowel cancers are associated with the presence of polyps (small abnormal growths that line the colon), diet (low fibre, high fat), tobacco, alcohol, sedentary lifestyle, inflammatory bowel conditions (ulcerative colitis, Crohn's disease) and some cancer-causing (carcinogenic) chemical agents.

Hereditary

These make up about 10% of large bowel cancers and result from genetic abnormalities that can be passed from one generation to other. These types include Familial Adenomatous Polyposis (FAP) Syndrome and Hereditary Non Polyposis Colon Cancer (HNPCC).

What are the symptoms of colon cancer?

Early-stage colon cancer may present without symptoms and highlights the importance of screening to detect early-stage disease that is curable by endoscopic intervention or surgery. The development of symptoms may signal advanced disease. However, symptoms are frequently variable and one or a combination of the following may indicate a need to seek medical advice:

- rectal bleeding
- change in your bowel habit (constipation or diarrhoea)
- weight loss
- anaemia (low blood count)
- feeling of incomplete emptying (tenesmus)
- abdominal pain
- abdominal swelling/mass.

How do we diagnose colon cancer?

Diagnosis of colorectal cancer is based on a combination of a good history (information you provide to your doctor), a physical examination, blood tests, stool tests, taking tissue samples from the growth to confirm the diagnosis and specialised investigations using state-of-the-art imaging techniques to establish the stage of the disease.

Blood tests

Routine blood tests may show the presence of a low blood count, which is known as anaemia. There is also a need to measure the baseline liver function (LFT) and renal function (electrolytes, U&Es). Colon cancer cells can also produce a blood protein known as carcinoembryonic antigen (CEA) which is especially helpful in monitoring the disease once a diagnosis of colon cancer has been made.

Stool test

Faecal Occult Blood Test (FOBT) kits check for the presence of blood in stool (the commonest symptom of colon cancer). It is not diagnostic in that any other possible cause of blood loss within the gastrointestinal tract or other conditions such as a diet rich in beetroot can result in a positive test. Recent advances in technology have seen the development of stool Faecal Immunohistochemical Tests (FIT), which are more accurate than FOBT because they detect the presence of blood while excluding other dietary conditions that may give rise to a positive test. A positive stool test requires further investigation of the large intestine with a colonoscope.

Tissue samples

A biopsy or tissue sample is required to confirm the diagnosis of cancer using special staining techniques and an electron microscope. This sample is usually obtained at the time of colonoscopy, performed to investigate one or a combination of symptoms a patient may present with. Sometimes because of the pain and discomfort from low-lying cancers, an examination under a general anaesthetic (EUA) is required to properly assess the tumour and to take tissue samples for examination in the laboratory.

Colonoscopy

A colonoscopy is a fibre-optic camera that can be introduced via the anal passage to directly visualise the entire colon. You are required to take strong laxatives the day before in order to cleanse the bowel and allow a clear inspection. It is the gold standard test used to investigate patients with symptoms suspicious of colorectal cancer and is also used to screen people at risk of developing the disease. A strong family history of colon cancer, age (>40 years in Nigeria), previous colonic polyps and lifestyle are some of the reasons why one should consider a screening colonoscopy. At Marcelle Ruth, diagnostic and therapeutic gastrointestinal endoscopy services are offered on site by UK-trained expert consultant gastrointestinal surgeons.

Contrast imaging – barium enema

A barium enema is sometimes used to diagnose colon cancer. This involves introducing a water-soluble dye via the anal passage followed by an abdominal X-ray that may show narrowing of the bowel lumen. The appearance of minimal or absent contrast beyond the narrowing or blockage indicates the site of the tumour.

CT scan

A CT scan of the chest, abdomen and pelvis is used to establish whether the disease has spread from its primary site in the colon. It also provides additional information about the tumour's relationship to other tissues/organs close by so that the surgeon can accurately plan the type and extent of surgery required.

CT pneumocolon/colography/virtual colonoscopy

The above terms are used to describe the same investigation. Air is introduced via the anal passage and patient is put through a CT scan at the same time. Using special software the radiologist is able to reconstruct the entire lining of the colon and visualise/identify any abnormality such as polyps as small as 5mm in size and colon cancer. This investigation is as sensitive as a colonoscopy and in addition can pick up other abnormalities outside the colon but within the abdominal cavity. It is particularly useful in the frail elderly patients and people who cannot tolerate bowel cleansing because of other medical conditions. However, a colonoscopy would still be necessary if a polyp or cancer is found, to enable its removal or the taking of a tissue sample for confirmatory diagnosis in the laboratory.

MRI scan

An MRI scan is particularly helpful for staging tumours that are located in the pelvis, particularly the rectum, which is the lower extremity of the colon. An MRI scan is able to show the tumour's proximity to local urinary, gynaecological and pelvic side wall organs. Such information is invaluable in accurately staging the disease in the pelvis and planning surgery. The MRI scan can also be used to stage liver spread of the disease either alone or in conjunction with an abdominal ultrasound scan.

Abdominal ultrasound scan

An abdominal ultrasound scan can be used to assess the presence of liver metastasis (spread of tumour to the liver) from the primary site in the colon. It is also sometimes useful to assess suspected recurrence of disease in the liver after its surgical removal

Trans-anal ultrasound

The role of this investigation is to establish whether rectal tumours are at an early T1 or T2 stage (confined to the rectal wall) because advances in technology and surgical techniques allow removal by local surgical excision of the tumour by Trans-anal Endoscopic MicroSurgery (TEMS) or Endoscopic Mucosal Resection (EMR).

Staging of colon cancer

1	The tumour is confined to the innermost lining of the bowel wall.
2	The tumour is within the bowel wall.
3	The tumour has spread to involve the local lymph nodes (these glands enlarge when they contain cancer cells or infection).
4	Disease has spread to distant organs such as the liver, lungs, bone and brain.

The importance of staging following a diagnosis of colon cancer is to determine the prognosis (likelihood of survival from the disease). Generally stage 1 and 2 disease indicate that the cancer is early stage and potentially curable by endoscopic intervention (removal during colonoscopy) or surgery to excise the tumour. Stage 3 and 4 disease indicate that the cancer has spread beyond the bowel wall and is consistent with advanced disease. Generally patients with stage 3 and 4 will require additional treatment such as chemotherapy and radiotherapy, either alone or in combination.

Screening for colon cancer

The rationale for screening for colon cancer is as follows;

- Most cancers (sporadic) arise from adenomas or benign polyps.
- The polyps are easily removed at colonoscopy.
- Cancer is prevented from developing by removing these polyps.
- Cancer prognosis is improved by removing the cancer early stage or before malignant disease. There is evidence in the literature that screening for colorectal cancer using faecal occult blood testing results in a 15% cancer survival benefit in the screened population and more recently an even greater survival benefit of 43% was demonstrated using once-only flexible sigmoidoscope at 55 years of age within the UK population.

Treatment

Modern treatment of colorectal cancer is decided in a multidisciplinary team setting. At Marcelle Ruth each case of colon cancer is discussed in the presence of all specialists (surgeons, oncologists, pathologists, radiologists and nurses) involved in the patient's care so that the best standard of care is agreed for each individual patient. Marcelle Ruth is proud to offer this 'best practice care' for each patient, which is also in line with current evidence in medical literature.

The treatment of colon cancer will depend on whether the disease is early (stage 1 and 2) or advanced (stage 3 and 4).

Early-stage disease

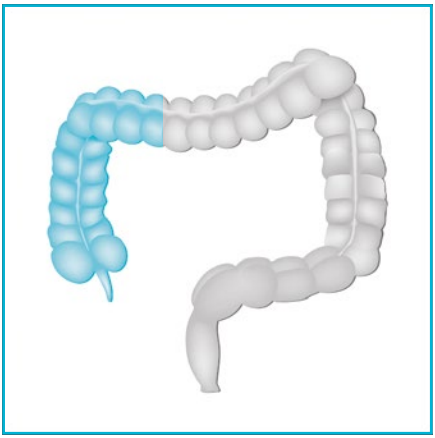
Surgery

Surgery offers most people a realistic chance of cure of the cancer. Cancer surgery may occur via the traditional open approach or using laparoscopic (keyhole) surgery.

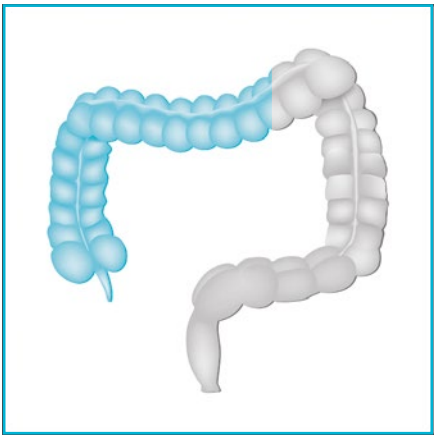
Open operation

Under general anaesthesia a long midline incision is made in the middle of the abdomen wall to gain access into the abdominal cavity. Tumour site is located, surgically removed and bowel continuity restored by anastomosis (the two bowel ends are joined together with suture). The abdomen is then closed in layers, leaving a scar. Some patients may require a temporary or permanent stoma bag (diversion of stool to the abdominal wall surface) and are seen before surgery by a stoma nurse specialist who sites the ileostomy/colostomy and provides information about living with a stoma.

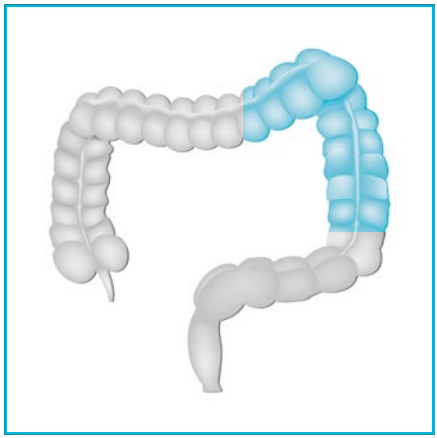
The common surgical options for early colon cancer include:



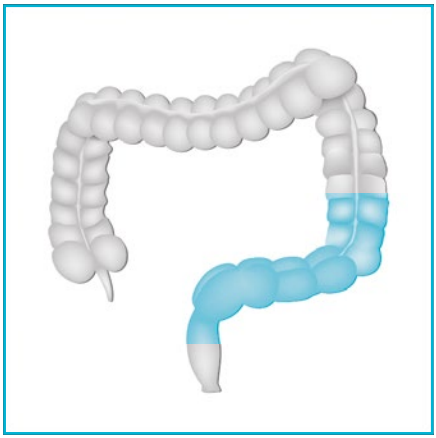
Right hemicolectomy



Extended right hemicolectomy



Left hemicolectomy



Anterior resection

An anterior resection is performed for tumours in the rectum using the total mesolectal excision (TME) technique. In order to avoid a permanent colostomy for the very low rectal cancers a colo-anal anastomosis with or without a pouch can be performed provided a cancer clearance margin of at least two centimetres can be achieved. However, where this clearance margin is not possible, then an abdomino-perineal (A-P) excision of the rectum (removal of the rectum and sphincters) is performed, with formation of a permanent colostomy.

Laparoscopic (keyhole) surgery

This procedure has rapidly overtaken the open operation for curative cancer surgery because of proven lower levels of post-operative pain/discomfort, improved cosmesis (small surgical scars), quicker recovery from surgery and earlier return to work. Marcelle Ruth has among its senior surgical staff a Nigerian UK-trained surgeon who trained in this technique and performed the first laparoscopic keyhole surgery for colon cancer at University College London Hospital in 2003. Our dedicated minimal access theatre team deliver this service from our two specially equipped modular theatres.

The laparoscopic (keyhole) technique can be adopted for all open surgical operations to treat colon cancer but patient selection is important to ensure excellent outcomes.

Advanced disease

Patients presenting with stage 3 or 4 disease indicate that the disease has spread beyond the bowel wall to the regional lymph nodes or distant organs respectively. Surgery alone is insufficient to cure the disease and additional treatment may involve one or more of the following options;

Chemotherapy

The rationale behind chemotherapy is that:

1. Surgery alone has failed to completely remove the cancer, which is assumed to have spread beyond the bowel wall.
2. It is believed that despite the physical removal of the tumour, spread at the microscopic level and other areas might explain why surgery alone fails.
3. With advances in biotechnology, we now have a better understanding that tumour cells can be destroyed at different stages of the tumour cell cycle by specific chemotherapy agents.

There is unanimous agreement among all experts treating colorectal cancer that chemotherapy in advanced or late-stage disease results in a significant survival benefit for patients. Chemotherapy may be given pre-surgery to try to downstage the tumour (shrink the cancer and make it easier to remove surgically). This known as neo-adjuvant chemotherapy. All patients with advanced colon cancer at Marcelle Ruth will be discussed in our colorectal cancer multidisciplinary team meeting to arrive at a consensus on the best combination chemotherapy agents for each patient. Patients are then given an opportunity to discuss treatment options with their clinical oncologist.

Radiotherapy

Radiotherapy is indicated in patients with locally advanced cancer in the rectum, which lies within the pelvis. Radiotherapy has no benefit in colon cancer. It is given in rectal cancer to reduce the rate of local recurrence or possibly 'downstage' the disease (downsizing to increase the chances of successful surgical clearance). It may be given either before surgery (neo-adjuvant radiotherapy) or following surgery (post-operative radiotherapy), either as a short course (5 days) or a long course (4–6 weeks) of treatment. There is good evidence from randomised trials that a short course of preoperative radiotherapy for rectal cancer significantly reduces local recurrence and improves survival. Long-course pre-operative radiotherapy is advocated for patients with locally advanced rectal cancers for the purpose of 'downstaging'.

Chemo-radiotherapy

Combination therapy in the form of chemotherapy and radiotherapy is based on the concept that cytotoxic agents sensitise tumour cells to destruction by radiation therapy. This form of neo-adjuvant therapy (given pre-operatively) is expected to increase in popularity, particularly with the development of newer more effective chemotherapy agents.

Liver resection

Hepatectomy (surgical removal of parts of the liver) for colorectal liver metastasis is associated with a 5-year survival of about 40%. Generally less than four metastases confined to one lobe of the liver may be amenable to surgical resection but this indication has been extended in the hands of experienced liver surgeons. However, the timing of surgery is the subject of debate, whether hepatectomy should be at the time of resection of the bowel primary tumour (synchronous) or perhaps should be delayed for three months prior to re-staging of the disease to ensure that other previously unaffected parts of the liver do not contain new metastases. In most parts of Europe, many surgeons favour a delayed approach because it permits selection of patients with rapidly progressive disease who are unlikely to benefit from surgery.

Radio-frequency ablation (RFA)

Radio-frequency energy has emerged as a useful modality to ablate (destroy) in-situ liver metastases where the lesions are considered irresectable. Sometimes in selected cases RFA maybe combined with liver resection for better disease control. This form of treatment is administered percutaneously under general anaesthesia and radiological control by expert radiologists in highly specialised centres. Current evidence indicates that RFA alone does not provide survival benefit comparable to liver resection but is marginally superior to chemotherapy for non-resectable colorectal liver metastasis.

Lung metastasis

The last decade has seen a dramatic increase in 5-year survival of patients with colorectal lung metastases. Best results occur with resectable lung metastases, with reported 5-year survival in the region of 50%.

Bone/Lung metastases

Colorectal cancer is advanced and incurable when it spreads to either the bone or brain. Treatment is geared towards managing the patient's symptoms. Bone fractures arising from disease spread can be treated by radiotherapy and orthopaedic fixation to provide pain relief. Tumour deposits in the brain can also be treated by radiotherapy and use of steroids to reduce rises in intracranial pressure which can cause sudden collapse and death.

Palliative care

Patients with disseminated colorectal cancer or irresectable primary tumours unresponsive to chemo-radiation are referred to the palliative care team following discussion at a multidisciplinary team meeting. Symptom relief with a variety of drugs is the primary goal of palliation. Infrequently surgery is indicated in the form of a debulking (reduce tumour size) or bypass (alternative route created to address a blockage) procedure.

Follow-up

An intensive follow-up programme for colorectal cancer patients is adopted at Marcelle Ruth given that local or regional recurrence of the disease is greatest within the first 2 years of surgery. This consists of 6-monthly blood tests (CEA blood levels) for 5 years, a CT scan of the chest, abdomen and pelvis every 6 months for 2 years and a colonoscopy at 1, 3 and 5 years. Patients are also seen regularly in surgical outpatients clinics over a 5-year period.

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