

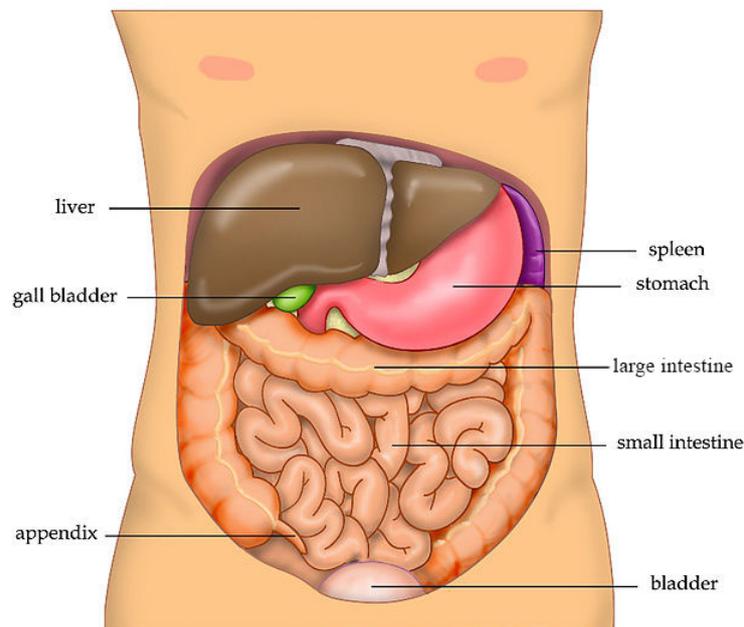
FREQUENTLY ASKED QUESTIONS

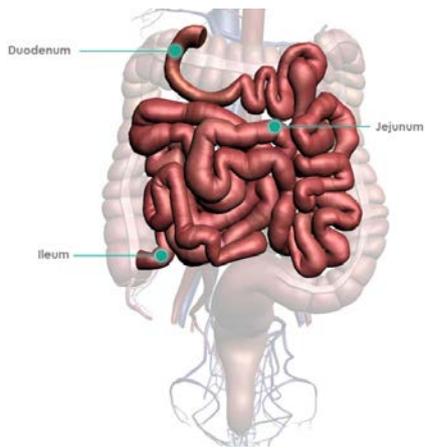
We hope the 'Patient pathway' and 'Extras' sections have helped you understand and familiarise yourself with the 'journey' you may experience during your proposed surgery and recovery in hospital. The primary aim is to prepare and inform you and your family members as much as possible.

This particular section provides answers to the frequently asked questions about Cytoreductive Surgery and HIPEC (Hyperthermic IntraPeritoneal Chemotherapy) to help reinforce what you will have seen and been told already. If you have any questions that you feel are not addressed, please do not hesitate to ask. To begin with, here are a few terms that you may have heard before and would like further clarification.

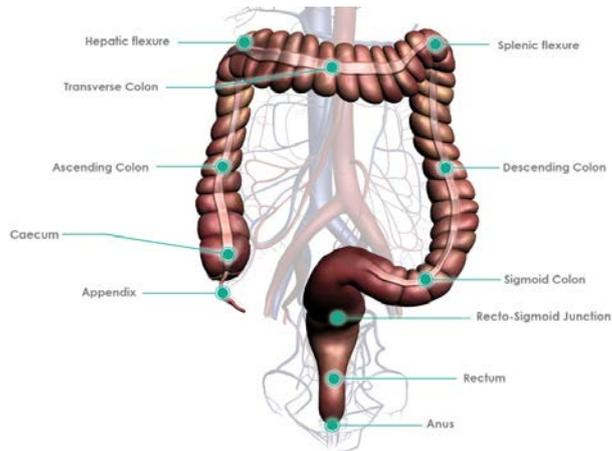
What is the abdominal cavity?

The abdominal cavity is a large body cavity containing the following organs:- stomach, omentum (fatty sheet covering the bowels) liver, gallbladder, spleen, pancreas, kidneys, appendix, small intestine, large intestine (comprising the colon and rectum), and adrenal glands. The abdominal cavity contents are covered by peritoneum (see later).





SMALL INTESTINE



LARGE INTESTINE

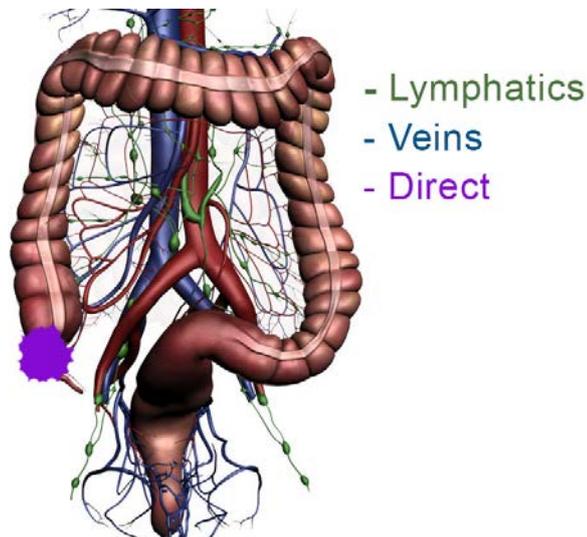
What is the peritoneum?

The peritoneum is a glistening clear lining, or membrane, which covers both the abdominal organs and abdominal wall.

How do cancers/ tumours spread in the abdominal cavity?

Cancers/ tumours within the abdominal cavity, such as cancers of the appendix or the large bowel (colon) can spread (seed) in three ways:

- Via the lymphatic vessels to the lymph nodes
- Via the blood vessels to other organs such as the liver or lungs
- Via the abdominal cavity *directly* to the peritoneum or adjacent organs

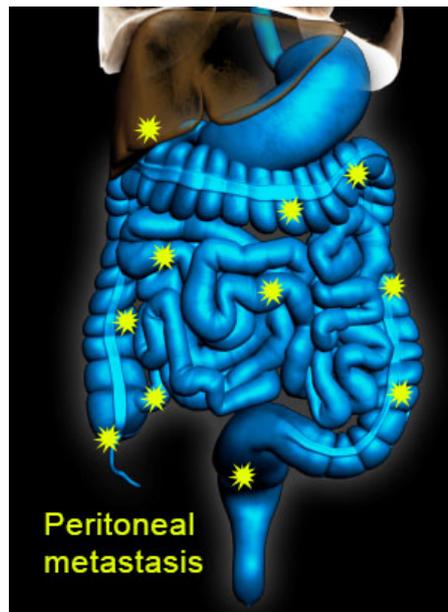


What does metastasis mean?

Metastasis is the spread of cancer cells to new areas of the body

What does Peritoneal metastasis mean?

Peritoneal metastasis means the presence of cancer deposits/ cells on the surface of the peritoneum



What is a Peritoneal Surface Malignancy?

A cancerous tumour or deposit on the surface of the peritoneum is referred to as a peritoneal surface malignancy.

Are there any symptoms and signs of peritoneal metastasis in the abdominal cavity?

It is difficult to detect the early spread of cancer in the abdominal cavity, and there are often no signs or symptoms. In some cases patients may notice abdominal pain or swelling of the abdomen. In most cases, peritoneal metastatic disease spread is detected either on a CT scan of the abdomen or at the time of an operation.

What are the traditional treatment options for peritoneal metastases in the abdominal cavity?

The traditional treatment of peritoneal metastasis used to involve mainly systemic chemotherapy (intravenous or tablet). In case of a blockage (i.e. an obstruction) in the bowel caused by peritoneal deposits, a surgical procedure, such as a bypass or a stoma formation was often carried out.

Surgery has traditionally not been used with the intention of removing and potentially curing cancer when it spreads within the abdomen cavity to the peritoneum until recently. An innovative surgical approach called Cytoreductive Surgery and HIPEC (heated or hyperthermic intraperitoneal chemotherapy), pioneered by Dr. Paul Sugarbaker from Washington Cancer Institute since the 1990s, has demonstrated promising results in treating selected patients with peritoneal metastases.

All you need to know about Cytoreductive Surgery + HIPEC

What conditions does Cytoreductive Surgery and HIPEC treat?

Cytoreductive Surgery and HIPEC is a surgical treatment for cancers that have originated in or spread within the abdominal cavity, such as appendiceal cancer, colon/ rectal cancer, gastric cancer, ovarian cancer, pseudomyxoma peritonei and peritoneal mesothelioma.

When is Cytoreductive Surgery and HIPEC a suitable treatment option?

Although there have been recent advancements in oral and intravenous chemotherapy, they are less effective when the cancer deposits resides on the peritoneal surfaces of the abdominal wall and organs in the abdominal cavity. When the spread of peritoneal metastases is not too widespread and patients are deemed fit enough for a major operation, Cytoreductive Surgery with HIPEC is a good option, with a potential for cure.

What is purpose of Cytoreductive Surgery and HIPEC?

The objective of Cytoreductive Surgery and HIPEC is to *improve survival compared to traditional treatments* such as systemic chemotherapy.

What is Cytoreductive surgery and HIPEC?

Cytoreductive Surgery is an operation in which the surgical team aim to remove **all visible** cancer/peritoneal deposits in the abdominal cavity. This highly specialised surgical technique, available only in very few centres within the UK, usually involves removing some of the abdominal organs affected by cancer spread and the peritoneum to remove all visible disease.

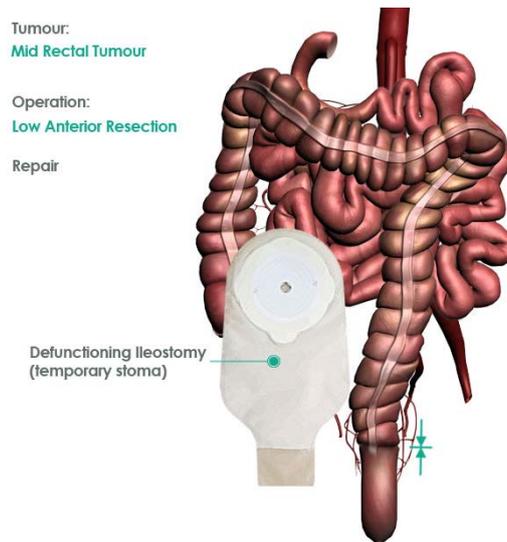
The operation lasts an average of 10 hours, depending on the extent of disease. A typical operation involves removal of:

- Part or all of the colon (large bowel)
- Rectum (lower end of large bowel)
- Gallbladder
- Spleen
- Uterus (womb) and ovaries in women
- Omentum (a sheet of fat contained inside the abdomen)
- Peritoneum
- Formation (either temporary or permanent) of a stoma in some patients (colostomy or ileostomy) may be required

HIPEC means hyperthermic or heated intraperitoneal chemotherapy, and usually lasts for 1 hour after Cytoreductive Surgery has been completed (more detailed information is available later).

Will I need a stoma (ileostomy or colostomy)?

A stoma is formed during surgery when the end of the bowel is brought to the surface of the abdomen and the bowel empties in to a specialised disposable pouch rather than in the usual manner. This can be for a single or combination of reasons. Often when the rectum is removed and an anastomosis performed (bowel joined together low down in the pelvis close to the anus), a temporary stoma is formed to allow this join to heal (see below).



Approximately a quarter of all patients having this surgery will require a permanent stoma, while another quarter will need a temporary stoma, which can be re-joined a few months later. This means that half of all patients having this surgery will not need a stoma.

What are the risks and possible complications of Cytoreductive Surgery?

Cytoreductive surgery is a major operation and there is the possibility of complications arising from surgery. Serious complications occur in 10% (1 in 10) of patients. These include:-

- Bleeding
- Anastomotic leak – this is when the bowel ends that have been joined together do not heal. This may require a second operation or a drain.
- Development of an enterocutaneous fistula (an opening between the intestines and the abdominal skin)
- Fluid collections within the abdomen – this may require a drain being inserted into the abdomen. This is usually done using x-ray guidance under a local anaesthetic.
- Blood clots – within the leg called “deep vein thrombosis or DVT” or in the lungs called “Pulmonary embolus or PE”
- Wound infections/ complications
- Chest and urine infections. These infections are treated with antibiotics, but severe infections may require more aggressive treatment on the ward or intensive care unit.
- Occasionally patients may experience hallucinations for a couple of days after surgery. This can be in the form of seeing or hearing things that are not real. These

experiences are temporary and will pass. The staff will be available to reassure you if you experience these.

- There is a 1 - 2% risk, from (1 in 100) to (1 in 50 chance) of death following the operations.

What does HIPEC mean?

- HIPEC = **H**yperthermic **I**ntra**P**eritoneal **C**hemotherapy
- “Hyperthermic chemotherapy” simply means the solution containing chemotherapy is heated to a temperature that is greater than normal body temperature
- “Intraperitoneal” means treatment delivered to the abdominal cavity

What does HIPEC do?

HIPEC is essentially a chemotherapy “bath” or “wash” that delivers heated chemotherapy directly to the abdominal cavity.

The HIPEC part of the operation is designed to kill any remaining cancer cells that are not visible to the naked eye, or “microscopic disease”, that may remain after removal of the visible disease.

Why is the chemotherapy heated?

Normal body temperature is approximately 37°C (or 98.6°F). During HIPEC treatment, the chemotherapy solution is heated to 41-42°C (105.8 – 107.6°F) with the goal of eliminating any remaining cancer cells while preserving the healthy ones. This temperature is used because cancer cells die at approximately 40°C, while normal cells die at approximately 44°C.

What are the benefits of HIPEC over traditional systemic chemotherapy?

Unlike traditional systemic chemotherapy that is delivered in the blood stream, throughout the whole body, HIPEC chemotherapy is largely isolated in the abdominal cavity and only a small amount absorbed into the body.

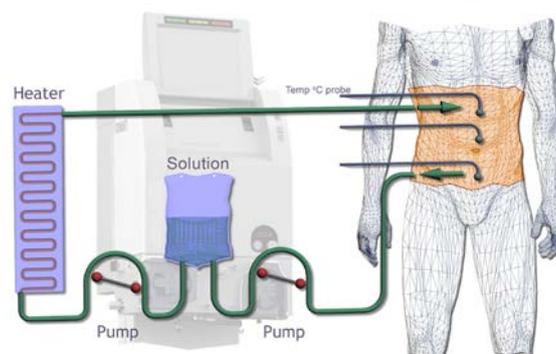
Therefore higher doses can be used without the side effects that can occur with traditional chemotherapy. This enables HIPEC to be more effective at killing cancer cells in the abdominal cavity, where it penetrates these cells directly.

How is HIPEC administered?

HIPEC is administered *immediately* after the Cytoreductive Surgery part of the operation is completed.



The chemotherapy agent is mixed with fluid to form a solution. This solution is administered in a controlled and safe fashion via secure tubes placed directly into various areas of the abdominal cavity (see below). These tubes are connected to a machine that both heats and pumps the solution allowing continuous circulation of the chemotherapy solution for 60 minutes. Temperature probes allow the temperature of the solution to be measured constantly during the 60 minutes.



Once the HIPEC part of the operation is completed, the tubes are removed and the abdomen is washed with normal solution. Following this, anastomoses (bowel ends joined together with either sutures or staples) are performed and stomas created, if required, prior to closure of the abdomen.

What are the risks of HIPEC?

The administration of heated chemotherapy into the abdomen has been found to be safe and does not have the usual side effects that are sometimes associated with chemotherapy.

There is a 2% (1 in 50) risk of neutropenia (a reduction in the number of white blood cells which normally fight infection). This can occur approximately 10 days following the operation and is treated with an injection that stimulates more white blood cells to be made by the body.

Recovery – what should I expect?

Before your surgery...

Before your surgery, you will have the opportunity to discuss stoma formation with a specialist nurse. She will show you an appliance, explain how it works, provide training in stoma care, explain how to obtain equipment and provide sources of support. She will also establish the best possible position for your stoma to be sited and help you to adapt to life with a stoma.

You will either be admitted the day before or arrive on the day of your planned surgery. You will be given a strong bowel cleansing preparation the day before surgery. During this time you will only be allowed to have “clear fluids” such as black tea and coffee, clear soup, water, squash and jelly. You will need to maintain a high intake of water during this period as the medication can leave you feeling dehydrated.

It is important that we have a contact number for your family while you are in surgery. It is a very long and draining day for your family and your surgeon will endeavour to contact them to inform them of the outcome of the operation when completed.

After your surgery...

Intensive Care Unit

After your operation has been completed, you will be looked after on the Intensive Care Unit (ICU) until you are well enough to return to the ward. The anaesthetic team will usually wake you up after surgery in theatre, but in some cases your breathing will need to be assisted by a ventilator to prevent you from becoming too tired, for a short period of time on ICU. Your breathing tube will then be removed during the evening or the next day. In addition to this you will have a variety of monitoring devices and attachments that help us to track your progress and allow you to have as much rest as possible.

Due to the type of surgery that you have had there will be a number of drips in place to allow for fluids, drugs and intravenous nutrition to be given, as you will not be able to tolerate food and drink for a period of time until your stomach/ bowel recovers. A naso-gastric tube will be in place to prevent you vomiting whilst your stomach/ bowel is not working and you may have drains in your chest and abdomen. You will also have a urinary catheter.

You will usually have an epidural for pain relief. This is a fine tube placed in your back that makes your abdomen more comfortable after the surgery. This is sometimes combined with other painkillers, including strong ones like morphine.

Ward care

Once the surgical team and intensive care doctors are happy that you are stable, you will be transferred to a general surgical ward.

The average stay in hospital after the operation is 3 weeks, although it may be shorter or longer for different people depending upon the extent of surgery and the recovery time.

Physiotherapy is an important part of your recovery. The role of the physiotherapist is to work with you to help maximise your lung function and to increase your mobility post-operatively.

Nutrition

Nutrition plays a major role in maintaining health and wound healing. A dietician will assess your nutritional status both before and after surgery to ensure caloric needs are met. It can take up to about two weeks after surgery before patients are able to eat normally.

Often stomach emptying and bowel function can be delayed after Cytoreductive Surgery, and TPN (total parenteral nutrition) may be required for a short period until the stomach/ bowels regains its normal function.

What is TPN?

Total parenteral nutrition (TPN) (containing protein, carbohydrate, fat, water, minerals and vitamins) is a method of feeding that bypasses the gastrointestinal tract. The nutritional feed is delivered into a vein to provide most of the nutrients the body needs. The method is used when patients are unable to receive feeding by mouth.

If total parenteral nutrition (TPN) is required, the dietician ensures you receive the correct formulation. The dietician will also work with you as you are weaned off TPN to establish a normal diet. Sometimes additional nutrition may be required, called enteral feeding, before you are able to have a completely normal diet to maintain your nutrition.

What is enteral feeding?

Enteral feeding is the delivery of a nutritional feed directly into the stomach or the beginning of your small bowel via a tube positioned through your nose into your stomach/ small bowel.

Clot prevention

We take full precautions to reduce the risk of clots developing. This involves you wearing stockings on your lower legs while in hospital and also having blood-thinning injections both during and after your hospitalisation for a total of 4 weeks after the surgery.

You will also have pneumatic calf compression stockings. These gently squeeze the calf every few seconds to keep the circulation moving in the legs, further reducing the risks of clots. We also advise that you keep wearing the stockings for 4 weeks after you are discharged from hospital.

When will I be discharged from hospital?

You will be discharged from hospital when you are deemed fit by your surgical team, the physiotherapists and the Colorectal Nurse Specialists. At this point you will be mobile walking regularly when you get home and managing with oral painkillers if required. If you had a stoma created, you will be taught to fully manage it independently before discharge.

You should not do any heavy lifting for 3 months. You should not drive for at least 6-8 weeks after your surgery. You need to be able to wear a seat belt and to safely perform an emergency stop.

What will my recovery be like at home following discharge?

Cytoreductive Surgery and HIPEC *does* have a big impact on your body both physically and psychologically. A lot of patients feel very tired for about three months. While it is important to rest during this period of recovery, it is also important to move around and remain as active as possible. Remaining active will help combat this fatigue as well as prevent possible complications of surgery, such as blood clots forming in the legs. Patients should continue doing the things they enjoy and set realistic goals throughout their recovery.

You may find that your appetite is reduced when you are first discharged. This is normal and you should try to eat a balanced diet in small, regular portions. Your appetite should improve with time but you may need to have supplement drinks on prescription if your appetite is poor.

Patients with stomas (mainly ileostomies) can experience episodes of dehydration, which sometimes require a further hospital admission to correct with intravenous fluids and medication. We endeavour to reverse temporary stomas usually a few months following Cytoreductive Surgery/ HIPEC.

Low mood may also occur during this period. It is important to have a good family support network and your surgical team, along with the specialist colorectal nurses will provide additional support and encouragement during this period.

What will my overall 'Quality of life' be after Cytoreductive Surgery + HIPEC?

Research has shown that after three months, quality of life does start to return to the level prior to surgery. Quality of Life can thereafter improve in some patients, usually *after 6 months*.

Although this is extensive surgery, it is possible to live a relatively normal life without the organs removed during your surgery, although some lifestyle adjustments may be required. An example is the need to take antibiotics for at least 1 year and sometimes for life following the removal of the spleen.

Are there any alternative treatments to Cytoreductive Surgery and HIPEC?

Conventional treatment for patients with peritoneal metastasis from cancers in the abdominal cavity have traditionally been treated with systemic chemotherapy and this may be recommended if surgery is not possible in cases when the disease spread is too extensive to safely remove surgically. Of course, patients may prefer to be treated with chemotherapy alone if they do not wish to undergo Cytoreductive Surgery and HIPEC.

Chemotherapy may also be recommended after Cytoreductive surgery/HIPEC although many patients having Cytoreductive surgery may have already tried chemotherapy.

Another option is a watch and wait approach. This means we monitor the cancer closely and if it continues to grow we may suggest that you have chemotherapy or surgery. Each patient is assessed individually and a treatment or surveillance plan is put in place.