

### Can PIPAC cure cancer?

PIPAC is currently used for controlling symptoms and reducing the disease burden. In some cases the tumor can disappear completely or may reduce drastically and surgical removal of the remaining tumor can be performed. These patients may experience a prolonged survival.

### Can all patients benefit from PIPAC?

Patients who are bed ridden and cannot eat, those who are malnourished or have massive ascites do not benefit from PIPAC. Sometimes there are adhesions between the intestines and abdominal wall due to which laparoscopy is not possible and hence these patients cannot receive PIPAC.

### What are the side effects of PIPAC?

Some of the common side effects of PIPAC are abdominal pain, nausea, alteration in the liver and kidney functions. Most of these side effects resolve within a few days. More serious side effects usually do not occur with PIPAC.

### Is PIPAC an experimental therapy?

First we should go back to what an experiment means- an experiment is a scientific procedure undertaken to determine something. The effects of PIPAC are known. It has been used in human patients and has been effective. This is in certain conditions mentioned above- when chemotherapy has stopped working or the fluid does not reduce with chemotherapy. In these cases, PIPAC is not experimental.

There are other situations in which the results are not known- like,

### Is PIPAC an alternative to chemotherapy?

In these situations, it is experimental and its effect is been studied in clinical trials and other experimental studies.

### Can PIPAC be used outside clinical trials?

Yes, PIPAC can be used outside clinical trials.

### What is the difference between HIPEC and PIPAC?

HIPEC is a single treatment usually given during open surgery and higher doses of chemotherapy drugs are used in it. PIPAC is given laparoscopically and multiple sessions are possible, doses of drugs used are lower.



### Which is better? HIPEC or PIPAC?

Right now both have different uses. HIPEC is used along with radical surgery that comprises of complete tumor removal (cytoreductive surgery). It can cure certain patients.

PIPAC is used for patients who cannot undergo HIPEC. Its role is palliative. Sometimes PIPAC is used to shrink the tumor before cytoreductive surgery and HIPEC.

Cytoreductive surgery and HIPEC require a greater expertise to perform compared to PIPAC.

### Which is the best place to take this treatment?

These procedures are best performed by a surgeon specializing in peritoneal cancer management; in institutes that are experienced in the management of peritoneal cancers.

**Gujarat's most Advanced Cancer Treatment**  
to infuse hope and health in your life.



DEPARTMENT OF SURGICAL ONCOLOGY  
HIPEC | PIPAC



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## OUR SPECIALIST



### Department of Peritoneal Surface Oncology

#### Dr. Aditi Bhatt

MS, M. Ch, GI, Gynaecology & Peritoneal Surface Oncology

“Dr. Aditi Bhatt is one of the most experienced doctors across the nation for the treatment of Peritoneal Cancer.”

Dr. Aditi Bhatt is an expert in ‘Peritoneal surface oncology’ that deals with peritoneal cancer-stage 4 abdominal cancer. Till few years ago, these cancers were treated with chemotherapy alone and patients survived only a few months. With surgical treatment, some of these patients can have a prolonged survival and can even get cured.

Dr. Aditi Bhatt has obtained special training in performing cytoreductive surgery and HIPEC for these cancers at a world renowned center in France. She is one of the first surgeons to start performing such surgeries in the country and has one of the largest experiences of over 150 procedures.

The outcome of this treatment depends on the quality of the surgery which takes around a 100 procedures to master.

She was also one of the first surgeons to start performing PIPAC in the country.

## HIPEC

for peritoneal (stage 4) cancer

### What is peritoneal cancer?

Peritoneal cancer means the presence of cancer cells on the peritoneum which is the lining of the abdominal cavity and the organs that it contains like the liver spleen and the intestines.

Any cancer can spread to the peritoneum and is called peritoneal cancer.

Commonly, cancers of the ovary, colorectum (large intestine), stomach and appendix spread to the peritoneum. There are some other rare cancers like pseudomyxoma peritonei and mesothelioma which commonly affect the peritoneum.

Peritoneal cancer is stage 4 cancer

### What is the treatment of peritoneal cancer?

Peritoneal cancer is usually treated with systemic chemotherapy. An aggressive surgical treatment called cytoreductive surgery (CRS) and HIPEC- hyperthermic intraperitoneal chemotherapy is used to treat patients with peritoneal cancer resulting in a prolonged survival and even cure in some patients

### What is HIPEC?

HIPEC stands for Hyperthermic Intraperitoneal Chemotherapy. In this procedure, a solution containing a chemotherapeutic agent is circulated in the abdominal/ peritoneal cavity and a high temperature for 30-90 mins.

She has published several scientific papers and a book on this subject and has organized workshops for training other Indian surgeons.

At Zydus we have the first dedicated unit for the treatment of peritoneal cancer offering both HIPEC and PIPAC in Gujarat. Such treatment needs expertise in other specialities as well like medical oncology, anesthesiology and intensive care, radiology and pathology which is available at our center.

This treatment is expensive and represents a substantial financial burden to patients with stage 4 cancer who may have already spent a lot on other treatments. At Zydus we offer this treatment at a substantially lower cost compared to the few other such centers in the country thus making it affordable for most patients.

### Is HIPEC a surgery?

HIPEC is done during surgery. During surgery, first all the tumor is removed which is called Cytoreductive Surgery (CRS) and then the hot solution containing the anti cancer drug (chemotherapy drug) is circulated in the abdominal cavity. By this process 1-2mm sized tumors can be destroyed. Microscopic tumor is also destroyed.

### How many sessions are needed?

HIPEC is a single procedure done during surgery. Only 1 session is done at a time. Some patients can undergo a second HIPEC if the cancer comes back.

### What is Cytoreductive surgery?

Cytoreductive surgery comprises of removal of tumor from the peritoneal/abdominal cavity. The aim of this surgery is to remove all the visible tumor. To achieve this the peritoneum that has tumor is stripped off the abdominal wall and from the organ surfaces. Sometimes a part of the small or large intestine, gall bladder, liver, spleen, stomach or pancreas may also have to be removed to completely remove the tumor. This is a very important part of the surgery which is done before HIPEC is performed. Complete tumor removal depends on the expertise of the surgeon and also the extent of tumor itself.

### Is HIPEC a high risk surgery?

Cytoreductive surgery and HIPEC is very complicated surgery and the risk of complications is a little high as compared to other cancer surgeries. After a HIPEC, complications occur in about 15- 30% of patients. Complications that are possible after any surgical intervention, such as infection or bleeding, can occur after a HIPEC too. Some complications are more specific to a HIPEC:

- An increased risk of leakage of bowel junctions (anastomoses) due to the heated chemotherapy. In case of increased risk of leakage, the surgeon can judge that it is safer to temporarily create a stoma (the bowel is exteriorized through the abdominal wall).
- Fluid accumulation in the pleural cavity (the space between the lungs and the thoracic cage), especially when tumor was removed from the diaphragm. In case of tumor at the diaphragm, the surgeon will put a tube (thoracic drain) in the thorax as a preventive measure to drain any fluid after the operation for some days.
- Slow emptying of the stomach for about two weeks. Complications of the chemotherapy itself (lowering of white blood cell count, lowering of platelet count) can occur after a HIPEC, depending on the drug and the dose that is used.

### Is HIPEC worth the risk?

Cytoreductive surgery and HIPEC is the only treatment which can cure certain patients with peritoneal cancer and prolong the life of others significantly. Hence, patients with peritoneal cancer should consult a specialist if this treatment is an option for them.

Most of the complications resolve with proper treatment and patients get back to their normal life. The risk is minimized when an experienced surgical team performs the procedure.

## PIPAC

PIPAC is pressurized intraperitoneal aerosol chemotherapy. It is a new method of giving chemotherapy to patients with advanced abdominal cancer in which chemotherapy is given directly into the abdominal cavity. Routinely, chemotherapy (cancer directed therapy) is administered intravenously (through the veins) as a drip. Intra-peritoneal chemotherapy is given directly into the abdominal cavity in patients who have cancer spread to the peritoneum that is the lining of the abdominal cavity and its organs.

### What is the need for this treatment?

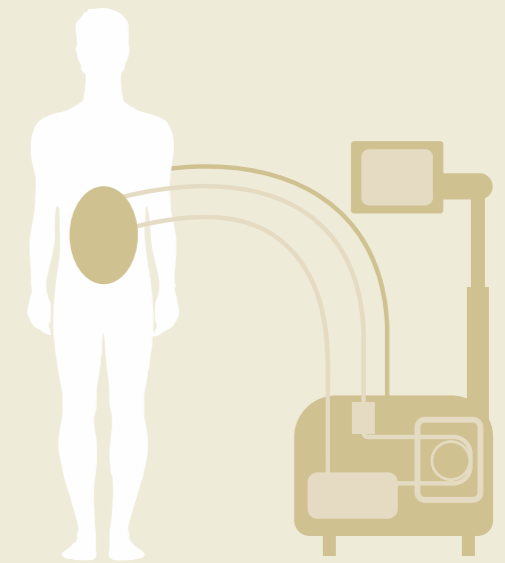
Patients who have peritoneal cancer spread have a very limited life span and experience discomforting symptoms like fluid accumulation in the abdominal cavity and inability to take food. Radical surgery with HIPEC (a method of giving chemotherapy directly to the abdominal cavity ) has resulted in improved survival in some patients. Yet a large number of patients are not eligible for this therapy and for these patients, new treatments like PIPAC are being developed.

### How does PIPAC work?

In PIPAC, a chemotherapy vapor is generated using a special device called 'Capnopen'. This procedure is performed through laparoscopy. In laparoscopic surgery, the pressure in the abdominal cavity is raised. The combined effect of this increased pressure and vaporized chemotherapy, increases the drug concentration in the cancerous tissue. A very small dose of chemotherapy is used leading to lesser side effects. Recent studies have shown that this form of chemotherapy delivery can be as effective as intravenous chemotherapy.

### What are the benefits of PIPAC?

It is a simple procedure for which the patient has to be in the hospital for one or two days only. The side effects are



There are certain conditions in which there is a clear benefit of HIPEC and in such patients it is worth the risk like patients with appendix cancer and pseudomyxoma peritonei, mesothelioma, and selected patients of colorectal, ovarian and gastric cancer.

For each patient, the decision needs to be individualized and the surgeon will clearly explain to the patient and family the risk versus benefit of the procedure.

minimal and the recovery is fast. It has shown to be effective when systemic chemotherapy has stopped working or in patients who cannot tolerate systemic chemotherapy. Multiple sessions or PIPAC can be given at intervals of 6 weeks each. 1/10 the dose is used to produce the same effect as systemic chemotherapy. PIPAC does not interfere with routine chemotherapy and both can be given together to produce a better effect.

### Which patients benefit from PIPAC?

Currently, PIPAC is used for patients who have peritoneal tumor deposits arising from ovarian cancer, colon cancer, stomach cancer, appendix cancer and some rare cancers of the peritoneum. Patients who have fluid build up in the peritoneal cavity from any cancer that does not respond to chemotherapy can benefit from this treatment. PIPAC is given to patients who have received chemotherapy before and usually more than 1 type of chemotherapy.